The Future of Medical Education in Canada/
L’Avenir de l’éducation médicale au Canada (AFMC)

Environmental Scan Project / Projet Volet « analyse environnementale »*
Wilson Centre for Research in Education, University of Toronto
Centre de pédagogie appliquée aux sciences de la santé, Université de Montréal

National Literature Reviews
Revue de littérature nationales

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EXECUTIVE SUMMARY

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LITERATURE REVIEWS


Objectives
A team of researchers at the Wilson Centre for Research in Education, University of Toronto and le Centre de pédagogie appliquée aux sciences de la santé (CPASS), l’Université de Montréal were funded by the Association of Faculties of Medicine of Canada (AFMC) to undertake a national environmental scan regarding the future of undergraduate medical education in Canada. As part of this comprehensive scan, a series of more than 30 review papers were commissioned. The purpose of these reviews was to broadly scan the published and “grey” literatures in medical education with the goal of identifying key issues, challenges and innovations that could be used to support and extend the more impressionistic data collected during the key informant interviews and expert panels conducted for the project. As well, each author was asked to construct a general reference list and an annotated bibliography of a few key articles related to each topic. Taken together, the whole set of review papers provide a very valuable source of data for those running or reforming medical schools and for those developing innovation and research in medical education.

Methods
The commissioning of literature reviews began before any other sources of project data were available. Thus, the initial process of commissioning rested on a list of important topics developed jointly by the AMFC Future of Medical Education in Canada Steering Committee and the Wilson Centre/CPASS research team. Together, a list of approximately 30 key topics was identified and clustered into 5 overarching domains. The original 5 domains were: Curriculum Content, Pedagogical Issues Affecting the Medical Education System, Culture(s) of Medical Education, External Issues Affecting the Medical Education System, and Higher Order Constructs. There were between 4 and 12 topics assigned to each of these 5 overarching “clusters”. Two members of the research team were assigned to each cluster. Cluster leaders then went about commissioning authors from across Canada to write the more than 30 papers.

Commissioned literature review papers took two forms. Where it was known that review papers already existed in the area (eg. interprofessional education, assessment) a “brief” review was commissioned. Brief reviews took the form of a 5-10 page focus “review of reviews”. Brief
reviews summarized the key finding of existing reviews, identified where possible innovations, provided a set of overarching implications for undergraduate medical education and concluded with a general reference list and annotated bibliography.

Where it appeared that there were no existing reviews of a topic, an “in-depth” review was commissioned. These much longer papers (ranging from 10 to 30 pages) provided detailed literature reviews in addition to a list of innovations, implications, references and an annotated bibliography as for the brief reviews.

As literature review papers were submitted, they were read and reviewed by the cluster leaders, by the members of the research team and by the AFMC FMEC Steering Committee. In a few cases additional external reviewers were invited to read the paper and to suggest further points or references for consideration in a revised version.

Over the summer of 2008, most of the papers were available and data from other project sources such as in they key informant interviews and expert panels was available. This gave the research team an opportunity to reflect on the cluster structure and to identify gaps in the commissioned papers. As a result, the clusters and their associated papers were reorganized and a few additional papers were commissioned. These included papers and reviews focusing on Health Inequities, Technology and Medical Education, Primary Care, and the CanMEDS roles in Undergraduate Education.

Results

This book contains the final version of the literature review process of the Future of Medical Education in Canada Environmental Scan. In total there are 34 literature review papers – 24 brief reviews and 10 in depth reviews – a total of 550 pages. Sixty-two authors from all parts of Canada generously gave of their time to produce these reviews, many of which will be published in peer-reviewed journals at the conclusion of the project.

The final cluster structure is:

1. Medical Education and Society
2. The Purpose, Function and Governance of Medical Schools
3. Medical Students: Selection, Support and Assessment of competence
4. Curriculum Design and Implementation
5. Contemporary Content Topics

This book contains several features that will assist those using it to easily access the contents, including:

1. A Table of Contents including all papers using the Cluster Structure above
2. An alphabetical list of authors
3. A summary abstract for each review paper
4. A key-word index
Papers were commissioned in both English and French. Some have been translated in full and some have summary abstracts in both languages.

Conclusions

Literature review paper authors gave generously of their time to create an unparalleled set resource for the Future of Medical Education in Canada project. Taken together, this book of reviews provides a rich resource of theoretical and practical background for most of the contemporary issues and challenges of medical education in Canada. As well, it provides a number of innovations, best practices and a comprehensive set of reference and annotated bibliographies.

The data provided in these literature reviews has been combined with the more impressionistic data generated by the key informant interviews and expert panels that are also part of this project, including the Young Leaders Forum, Blue Ribbon Panel, Data Needs and Access Group, and the international consultations. This integration takes the form of 10 “issue analysis papers” – one for each 10 key priority areas identified and listed in a separate volume (Volume 3) of this environmental scan. Each issue analysis paper integrates information from all project sources, providing evidence-based recommendations, information on innovations and references to assist with planning and implementation.

Acknowledgements

The entire AFMC Environmental Scan team (listed as authors of this paper) contributed to the design, conduct, commissioned, editing and synthesis of the literature review project. Deepest thanks to the many authors who wrote and re-wrote review papers. Their names are listed in the alphabetical author list in this volume, and appear on their own papers.

The following individuals made additional contributions to this phase of the Environmental Scan:

Sandy Parker coordinated the Environmental Scan literature review project, including the commissionering of papers, signing of letters of agreement, communication with authors and cluster leaders, external review of selected papers and the formatting of the final book.

Ayelet Kuper, Jerry Maniate, Scott Reeves, Glen Bandiera, Mathieu Albert, Niall Byrne, Philippe Karazivan, Bernard Millette and Brian Hodges served as cluster leaders, commissioning papers, working with authors and writing summary abstracts.

Spogmai Akseer coordinated the initial review paper clusters, the editing and formatting of papers and the detailed indexing of key words.

Participants in the final synthesis retreat, which identified the 10 overarching priorities identified in Volume 3, and integrating both the Key Informant Interviews and Literature Reviews, were:
Wilson Centre: Brian Hodges, Mathieu Albert, Ayelet Kuper, Jerry Maniate, Sandy Parker, Glen Bandiera, Niall Byrne

CPASS: Bernard Charlin, Bernard Millette, Philippe Karazivan, Delphine Arweiler, Emilie Noyeau

AFMC: Nick Busing, Catherine Moffat, Steve Slade, Deborah Danoff, Susan Maskill, Mathieu Moreau, Roona Sinha

Additional participants at the summer retreat which identified a new structure for the literature review clusters and helped to identify additional papers to commission included all of the above members of the Wilson Centre and CPASS teams as well as Nick Busing, Angela Towle and Jay Rosenfield from the AMFC FMEC Steering Committee
RÉSUMÉ

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LES REVUES DE LITTÉRATURE


Objectifs

Une équipe composée de chercheurs du Wilson Centre de l’Université de Toronto et du Centre de pédagogie appliquée aux sciences de la santé (CPASS) de l’Université de Montréal a reçu une subvention de l’Association des Facultés de Médecine du Canada (AFMC) pour entreprendre une analyse environnementale nationale sur l’avenir de la pédagogie médicale au niveau pré-gradué au Canada. Dans le cadre de cette analyse, plus de trente revues de littérature ont été commanditées. Ces revues visaient à analyser les publications et la littérature grise en éducation médicale afin d’en identifier les problématiques-clés, les enjeux et les innovations qui pouvaient être utilisées pour confirmer et compléter l’ensemble plus impressionniste des données collectées lors des entrevues-clés avec les informateurs et auprès des groupes d’experts qui ont été organisés pour le projet. De plus, il a été demandé à chaque auteur d’établir une liste générale de références et une bibliographie annotée qui identifie les articles-clés pour chaque thème. L’ensemble de ces revues de littérature constitue une importante source de données pour ceux qui administrent ou réforment les écoles de médecine et pour ceux qui développent l’innovation et la recherche en éducation médicale.

Méthodes

Les revues de littérature ont été commanditées avant que les données des autres sources ne soient disponibles. Cette démarche reposait initialement sur une liste de domaines importants qui avait été développée conjointement par le Comité de pilotage sur l’Avenir de l’éducation médicale au Canada de l’AFMC et par l’équipe de recherche Wilson Centre/CPASS. Une liste d’approximativement 30 thèmes-clés a été établie et ceux-ci ont été regroupés en cinq grands domaines. Ces cinq domaines étaient à l’origine : le contenu du cursus, les questions
pédagogiques affectant le système de l’éducation médicale, la ou les culture(s) de l’éducation médicale, les questions externes affectant le système de l’éducation médicale et les construits d’un ordre plus élevé. Quatre à douze thèmes ont été identifiés pour chacun de ces grands domaines ou groupes. Deux membres de l’équipe de recherche ont été assignés à chaque groupe. Les leaders des groupes ont alors demandé à des auteurs à travers le Canada d’écrire la trentaine de revues de littérature.

Ces revues de littérature prirent deux formes. Lorsque des revues de littérature avaient déjà été publiées sur un des thèmes (par exemple, l’éducation interprofessionnelle, l’évaluation), une brève revue de littérature a été commanditée. Les revues brèves prirent la forme d’une « revue des revues » de 5 à 10 pages. Les revues brèves résumaient les résultats-clés des revues existantes, identifiaient les innovations possibles, concluaient en un ensemble d’implications pour l’éducation médicale prégraduée et se terminaient avec une liste générale de références et une bibliographie annotée.

Lorsqu’il apparaissait qu’aucune revue de littérature n’avait été publiée sur un thème, une revue de littérature plus approfondie a été commanditée. Ces revues de littérature plus longues (allant de 10 à 30 pages) et plus détaillées identifiaient également une liste d’innovations, d’implications, de références et une bibliographie annotée, comme les revues de littérature brèves.

Lorsque les revues de littérature étaient terminées, elles étaient lues et révisées par les leaders du groupe en question, par les membres de l’équipe de recherche et par le comité de pilotage FMEC de l’AFMC. Dans quelques cas, des réviseurs externes ont également révisé la revue de littérature et ont suggéré d’inclure certains points ou certaines références dans une version révisée.

Au cours de l’été 2008, la plupart des revues de littérature étaient disponibles, ainsi que les données des autres sources comme les entrevues-clés et les groupes d’experts. L’équipe de recherche a ainsi pu poursuivre sa réflexion sur les domaines couverts et identifier des thèmes qui n’avaient pas été couverts par les revues de littérature déjà commanditées. Les domaines, réunissant plusieurs thèmes, ont été réorganisés et des revues de littérature supplémentaires ont été commanditées. Ces revues et textes additionnels se concentraient sur les inéquités en santé, la technologie et l’éducation médicale, les soins de santé primaires et les rôles CanMeds dans l’éducation prégraduée.

Résultats
Ce recueil contient la version finale des revues de littérature de l’analyse environnementale sur l’avenir de l’éducation médicale au Canada. Au total, 34 revues de littérature (24 brèves et 10 approfondies) sont inclues dans ce volume de 550 pages. Soixante-deux auteurs à travers le Canada ont généreusement consacré de leur temps à la rédaction de ces revues de littérature dont la plupart seront publiées à la fin de projet dans des revues avec comité de lecture.

La structure finale des domaines est la suivante :

1. Éducation médicale et société
2. L’objet, la fonction et la gouvernance des écoles de médecine
3. Les étudiants en médecine : sélection, support et évaluation des compétences
4. L’élaboration et la mise en place des cursus
5. Thèmes contemporains

Ce recueil contient plusieurs éléments qui permettront au lecteur d’accéder aisément à son contenu, notamment :

1. Une table des matières incluant toutes les revues de littérature classées selon la structure des domaines ci-dessus
2. Une liste alphabétique des auteurs
3. Un résumé pour chaque revue de littérature
4. Un index des mots-clés

Les revues de littérature ont été commanditées en anglais ou en français. Certaines ont été traduites dans les deux langues, d’autres ont leur résumé dans les deux langues.

Conclusions

Les auteurs des revues de littérature ont généreusement consacré de leur temps afin de créer un ensemble sans précédent de ressources pour le projet sur l’avenir de l’éducation médicale au Canada. Ce recueil de revues de littérature constitue une ressource importante au plan théorique et pratique pour la plupart des questions et des enjeux contemporains en éducation médicale au Canada. De plus, il offre un certain nombre d’innovations et de bonnes pratiques, ainsi qu’un ensemble de références et de bibliographies annotées.

Les données des revues de littérature ont été combinées avec les données plus impressionnistes des entrevues-clés ainsi que des groupes d’experts qui font également partie du projet, incluant Young Leaders Forum, Blue Ribbon Panel, Data Needs and Access Group ainsi que les consultations internationales. Cette intégration prend la forme de dix articles analytiques, un pour
chaque thème prioritaire identifié, que l’on retrouve dans un recueil séparé (volume 3) de cette analyse environnementale. Chacun de ces articles analytiques intègre l’information provenant de toutes les sources du projet et offre des recommandations basées sur les preuves, de l’information sur des innovations et des références afin de soutenir la planification et l’implantation.

Remerciements

L’équipe entière de l’analyse environnementale de l’AFMC a contribué à la conception, à la conduite, au suivi, à la révision et à la synthèse du projet portant sur les revues de littérature. Nous remercions chaleureusement tous les auteurs qui ont écrit et réécrit les revues de littérature. Leurs noms sont classés par ordre alphabétique dans ce document et apparaissent sur leur revue de littérature.

Les personnes suivantes, membres de l’équipe, ont également contribué de la façon suivante :

Sandy Parker a coordonné le projet de l’analyse environnementale incluant les revues de littérature, notamment pour ce qui est de commanditer des revues, du suivi des lettres d’entente avec les auteurs, de la communication avec les auteurs et les leaders des groupes, à la révision externe des revues sélectionnées et à la préparation du document final.

Ayelet Kuper, Jerry Maniate, Scott Reeves, Glen Bandiera, Mathieu Albert, Niall Byrne, Philippe Karazivan, Bernard Millette et Brian Hodges ont commandité les revues de littérature, ont travaillé avec les auteurs et ont écrit les résumés des revues.

Spogmai Akseer a coordonné les groupes initiaux des revues de littérature, le suivi des revues de littérature et l’indexation détaillée des mots-clés.

Les participants qui, lors de la retraite au cours de laquelle a été élaborée la synthèse finale, ont identifié les dix priorités que l’on retrouve dans le recueil volume 3 et ont intégré les entrevues-clés et les revues de littérature, sont les suivants :

Wilson Centre: Brian Hodges, Mathieu Albert, Ayelet Kuper, Jerry Maniate, Sandy Parker, Glen Bandiera, Niall Byrne

CPASS: Bernard Charlin, Bernard Millette, Philippe Karazivan, Delphine Arweiler, Emilie Noyeau

AFMC: Nick Busing, Catherine Moffat, Steve Slade, Deborah Danoff, Susan Maskill, Mathieu Moreau, Roona Sinha
Les participants qui, lors de la retraite qui a eu lieu cet été, ont identifié une nouvelle structure des domaines couverts par les revues de littérature ainsi que les revues supplémentaires à commander, incluaient tous les membres des équipes du Wilson Centre et du CPASS cités ci-dessus ainsi que Nick Busing, Angela Towle et Jay Rosenfield du comité de pilotage FMEC de l’AFMC.
Titles of National Literature Reviews by Lead Authors /
Titres des revues littérature nationales par auteur principal

2. Arweiler, Delphine. La gestion du changement et le leadership en éducation médicale.
   Arweiler, Delphine. Change Management and Leadership in Medical Education.
3. Banack, Jeannine. Health Inequities, Social Responsibility and Medical Education.
4. Beaulieu, Marie-Dominique. Compétences de base sur la collaboration intra professionnelle (ou intra professionalisme) pour les études pré-graduées en médecine.
5. Bell, Mary. Distributed Medical Education and Distance Learning: Brief review.
   Boelen, Charles. Social Accountability and the Future of Medical Education.
7. Brown, Adrian. The Future of Medical Education in Canada: Community-based Education: Brief review.
8. Byrne, Niall. The influence of Science and Evidence on Medical Education.
9. Coke, William. Chronic Care Education for Medical Students in the Clinics and in the Community.
11. Gagliardi, Anna. Integrating Knowledge Translation in Medical Education Delivery and Curriculum.
    Gagliardi, Anna. L’intégration du transfert des connaissances à la pédagogie médicale et au cursus.
12. Hayter, Megan. The Future of medical education in Canada: Simulation in Medical Education.
13. Hodges, Brian. Assessment and Medical Education: Major Trends and Issues for the Future of Medical Education in Canada.
16. Karsenti, Thierry. Enseignement et pratique de la médecine : quels sont les principaux défis engendrés par les technologies de l’information et de la communication (TIC) ?
    Karsenti, Thierry. Information and Communication Technologies (ICT), Medical Education and Practice: What are the major challenges?
    Lussier, Marie-Thérèse. Because One Shoe Doesn’t Fit All: Doctor-Patient Relationships: A Repertoire.
20. Maniate, Jerry. Governance in Undergraduate Medical Education in Canada.
22. Mann, Karen V. The Future of Medical Education in Canada: The Primary Care Lens.
23. McNaughton, Nancy. Conflict Resolution and Negotiation Teaching in Medical Education.
24. Neville, Alan. AFMC-Medical Education in Canada: A Review of Undergraduate Medical Curricula.
   Parboosing, J. Environmental scan in support of the teaching of lifelong learning qualities and abilities in the undergraduate medical curriculum.
27. Puddester, Derek. The Future of Medical Education in Canada: Brief Literature Review Physician Wellness and Work/Life Balance.
28. Reeves, Scott. The Future of Medical Education in Canada: Interprofessional Education.
29. Reid, Lynette. Recent Developments in Bioethics and Decision-making in Canadian Medical Education: From Awareness to Competencies.
30. Robertson, David. Literature Review: Patient Centeredness as a Theme in Medical Education.
31. Schoales, Blair. Medical Student Recruitment Issues.
33. Taylor, Janelle. The Culture of Medicine.
34. Wong, Brian. Quality of Care & Patient Safety.
Cluster Order of National Literature Reviews /
Ordre des revues littérature nationales

CLUSTER 1: Medical Education and Society / Éducation médicale et Société

1a Imputabilité sociale et avenir de l’éducation médicale/ Social Accountability and the Future of Medical Education. (Boelen)

1b Planification des effectifs médicaux et pénurie au Canada : revue de la littérature l’impact sur l’éducation médicale. (Karizivan)

1c Health Inequities, Social Responsibility and Medical Education. (Banack)

CLUSTER 2: The Purpose, Function, and Governance of Medical Schools / L’objet, la function et la gouvernance des écoles de Médecine

2a Governance in Undergraduate Medical Educaton in Canada (Maniate)

2b La gestion du changement et le leadership en éducation médicale / Change Management and Leadership in Medical Education (Arweiler)

2c The Influence of Science and Evidence on Medical Education (Byrne)

2d Brève revue de la littérature sur la recherche en éducation médicale (Albert)

2e Enseignement et pratique de la médecine : quels sont les principaux défis engendrés par les technologies de l’information et de la communication (TIC) / Information and Communication Technologies (ICT), Medical Education and Practice: What Are the Major Challenges? (Karsenti)

CLUSTER 3: Medical Students, Selection, Support and Assessment of Competence / Les étudiants en médecine: sélection, soutien et évaluation des compétences

3a Medical Student Recruitment Issues (Schoales)

3b The Future of Medical Educaiton in Canada: Brief Literature Review Physician Wellness and Work/Life Balance (Puddester)

3c Assessment and Medical Education: Major Trends and Issues for the Future of Medical Education in Canada (Hodges)

CLUSTER 4: Curriculum Design and Implementation / L’élaboration et la mise en place des cursus
4a AFMC-Medical Education in Canada: A Review of Undergraduate Medical Curricula (Neville)

4b The Future of Medical Education in Canada: Simulation in Medical Education (Hayter)

4c The Future of Medical Education in Canada: Community-Based Education: Brief Review (Brown)

4d Distributed Medical Education and Distance Learning: Brief Review (Bell)

4e Integrating Knowledge Translation in Medical Education Delivery and Curriculum (Gagliardi)

4f The Culture of Medicine (Taylor)

4g Hidden Curriculum (D’Eon)

4h Environmental Scan in Support of the Teaching of Lifelong Learning Qualities and Abilities in the Undergraduate Medical Curriculum (Parboosing)

4i Literature Review: Patient Centredness as a Theme in Medical Education (Robertson)

4j Brief Review of the Literature on Faculty Development (Leslie)

4k Maîtriser le flux d’information médicale : un important défi pour le médecin (Noyeau)

CLUSTER 5: Contemporary Content Topics / Thèmes contemporain

5a Compétences de base sur la collaboration intra professionnelle (ou intra professionalisme) pour les études pré-graduées en médecine (Beaulieu)

5b Literature Review: The Medical Humanities in Canada (Stewart)

5c Population Health: A Collective Challenge for Canadian Medical Schools (Johnson)

5d Chronic Care Education for Medical Students in the Clinics and in the Community (Coke)

5e En l’absence de panacée universelle: Répertoire des relations médecin-patient / Because One Shoe Doesn’t Fit All: Doctor-Patient Relationships: A repertoire (Lussier)
5f Quality of Care and Patient Safety (*Wong*)

5g Conflict Resolution and Negotiation Teaching in Medical Education (*McNaughton*)

5h Palliative Medicine: A Perspective on Canadian Undergraduate Medical Education (*Kirshen*)

5i Recent Developments in Bioethics and Decision-Making in Canadian Medical Education: from Awareness to Competencies (*Reid*)

5j The Future of Medical Education in Canada: Inter-Professional Education (*Reeves*)

5k AFMC – The Primary Care Lens (*Mann*)

5l Medical Professionalism: Fostering an Ecology of Professionalism. (*Maniate*)
CLUSTER 1: Medical Education and Society /

Éducation médicale et société

Boelen, Charles, Consultant International en systèmes et personnels de santé

Imputabilité sociale et avenir de l’éducation médicale

Résumé

L’imputabilité sociale suppose que les facultés de médecine orientent leurs activités d’éducation médicale, mais aussi de recherche et de service, pour répondre aux problèmes de santé prioritaires des citoyens et de la société toute entière, ces problèmes étant identifiés conjointement avec les pouvoirs publics, les organisations sanitaires, les professions de santé et les communautés. L’imputabilité sociale implique donc pour les facultés d’établir un partenariat avec d’autres acteurs influents du système de santé et une transparence quant à la gestion et au fonctionnement de son institution afin de permettre à chacun des partenaires de se faire une appréciation aussi objective que possible des bénéfices de son action. On peut se demander si les interventions d’une faculté de médecine sont rigoureusement conçues, organisées et évaluées pour satisfaire au mieux les besoins de santé prioritaires d’une communauté ou d’une nation. L’image d’une tour d’ivoire, centrée avant tout sur ses propres intérêts et relativement éloignée des problématiques usuelles des gens, a longtemps été utilisée, à tort dans certains cas, pour dépeindre l’institution universitaire, et notamment la faculté de médecine. Une réflexion critique sur sa raison d’être, sur la pertinence de ses programmes et sur l’influence qu’elle exerce sur le bon fonctionnement d’un système de santé n’est apparue que récemment.

Enjeux majeurs

La reconnaissance de l’imputabilité sociale de la faculté de médecine aura des répercussions importantes sur l’éducation médicale, par plusieurs aspects.

Vision stratégique

Les programmes en matière d’éducation médicale, de recherche et de prestation de services de santé devront être revus à la lumière des besoins futurs de santé et de bien-être de la société et des citoyens et de l’évolution du système de santé. Les planificateurs de l’éducation médicale devront mieux anticiper les besoins qualitatifs et quantitatifs en personnel médical, en tenant compte d’une éventuelle répartition des responsabilités et tâches parmi les autres personnels de santé et des services sociaux.
**Education mieux adaptée aux besoins de société**

L’éducation médicale devra être rigoureusement conçue pour mieux préparer les étudiants à répondre aux futures exigences de la pratique médicale, en considérant notamment : la compétence clinique, la communication avec les usagers, l’action sur les déterminants sociaux de la santé, une plus grande participation à la prévention des risques et à la promotion de la santé, l’optimisation du rapport coût-bénéfice des interventions de santé, le partenariat avec d’autres professions de santé, toutes vertus contribuant à avoir un impact positif sur la santé. Ces marques d’imputabilité sociale devront être appliquées dès le début et tout au long du programme d’éducation médicale, entraînant notamment une ouverture précoce sur les problèmes de société, l’intégration des sciences humaines et de la santé publique dans l’enseignement de toutes les disciplines et un apprentissage dans une variété de contextes adaptés.

**Démonstration par les preuves sur le terrain**

La faculté devra démontrer l’efficacité de ses programmes à répondre aux problèmes de santé prioritaires d’une communauté, notamment en s’investissant, en partenariat avec d’autres agences, dans la gestion des services de santé d’un territoire, en faveur d’une population bien définie. Par des indicateurs objectifs de santé autant que par la satisfaction de la population, les preuves devraient être apportées de l’impact de l’éducation médicale, à plus ou moins long terme, dans cette zone, en particulier sur le fonctionnement des services de santé, la réduction des risques de santé et le niveau de santé des citoyens.

**Participation élargie**

Des formations et des incitatifs de différente nature seront proposés aux enseignants et tuteurs afin de les encourager à développer des relations étroites avec la communauté, à identifier les principaux risques pour la santé, à contribuer à résoudre des problèmes de santé complexes ayant des prolongements économiques et sociaux et à servir de modèles aux apprenants. Une collaboration étroite sera renforcée avec des praticiens de la santé sur le terrain, dans le double but de bénéficier de leur expérience et d’expérimenter avec eux des modes de pratiques nouvelles, notamment en équipes pluridisciplinaires, qui soient plus pertinentes aux exigences de la société et cohérentes avec l’éducation médicale dispensée.

**Evaluation par la société**

Toute institution dans une société moderne est appelée à démontrer que ses interventions produisent les meilleurs effets possibles. De même, la faculté de médecine, motivée par une démarche de qualité, d’une part, et incitée par la société à l’aider à atteindre ses objectifs de santé, d’autre part, s’appliquera à produire les médecins qui conviennent le mieux à la société. L’imputabilité sociale suppose qu’elle orientera ses activités d’éducation médicale, mais aussi de recherche et de service, pour répondre aux problèmes de santé prioritaires des citoyens et de la société toute entière, ces problèmes étant identifiés conjointement avec les pouvoirs publics, les organisations sanitaires, les professions de santé et les communautés (1).

L’imputabilité sociale implique donc pour la faculté d’établir un partenariat avec d’autres acteurs influents du système de santé et une transparence quant à la gestion et au fonctionnement de son institution afin de permettre à chacun des partenaires de se faire une appréciation aussi objective que possible des bénéfices de son action. Partenariat et transparence peuvent constituer des défis comme des opportunités, car ils constituent des exigences pour l’institution, notamment, l’adaptation de sa mission pour atteindre des objectifs partagés avec le monde extérieur et la démonstration explicite de l’impact de son action sur le bien-être de la société.

**Maîtriser la finalité de l’éducation médicale**

Façonner l’éducation médicale dans l’espoir d’améliorer les prestations de santé pour l’ensemble d’une population reste un défi important pour la majorité des facultés de médecine dans le monde (2). Il y a près d’un siècle déjà, Flexner recommanda l’introduction d’une solide base scientifique dans les études médicales pour en relever le niveau académique, mais aussi avec l’espoir que cette initiative contribuerait à une plus juste distribution des bénéfices de santé à l’ensemble de la population américaine, en particulier la population noire (3). Les générations de réformateurs d’éducation médicale qui ont suivi n’ont souvent retenu de lui que la dimension pédagogique de l’entreprise, accordant une moindre attention à sa dimension sociale. A tel point que l’on peut se demander, aujourd’hui encore, si les interventions d’une faculté de médecine sont rigoureusement conçues, organisées et évaluées pour satisfaire au mieux les besoins de santé prioritaires d’une communauté ou d’une nation (4). L’image d’une tour d’ivoire, centrée avant tout sur ses propres intérêts et relativement éloignée des problématiques usuelles des gens, a longtemps été utilisée, à tort dans certains cas, pour dépeindre l’institution universitaire, et notamment la faculté de médecine.

Une réflexion critique sur sa raison d’être, sur la pertinence de ses programmes et sur l’influence qu’elle exerce sur le bon fonctionnement d’un système de santé n’est apparue que récemment. Ces deux dernières décennies, par exemple, on a assisté à une description de typologie du médecin, permettant éventuellement une plus grande cohérence de l’éducation médicale avec l’évolution des mœurs, comme : le médecin-cinq-étoiles de l’OMS, Tomorrow’s doctor du
General Medical Council du Royaume Uni, le profil Can Meds du Canada et plus récemment
The Physician Charter. Ce questionnement sur la finalité de l’éducation médicale, à travers une
analyse du produit fini, est une initiative utile mais ne constitue qu’une étape d’une démarche
plus générale qui devra conduire la faculté de médecine à mieux appréhender son rôle dans le
système de santé du pays.

A partir de l’identification actuelle et prospective des problèmes de santé de la société et des
citoyens et d’une vision critique des défis et enjeux auxquels le système de santé devra faire face
dans l’avenir, la faculté déterminera sa mission et son organisation. L’analyse de la situation des
professions de santé, qu’elle a la charge de former, est un préalable à sa stratégie pédagogique,
tenant compte de paramètres tels que la qualité souhaitée des professions, leur nombre, leur
répartition, leurs débouchés éventuels, leur insertion dans le système de soins, leur contribution à
la santé publique. La faculté tiendra compte de l’influence de la société sur ses programmes et
de l’influence de ses programmes sur la société. En somme, l’imputabilité sociale suppose
qu’elle pratique une interaction active avec l’environnement politique et social et qu’elle en soit
redevable devant la société.

**Portée de l’imputabilité sociale**

Alors que l’on évalue généralement l’excellence de l’éducation médicale sur le contenu des
programmes et les processus pédagogiques, le concept d’imputabilité sociale étend la démarche
de qualité aux phénomènes situés en amont et en aval de la formation. En amont, la faculté
tiendra compte de l’évolution de la société, du système de santé, et des besoins des citoyens, en
consultation avec d’autres acteurs influents, avant de réaliser la formation. En aval, elle prendra
des mesures pour vérifier que le médecin formé est utilisé dans les meilleures conditions
possibles pour pratiquer toutes les compétences acquises pendant sa formation. Ainsi, en amont
de la formation, la faculté assume une part de responsabilité dans la « conceptualisation » du
produit à former ; en aval, elle assume une part de responsabilité dans l’« utilisabilité » du
produit formé.

Dans la perspective de l’imputabilité sociale, les trois compartiments de conceptualisation,
formation et utilisabilité sont interdépendants, et la faculté comprend la cohérence à accepter une
part de responsabilité dans chacun d’entre eux, en partenariat avec d’autres institutions,
namment : le pouvoir politique qui esquisse une vision du système de santé, l’organisation des
services de santé qui la concrétise ; les professions de santé qui s’identifient dans des pratiques
nouvelles et la société civile qui contribue au bien-être général (5). Ainsi, si l’éducation médicale
met l’emphase sur la médecine de famille ou la pratique en équipes pluridisciplinaires de santé,
elle devra être en mesure de justifier sa décision en fonction des besoins futurs de la société, et
de jouer de son influence pour qu’existent des opportunités de postes dans ces domaines pour les
prochains diplômés. De même, si elle forme à la santé communautaire, c’est qu’elle aura anticipé
ou favorisé une réorientation du système de santé en faveur des soins de santé primaires. En
somme, elle devra innover en matière d’éducation médicale avec une meilleure connaissance de
l’évolution du contexte dans lequel pratiqueront ses futurs gradués et en assumant de nouvelles
responsabilités dans leur suivi.
Modernité et imputabilité sociale

Une imputabilité sociale négligée peut conduire à des états de performance désastreux pour une faculté de médecine, par exemple, un exode important des diplômés vers l’étranger ou une désaffection pour servir dans des lieux isolés du pays, ou à l’égard de disciplines pourtant considérées comme prioritaires. Par contre, là où l’imputabilité sociale est reconnue, une meilleure adéquation est observée entre les prestations de la faculté et les besoins de la population (6). Progressivement, une prise de conscience se manifeste au niveau international, national et institutionnel en faveur de l’imputabilité sociale des facultés de médecine. En effet, au plan international, des réseaux et des échanges s’établissent progressivement, dans le monde anglophone, The Network Towards Unity For Health, et dans le monde francophone, la SIFEM, Société Internationale Francophone d’Éducation Médicale (7,8). Au plan national, des agences gouvernementales et académiques prennent des initiatives encourageantes, notamment au Canada (9).

Ces initiatives sont parmi les signes annonciateurs d’un mouvement général vers une plus grande reconnaissance de l’imputabilité sociale des institutions, qui devrait prendre de l’ampleur à l’avenir sous l’influence de considérations de nature éthique, démocratique, économique et politique. Sur le plan de l’éthique, l’institution, comme l’individu, devra répondre non seulement de ses actes mais aussi des effets que ses actes pourraient entraîner à plus ou moins long terme sur le bien-être de la société et des citoyens. Sur le plan de la démocratie, transparence et traçabilité sont vivement souhaités par le citoyen et la société toute entière afin de pouvoir porter une plus juste appréciation sur l’utilisation de ressources, la qualité des interventions et l’impact ultime sur le bien-être. Sur le plan économique, la transparence aidant, l’imputabilité sociale mettra en évidence la pertinence et la performance comparatives des institutions, promouvant ainsi concurrence et compétition pour un surcroît de qualité. Sur le plan politique, on peut s’attendre à ce que le soutien moral et financier soit plus aisément accordé à une institution disposée à créer des synergies avec d’autres institutions partageant les mêmes idéaux à servir l’intérêt public qu’à celle qui investit dans des actions sectorielles et isolées. L’analyse de ces tendances amène à penser que le concept d’imputabilité sociale est celui qui prépare le mieux la faculté de médecine à répondre aux défis de l’avenir.

Enjeux majeurs pour l’éducation médicale

La reconnaissance de l’imputabilité sociale de la faculté de médecine aura des répercussions importantes sur l’éducation médicale, par plusieurs aspects.

Vision stratégique

La faculté, soucieuse de sa performance comme acteur important de l’action sanitaire et sociale du pays, devra s’intéresser davantage à la conduite de politiques de santé, car celles-ci conditionnent son action. Ses mandats et programmes en matière d’éducation médicale, de recherche et de prestation de services de santé devront être revus à la lumière des besoins futurs de santé et de bien-être de la société et des citoyens et de l’évolution du système de santé. Les planificateurs de l’éducation médicale devront mieux anticiper les besoins qualitatifs et quantitatifs en personnel médical, en tenant compte d’une éventuelle répartition des
responsabilités et tâches parmi les autres personnels de santé et des services sociaux. Le produit fini de l’éducation, tel qu’envisagé par le cadre de compétences CanMEDS pour les médecins, devrait servir de référence dans l’élaboration et l’évaluation des programmes de formation (10).

Éducation mieux adaptée aux besoins de société

L’éducation médicale devra être rigoureusement conçue pour mieux préparer les étudiants à répondre aux futures exigences de la pratique médicale, en considérant notamment : la compétence clinique, la communication avec les usagers, l’action sur les déterminants sociaux de la santé, une plus grande participation à la prévention des risques et à la promotion de la santé, l’optimisation du rapport coût-bénéfice des interventions de santé, le partenariat avec d’autres professions de santé, toutes vertus contribuant à avoir un impact positif sur la santé. Ces marques d’imputabilité sociale devront être appliquées dès le début et tout au long du programme d’éducation médicale, entraînant notamment une ouverture précoce sur les problèmes de société, l’intégration des sciences humaines et de la santé publique dans l’enseignement de toutes les disciplines et un apprentissage dans une variété de contextes adaptés.

Démonstration par les preuves sur le terrain

La faculté devra démontrer l’efficacité de ses programmes à répondre aux problèmes de santé prioritaires d’une communauté, notamment en s’investissant, en partenariat avec d’autres agences, dans la gestion des services de santé d’un territoire, en faveur d’une population bien définie. Dans cette zone d’expérimentation et de démonstration, elle offrira aux enseignants et étudiants, en plus de l’hôpital et des structures conventionnelles des lieux de formation, un éventail d’opportunités nouvelles d’éducation leur permettant de mieux appréhender les réalités sociales, culturelles et économiques de l’existence et leur relation avec les problèmes de santé et d’envisager les meilleures interventions pour y remédier. Par des indicateurs objectifs de santé autant que par la satisfaction de la population, les preuves devraient être apportées de l’impact de l’éducation médicale, à plus ou moins long terme, dans cette zone, en particulier sur le fonctionnement des services de santé, la réduction des risques de santé et le niveau de santé des citoyens.

Participation élargie

Dans la mise en œuvre de sa vision stratégique, d’une éducation mieux adaptée aux besoins de société et d’une démonstration par les preuves sur le terrain, la faculté invitera ses administrateurs, chercheurs, enseignants et étudiants à diversifier leurs activités, voire à assumer de nouveaux rôles. Des formations et des incitatifs de différente nature seront proposés aux enseignants et tuteurs afin de les encourager à développer des relations étroites avec la communauté, à identifier les principaux risques pour la santé, à contribuer à résoudre des problèmes de santé complexes ayant des prolongements économiques et sociaux et à servir de modèles aux apprenants. Une collaboration étroite sera renforcée avec des praticiens de la santé sur le terrain, dans le double but de bénéficier de leur expérience et d’expérimenter avec eux des modes de pratiques nouvelles, notamment en équipes pluridisciplinaires, qui soient plus pertinentes aux exigences de la société et cohérentes avec l’éducation médicale dispensée.
Evaluation par la société

L’évaluation et l’accréditation évolueront pour mettre en évidence l’imputabilité sociale des facultés de médecine. De nouvelles normes s’ajouteront à celles déjà existantes pour promouvoir l’excellence en matière d’analyse prospective des besoins de société et de suivi des gradués dans leur prestation à répondre à ces besoins, permettant ainsi à l’éducation médicale de se réactualiser en fonction des véritables défis auxquels la société et le système de santé seront confrontés. L’application de ces normes pourra mener à un réexamen de la gouvernance académique et un réajustement de l’utilisation des ressources. La reconnaissance formelle de l’imputabilité sociale dans l’accréditation devra être l’aboutissement de consultations menées à l’initiative des facultés de médecine elles-mêmes, en anticipation aux prochaines pressions exercées par les pouvoirs publics pour une meilleure performance des institutions. Parmi les membres de l’équipe visitant l’institution soumise à évaluation ou accréditation figureront des représentants de la société : pouvoirs publics, organismes de soins, professions de santé et citoyens.

Bibliographie annotée


Tout en reconnaissant le mérite du rapport de Flexner pour améliorer la qualité de l’éducation médicale, l’auteur prétend que la principale ambition de Flexner était d’améliorer la santé des populations à travers une meilleure formation des médecins, en particulier lorsqu’il appelle les facultés de médecine à faire montre de « patriotisme ». Au modèle flexnérien d’éducation médicale, qui n’a pas eu l’influence espérée sur la santé, il oppose le nouveau paradigme « d’imputabilité sociale » pour les facultés de médecine.

Cet ouvrage fait le constat que des progrès en matière de santé ne sont vraiment marquants et durables que s’ils reposent sur une collaboration étroite entre les principaux acteurs de la santé : décideurs politiques, gestionnaires de santé, professions de santé, responsables académiques et société civile. De même, l’éducation médicale sera influente si la faculté de médecine développe de solides partenariats pour assurer une contribution active et responsable dans l’édification d’un système de santé répondant aux besoins de société.

Le concept d’imputabilité sociale invite les facultés de médecine à améliorer leur contribution au bon fonctionnement d’un système de santé et à l’élévation du niveau de santé dans la société. Des expériences dans un certain nombre d’institutions de formation de par le monde montrent comment il peut être appliqué, quels avantages on peut en attendre et quels défis seront à relever.

7- See the task force on “ Social accountability and accreditation “ du Network Towards Unity For Health : www.the-networktufh.org.
Le réseau international “ The Network Towards unity For Health” comprend des facultés de médecine, et d’autres institutions de formation en santé, engagées à mieux adapter leurs programmes d’éducation médicale aux besoins de santé prioritaires de leurs communautés. Au sein de ce réseau, un groupe de travail vient de se constituer pour formuler des normes d’évaluation et d’accréditation illustrant le concept d’imputabilité sociale.

La SIFEM est une société récemment constituée avec le but d’améliorer la qualité de l’éducation médicale dans le mode francophone. L’un de ses groupes de travail, appelé « Santé et société », a parmi ses objectifs la promotion du concept d’imputabilité sociale des facultés de médecine.

Cette brochure, éditée par le gouvernement fédéral canadien, est produite par un groupe d’éménents responsables de l’éducation médicale au Canada. Elle met en exergue le concept d’imputabilité sociale et invite les facultés de médecine canadiennes à s’en inspirer dans la formulation de leur stratégie de développement.

10- Le Collège Royal des Médecins et Chirurgiens du Canada.


Le Collège Royal des Médecins et Chirurgiens du Canada adopte le cadre de compétences « CanMEDS » pour les médecins, qui met l’accent sur les qualités d’expert médical, de communicateur, de collaborateur, de gestionnaire et de promoteur de la santé. Ce cadre de compétences vise à améliorer la qualité des soins de santé et est disponible pour servir de référence aux facultés de médecine dans leurs efforts d’orientation de l’éducation médicale vers les besoins de santé de la société.

Références


7. See the task force on “Social accountability and accreditation “ du Network Towards Unity For Health; Available from www.the-networktuflh.org


Social Accountability and the Future of Medical Education

Summary

Social accountability involves medical schools directing not only their educational but also their research and service activities towards dealing with the priority health problems of citizens and society as a whole, these problems being identified in collaboration with public authorities, health organizations, health professions, and communities. Accordingly, it means establishing partnerships with other influential health system actors and transparency in management and operation of institutions, so as to allow each partner to evaluate the benefits of its actions as objectively as possible. The question can be raised whether a medical school’s actions are rigorously developed, organized, and evaluated to best satisfy the priority health needs of its community or country. University institutions and especially medical schools have long been tarred, sometimes unjustly, with the image of an ivory tower looking to its own interests above all else and relatively distant from regular people’s problems. Only in recent years has there been critical reflection on medical schools’ reason for being, the relevance of their programs, and the influence they have on the proper functioning of the health system.

Major issues:

The recognition of medical schools’ social accountability will have significant repercussions on several aspects of medical education.

1- Strategic vision
Medical education, research, and health care service programs must be reviewed in light of future health and well-being needs of society and its citizens and in light of the evolution of the health system. Medical education planners must better anticipate qualitative and quantitative medical staffing needs, taking into account possible distribution of responsibilities and tasks among other health and social services personnel.

2- Education better adapted to society’s needs
Medical education must be rigorously developed to better prepare students to meet future demands of medical practice, with particular consideration of clinical skills, communication with patients, action on social determinants of health, increased participation in risk prevention and health promotion, cost-benefit optimization of health risks, and partnership with other health professions. All these marks of social accountability will contribute to a positive impact on
health, and will have to be cultivated from the start and throughout medical education. In particular, this will lead to early openness to social problems, integration of social sciences and public health in teaching all disciplines, and learning in a variety of adapted contexts.

3-Demonstration on the ground
Schools will have to demonstrate the effectiveness of their programs in meeting their communities’ priority health needs, in particular by becoming involved along with other agencies in managing health care services in a particular area for a well-defined population. Evidence, including objective health indicators and data on population satisfaction, will be required on the impact of medical education in that area over the short or long term, especially on functioning of health services, reduction of health risks, and citizens’ level of health.

4-Increased participation
Training and incentives of various kinds will be offered to instructors and tutors to encourage them to develop close links with the community, to identify its principal health risks, to help to resolve complex health problems with economic and social aspects, and to serve as models for students. They will be encouraged to collaborate closely with health practitioners on the ground, with the goal of benefiting from their experience and experiencing new methods of practice with them, especially in multidisciplinary teams more relevant to society’s needs and to the medical education being provided.

5-Evaluation by society
Evaluation and accreditation will evolve to emphasize the social accountability of medical schools. Formal recognition of social accountability in accreditation must emerge from consultations conducted on medical schools’ own initiative, in anticipation of future pressure by public authorities for better institutional performance. Evaluation teams visiting institutions will include representatives of society, such as public authorities, care organizations, health professions, and the citizenry.

(For translation – due Nov 20/08)

Full Text

All institutions in modern society are called on to show that their actions produce the best possible results. Accordingly, medical schools, motivated by a quality approach on one hand and called on by society to help it meet its health goals on the other hand, work to produce physicians best able to meet society’s needs. Social accountability entails that they will orient their medical education activities, as well as their research and service activities, to deal with the priority health problems of citizens and the whole society, as identified by public authorities, health organizations, the health professions, and communities (1).

Social accountability therefore requires schools to establish partnerships with other influential actors in the health care system, and to maintain transparency regarding the management and functioning of their institutions to allow their partners to evaluate the results of their actions as
objectively as possible. Partnership and transparency are challenges as well as opportunities, as they impose demands on the institution – in particular, adapting its mission to reach goals shared with the outer world and explicitly demonstrating the effects of its actions on the well-being of society.

**Mastering the goal of medical education**

Shaping medical education so as to improve the provision of health care to an entire population remains a significant challenge for most of the world’s medical schools (2). Nearly a century ago, Flexner recommended introducing a solid scientific base to medical studies both to increase their academic level and to ensure a more just distribution of health benefits throughout the American population, in particular the black population (3). Subsequent generations of medical education reformers often retained only the pedagogic aspect of the plan, paying less attention to the social aspect, to the point where even today, a medical school’s actions are not necessarily rigorously conceived, organized, and evaluated to best satisfy the priority health needs of a community or nation (4). Universities and medical schools in particular have long been painted, sometimes unjustly, as an ivory tower focused above all on their own interests and out of touch with the day-to-day problems of ordinary people.

Critical reflection on medical schools’ reason for being, the relevance of their programs, and the influence they have on the proper functioning of health care systems has only emerged recently. The last two decades, for example, have seen the description of typologies of physicians, which may allow greater coherence between medical education and changing social attitudes. Examples include the WHO’s “five-star doctor,” the UK General Medical Council’s “tomorrow’s doctor,” Canada’s CanMEDS profile, and more recently the Physician Charter. This reflection on the aim of medical education, through an analysis of the finished product, is a useful initiative but is just one step in a more general undertaking by medical schools to better understand their role in the national health care system.

In determining its mission and organization, the school will take into account the current and potential public and individual health problems identified, as well as a critical view of the issues and challenges the health system must face in the future. Setting a pedagogical strategy will require analyzing the situation of the health professions for which the school provides training, with regards to the desired quality, the quantity, and the distribution of professionals, possible opportunities, professionals’ entry in the health care system, and each field’s contribution to public health. The school must consider society’s influence on its programs and its programs’ influence on society. In sum, social accountability means that the school actively interacts with the social and political environment and that it is accountable to society for its actions.

**Scope of social accountability**

While the excellence of medical education is generally evaluated based on program content and pedagogical processes, the concept of social accountability extends the quality process to phenomena both before and after training. Before training, the school must take into account the constant changes to society, the health care system, and the needs of the citizens, in consultation with other major players. After training, it must verify that the trained physician is employed in
the best possible conditions to make use of all the skills he or she has acquired during training. In other words, before training, the school assumes a share of the responsibility for planning the product; after training, it assumes a share of the responsibility for the impact of the finished product.

From the standpoint of social accountability, the three phases of planning, doing, and impacting are interdependent, and the school must understand the rationality of accepting its share of responsibility for each of them, together with other institutions: the government, which traces a vision of the health care system; the health authority, which gives effect to this vision; the health professions, which make use of new practices; and civil society, which contributes to general well-being (5). Accordingly, if a school emphasizes, for example, family medicine or practice in multidisciplinary health teams, it must be in a position to justify this decision based on society’s future needs and to use its influence to ensure that job opportunities exist in these fields for its future graduates. Likewise, if it trains its students for community health, this should be because it anticipates or is promoting a reorientation of the health care system towards primary care. In sum, schools must innovate using a better understanding of how their future graduates’ fields will evolve, and must assume new responsibilities in tracking them.

Modernity and social accountability

Neglecting social accountability can lead to disastrous performance on the part of medical schools; for example, significant emigration of graduates or lack of interest in serving in isolated regions or in less valued but crucial disciplines. Where social accountability is valued, on the other hand, the school’s actions are seen to concord more closely with the population’s needs (6). Awareness of the value of social accountability in medical schools is growing on the international, national, and institutional levels. Networks and exchanges are emerging at the international level, such as the Network towards Unity for Health in the Anglophone world and the Société Internationale Francophone d’Éducation Médicale (SIFEM) in the francophone world (7, 8). At the national level, governments and academics are undertaking encouraging initiatives, notably in Canada (9).

These initiatives herald a general movement towards greater recognition of social accountability in institutions, a movement that should grow in the future under the influence of ethical, democratic, economic, and political concerns. With regard to ethics, institutions like individuals must be answerable not only for their actions but also for the effects their actions will have on the short or long term on the well-being of society and its citizens. With regard to democracy, citizens and society as a whole strongly expect transparency and traceability, to allow more accurate evaluation of the use of resources, the quality of interventions, and their ultimate effect on well-being. Economically, social accountability accompanied by transparency will reveal the comparative relevance and performance of institutions, creating competition for increased quality. Politically, institutions that foster synergy with other institutions with the same ideals of public service can expect to receive moral and financial support more easily than ones that invest in isolated, sectorial actions. Analyzing these trends leads one to believe that social accountability is the concept that best prepares medical schools to meet the challenges of the future.
Major issues in medical education

Recognizing the social accountability of medical schools will have major effects on several aspects of medical education.

Strategic vision

Out of concern for their performance as a major player in their country’s health and social services initiatives, medical schools will take a greater interest in how health policies are implemented, as this creates the context for their activities. Their mandates and programs in medical education, research, and health services will be re-evaluated in light of future health and welfare needs of their society and its citizens and the evolution of the health system. Medical education planners will better anticipate qualitative and quantitative need for medical personnel, taking into account the future division of responsibilities and tasks among physicians and other health and social services professionals. The finished product of education, as envisaged by the CanMEDS skills framework for physicians, will serve as a reference in developing and evaluating training programs (10).

Education better adapted to society’s needs

Medical education will be rigorously developed to better prepare students to meet the future demands of medical practice. In particular, these include: clinical skills, communication with users, action on the social determinants of health, greater participation in risk prevention and health promotion, cost-benefit optimization for health measures, and partnership with other health professionals – all of which have a positive effect on health. These elements of social accountability will be applied from the beginning of and throughout medical education, in particular to encourage early attention to social problems, to integrate social studies and public health studies in teaching of all disciplines, and to permit learning in a variety of adapted contexts.

Demonstration by experience on the ground

Medical schools will demonstrate the effectiveness of their programs in meeting the community’s priority health needs, in particular by taking part, in partnership with other organizations, in managing health services in a region for a well-defined population. In addition to the hospital and the usual training spaces, this zone of experimentation and demonstration will offer instructors and students a range of new educational opportunities, to better understand the local social, cultural, and economic situation and its relationship with health problems and to determine the best interventions to remedy them. Evidence, including both objective health indicators and population satisfaction, will be required to demonstrate the short- and long-term effect of medical education in this area, in particular on health service functioning, reduction of health risks, and citizens’ level of health.
Increased participation

As they implement their strategic vision, offer an education better adapted to society’s needs, and demonstrate their effectiveness with evidence from the field, medical schools will incite their administrators, researchers, instructors, and students to diversify their activities and take on new roles. Training and incentives of various kinds will be offered to instructors and tutors to encourage them to develop a close relationship with the community, identify principal health risks, contribute to resolving complex health problems with economic and social impacts, and serve as role models for students. They will be encouraged to work closely with health professionals in the community. This will allow them both to benefit from their experience and to explore, particularly in multidisciplinary teams, new practice methods that are more relevant to society’s needs and more coherent with the medical education provided.

Evaluation by society

Evaluation and accreditation will evolve to emphasize medical schools’ social accountability. New standards will join existing ones in promoting excellence in prospective analysis of society’s needs and tracking graduates’ performance in meeting these needs, allowing medical education to evolve to meet the real challenges facing society and the health care system. Applying these standards may lead to re-examination of academic governance and adjustments to resource allocation. Formal recognition of social accountability in accreditation must stem from consultation undertaken at the behest of medical schools themselves, in anticipation of future pressure by public authorities for better institutional performance. Evaluation and accreditation teams will include representatives of society – government, care organizations, health professions, and the citizenry.

Annotated Bibliography

A brief monograph published by the World Health Organization’s headquarters in Geneva, arguing in favour of organizing medical schools to meet society’s priority health needs. This text defines the principle of social accountability; a definition widely referred to at the international level and used in official Health Canada documents.

In 1995, the World Health Assembly adopted resolution 48.8, to “re-orientate medical education and medical practice for ‘Health for All’,” encouraging governments to promote synergy between medical education and health policy. The document suggests elements of a strategy for implementing this resolution.
A study of North American medical schools shows the need to give medical education a firm scientific foundation. This report had a considerable influence on the organization of medical education throughout the world, in particular by teaching a number of fundamental sciences as prerequisites for the clinical sciences. Though nearly a century old, this model remains in use in numerous faculties of medicine.

While acknowledging the merits of Flexner’s report for improving the quality of medical education, the author claims that Flexner’s main ambition was to improve public health through better medical training, especially when he called on medical schools to show “patriotism.” The author contrasts the Flexner model of medical education, which has not had the influence hoped for, with the new paradigm of social accountability for medical schools.

This work demonstrates that health progress is only significant and sustainable if it is based on close collaboration between the main players in health: political authorities, health managers, health professionals, academic officials, and civil society. Accordingly, medical education will be influential if medical schools develop solid partnerships allowing them to contribute actively and responsibly to building a health system that meets society’s needs.

The concept of social accountability encourages medical schools to improve their contribution to ensuring the proper functioning of the health care system and to increasing the level of public health. Experiences from a number of schools throughout the world show how it can be applied, what advantages it can produce, and what challenges may be encountered.

7- See the task force on Social accountability and accreditation of the Network towards Unity for Health: www.the-networktufh.org.
The international Network Towards Unity For Health includes medical schools and other health education institutions involved in better adapting their programs to their communities’ priority health needs. Within this group, a task force has recently been set up to develop evaluation and accreditation standards for the concept of social accountability.

The SIFEM is a recently created society with the goal of improving the quality of medical education in the francophone world. One of the objectives of its Santé et Sécurité task force is to promote the concept of the social accountability of medical schools.
This brochure, published by the Canadian federal government, was written by a group of well-known medical education officials in Canada. It highlights the idea of social accountability and encourages Canadian medical schools to adopt it in drafting their development strategies.

The Royal College of Physicians and Surgeons of Canada has adopted the CanMEDS skill framework for physicians. This framework emphasizes the qualities of medical expert, communicator, collaborator, manager, and health advocate. It aims to improve the quality of health care and is available as a reference for medical schools in their efforts to orient medical education towards the society’s needs.

References


7. See the task force on Social accountability and accreditation of the Network Towards Unity For Health. Available from www.the-networktufh.org


Planification des effectifs médicaux et pénurie au Canada:
Revue de la littérature et impact sur l’éducation médicale

Résumé

Le Canada connaît actuellement une pénurie de médecins. La population augmente et vieillit, ce qui se traduit par des problèmes de santé de plus en plus complexes et chroniques. La profession médicale se transforme aussi : la proportion de femmes augmente et les jeunes médecins travaillent différemment et moins que leurs aînés. De plus, le développement des connaissances et des technologies entraîne une transformation des pratiques médicales et du rôle de chaque spécialité. Les politiques canadiennes de planification des ressources n’ont pas su à ce jour s’adapter à ces réalités.

Un large consensus existe autour de l’idée que la pénurie de médecins de famille est l’élément le plus critique de la situation actuelle. On estime que plus de quatre millions de canadiens n’ont pas de médecin de famille (MF). Cette pénurie de généralistes est attribuable à un nombre insuffisant de médecins, mais aussi à une organisation non efficiente de la première ligne. L’évolution du profil de pratique des MF ainsi que la diminution du nombre d’heures de travail par semaine inquiètent nombre d’observateurs qui jugent que la tendance à la sur-spécialisation de la pratique des MF se fait au détriment de la continuité des soins. Tous ces facteurs contribuent à la diminution de l’offre médicale au pays, surtout au niveau de la première ligne.

La planification des ressources médicales constitue un exercice complexe étant donné la quantité des facteurs à considérer, le développement rapide des connaissances et des technologies ainsi que l’ampleur des besoins de la population. Très peu de données ou d’informations peuvent nous renseigner sur le nombre de médecins nécessaires pour répondre aux besoins de la population canadienne (9) et la détermination de l’offre adéquate de médecins relève davantage de considérations sociales et idéologiques, c'est-à-dire le nombre de médecins qu’une société veut se donner (1). C’est ce qui explique les grandes variabilités dans les ratios population par médecin entre les pays.
Les neuf facteurs suivants (et leur interdépendance) ont chacun un impact direct sur l’offre de services médicaux au Canada:

- Le nombre d’admissions en médecine ;
- Le choix de carrière des étudiants (MF vs spécialité) ;
- Le profil de pratique, ainsi que l’impact de la nouvelle génération de médecins ;
- La féminisation de la profession ;
- La forte tendance à l’interdisciplinarité, dans tous les secteurs ;
- La migration des médecins ;
- L’impact potentiel du privé en ce qui concerne la planification des effectifs ;
- La répartition géographique des effectifs ;
- Le vieillissement de la population.

**Enjeux pour l’éducation médicale :**

Les Facultés de médecine pourraient influencer positivement l’orientation vers la médecine familiale, par exemple, en faisant en sorte que les critères de sélection des candidats à l’admission en médecine prennent en considération les caractéristiques des étudiants plus susceptibles de choisir la MF. De plus, les médecins de famille pourraient être plus impliqués dans la formation prégraduée, et que l’exposition à la médecine familiale y soit plus importante.

Dans le contexte actuel de pénurie, la question d’imputabilité sociale de l’éducation médicale devient prioritaire : la formation prégraduée doit pouvoir s’adapter constamment et rapidement aux besoins de la population. Pour y réussir, il faut établir une communication efficace entre les ordres professionnels et les gouvernements (qui établissent les priorités de santé publique et les besoins de la population) et les universités, pour que les orientations et les décisions pédagogiques soient basées sur les besoins réels.

Le recrutement des médecins et d’étudiants provenant de pays en voie de développement est une question éthiquement litigieuse. Les facultés de médecine doivent initier une réflexion en profondeur sur l’attitude à adopter et les gestes à poser, attitude et gestes respectueux des principes éthiques touchant l’équité et la bienfaisance (par exemple, vis-à-vis les pays moins riches) ainsi que l’autonomie des individus (souhaitant quitter leur pays).

Étant donné que l’augmentation des cohortes d’étudiants en médecine impose une charge supplémentaire importante aux universités et aux corps professoaux, le financement des universités se doit d’être ajusté, pour que les facultés de médecine soient en mesure de fournir une formation adéquate, basée sur les besoins de la population, et avec les standards de qualité reconnus en éducation médicale.
Texte Intégral

Introduction

Le Canada connaît actuellement une pénurie de médecins. La population augmente et vieillit, ce qui se traduit par des problèmes de santé de plus en plus complexes et chroniques. La profession médicale se transforme aussi : la proportion de femmes augmente et les jeunes médecins travaillent différemment et moins que leurs aînés. De plus, le développement des connaissances et des technologies entraîne une transformation des pratiques médicales et du rôle de chaque spécialité. Les politiques canadiennes de planification des ressources n’ont pas su à ce jour s’adapter à ces réalités.

Les liens entre l’éducation médicale, la planification et la gestion des effectifs médicaux et la santé de la population sont complexes. La littérature est abondante, mais peu de données probantes existent.

Pour analyser la question des ressources humaines en santé au Canada, nous avons effectué une revue de la littérature. Notre rapport présente d’abord brièvement l’état actuel de la pénurie. Par la suite, il présente une série de facteurs qui ont une importance significative soit comme éléments contributifs, soit comme solutions à la pénurie. Il nous apparaît clair que tous ces facteurs, leurs déterminants et leur interdépendance, devront être pris en considération pour que les politiques de planification des ressources humaines – et d’éducation médicale – puissent répondre aux besoins de la population au cours des prochaines années.

Méthodologie

Pour mieux définir la question de la planification et de la gestion des ressources médicales au pays, nous avons dégagé dans un premier temps une liste de facteurs possiblement contributifs et d’enjeux en éducation médicale, à partir de la « littérature grise » (rapports, communications) issue des sites d’organisations clés en ressources humaines. D’autres recherches ont été réalisées à partir des principales bases de données en santé (Medline, Embase, CINAHL et ERIC) et des moteurs de recherche sur Internet (Google). Nous avons limité notre revue aux dix dernières années, sauf pour l’article de Barer et Stoddart, en raison de son importance historique.

Nous avons aussi consulté un expert du domaine : Monsieur Marc-André Fournier du Groupe de recherche interdisciplinaire en santé (GRIS) de l’Université de Montréal, qui nous a conseillé quant aux facteurs connus contribuant à l’état actuel de pénurie et aidé à rassembler les sources d’information pertinentes. Finalement, pour chacun des neuf facteurs identifiés, nous avons recherché des données et des analyses issues des :

1 AMC : Association médicale canadienne; ICIS : Institut canadien d'information sur la santé; FCRSS : Fondation Canadienne de la recherche sur les services de santé; RCRPP : Réseaux canadiens de recherche en politiques publiques; OMS : Organisation mondiale de la santé.
• Principaux rapports d’organismes de santé\textsuperscript{2}, de groupes ou comités de recherche du Canada\textsuperscript{3}, de comités consultatifs canadiens et du dernier Sondage National des Médecins du Canada réalisé en 2007\textsuperscript{4};
• Références citées dans les bibliographies des publications consultées;
• Publications à partir des recherches dans les bases de données (Medline, 1996-présent) et Internet.

Résultats

La Pénurie

Actuellement le Canada est l’un des pays de l’OCDE ayant la plus faible densité médicale, avec 2,1 médecins par 1000 habitants, alors que la moyenne des pays de l’OCDE se situe à 3,1 (2). De plus, si l’on tient compte du vieillissement de la population et de la baisse d’activité des médecins, le ratio « réel » médecins / population aurait diminué de 5% au cours des années 1990 (3,4), tandis que la croissance des besoins aurait été de 1,6% par année (3). Chan (3) a montré que la pénurie que l’on connaît depuis quelques années ne résulte pas tant des réductions des admissions en médecine des années 1990, que de la faible croissance des effectifs depuis les années 1980, inférieure à la croissance des besoins. Par contre, la réduction des admissions des années 1990 aura de lourdes conséquences au cours des prochaines années.

La croissance des effectifs est aujourd’hui presque nulle dans toutes les provinces (5) et cette tendance devrait se poursuivre au cours des prochaines années. Entre 2002 et 2006, l’augmentation du nombre de médecins a été très faible (4,9%) et à peine supérieure à la croissance démographique (4,0%) (6). La croissance de l’offre nette de services serait négative si on tient compte du vieillissement de la population et des médecins (5).

La population médicale vieillit, elle aussi. Selon le Sondage national des médecins 2007 (7), plus de 6% des médecins comptent prendre leur retraite d’ici deux ans. On estime donc que plus de 4000 d’entre eux cesseront d’exercer au cours des deux prochaines années (8).

Un large consensus existe autour de l’idée que la pénurie de généralistes est attribuable à un nombre insuffisant de médecins, mais aussi à une organisation non efficiente de la première ligne (5). On estime que 14,4% de la population n’a pas de médecin de famille (MF), ce qui constitue plus de 4 millions de canadiens (3).

\textsuperscript{2} ICIS; AMC; AFMC : Association des facultés de médecine du Canada; FMRQ : Fédération médecins résidents Québec; AIIC : Association des infirmières et infirmiers du Canada.
\textsuperscript{3} GRIS; CHEPA : Centre for Health Economics and Policy Analysis.
L’évolution du profil de pratique des MF ainsi que la diminution du nombre d’heures de travail par semaine inquiètent nombre d’observateurs qui jugent que la tendance à la sur-spécialisation de la pratique des MF se fait au détriment de la continuité des soins (4,9).

Face à cet état de pénurie, on comprend l’importance d’une bonne planification de la main d’œuvre médicale au pays. Celle-ci pose trois grands défis :

- Estimer les besoins de la population en services médicaux ;
- Estimer la disponibilité et les caractéristiques de l’offre future de médecins ;
- Prévoir des mesures pour combler les écarts anticipés entre les deux.

La mesure des besoins est un exercice difficile. Elle peut se faire à partir de trois approches :

- Projeter l’utilisation actuelle des services par âge et par sexe ;
- Estimer les besoins futurs de la population selon son profil épidémiologique et des services requis (ce qui est une tâche complexe) ;
- Estimer la demande effective, c’est-à-dire la volonté et la capacité de payer ces services (10).

Ces trois approches reposent cependant sur un corps d’hypothèses différent et donnent des résultats différents (11). Pour Barer et Stoddart (1), la détermination du nombre de médecins dont une société a besoin relève de considérations sociales et morales, c’est-à-dire le nombre de médecins qu’une société veut se donner.

Nous nous attarderons maintenant à chacun des neuf facteurs impliqués dans la pénurie actuelle.

**Facteur 1: Admissions en médecine**

Depuis une vingtaine d’années, on observe des fluctuations importantes du nombre d’admissions d’étudiants dans les facultés de médecine canadiennes.

Au début des années 1990, on assistait à une croissance du nombre de médecins supérieure à la croissance démographique de la population (1,3). Afin d’améliorer l’efficience du système de santé canadien, Barer et Stoddart recommandaient, en 1991, d’effectuer une réorganisation majeure de la première ligne. Ils ont aussi recommandé une diminution des admissions de 10 %, étant donné les gains d’efficience ainsi prévus (1). Cette réorganisation n’a pas été réalisée de façon complète, alors que les admissions ont diminué de 12% de 1989 à 1999 (12).

La présidente du Collège Royal des Médecins et Chirurgiens du Canada, Dr Louise Samson, rappelait récemment que les universités sont sous financées (9). Face à l’augmentation des cohortes, cet aspect demeure des plus préoccupants.

La situation de pénurie ne se limite pas au Canada. En 2006, l’Association of American Medical Colleges sonnait un cri d’alarme et recommandait une augmentation significative des admissions, pour faire face à la pénurie de médecins américains (14).

L’augmentation du nombre d’admissions en médecine joue certainement un rôle important dans l’évolution du nombre de médecins, mais son effet ne se fait sentir qu’à moyen et à long termes. De plus, elle impose une charge humaine et financière aux milieux universitaires sous-financés. Ce n’est pas le seul mécanisme permettant une planification efficace. Celui-ci doit s’accompagner d’une réorganisation du système ainsi que d’une planification rigoureuse à long terme, qui prenne en considération l’ensemble des facteurs influençant l’organisation du système de santé et le comportement des médecins.

**Facteur 2: Choix de résidence**

La pénurie de médecins de famille est un des éléments les plus alarmants de la situation actuelle. L’intérêt des étudiants envers la médecine de famille a diminué de manière importante depuis une dizaine d’années (15-17). En 2003, seulement 24% des étudiants ont choisi la médecine familiale comme premier choix, alors qu’ils étaient entre 32 et 35% à le faire jusqu’au milieu des années 1990 (18).

*Le Sondage national des médecins 2004 (19) a demandé (de façon rétrospective) aux médecins canadiens quels sont les facteurs qui ont influencé leur choix de carrière :*

<table>
<thead>
<tr>
<th>Facteur</th>
<th>Généralistes</th>
<th>Spécialistes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stimulation intellectuelle</td>
<td>74.5 %</td>
<td>83.8 %</td>
</tr>
<tr>
<td>Relation médecin patient</td>
<td>70.7 %</td>
<td>56.4 %</td>
</tr>
<tr>
<td>Influence d’un mentor</td>
<td>20.1 %</td>
<td>42.1 %</td>
</tr>
<tr>
<td>Flexibilité ou prévisibilité de la charge de travail</td>
<td>44.9 %</td>
<td>37.9 %</td>
</tr>
<tr>
<td>Possibilités de recherche</td>
<td>5.3 %</td>
<td>16.7 %</td>
</tr>
</tbody>
</table>


Une vaste revue de la littérature a aussi été menée en 2003(20). On constate que le choix de la médecine familiale est relié à des caractéristiques particulières chez les étudiants :

<table>
<thead>
<tr>
<th>Caractéristiques des étudiants qui ont <strong>Plus de chance</strong> de choisir la MF</th>
<th>Caractéristiques des étudiants qui ont <strong>moins de chance</strong> de choisir la MF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Origine rurale</td>
<td>Parents avec statut socioéconomique élevé</td>
</tr>
<tr>
<td>Valorisent la première ligne</td>
<td>Valorisent l’aspect salarial</td>
</tr>
<tr>
<td>Veulent travailler dans milieu rural ou défavorisé</td>
<td>Veulent s’impliquer en recherche – vie académique</td>
</tr>
<tr>
<td>Exposés à des modèles de rôle positifs en MF</td>
<td></td>
</tr>
<tr>
<td>Exposés à beaucoup de MF</td>
<td></td>
</tr>
</tbody>
</table>
Le Sondage national des médecins 2004 révèle aussi que les femmes sont plus susceptibles de choisir la médecine familiale que les hommes (21). Si l’objectif est de former plus de MF, il est pertinent de se questionner à propos de ces caractéristiques par rapport aux critères actuels de sélection pour l’admission en médecine.


**Facteur 3: Profil de pratique**

Le profil de pratique des médecins a grandement évolué depuis quelques années. Pourtant, alors que le vieillissement de la population a entraîné une hausse du nombre de visites médicales par patient et un allongement des durées de ces visites (5), le Sondage national des médecins de 2007 annonce que :

La réduction des heures de pratique et du champ de pratique va continuer d’avoir un impact sur les ressources médicales. Vingt-sept pour cent des médecins ont indiqué qu’ils avaient diminué leurs heures de travail hebdomadaires depuis deux ans. De plus, le tiers (35 %) ont dit qu’ils comptent réduire leurs heures de travail hebdomadaires au cours des deux prochaines années (7).

Par ailleurs, la tendance semble être à l’abandon de la première ligne et de la pratique en cabinet, surtout chez les plus jeunes. Selon le Sondage national des médecins 2007, seulement 67 % des médecins de famille canadiens pratiquent en cabinet et une large proportion d’entre eux travaillent soit auprès de patients hospitalisés, soit dans les salles d’urgence, soit dans les cliniques de sans rendez-vous indépendantes (7).

Au Québec, entre 2000 et 2005, l’augmentation du nombre de MF a profité presque exclusivement au secteur hospitalier (22). De plus, ceux qui travaillent en cabinet y consacrent une plus faible part de leur pratique (5). Seulement 5% des omnipraticiens québécois âgés de moins de 35 ans ont le cabinet comme lieu de travail principal (5).

Partout au Canada, parmi les étudiants ayant choisis la médecine familiale comme résidence, de plus en plus sont intéressés à obtenir une sous-spécialisation comme la médecine sportive ou la médecine d’urgence (18). Cependant, après une dizaine d’années de pratique en début de carrière, on observe (notamment au Québec et en Grande-Bretagne) que les médecins de famille augmentent souvent leur pratique de première ligne et diminuent leur pratique hospitalière (23,24). Ce phénomène devra être étudié de façon plus approfondie au Canada, car il pourrait avoir d’importantes implications au plan des ressources humaines.
En 2004, le Task Force Two concluait, à propos des jeunes médecins :

Les profils de pratique des nouveaux médecins sont et continueront d’être très différents de ceux des médecins en fin de carrière. Par exemple, les nouveaux médecins limitent leurs heures de pratique, le nombre et le type de patients qu’ils voient. De plus, ils attachent plus d’importance aux contrats qui les lient, aux heures de travail imposées, à la rémunération et aux avantages secondaires comme par exemple, les congés parentaux et de maladie (25).

Ce groupe prévoyait trois conséquences majeures à ce nouveau phénomène :

- Il faudra plus de médecins pour remplacer ceux qui se retirent, ajoutant ainsi à la pression déjà significative sur la demande en médecins.
- Deuxièmement, certains domaines de soins et certains types de patients risquent d’être oubliés, créant ainsi des lacunes dans le système de soins et une demande supplémentaire pour combler ces lacunes, par exemple par l’utilisation de médecins « hospitalistes », de sages-femmes ou d’autres types de professionnels de la santé.
- Troisièmement, certains croient qu’au moins dans certains contextes, les médecins développent une mentalité d’employé par opposition à une mentalité de professionnel (25).

Plus récemment, la Fédération des médecins résidents du Québec (FMRQ) publiait les résultats d’un sondage auprès de ses membres, dévoilant leurs préoccupations principales en ce qui concerne leur pratique future (26). La conciliation travail-famille arrive au premier rang (68%), avant le lieu de pratique (64%), le type de pratique (56%) et le salaire (20%).

On accuse souvent les jeunes médecins de placer leurs intérêts personnels avant ceux des patients. Tepper, dans son rapport pour l’Institut canadien d’information sur la santé en 2004, soulignait que les médecins plus âgés sont plus susceptibles d’accroître leur charge de travail à mesure que la pénurie s’accentue (18). Ce « conflit » intergénérationnel entre les Baby-boomers et la Generation X, tel que le souligne le Dean for Medical Education du Mount Sinai School of Medicine, Dr. Lawrence Smith, est dangereux pour la profession médicale. Celui-ci voit la nécessité de redéfinir les concepts de professionnalisme et d’excellence en des termes rassembleurs et non pas en termes de charge et de quantité de travail (27).

Le nouveau profil de pratique des médecins pose donc de grandes questions en ce qui concerne le bien-être des patients, les orientations pédagogiques que les universités devront prendre et les politiques futures d’organisation des soins de première ligne.

Facteur 4: Féminisation

La profession médicale a connu, depuis quelques années, une importante féminisation. Alors qu’en 1970 seulement 20,2% des admissions dans les Facultés de médecine canadiennes étaient constitués de femmes, ce taux était de 57.8% en 2006-2007 (12). Actuellement, au Canada, 32.5% des médecins sont des femmes (12). Celles-ci sont plus présentes dans certaines
spécialités comme la pédiatrie (48.1%), la médecine familiale (46.6%) et l’obstétrique-gynécologie (42.2%), tandis qu’elles ne représentent que 18.7% de l’ensemble des spécialistes en chirurgie (12).

Les femmes travaillent moins d’heures que les hommes (28). On a évalué, au Québec, l’écart à 8.5% (29). Au cours de leur carrière, elles travaillent moins durant une certaine période qui correspond vraisemblablement à la maternité (28). Au Québec, cependant, leur nombre d’heures travaillées a augmenté ces dernières années (29).

Les femmes ont également une pratique différente. Elles consacrent plus de temps au patient (29,30), sont plus engagées dans la communication avec lui (30), exercent un leadership dans le travail en équipe multidisciplinaire et leur pratique est plus orientée vers les populations défavorisées (31). Elles ont une approche plus holistique et plus orientée vers la prévention (29).

Levison et Lurie concluent que les femmes proposent une nouvelle forme de profession médicale sur le plan de la pratique et de l’équilibre entre la vie professionnelle et personnelle, mais qu’elles devraient s’engager davantage dans des positions de leadership afin de valoriser cette diversité de pratique.

La féminisation de la profession a donc un impact majeur et ce nouveau phénomène comporte (et continuera d’avoir) d’importantes implications au plan de la planification des ressources humaines en santé au Canada.

**Facteur 5: Interdisciplinarité**

La médecine moderne est de plus en plus complexe et la réalité des maladies chroniques a généré de nouveaux modes de fonctionnement. D’abord, les médecins travaillent de plus en plus en groupe. Le Sondage national des médecins 2007 (7) révèle que 93% des médecins qui dispensent des soins en collaboration sont d’avis que ces relations de travail améliorent les soins que reçoivent leurs patients. Voici leur répartition, en 2007 (7) :

- 46% des médecins travaillent dans des contextes de pratiques de groupe ;
- 24% des médecins travaillent dans des contextes interprofessionnels ;
- 27% des médecins pratiquent en solo.

Depuis quelques années, on observe que des tâches traditionnellement réservées aux médecins sont maintenant assumées par les chiropraticiens, les infirmières praticiennes et les pharmaciens, qui aspirent d’ailleurs à accroître leurs tâches encore plus (18: réf. citées 10-13). Le médecin voit donc son rôle profondément changer.

Il est utile de rappeler que cette tendance à la délégation de tâches médicales et à l’interdisciplinarité a été initialement instaurée pour améliorer la qualité des soins aux patients et non pour résoudre les problèmes de pénurie. Le Task Force Two soulignait d’ailleurs, en 2004, que les problèmes de distribution, de recrutement et de rétention auxquels font face les médecins de famille se rencontrent aussi chez les infirmières (25). À ce chapitre, l’Association des infirmières et infirmiers du Canada a annoncé en 2007 qu’au cours des 15 prochaines années, le
Canada sera confronté à une pénurie croissant d'infirmières, de l’ordre de 113 000 d'ici 2016 (32).

Bien que son impact positif sur la qualité des soins soit indéniable, l’interdisciplinarité (et les changements de rôles qu’elle entraîne) ne peut, à elle seule, compenser pour les difficultés reliées à la pénurie en ressources humaines.

**Facteur 6: Médecins étrangers**

Malgré la hausse des inscriptions dans les Facultés de médecine, le nombre de diplômés canadiens est insuffisant face aux besoins en ressources médicales (33).

De ce fait, les médecins formés à l’étranger jouent un rôle important dans la planification des ressources humaines. Partout au Canada, les provinces font largement appel à des diplômés internationaux pour pourvoir les postes vacants dans les spécialités et les collectivités où l’on manque de médecins (33). On estime actuellement que 23% des médecins de famille et 21% des spécialistes canadiens ont été formés à l’extérieur du pays (34). C’est en Saskatchewan que leur proportion est la plus élevée avec 56% de MF diplômés internationaux (34).

Bien que plusieurs initiatives prometteuses aient été lancées (33,35), nous ne disposons pas, à l’heure actuelle, de stratégie nationale homogène en ce qui a trait à la reconnaissance des diplômes, à l’évaluation des compétences et à la distribution géographique des médecins étrangers.

Par ailleurs, plusieurs auteurs soutiennent qu’il est éthiquement litigieux de recruter dans les pays en développement, la pénurie de professionnels de la santé et de médecins étant d’envergure mondiale (14,33). Mullan conclut même que le drainage de médecins étrangers par les Etats-Unis, le Canada, l’Australie, et la Grande-Bretagne contribue de façon significative à la pénurie dans les pays en développement (36). Avant même d’envisager d’augmenter le rôle que jouent actuellement les diplômés internationaux dans la planification des ressources humaines, cet aspect préoccupant doit être étudié de façon sérieuse.

**Facteur 7: Le privé**

Le secteur à but lucratif a pu être perçu comme une solution à la pénurie de main d’œuvre médicale dans le secteur public en rendant accessible à une certaine partie de la population - celle qui en a les moyens financiers - des services médicaux.

L’organisation de l’éducation médicale et la régulation professionnelle sont telles que le Canada ne dispose que d’un nombre limité de médecins et que ceux-ci ont le choix de participer ou non aux programmes provinciaux d’assurance-maladie (37). Les médecins non-participants ne représentent donc pas, à proprement dit, un surplus de main d’œuvre médicale. De fait, ils restreignent la disponibilité de la main d’œuvre médicale dans le secteur public, ce qui risque d’y allonger les listes.
Il est possible que les médecins travaillant dans le secteur à but lucratif travaillent un nombre d’heures supérieur à ceux du secteur public et contribuent à la réduction des temps d’attente dans le secteur public. Mais dans ce cas, la priorisation des soins entre les deux secteurs se fait selon la capacité à payer des patients et non selon le besoin de recevoir les services requis dans des délais raisonnables. Lorsque les médecins pouvaient pratiquer dans les deux secteurs, on a pu constater une augmentation des listes d’attente dans le secteur public (38). De plus, certaines études empiriques ont montré que le secteur à but lucratif sélectionne les cas et laisse généralement les cas complexes graves au secteur public (39).

Lorsque le secteur à but lucratif offre des services médicaux qui ne peuvent être offerts dans le secteur public faute de ressources matérielles ou de personnel, que le service soit couvert ou non par l’assurance-maladie, il y aura drainage des ressources du secteur public au secteur à but lucratif dans la mesure où ces services requièrent des infirmières ou des autres professionnels de la santé qui peuvent manquer dans le secteur public (40-42). Si le personnel ou les ressources matérielles étaient redondantes dans les deux secteurs, il n’est pas certain que le secteur privé se développerait au-delà de sa taille actuelle puisque le secteur public pourrait répondre aux besoins de la population dans des délais raisonnables.

Facteur 8: Répartition géographique des effectifs

Au Canada, la répartition des médecins entre les zones urbaines et rurales a toujours été en faveur des premières. Même si 22,2 % de la population canadienne vit dans des collectivités de taille moyenne (moins de 10 000 habitants), seulement 10,1 % des effectifs médicaux y travaillent (43) et la plupart d’entre eux sont des médecins de famille (18).

La médecine rurale peut être valorisante si l’on en accepte les défis, la charge de travail et la disponibilité requise (44,45). Les gouvernements ont mis en place différentes mesures pour encourager les médecins à aller pratiquer en zone rurale et à s’y installer notamment par des incitations financières, des mesures administratives et de régulation, des initiatives reliées à l’éducation, des arrangements contractuels et la télémédecine. Toutefois, ces mesures n’ont eu jusqu’à présent que des résultats limités (45).

Certains facteurs sociaux influençant la pratique en zones rurales sont difficiles à modifier. Hutton (44) souligne l’importance des valeurs qui orientent les choix de lieu de pratique : la différence entre les valeurs rurales et urbaines sont telles que quelqu’un qui a déjà intégré les valeurs rurales est plus susceptible de choisir une pratique rurale. Dans cette perspective, de nouvelles universités et de nouveaux programmes de résidence en médecine familiale sont créées en région. De même, l’importance de l’intégration du médecin dans la communauté est primordiale et dépend tout autant du médecin que de la communauté (46).

Facteur 9: Vieillissement de la population

Le vieillissement de la population entraîne, rappelons-le, une hausse du nombre de visites médicales par patient et un allongement des durées de ces visites (5).
Cependant, les données indiquent que ce sont surtout les derniers mois de vie qui coûtent très cher, tant au plan financier qu’en termes de ressources humaines. Ce facteur (proximity to death) a finalement beaucoup plus d’importance, quant aux coûts, à la planification, et de gestion des ressources humaines, que le vieillissement de la population (47).

De plus, les besoins des patients en fin de vie concernent principalement les ressources infirmières et sociales, bien plus que médicales (47). Cette donnée aura d’importantes implications pour la planification et la gestion des ressources humaines.

**Implications**

La planification des ressources médicales constitue un exercice complexe étant donné la quantité des facteurs à considérer, le développement rapide des connaissances et des technologies ainsi que l’ampleur des besoins de la population. Très peu de données ou d’informations peuvent nous renseigner sur le nombre de médecins nécessaires pour répondre aux besoins de la population canadienne (9) et la détermination de l’offre adéquate de médecins relève davantage de considérations sociales et idéologiques (1). C’est ce qui explique les grandes variabilités dans les ratios population par médecin entre les pays.

Notre revue de littérature permet de constater que les neuf facteurs présentés ont chacun un impact direct sur le nombre de médecins au Canada:

- Le nombre d’admissions en médecine ;
- Le choix de carrière des étudiants (MF vs spécialité) ;
- Le profil de pratique, ainsi que l’impact de la nouvelle génération de médecins ;
- La féminisation de la profession ;
- La forte tendance à l’interdisciplinarité, dans tous les secteurs ;
- La migration des médecins ;
- L’impact potentiel du privé en ce qui concerne la planification des effectifs ;
- La répartition géographique des effectifs ;
- Le vieillissement de la population.

Les politiques doivent tenir compte de l’interdépendance de ces facteurs. Par exemple, l’augmentation des admissions au premier cycle peut s’avérer inefficace face à la pénurie de médecins de famille, si elle n’est pas associée à un ajustement du financement des universités ou encore si les critères de sélection des candidats ne tiennent pas compte des caractéristiques prédictives d’un choix de médecine familiale. De la même façon, l’expérience des années 1990, où on a accéléré la pénurie en diminuant les admissions rapidement sans réorganiser la première ligne de façon efficiente, constitue un autre exemple de politique peut-être trop ciblée qui ne considérait sans doute pas l’ensemble des facteurs en cause.

Par ailleurs, l’impact des politiques de planification est limité par l’hétérogénéité de la pratique des médecins canadiens (et particulièrement des MF) quant au type, au lieu et à l’intensité de pratique. Barer et Stoddart, en 1991, offraient une analyse qui demeure encore aujourd’hui, à la lumière de la revue de littérature que nous avons effectuée, tout à fait pertinente (1):
...La répartition des effectifs médicaux, les services qu’ils offrent, et même leur moral tient à tout un ensemble de micro-décisions que prennent des individus, en raison de stimulants personnels et professionnels, aux nombreux « carrefours » qui jalonnent une carrière. Souvent, les macro-décisions tendaient à faire abstraction de cette réalité et, par conséquent, elles n’ont pas produit le résultat escompté. Une analyse de ce qui pousse actuellement un médecin à choisir (disons) une spécialité au lieu de la pratique générale, ou encore un cadre urbain plutôt qu’un cadre rural, nous éclaire davantage sur les origines du problème de l’heure. Les tentatives futures d’élaboration d’une politique devraient donc porter précisément sur les « stimulants » qui déterminent le choix des médecins aux principaux « carrefours » de leur carrière ; on pourra ainsi favoriser une répartition et une utilisation des effectifs médicaux qui correspondent davantage aux objectifs collectifs et aux besoins de la société. » (1)

En plus du vieillissement de la population, d’autres facteurs contribuent également à l’augmentation du nombre de services par patient : adhésion aux guides de pratique, nouvelles technologies, nouveaux traitements, pathologies multi-systémiques et comorbidité.

La difficulté à répondre à court terme à l’évolution des besoins de la population constitue l’autre défi majeur. Il faut trouver des solutions efficaces qui n’hypothèqueront pas l’avenir. Les politiques des vingt dernières années ont montré que des mesures trop ciblées visant des objectifs à court terme peuvent avoir des effets néfastes à moyen comme à long terme. Un fort leadership et une vision globale, et à long terme, sont donc nécessaires pour faire face aux défis d’aujourd’hui et de demain.

Pour ce qui est des enjeux au niveau de la formation prégraduée, nous en avons identifié quatre principaux. Étant donné qu’il apparaît que :

i) La pénurie de médecins de famille est un des éléments les plus importants de la pénurie actuelle au Canada (même si les besoins ne sont pas les mêmes partout au Canada et que les spécialistes jouent souvent un rôle-clé dans la médecine de première ligne au pays);

ii) La médecine familiale est un choix de moins en moins populaire chez les étudiants de médecine;

iii) Les études suggèrent que certaines caractéristiques des étudiants les rendent plus susceptibles de choisir la médecine familiale;

iv) Le fait d’enseigner plus de médecine de première ligne avec des médecins de famille, durant la formation pré graduée, augmente la popularité de la médecine familiale;

L’un des enjeux des Facultés de médecine pourrait être d’agir pour influencer positivement l’orientation vers la médecine familiale, par exemple, en faisant en sorte que :

- Les critères de sélection des candidats à l’admission en médecine prennent en considération les caractéristiques des étudiants plus susceptibles de choisir la MF.
Les médecins de famille soient plus impliqués dans la formation prégraduée, et que l’exposition à la médecine familiale y soit plus importante.

Les besoins de la population sont en pleine évolution - avec le vieillissement de la population, les nouvelles technologies et les maladies chroniques -, et le rôle du médecin (et ce qu’on attend de lui) change aussi. **Les Facultés de médecine ont le défi d’exercer un leadership pour faire en sorte que les études médicales répondent adéquatement aux besoins sociétaux en évolution :**

- La formation prégraduée doit pouvoir s’adapter constamment et rapidement aux besoins de la population. Pour y réussir, il faut établir une communication efficace entre les ordres professionnels et les gouvernements (qui établissent les priorités de santé publique et les besoins de la population) et les universités, pour que les orientations et les décisions pédagogiques soient basées sur les besoins réels.

Le recrutement des médecins et d’étudiants provenant de pays en voie de développement est une question éthiquement litigieuse;

- Les Facultés de médecine doivent initier une réflexion en profondeur sur l’attitude à adopter et les gestes à poser, attitude et gestes respectueux des principes éthiques touchant l’équité et la bienfaisance (par exemple, vis-à-vis les pays moins riches) ainsi que l’autonomie des individus (tel que ceux souhaitant quitter leur pays).

Étant donné que l’augmentation des cohortes d’étudiants en médecine impose une charge supplémentaire importante aux universités et aux corps professaux, un enjeu majeur des Facultés de médecine et de ses partenaires sera de réussir à faire en sorte que :

- Le financement des universités soit ajusté, pour que les facultés de médecine soient en mesure de fournir une formation adéquate, basée sur les besoins de la population, et avec les standards de qualité reconnus en éducation médicale.

**Bibliographie Annotée**

*Bibliographie annotée classée par date de publication (du plus récent au plus vieux)*

<table>
<thead>
<tr>
<th>Articles</th>
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- Résultats par MF/omnipraticien ou autre spécialiste, sexe, âge et province/territoire. Canada, 2007 (*parution à venir*). |
Le rapport dresse une analyse de l’offre des services médicaux dans une perspective de planification de la main d’œuvre médicale au Québec et au Canada. L’une des implications majeures retenue dans le rapport est que "l’amélioration de la performance du système de santé canadien ne peut se faire sans une réorganisation des services de première ligne mais cette amélioration est difficile à court terme étant donnée la pénurie importante de médecins de famille". |

Ce rapport a été rédigé pour le Groupe de travail Deux : Une stratégie en matière d’effectifs médicaux pour le Canada. Publié en octobre 2004, il traite de la validation de la portée et du champ d’application de modèles novateurs de prestation des soins de santé. Le Groupe de travail Deux a été mis sur pied pour examiner les principaux enjeux liés aux ressources humaines en matière de prestation de soins médicaux et sur l’avenir des effectifs médicaux.

Le rapport étudie les modèles de prestation traditionnels, de même que le rôle des médecins et autres professionnels de la santé dans un contexte de régionalisation, de contraintes budgétaires et de pressions sur les ressources humaines et matérielles. L’une des solutions mises de l’avant est de développer des modèles et des outils innovateurs tout en gardant le cap sur l’amélioration des résultats, l’efficience, la satisfaction, l’accessibilité, la qualité et la responsabilité.


Le rapport coécrit par ML. Barer et GL. Stoddart, offre une analyse des politiques intégrées sur les effectifs médicaux au Canada, qui demeure encore aujourd’hui d’actualité (c’est la raison pour laquelle, nous avons conservé ce rapport de 1991 dans la revue littérature). Cette analyse débouche sur une série de recommandations ou options visant à systématiser la résolution des problèmes liés à la planification des effectifs médicaux.

Souvent, les macros-décisions n’ont pas produits les résultats escomptés, par exemple sur la répartition et l’utilisation des effectifs médicaux qui correspondent davantage aux objectifs collectifs et aux besoins de la société.
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Health Inequities, Social Responsibility and Medical Education

Summary

A growing interest in health equity and the social responsibilities of medical schools has given rise to 3 questions: (i) Are health inequities discussed in the Canadian literature? (ii) What is the content and scope of medical schools’ social responsibility? and (iii) What changes are being done or considered in medical education to address health inequities?

With regard to (i) it is evident that there are health inequities in Canada, with particular emphasis on the burden of illness among aboriginal peoples. Thirty years post the Lalonde Report, Canada is still struggling to address health inequities. It is generally agreed that to resolve these inequities a coordinated partnership is needed among stakeholders including researchers, policy makers, medical schools and health professionals.

With regard to the question of social responsibility of medical schools, there is little disagreement. Most authors assert that medical schools should prepare students to meet the changing health needs of society. Few schools, however, express this goal as a component of their mission statements alongside their traditionally based mission of research and education. Additionally, in fulfillment of their social responsibility some medical schools have selection policies and procedures aimed at increasing the proportion of entry students from disadvantaged communities. Also a call for support of medical students’ motivations to serve society and strategies to develop faculties dedicated to pursuing a social agenda is expressed by the literature.

Some medical schools address health inequities in a variety of different ways, without a consistent, coherent model emerging.

Major Themes

Canada has health inequities. Medical schools have a responsibility to society and their communities which include the responsibility to address health inequities in the curriculum. The literature does not provide answers to curriculum questions such as timing, content, integration or sites of education. The opportunity to link education in this area with the CanMeds Advocacy competencies has not yet been taken up. Future development of inequities curricula will necessarily require collaboration from a number of fields outside traditional biomedical disciplines. Canada, with its commitment to universal health care and social justice, is in a position to provide global leadership in this area.

Best Practices and Innovations

No compelling model of medical education addressing health inequities has emerged. Each medical school’s attempt to include curriculum of this kind has been designed as an innovation relative to the school’s objectives and culture. The CanMeds Advocacy competencies are seen as a way to bring coherence and consistency into the design and implementation of this area.
Introduction

The Institute of Medicine’s groundbreaking report, “Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare” (1) highlighted that, both in terms of diagnostic work up and treatment, racial and ethnic minorities in the United States received lower quality of health care than non-minorities even when access-related factors such as income and patient insurance were controlled. This powerful admission about health inequities resonated with other admissions around the world (2, 3, 19, 43), as well as in Canada (4-16), that not all populations are treated in an equitable manner in terms of health care access and treatment.

The literature provides evidence that, despite Canada’s commitment to universally accessible health care and social justice (16, 18-23), health inequities and disparities are clearly part of the Canadian healthcare landscape. For example, an analysis by Lasser et al of a population-based Joint Canada/US Survey of Health indicated that both countries had health disparities related to race and immigrant status, although these disparities were stronger in the United States (12). This same survey analyzed by a Canadian group, Sanmartin et al, did not address the aforementioned health disparities but focused on income inequities (13). The Lasser et al analysis also mentioned income disparities, noting that these were more pronounced for dental care in Canada (where there is no universal insurance coverage) and were of similar magnitude to the US disparities. This article goes on to state that, while universal coverage may attenuate health disparities; it is insufficient to eliminate these disparities.

The background against which these admissions about health inequities/disparities is taking place is one in which there is a global movement for health equity (2, 17). Additionally, there is an ongoing dialogue concerning the social responsibility of medical schools, spearheaded by the WHO, which states that medical schools must be socially accountable and this social accountability should guide all aspects of education, service and research (24). Other important influences include the Association of Faculties of Medicine of Canada which states as one of the goals of the Future of Medical Education project “to equip physicians with knowledge, skills, attitudes and values to provide high quality medical care and be responsive to changing societal needs (25)”. With documented health disparities in Canada, a country whose citizens see universally accessible care as a core value, it would seem appropriate to include addressing health inequities as part of the social accountability agenda of Canadian medical schools. Medical schools and physicians have a vital role as advocates for a health care system that is accountable, universally acceptable and provides effective care to an economically disparate population (37). Teaching medical professionals to care about the welfare of the human race is an important function of medical schools (38).

In light of the above, this literature review was undertaken to answer the following questions:
1- Are health inequities or disparities discussed in the Canadian literature?
2- What is the general tenor of the literature on social responsibility of medical schools?
3- What changes are being discussed in medical education to address health inequities?
Method

The search of the literature was undertaken using Scholars Portal (which includes Web of Science, ERIC, MEDLINE, CSA Illustrata, PsycINFO, AgeLine, ProQuest, Applied Social Science Index and Abstracts) and the following keywords “health disparities and Canada” or “health inequities and Canada”.

A second search was undertaken using “social responsibility and medical school” or “social accountability and medical education”. A third search was done using the keywords “health disparities and medical education or “health inequities and medical schools”. The database was searched from 1990 to the present. This search resulted in an initial identification of 13 articles for the first search, 21 for the second search and 9 for the third. Additional articles were added as a result of a review of bibliographies of the initial source documents. Finally, the grey literature was reviewed and a number of health-related government reports from 1974 on were accessed and are referred to in this review.

Findings

Are health inequities or health disparities discussed in the Canadian literature?

Although the terms health disparities and health inequities are used interchangeably in the literature, a definition of these terms is pertinent. Adelson defines health disparities as indicators of a relative disproportion of a burden of disease on a particular population, and, health inequities as the underlying causes of the disparities directly or indirectly associated with or related to social, economical, cultural and political inequities. (8) Spitzer defines health disparities as the marked difference or inequality between two or more population groups defined on the basis of race or ethnicity, gender, educational level or other criteria, and she adds that disparities reflect a gradient in socioeconomic status and power (9). Further, she comments that these disparities are engendered by inequity in access to income, social support, good housing, clean environments etc. (9). Webster’s dictionary defines disparity as an inequality or difference in rank, amount, quality, and, inequity as lack of justice or fairness. In discussions with colleagues, other definitions have been suggested for these words, all of which may indicate a need to adopt an operational definition.

This search revealed no articles written prior to 2004 on the topic of health disparities in Canada, although the grey literature referred to a number of government reports going back to the 1974 Lalonde report (18-23) articulating a vision of reducing health inequities in Canada. However, starting in 2004, there is mounting sensitivity in the Canadian literature to equity issues in health care as evidenced by the number of articles on this topic. In fact, the Canadian Journal of Public Health devoted the March/April 2005 publication to the topic of Reducing Health Disparities in Canada. The papers included in that publication were originally commissioned for the 2003 International Think Tank on Reducing Health Disparities and Promoting Equity for Vulnerable Populations which took place in Ottawa in September 2003 (16). Specific articles discussed absolute homeless (living in shelters) and health (6), the health of immigrants and refugees (7), health disparities in aboriginal populations (the embodiment of inequities according to Adelson) (8), gender and health disparities (9) and, finally, the impact of intellectual disability (5) and
literacy (10) on health equity. In the preface of this journal issue, Beiser and Stewart, the Canadian National co-leaders for the Reducing Health Disparities initiative, identified many points of convergence in the articles listed above which they summarized as follows: Canada must expand the knowledge base that informs relevant policies and practices to address health disparities. Research must be undertaken to understand the mechanisms which produce health disparities, to document these health inequities, to design and test interventions that reduce inequities and, finally, to evaluate existing programs. They suggest that this research must be multidisciplinary (going beyond the social science framework), and international in nature (4). Mackenbach et al also suggest international collaboration such as exchange of policies, methods and their effectiveness, to help policy makers in different nations adopt strategies to address health inequities which are more evidence-based (17). Stewart et al suggest that mixed methods research enhances the relevance and provides a more balanced contextual perspective for research on health disparities issues (15).

Many writers focus on the health of aboriginals in Canada, noting that their health status is worse than that of other Canadians on almost every measure of health (3, 8, 11, 14). Two recent government reports also state that aboriginals and individuals of low economic status bear a disproportional burden in terms of health inequities (20, 23). Adelson as well as Frohlich et al consider aboriginals to be victims of colonialism and oppressive regimes (8, 11), who are also impacted by issues of income (inadequate income results in inequity in access to material resources such as food, housing, etc.) and place (certain neighborhoods have less access to parks, health and education services, are more dangerous etc.). When addressing aboriginal health disparities, many (8, 11, 14), discuss racism, colonialism, loss of indigenous culture etc. as reasons for these health disparities. To remedy these structural inequities requires a focus on addressing the determinants of health disparities rather than the disparities themselves (11). The idea of targets for reduction of health disparities is suggested (2, 11, 20), although caution is urged in the selection of these targets to ensure that they provide more than a motivational focus but actually focus on outcomes of policies and interventions (17).

Frohlich et al, as well as Collins and Hayes, suggest that, despite Canada’s legacy of governmental reports on health disparities, there is no evidence that concrete strategies have been developed to address these disparities in Canada (11, 16). A 2008 Senate report acknowledges that 50% of population health is attributable to the social and economic environment and that population health policy must be implemented to address health inequities. This report makes a number of recommendations which include further research on this issue, a reorientation of government policy (a national plan) which might include establishing health goals, as well as a focus on an aboriginal population health strategy (20).

It is clear from the above that there are health inequities in Canada and that many groups are marginalized from the mainstream of health services. Aboriginal peoples are discussed more frequently in the literature, although other groups are also at risk including those of lower economic status, immigrants and refugees, women, and individuals with intellectual disabilities. Thirty four years after the Lalonde report, Canada is still struggling to address health inequities. Mackenbach reviewed the experience of a number of European countries struggling with mechanism to reduce socioeconomic inequalities in health and suggests that part of the problem is that policy makers are working in isolation and efforts to address this issue are largely intuitive.
To solve health inequities requires partnerships amongst key stakeholders including researchers, policy makers, medical schools, and health professionals (34).

What is the general tenor of the literature on social responsibility of medical schools?

The WHO defines the social accountability of medical schools as follows: “the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region, and/or nation they have a mandate to serve”. Later they note that medical schools whose programs address the “obligations for which they are socially accountable could be said to be socially responsible”. They emphasize that social accountability should guide all aspects of activities including education, research and service (24, 34).

The AFMC *Future of Medical Education* project has as one of its four objectives “to equip physicians with knowledge, skills, attitudes and values to provide high quality medical care and be responsive to changing societal needs” (25).

The most prevalent theme of the literature review on social responsibility/accountability and medical education is the notion that medical schools must be socially responsible or accountable to society (24, 26-29, 31, 33-38, 54). Medical education is a public good (55). This long term commitment was initiated by Hippocrates and further demonstrated in history by the establishment of the first academic chair of Medicine in 1497 in Aberdeen, Scotland, with the mission “of the pursuit of health in the service of society” (36, 37). Further evidence of this social responsibility abounds in the literature. For example, the social responsibility of the academic complex (medical schools and their teaching hospitals), was the theme of the 1990 joint annual meeting of the Canadian Medical Colleges and Association of Canadian Teaching Hospitals (26). Social responsibility has been a fundamental interest of the medical profession ranking among the top10 topics in the Association of American Medical Colleges addresses for most of the last century (27). In 1998, the Educational Commission for Foreign Medical Graduates and the World Health Organization co-sponsored a conference entitled “Improving the Social Responsiveness of Medical Schools” (32). In 1997, a survey of the existing 16 Canadian medical schools was conducted to ascertain their experiences in promoting social responsiveness. The results indicated an enhanced interest in the issue of social accountability although the application was variable (33). In 2001, the Association of Faculties of Medicine of Canada made a commitment to social accountability charging medical schools to develop measurable standards for programs which address the social determinants of health (37). In 2005, the Canadian accreditation standards for CME/CPD were rewritten with an explicit social accountability framework (38).

However, despite this focus, of late, this social responsibility is being coupled with the public’s discontent, lack of trust and demand for accountability on a number of issues including addressing the perceived shortage of generalists (26-27), and the needs of the underserved (27-28, 30-31, 35,). These concerns are coupled with unease from medical educators about the waning of the transmission of the fundamental values of healing and human concerns to technically competent practitioners (38).
The notion of a social purpose (47) or a social contract is explicitly discussed in a number of articles which note that, by accepting society’s resources and support, medical schools should be responsive to their community/public (24, 27-28, 30-32, 35-37, 54). Cappon and Watson reported on a 1992 survey done in Canada and the US to assess public involvement in medical schools. No significant differences were found between the two countries and only a small majority of schools identified community needs and involved the public in research committees etc. (33). McCurdy et al reported on a 1996 survey of US medical schools in which deans were asked to reflect on their social contract and to gather information about their stakeholders (30). The survey exercise led to the realization that many schools had not included their community stakeholders in determining the mission of their medical schools.

It is interesting that a number of articles define the mission of medical schools as tripartite: education, research and clinical service (24, 28-30, 32, 34, 36). Two articles change the nomenclature of this third mission as follows: develop health policy reform (31), and, provide service to society (36). However, a brief review of the mission statements of a few Canadian medical schools, done outside of this literature review, reveals that the mission statement of these medical schools usually limits their mission to education and research. Often the mission statement of medical schools parallels the visions and missions of their universities (33). Lewkonia quotes Barck CK and Tambone JC, who define mission statements as formal documents that attempt to capture an organizations unique and enduring purpose and practice (36). If a significant number of medical schools do not see clinical service as part of their mission, could this structural omission impact their actions related to their social accountability agenda?

A number of articles comment that the application of the mission should not remain institutionally-based, nor should planning be focused on the interests of faculty, university and hospitals, but both mission and planning must be immersed and framed by community/societal expectations and needs (24, 29-30, 32-34, 36, 38, 40-41, 44). Eckenfels speaks of John Evans’ supply/demand approach, describing institutional demand-side thinking as “from the perspective of the patient and population of the community”, whereas; supply-side thinking is “driven by new knowledge and technology…” (44). Assuming responsibility for the welfare of the community, and a population based approach to education, is suggested as a valuable framework for medical education (34, 35, 43).

The goals of the medical school must be defined and prioritized through a public discussion, be clearly articulated and linked to fulfillment of social objectives which must be measurable (31, 35, 36, 56). Lewkonia, in reviewing documents from medical schools in the United Kingdom, United States, Canada and Australia found that these generally did not address how medical schools objectives would be evaluated (36). He supports the World Health Organization’s social accountability grid (24, 34) to assess progress in meeting societal expectations of medical schools. He further suggests that sharing this information on the web would facilitate exchange of ideas and demonstrate how medical schools fulfill their mission (36). The social accountability grid looks at the mission of medical schools in the domains of education, research and service and assesses the social responsiveness in terms of values related to relevance, quality, cost effectiveness and equity. Within each domain three phases are included (planning, doing, implementing) allowing medical schools to trace their trajectory in all areas of the grid.
Lewkonia notes that medical schools utilizing the social accountability grid who progress beyond the planning and doing phases can meet society’s expectation and be able to state “the health status of the underserved has been improved, and the gap between privilege and underserved is narrowing” (34, 36). This grid can be useful in the transformative process of medical schools toward this goal (38). In 1999, a new medical school in Northern Australia explicitly stated its strong community orientation by adopting a socially accountable mission statement stating that it will improve the health of rural and remote indigenous and tropical populations. To ensure that the school meets the stated goal, in addition to participating in the National accreditation process, this school has an external evaluation committee that reports on how local expectations have been met (43). Chapagain et al conducted a survey of administrators, faculty, students, residents and community members at a medical school in Nepal to determine the effectiveness of initial efforts to reach their goal to raise the health status of disadvantaged and underserved populations in their community (42). They framed their survey using the social accountability grid previously described (24, 34) and found that faculty members tended to rate social accountability performance more positively than did community members (42). In Thailand, one medical school has begun using the social accountability grid in a systematic way to assess social responsiveness and others are exploring mechanism to measure responsiveness and community satisfaction (39). In the United Kingdom, the Education Committee of the General Medical Council produced, in 1993, a set of 13 recommendations for undergraduate training, 5 of which are targeted at improving the social responsiveness of medical schools. Regular progress reports from medical schools as well as visits from the Education Committee are mechanisms to monitor progress towards meeting these recommendations (40). Kaufman reviews the social responsiveness of the University of New Mexico School of Medicine in terms of changing paradigms from a supply-side to a demand-side institution. He reports on the successes and shortcomings of admission policies, curricular changes such as increased exposure and service to the community, advocacy initiatives related to community development, and contribution to health policy development (41). Suggestions that programs for social responsiveness be assessed as part of the accreditation of medical schools have been made (32, 33, 34). One author suggests that Deans should be assessed on the degree to which their graduates meet the health care needs of all the US population including the underserved (54).

A number of successful examples of community integration/immersion are discussed such as: the Area Health Education Centers involving 55 medical schools (27); Parkland Memorial Hospital’s community oriented programs; New York’s Montefiore Medical Center drug treatment programs and community centers; the John Hopkins Health System urgicentres located in poor and largely minority communities, all examples of providing care to the underserved (28). In Canada examples of such programs are the University of Ottawa “bus rounds” (service to individuals who are dying or in continuing care facilities) and the University of British Columbia interdisciplinary course to serve individuals with HIV infections or AIDS (33). In terms of community based training of health professionals, the Dartmouth Medical School and the University of Minnesota programs expose medical students to the social, environmental and cultural influences which impact health (28). Thailand also boasts a medical school which has developed, since 1978, a progressively more sophisticated community oriented/targeted curriculum which has received input from the community (39). A new school in Northern Australia established a conceptual framework for the entire curriculum focused on rural/remote health and community orientation. Clinical learning takes place not only in large hospitals but in
health facilities dispersed throughout the region with web-accessible internet resources, a key element supporting this program (43). In Canada, students can choose a site placement which exposes them to marginalized populations during the University of Toronto’s Determinants of Community Health Course (DOCH), the Ambulatory Community Experience course (ACE), as well as through programs in the Northern Ontario School of Medicine. There likely are other such programs in Canada. However, these programs were not found as part of this literature review and cannot be further discussed.

The intake policies influencing medical school student selection are an important factor when considering social responsiveness (27, 33, 35, 41, 54). Medical education continues to produce physicians who come from upper middle class and upper income families (54). Sixty percent of medical students come from families in the top 20% of income (54). In Canada, a number of medical schools (Queen’s University, the University of British Columbia, McMaster University, Dalhousie University, University of Alberta, University of Manitoba, University of Western Ontario, and Memorial University) have adopted mechanisms to improve the representation of disenfranchised social groups in the student body (33). In New Mexico, promising secondary school students, representative of the community economic and ethnic background, are tracked, receive mentorship and field experiences to sustain their interest in health care. This affirmative action was being challenged at the time this article was written in 1999 (41). Preferential admission policies for rural students from underserved areas have been adopted by one new Health Sciences University in Nepal (42) as part of their plan to respond to societal needs. Since the mid 1990’s, all medical schools in Australia are offered incentives to both recruit more rural students and orient curricula towards more rural health care issues, with one new medical school in Northern Australia having a specific focus on these issues (43). Freeman et al suggest that preadmission screening for medical schools might include a selection bias that would identify students with characteristics that will result in the likelihood that an applicant will care for the underserved after graduation (54). Sanson-Fisher et al note that schools with a commitment to social equity should have clear selection policies and procedures which aim to increase the numbers of medical students from disadvantaged groups or communities (56).

There is a need to support the inclination of medical students to serve society (28, 38). Woollard notes that, in the Canadian experience, many initiatives focused on community engagement and marginalized populations are student initiated and driven (38). Furin et al refers to an Association of American Colleges 2000 medical school graduation questionnaire which reported that more that 1/3 of medical graduates had been interested and participated in a medical experience in a resource poor setting during their undergraduate training (51). Eckenfels describes three programs which focus on social responsibility, one at Rush and two across the United States, which importantly, were all student initiated (44). O’Toole et al did a study to ascertain the influence of medical school on the attitudes of students towards underserviced/vulnerable populations. They found that medical students were influenced by their medical education experience including the degree of community outreach and exposure to physician role models (45). Crandall et al conducted a longitudinal study spanning medical school education in schools using PBL versus the traditional curriculum to ascertain the attitude of medical students towards the underserved populations. The study showed worsening attitudes towards marginalized people irrespective of curricular approach. They suggest further studies of
a qualitative nature to ascertain what changes in medical school maintains, changes or improves medical students attitudes towards marginalized groups (46).

Developing a faculty dedicated to pursuing a social agenda is also key and may involve: developing innovative linkages between the academic centre and the community to encourage research questions; educational opportunities in the scholarly community; and an increase in structures that assure prestige and stature for those involved in this agenda. (27-29, 35, 38, 56). Faculty development programs may also be needed (35). Recognition and reward systems must change and be linked to a new definition of scholarship which incorporates solving pressing social and ethical problems (38). Health service research should be encouraged (28, 31-33). In Canada, research in population health, and specifically aboriginal people’s health, as complementary to biomedicine is being promoted (29, 37).

From the above, it is clear that medical schools do have a social responsibility and should be proactive in contributing to the shaping of more socially accountable and equitable health systems as the education of physicians is a vital piece of the solution to societal health problems (32, 34). In the more complex arena of health policy, the determinants of health, poverty and inequity, medical schools can affect change by partnering with their public health colleagues, other academic communities, community agencies, government and professional associations (24, 34, 38, 41). The mounting global focus on health disparities, as well as partnerships with medical schools whose social responsibility/accountability agendas are increasingly focusing on this same issue, may help to address health inequities.

**What changes are being discussed in medical education to address health inequities?**

This section will briefly summarize medical education health inequity curricula as discussed in the literature.

Jacobs et al describe a one month curriculum designed to assist all internal medicine and paediatrics first-year residents in providing better care to the poor African-American community surrounding Cook County Hospital/Rush Medical College. The core faculty members of the program are a sociologist, four community members (who advocate and speak for their community) and three physician faculty. Topics include the impact of socioeconomic factors on health and cross cultural communication. These are supplemented by tours of the community and case studies dealing with a variety of issues, including the cost of prescriptions. Two assignments, of which one includes a discussion with patients about how economics, geography and other factors influence access to health care, are included in the program. Special care is taken to ensure that residents value the teaching from the community members and the program is highly rated by the residents. Challenges to increasing this experience include time and funding. The collaborative relationship of the health care organization and the community is key to the success of the program (48).

A “Social Activism in Medicine” elective program was introduced at the University of California, San Francisco, geared to undergraduate medical students and led by physicians who have incorporated advocacy and social activism in their medical practices. In addition to receiving pertinent lectures related to the care of the disenfranchised etc. which parallel core
curriculum content, students are encouraged to form a mentoring relationship with the faculty. The program has been well-received by the students and there is a desire to move this program into the core curriculum (49).

At the University of California, San Francisco, a new program integrating social and behavioral sciences with biomedical sciences has been introduced. Launched in 2001, each curriculum block is developed and administered by a team which includes a basic scientist, a clinician, and a social or behavioral scientist (SBS) as well as other relevant faculty. The challenges in developing this curriculum include the very different cultures of medical education and SBS. This is also reflected in the divergent attitudes of the students about the value of the SBS component. Basic scientists are also challenged in understanding the differing scientific methods traditions of their SBS colleagues. Despite these challenges, there is excitement about this program and the potential to educate physicians who will be able to practice more humane and equitable medicine (50).

At Brigham and Women’s Hospital, a four year program has been developed to provide training in both internal medicine and health disparities. Two residents are selected for the program each year. Key features of the program include didactic teaching sessions, longitudinal seminars on equity and applied public health, graduate level courses in epidemiology, health policy, ethics and medical anthropology, as well as field experiences in resource poor settings both in the United States and internationally. Residents are matched with a mentor with clinical and research experience in global health and they must complete an independent community based research project in a geographic area suffering from health disparities. There is an opportunity for residents to apply their course work towards a master’s degree at Harvard. The program is in the initial phases and its success has yet to be fully evaluated (51).

At the University of Wisconsin School of Medicine and Public Health, a “Caring for the Underserved” curriculum during the six week paediatric clerkship was developed, using two formats: one web-based and one faculty led. For each learning objective, web based activities were developed to replace faculty-led activities. The curriculum addresses student barriers to providing adequate care to the underserved and the goal is to enhance student knowledge, attitudes and skills in caring for the underserved. Students are randomized to the traditional curriculum or one of the two new formats. A screening tool to help students recognize underserved families and an independent clinical project are common to both formats. For this latter project, students work with a family to address one unmet health care need. The student is then responsible for locating the appropriate resources and providing the necessary support to address this unmet need. The final report describes this process and includes a reflective component on knowledge gained and barriers encountered. An evaluation of these two formats and the existing curriculum (students randomized to this format received only a reader) was undertaken and showed that web based and faculty-led curricula were equally effective and demonstrated improved knowledge and attitude relevant to caring for the underserved when compared to the traditional curriculum. However, the web-based format is less resource intensive (52).

Nation et al describe the new University of California programs in Medical Education (PRIME) which will substantially increase enrollment in medical schools, develop new guidelines for
admissions and recruitment, as well as a new curriculum to prepare students to better serve their communities and those suffering from health disparities. A new five year MD and Masters Program will be introduced for students who wish to acquire added skills and experience caring for the underserved or those with disproportionate disease burden. This program will include research on health disparities, access to programs in public health, public policy, as well as clinical rotations in diverse settings with emphasis on cultural competence and community advocacy. Each of the five campuses has, or will have, a focus based on faculty expertise. Examples are: UC Irvine who will focus on Latino health; UC Davis on rural health and telemedicine; UC San Francisco, the urban undeserved; US San Diego, health equity and finally UC Los Angeles, diverse disadvantaged communities. Ultimately, the PRIME program will enroll 60 to 80 students per campus. The first class of eight UC Irvine students is expected to graduate in 2009 (55).

Sanson-Fisher et al suggest criteria that medical schools can implement to reduce health inequities. These include student selection processes, as well as having health inequity as part of the core curriculum content in addition to supporting innovative electives such as learning to be a health activist or spending time in an indigenous community. They further suggest that it is important to model health service delivery to overcome inequities by establishing university supported physicians and health care teams outside of the traditional teaching hospitals. Health inequity research focused on interventional studies rather than descriptive studies should be encouraged. Finally, they suggest that academic titles should reflect the Faculty’s commitment to health inequities by establishing, for example, Professors or Chairs of Disadvantaged Health. They suggest that criteria will allow for objective and measurable assessment of a medical school’s commitment to addressing health inequities (56).

The University of Chicago Pritzker School of Medicine developed a 5 day elective course entitled “Health Care Disparities in America” to introduce incoming first year medical students to these issues and improve their skill attitudes and knowledge towards the underserved. Sixty-four (60%) of the 104 oncoming students selected this elective. The course requires attendance at all lectures which are supplemented with workshops, small group discussions, recommended readings and community visits. They are required to make a poster on 1 of 5 disparity topics. Thirty-two faculty members from different disciplinary backgrounds, half of whom are women, and one-third from visible minorities, participate in the program. Pre-and post-surveys showed a good improvement in knowledge about health disparities and abilities to address issues of disparity. The course received the highest rating in the entire curriculum. Based on these successful results, the course is now mandatory for all first year medical students and is scheduled the week after orientation (57).

Koehn and Swick discuss the rapid adoption in the United States of cultural competence (CC) as a formal curriculum goal to address issues of health equity. They, like others (58), are critical of the CC approach. Koehn and Swick suggest that a more appropriate curriculum goal should be transnational competence (TC). The framework of transnational competence encompasses a set of core competencies involving the acquisition of skills in five domains: analytical skills (gather health related information and analyze it critically); emotional skills (gain and express genuine respect for multiplicity of beliefs and values); creative skills (design of innovative and contextually appropriate action plan); communicative skills (skillful use on interpreters and
intercultural negotiators); functional skills (ability to accomplish tasks and achieve objectives). Advocacy skills, patient-centered approach, knowledge of social and power contexts are all integral to this educational model. Another central component of TC is a student prepared miniethnography for each patient, which includes not only issues of mental and physical health, but also those of life circumstances and how these are addressed in the health plan. Because TC is based on demonstrated skills, it is easier to assess than cultural competency. Since medical education is “politically invested” in CC whether to modify the CC curriculum to incorporate the TC approach or replace the CC curriculum is a difficult decision (53).

From the above, it appears that there is no consensus in the literature about curricula for health disparities.

Implications

From the literature review, the responses to the 3 questions are clear. Canada has health inequities. Medical Schools have a responsibility to society and their communities which includes the responsibility to address health inequities. Other than the problematic cultural competency approach, there is no health inequities curriculum which has been widely accepted across medical schools. There is also no literature suggesting either the ideal time or data to show the difference in outcomes of a focused curriculum versus a longitudinal approach.

However, there is a potential “made in Canada” approach to teaching about health inequities which would use the health advocacy competency as a framework for curriculum. Both the College of Family Physicians of Canada and the Royal College of Physicians and Surgeons of Canada have mandated health advocacy as part of their core competencies for all training programs (59, 60). Undergraduate programs in Canadian medical schools are framing their curriculum with these competencies in mind. Therefore, there is an opportunity to refine and build curriculum around the health advocate competency with a focus on health inequities. This strategy would provide a systematic as well as systemic approach across Canada to teach medical students and residents the necessary skills, knowledge, and attitudes to deal with health inequities in their clinical practice. As the solution to addressing health inequities is complex and multifactorial, it follows that developing this curriculum would require input from a number of fields outside of the traditional biomedical experts. Canada with its commitment to universal health care and social justice has the ability to provide global leadership in addressing this issue both at home and internationally.

As a final comment, it is noteworthy to observe that some medical schools focus their mission statements only on education and research activities, while others focus on a tripartite mission adding clinical services or service to society. If the WHO recommends that medical schools have an additional obligation to provide health care services (24), and, if the social responsibility of medical schools is an accepted fact in the literature, than perhaps a significant step towards social responsibility is a review of the mission statements of medical schools in Canada. The inclusion in the mission statement of medical schools of the additional obligation and commitment to serve the health care needs of society may provide an important structural framework on which medical schools can build their social responsibility agenda.
Annotated Bibliography

   The authors provide an interesting overview of strategies undertaken by both developing and developed countries to reduce health inequities. These include: establishing national inequity targets, integrating health determinants into policy areas, reducing access barriers, etc. Additionally, health equity and social determinants of health are being introduced into the public health policies of a number of countries. In the United States, it is racial and ethnic disparities that are of greater policy relevance. Other global initiatives are mentioned such as the Global Equity Gauge Alliance, EQUINET (in Southern Africa) which promote shared values of equity and social justice in health. The role of information sharing and knowledge at the international level, as well as cooperation of local communities and governments are mentioned as key to the success of this global movement for health equity.

   This is a very dense synthesis document of the literature about health disparities which highlights the particular inequities suffered by Aboriginal populations in Canada. Many indicators are reviewed such as estimated life expectancy, leading causes of death, housing, education and employment income, as well as selected social problems. Historical information related to the treatment of aboriginal peoples is reviewed as is the institutionalization of inequity in health care services and programs. It is suggested that research and policy development must incorporate adequate assessment of health care needs, address cultural and social barriers to access of community health services, and examine the contributions of housing, education, employment, and adequate health services to health disparities. The indirect sources of these disparities (colonization and racism) must also be acknowledged and addressed.

   The authors analyze policy developments to address health inequities in a number of European countries during the period 1990-2001. They identify specific innovative approaches for which there is, in many cases, evidence that they reduce health inequalities. These are: policy steering mechanisms (ex. quantitative policy targets); labour market and working conditions (ex. strong employment protection); consumption and health related behaviour (ex. multi method interventions to reduce smoking for low income women); health care (ex. nurse practitioners to support family physicians in deprived areas); and territorial approaches (ex. comprehensive health strategies for deprived areas). Development of effective strategies to reduce health inequalities is a difficult task and that no one country is able to contribute more that a fraction of the necessary knowledge. Exchange of information between countries as well as development of assessment methods are both essential in obtaining evidence of effective policies and interventions.
This 1994 article is a rallying cry for academic centers to meet their obligations to care for society’s most vulnerable members and the underserved who live in their communities. The author challenges these centers (who have the necessary skills and resources) to build the needed medical infrastructure in these deprived communities, than use these community based settings to train health care professionals. Examples of institutions that have developed these kinds of service delivery systems and those that train health professionals to practice in underserved areas are cited. Finding solutions to the complex and tenacious problems facing underserved/vulnerable communities should be part of the academic research mission. This comprehensive article also suggests funding sources for the changes proposed, strategies to develop and support the Faculty; and strongly encourages academic leaders to make this agenda happen.

5. Boelen C. Adapting health care institutions and medical schools to societies’ needs. Acad Med 1999;74(s8)
The author suggests that four universal values exist in health care: quality, equity, relevance and cost effectiveness, and that health systems and their shareholders must strike a satisfactory balance between these four values. He bemoans the fragmentation in health delivery systems and suggests a holistic approach based on epidemiological and social sciences. He further suggests that efficient links between medicine and public health be adopted and supported by research. He proposes that medical schools use a simple grid with the aforementioned four values and the domains of education, research and service. Under each domain, schools can note whether they are at the planning, doing or impacting phase and this will allow them to monitor their progress towards responding to societies needs. This tool has been adopted by some schools and is referenced positively in the literature for its usefulness.

The author argues that medical schools must meet their obligations to society and must add educational standards from a social perspective to the present assessment methods. Stakeholders including practitioners, the public, advocacy groups, medical schools and governments must be part of an open debate that provides the opportunity to address different perspectives before standards are set. Most communities would agree that what is valued is better cost effective aggregate health, more equity, and protection against catastrophic ill health. The challenge is to find the appropriate standards to measure a medical school’s contribution towards achievement of these goals. Health service research can assist in the development of standards as well as in measurement of their outcomes.
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CLUSTER 2: The Purpose, Function, and Governance of Medical Schools /

L’objet, la function et la gouvernance des écoles de médecine

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Governance in undergraduate medical education in Canada

Summary

Much of the current public and professional debate surrounding the profession of medicine is taking place against a background of significant changes in the delivery of healthcare, medical education, inter-professional collaboration and increasing involvement of governments and private-sector industry. Physicians must demonstrate leadership and ensure that the system that we have created and operate within is responsive to societal concerns and also become engaged with these critical discussions that have the opportunity to shape and mold the future of medicine. Fullan argues “we must go beyond superficial knowledge of the key concepts and move towards a deeper commitment to developing knowledge, skills, and beliefs related to being change agents in collaboration with others” (2005).

Medical schools in Canada, as they do in the United States, are caught balancing the various aspects of their traditional missions, that is, research, education, scholarship of teaching and learning, and the provision of highly specialized health care services.

There is a need to clarify the roles of departments, particularly how they relate to research institutes and faculty members and for us to explore whether the current, albeit traditional, organization of academic administrative units and departments are outdated and should be replaced. Watson suggests that we need to answer the following question, “how can education be best provided in a new AMC organizational and governance structure” needs to answered?” (Acad.Med. 2003 Jul;78(7):659-665). He goes on to suggest considering,

“a centralized structure – an education center – overseeing teaching and learning, for providing logistical support for implementing the education programs, and for pursuing educational research…and the] dean must remain responsible for the education mission, and personally involved in its vision and goals. The dean delegates education management to a senior associate dean, who has responsibility for the mission, and the authority to implement decisions” (Acad.Med. 2003 Jul;78(7):659-665).

Flexner’s critique of medical education in 1910 arguably gave momentum to a process of change that had already been underway in North America that resulted into a revolution, which swept
across the continent. Since then, both medicine and the science that underpins it have made significant advances while the traditional structures and processes that comprise the medical education system have essentially remained unchanged. Bloom in his work identifies that despite significant changes in clinical practice in medicine over the last half of the 20th century, the process and structure of medical education has been relatively unchanged. The role of education in the medical school, Bloom argues, is secondary to clinical service and research, which have been the major forces in defining the structure and culture of medicine. The governance model of the modern medical school is incapable of meeting the needs of the medical profession and more importantly, the needs of society for the next 100 years. Coupled with inadequate resources and infrastructure, an overstretched and underappreciated faculty, and relatively poor resources to provide needed faculty development to assist in the creation of curriculum and new assessment, and increasing clinical loads, it has been difficult to shift the system to reflect what we now know about teaching and learning. While flexibility and the freedom to promote and implement change may have been Flexner’s message, as Cooke and colleagues suggest, practically speaking, it has been difficult to see broad evidence of this.

Fullan notes that “real change involves changes in conceptions and behaviour, which is why it is so difficult to achieve…changes in beliefs and understanding (first principles) are the foundation of achieving lasting reform” (J Staff Development 2005 Fall;26(4):54). As we see in Fullan’s work, governance is only but one component that is necessary to ensure the successful development and implementation of educational change. However, as we recognize from what little literature there is on the topic, governance is the one component that has essentially remained unchanged since the release of the Flexner Report in 1910. Medical educators need to address the issue of governance in UGME here in Canada to ensure that we are positioning Canadian medical schools today to meet the needs and challenges for tomorrow.

**Conclusions and Directions:**
Create a vision relevant to medical education in the 21st century. And by extension, to develop organizational structures that can best serve all the missions of the modern AMC (i.e., education, research and clinical care), by restoring the standing of education in the priorities of academic medicine.

Consider the experience of American Academic Medical Centers that have explored new governance structures to remove departmental “silos” and that facilitate the development and support of interdisciplinary and perhaps interprofessional collaboration. There is a need to clarify the roles of departments, particularly how they relate to research institutes and faculty members. Is the current, albeit traditional, organization of academic administrative units and departments outdated and should it be replaced? If so, what should this structure look like, and how can it be developed and implemented in such a way to maximize its support and minimize resistance?

Explore the development and establishment of new models of leadership and governance that are: more distributed, more learning-based, more adaptive and more effective and efficient.

Consider how models of change, such as those described by Fullan and Lindberg can facilitate medical education restructuring.
Study the successes and challenges in implementing this CanMEDS into training programs at the various medical schools, in Canada and abroad, as a way to formulate a more coherent model for implementing such large-scale change in the future, for example, at the undergraduate level here in Canada.

Gather information on the governance models of Canadian medical schools utilizing the eight characteristics of good governance as a framework. This would be derived through a systematic process of interviewing key informants from each medical school in order to access non-public documents for review, but also to identify local strengths and weaknesses given the local variations in governance structures and processes as determined by provincial charters or acts.

Best practices and innovations:
None

Full Text

Introduction

In highly developed bureaucracies and corresponding organizational structures, order and decision-making have played a central role in ensuring the well-being of individuals, in promoting ideas and concepts, and in managing resources and processes. Good decision-making is currently very tightly associated with several key concepts such as leadership, change, quality and accountability. These concepts are just as applicable to organizations, universities and other higher education institutions as they are to governments.

The traditional approach to studying organizations has conceptualized organizations as: static structures; hierarchical; having clear boundaries between groups; and trustworthy (1). Yet in recent years, some of the basic assumptions on which more traditional forms of leadership and governance have depended upon have begun eroding as high profile cases of large scale mismanagement and unethical organizational leadership such as the Enron example, bring to the fore the social and political relations embedded in organizational structures and decision-making. At the same time a growing number and a diversity of stakeholders are actively demanding a voice in decision-making processes. We must thus re-think our approach to the study of organizations. For example, we can no longer assume that there are a limited number of stakeholders with a manageable range of interests. Organizations are now being viewed as: dynamic structures or entities; needing network-type structures for efficiency; and generally untrustworthy (1,2).

In this paper, we will examine the idea of governance in higher education and relate it specifically to the undergraduate medical education (UGME) system here in Canada. Utilizing a perspective situated in Michael Fullen’s work on educational change, we will review the available literature (published and grey literature) and make recommendations on principles for
good governance for Canadian medical schools and appropriate dimensions for successful policy change, in addition to identifying a series of implications for Canada’s UGME system.

Definitions

What is governance?

The word governance is derived from the Latin and suggests the notion of “steering”. This term contrasts with the traditional “top-down” approach of governments “driving” society. While governance has been defined by a number of organizations, I will use the definition published by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), who describe it as “the process of decision-making and the process by which decisions are implemented (or not implemented)” (3).

As a process, governance is applicable to organizations of any size, such as an individual, a family unit, a company, an educational institution, a government (local, provincial or federal), or all of humanity. Governance may function for any purpose, that is, good or evil, for profit or not. Thus we see the term governance used in several contexts, such as corporate governance, educational governance, international governance, national governance and local governance.

When studying an organization, “an analysis of governance focuses on the formal and informal actors involved in decision-making and implementing the decisions made and the formal structures that have been set in place to arrive at and implement the decision” (3). In the case of corporations or educational institutions, governance relates to consistent management, cohesive policies, processes and decision-rights for a given area of responsibility. For the purposes of this paper, we will also look at how governance is experienced in the context of medical education restructuring.

Medical Schools / Academic Medical Centre / Academic Health Centre

Throughout this paper we will use the terms “medical school”, “academic medical centre (AMC)” and “academic health centre (AHC)” interchangeably. In the literature, the AMC is defined as medical schools and their owned or closely affiliated teaching hospitals (4,5). In North America, almost all AMCs function within the structures and processes outlined by their parent universities, or by provincial or state legislation.

Literature Search

A search of the literature using Scholars Portal (which included the following databases: ERIC, MEDLINE, CSA Illustrata, PsycINFO, AgeLine, ProQuest, Applied Social Sciences Index and Abstracts, and Web of Science), was performed utilizing the following limits: HUMANS, ENGLISH, 1998 - 2008; with the following MESH terms: Governance AND “Schools, Medical”, Governance AND “Schools, Medical / organization and administration”. A total of 22 articles were identified with these search parameters. While all of the articles did not
pertain to Canadian medical schools they did provide useful background information for our study by providing insight on the experiences of medical schools in a North American context, with educational restructuring and the role governance played in facilitating or hindering these activities. While we read all 22 articles, we selected 6 to include in this review.

Once a search of the previously noted databases was completed, a hand search was performed and identified an additional set of relevant articles. The literature search was supplemented with literature on educational change and governance in Canadian higher education institutions. This included a set of “snapshots” of Canadian medical schools that were included in the Academic Medicine September Supplement issue in 2000, which included a brief mention of their governance structures (See Appendix 1). Not included in this “snapshot” review were the University of Calgary, University of Western Ontario, or the University of Toronto. The Northern Ontario School of Medicine was established after this review had been completed. A review of the websites of Canadian medical schools revealed a scarcity of information pertaining to their governance structure and function. The literature search results underscored the dearth of information available on the specific topic of governance in Canadian medical schools. Following these supplementary searches the total number of articles identified for this review is 20, and are listed in the annotated bibliography.

**Characteristics of Good Governance for Canadian Medical Schools**

The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), in their document on “What is Good Governance?” identified and explained the eight major characteristics of good governance (3). They noted that good governance has the following characteristics: (1) participatory; (2) consensus oriented; (3) accountable; (4) transparent; (5) responsive; (6) effective and efficient; (7) equitable and inclusive; and (8) follows the rule of law (3). The UNESCAP report underscores the importance that in order for a government, or organization, or even institution to demonstrate good governance, it must be responsive to the present and future needs of society (3). See Appendix 2 for definitions of each characteristic.

Another perspective on “good governance” is provided by Ferris and colleagues who modify McDonald’s concept, to identify four operational features: 1) appropriate oversight; 2) sound policies and guidelines; 3) effective implementation of policies and guidelines; and 4) continuous evaluation and feedback.

Given the relative scarcity of literature (either published or grey) on the issue of governance structures and processes in UGME in Canada, we are unable to delve further into identifying the strengths and weaknesses of the current governance structure or to examine questions such as “whether the existing governance model of Canadian medical schools facilitate or inhibit the implementation of new concepts and frameworks into the curriculum content and structure of undergraduate medical education?” This paper has instead identified and drawn together the key components that are necessary to address this important question.
The next steps would include utilizing the eight major characteristics of good governance, to do a systematic review and analysis of the governance models of each Canadian medical school to address the following questions.

- Does the medical school governance model include the major characteristics of “good governance”?
  - Is it participatory?
  - Is it consensus oriented?
  - Is it accountable and transparent to all stakeholders?
  - Is it responsive?
  - Is it effective and efficient?
  - Is it equitable and inclusive?
  - Does it have a clearly defined structure and appeals mechanism?

- What factors are critical to ensure change is successful? What factors are important?
- Are current governance structures facilitating or interfering with educational policy change?

Information on the governance models would need to be derived through a systematic process of interviewing key informants from each medical schools in order to access non-public documents for review, but also to identify local strengths and weaknesses given the local variations in governance structures and processes as determined by provincial charters or acts.

**Governance in Canadian Higher Education**

There has been a growing interest in the governance of higher education institutions, triggered by a number of systemic changes including: the relationship between government and higher education institutions; changes in governmental higher education policy; increasing pressures to ensure quality and accountability; the adoption and influence of new technologies; the knowledge-based economy; and the impact of globalization and internationalization (6,7). Jones and colleagues have produced a thorough review of university governance in Canada, and allude to the above listed issues as fueling recent discussions on institutional decision-making, and underscoring efforts of higher education institutions to demonstrate social accountability.

In higher education, governance refers to the means by which these institutions (such as colleges and universities) are formally organized and managed. Jones and colleagues have identified several key characteristics that are true for most of Canada’s universities, which are reflective of the impact of the Flavelle Commission in 1906 and the Duff-Berdahl Commission of 1966. The Flavelle Commission defined the rationale and framework for bicameralism. Bicameralism refers to the creation of two bodies, the corporate board, composed of government appointed citizens, vested with the responsibility for administrative policy, and the senate, predominantly comprised of members of the university, which has responsibility for academic matters (6).
The Duff-Berdahl Commission resulted in a modification to the bicameralism governance structure by recommending more open and transparent governance structures and processes through increased faculty participation on the governing board and reform of the academic senate (6). These recommendations have resulted in increased student participation on the governing board of all Canadian universities. Jones and colleagues note that there have been high levels of university autonomy in Canada for most of the past century, however, there have been recent incursions by some provincial governments who are attempting to steer institutional activities, and reduce government expenditures while maintaining or increasing enrollment. They argue that “given the central role of university governance in Canadian higher education…it is extremely important for both board and senate members to fully understand the role of these decision-making bodies” (6). Jones, in a subsequent work on the structure of university governance in Canada, similarly comments, “senate and boards members, as individuals, have little formal opportunity to learn about the broader principles and organizational assumptions that underscore their work, and the governing bodies seldom take a step back to discuss and evaluate broader governance issues” (7).

In addition to bicameralism, Canadian universities are characterized by the following: autonomy and the creation of universities through provincial acts or charters as private not-for-profit corporations, (6,7). Jones and colleagues argue that, “in order to more fully understand the nuances of university decision-making” it is important to study how institutions develop policy and “learn from the complex power and authority relationships associated with university governance” (6). Policy-making is context specific. While Canadian universities have strong commonalities, there are also substantive differences in organizational arrangements at the institution level, including the composition and practical operation of the two governing bodies that affect the way policy is approached, developed and implemented.

**Medicine as a Profession**

The role of healer exists in the history of all civilizations and can be traced back to antiquity. Medicine as a profession, however, emerges in the middle ages with the creation of guilds, and the first organized approaches to the delivery of specialized services. During this time, professional groups had little impact on the greater society, as they tended to serve only a small elite. With the development of modern scientific medicine and health care delivery by the middle of the twentieth century, the concepts of the physician as a healer and a professional have become intertwined. As a result, physicians have been entrusted by society with the responsibility: to ensure their competence of specialized knowledge; to provide altruistic care for patients; to ensure that a patient’s autonomy is respected; to advocate and promote social justice; to ensure personal integrity, beneficence and accountability. In return for these significant responsibilities, society has afforded those within the profession of medicine the privilege of professional autonomy, self-regulation, and monopoly in health care delivery and a status of respect within their communities. The patient – physician relationship and the relationship between the profession and society are the basis upon which the modern health care delivery system has been built and serve to guide clinicians to ensure that their patients receive the best possible health care.
The Medical Education System

Medical education is inextricably tied to the health service system, and when questions arise about service, questions about education must follow. World Health Organization, 1972 (8)

The system of medical education that has evolved in North America in the post-Flexner era is unique. Medical schools bear similarities with all other academic higher education institutions but they do differ in several key characteristics from the traditional university. Charles Phelps notes, “…academic medical centers, in many ways, simply have different value structures than other parts of the parent university…this culture stands in stark contrast to the clinical world of the academic medical center” (9). As Griner and Blumenthal point out medical schools “have one foot in the comparatively tranquil world of academia, and another in the increasingly competitive world of the U.S health care system” (10). They go on further to discuss how the involvement of the medical school in the health care system is making efficiency and responsiveness to market developments imperatives in the academic setting (10).

In a more recent article, Nonnemaker and Griner note that “medical schools differ from other university graduate schools in that community settings, hospitals, and ambulatory care facilities are required for medical education” and while most of these settings are either owned by or closely affiliated with the university they do have their own unique missions. (9). Given that the mission of medical schools broadly speaking and the missions of the affiliated clinical care settings are often different, governance related problems can arise when individuals carry overlapping university and hospital administrative responsibilities. For example, often University Chairs of clinical departments also hold senior management positions in hospitals. Resource sharing is facilitated by such arrangements, but transparency and accountability can be blurred in the process.

Medical schools have a fundamental mission in the areas of research, education and the provision of highly specialized health care services to the population. (11). This concurrent commitment to excel in both education and research has proven to be problematic. Bloom argues that against a backdrop of the modern medical research enterprise “medical schools need medical students, not so much to teach them but to give the entire apparatus of the school a justification for being” (11,12). While the overemphasis on medical research can be traced back to Flexner’s recommendations to underscore medical training with scientific legitimacy, the issue has been further exacerbated by the marketization movement, which has taken hold at a much faster pace in academic clinical health centres. Commenting on this very shift, Watson attributes the marginalization of teaching and the under-supported and under-recognized activity of the majority of medical school faculty members engaged in teaching as a product of reduced funding and pressure for increased quality and accountability (11). Financial imperatives and organizational approaches developed in the corporate world to address issues of mismanagement have been adopted in the AMC setting without due consideration of the impact of current governance approaches on the educational experience of trainees and the clinical teachers responsible for their training.
On a related note, and speaking about the North American context, Nonnemaker and Griner identify a number of external pressures on medical schools that have implications for medical education including declining revenues from patient/clinical care, declining reimbursements from managed care companies, both of which have led to reduced funding available for research and teaching. In another article, Griner and Blumenthal note that there are “two generic types of challenges for AMCs…to make their missions more relevant to the needs of a changing health care system…[and] the decline in resources available to AMCs for conducting their missions” (5). In the past, the net revenues from clinical care in the United States were used to “help support teaching, research, and other social missions of AMCs” (5). They identify a number of reforms that AMCs must consider to face these two challenges, one of which they describe as “creating new vehicles for faculty participation in governance”. This would involve creating new methods for increasing communication, restructuring the organization and governance of the faculty clinical practice, but also re-examining the roles of chairs in light of current trends in interdisciplinary clinical care, teaching and research (5).

Griner and Blumenthal suggest that there is a need “to set aside traditional professional and departmental structures when these cease to enhance the efficiency and quality of core AMC activities” (5). There has been a growing appreciation among researchers and clinicians that patient care is best accomplished through the utilization of interdisciplinary and perhaps even interprofessional teams that function within organizations and institutions that facilitate these types of cross-disciplinary partnerships. Some examples of this partnership are seen in the management of oncology patients who require close coordination and care from multiple specialists including family physicians, but also nursing, pharmacy, palliative care, social work, chaplaincy, and rehabilitation medicine. In the research arena, we see similar collaboration occurring with the establishment of interdisciplinary research centres in such areas as cancer, cardiovascular sciences, and women’s health. These innovative structures in clinical care and research have not often resulted in the re-organization of traditional departmental structures, who retain the ability to appoint and release staff and “remain the center of academic power and loyalty for young faculty” (5). Griner and Blumenthal go on further to comment:

Efforts to create interdisciplinary centers of clinical excellence and multispecialty groups practices are growing, but sometimes [they] face impediments as they threaten the power and prerogatives of departmental chairs…What new or hybrid structures will replace departments as central organizing units of AMCs? This question needs urgent attention (5).

As educational, research and community imperatives evolve and change, it is important to consider how educational processes, structures and relationships must also evolve to facilitate change. This will be explored in more detail below.

Governance and Medical Education in Canada

There are currently 17 medical schools in Canada, and each of them is primarily linked to a university. As such, the structures and processes of decision-making for each medical school will bear resemblance to the university governance model. As we previously described,
Canadian universities generally will have a bicameral governance structure. However, medical schools differ from universities given their tripartite relationship with and accountability to the university, the provincial government / public, and the medical profession.

At the time of Abraham Flexner’s influential report in 1910, which has since defined medical education in North America, there was great concern with the numbers of medical schools that had quickly been established, but even more so with the high degree of variability in quality that existed between these institutions. Flexner proposed 4 principles pertaining to the structure of the medical school upon which he would base his final evaluation of the institutions in Canada and the United States (13). The first identified that “a medical school is properly a university department”, which was significant since many of the schools in the United States were not affiliated with a university at the time. In Canada, the existing schools in Winnipeg (Manitoba), Toronto, Montreal (McGill and Laval), Quebec City (Laval), London (Western University), Halifax (Dalhousie) and Kingston (Queen’s) were all connected in a relationship to the local university. Related to this, Flexner noted that the appropriate universities to consider would be those located in large cities given the access they had to resources, infrastructure and “clinical material” (13). Secondly, he proposed that “as we need many universities and but few medical schools, a long-distance connection is justified only where there is no local university qualified to assume responsibility”. With these two principles, Flexner integrated medical schools into universities, and as a result, these established medical schools would need to adopt the governance structure of their respective university.

The structures and processes of decision-making for each medical school is impacted upon by two key factors, the nature of internal governance and the nature of external governance. In medical schools, internal governance refers to the university governance model, which is comprised of governing bodies that are responsible for administration or management issues (corporate board) and also academic concerns (senate / academic committees). Power and authority is diffused through a hierarchy of committees and councils within the medical schools, which creates a complex environment for academic affairs and administration. As noted previously, the specific internal governance structure of the medical school will be dependent on the model identified in the university act or charter passed by the provincial government, albeit, they will have strong similarities.

In Canada, external governance refers to the relationships that the medical school has with organizations and institutions that are beyond the university, such as the Association of Faculties of Medicine of Canada (AFMC) and governments (provincial and federal), that it actively engages with. The Association of Faculties of Medicine of Canada (AFMC), with its 65 year history of being the national voice of Canada’s faculties of medicine and its mission to ensure the health of Canadians by promoting and supporting excellence in health education and research, has provided the leadership to ensure social accountability through a variety of activities.

The AFMC is currently governed by a Board of Directors that is comprised of the Deans of the 17 Canadian medical schools and up to four public members (14). A significant role that the AFMC has played pertains to the accreditation of the medical schools through the Committee on Accreditation of Canadian Medical Schools (CACMS), which was established in 1979 (15). The accreditation process represents a professional judgment about the quality of an educational
program and its purpose is to improve the quality of undergraduate medical education, and ideally occurs through a collegial, constructive process that respects the expertise and autonomy yet ensures that the trainees are provided with the best possible environment for medical education (16). It also ensures that medical schools are maintaining standards of medical education.

While education and health are provincial matters, according to the Canadian Constitution, medical schools utilize the AFMC to speak to the federal government on their behalf on collective concerns. This arrangement parallels that of many medical organizations in Canada, which is necessary for political and constitutional reasons.

Clinical academic faculty are also represented at the Federal level by the Canadian Association of University Teachers (CAUT). Founded in 1951, CAUT as the national voice for all academic staff “believes that academic staff must play a decisive role in making educational decisions and setting educational policy if post-secondary institutions are to fulfill their purposes” (17). The CAUT further notes that “systems of “collegial governance” were meant to ensure academic staff can play their proper role in making educational decisions and setting educational policy” (17). In their *Defending Medicine: Clinical Faculty and Academic Freedom* report, the CAUT argues that “clinical faculty in Canada do not enjoy the same academic freedom protection as other members of the professoriate” (18). Academic freedom, as defined by the CAUT:

…is the right of academic staff to teach, study, and publish regardless of prevailing opinion, prescribed doctrine, or institutional preferences…it also includes the freedom to participate in professional or representative academic bodies and the mechanisms of governance that regulate the core functions of their institutions (18).

The issue of faculty representation and governance is a matter that has received considerable attention in light of high profile cases related to academic freedom involving clinical faculty. Academic clinical faculty find themselves in very unique employment circumstances related to other academic faculty. Clinical faculty are simultaneously accountable to the university they are appointed to, the teaching hospital they work for and their profession. CAUT has set up a task force to review how faculty relations are governed at each medical school and whether or not appropriate safeguards and mechanisms are in place that will allow clinical faculty to fulfill their academic responsibilities without fear of reprisal from their employers. The CAUT task force described a number of reasons including legislative, cultural and financial that contribute to clinical faculty not having strong ties to representative bodies that will advocate for them, and buffer the costs of arbitration during academic freedom disputes.

Of particular concern is the variability in arrangements across medical schools regarding faculty academic appointments, remuneration arrangements and protection of academic freedom.
Enduring Issues Related to Medical Education Governance

An examination of the literature that pre-dates those included in this review notes that the problems identified are not new. In fact, many prominent medical educators have examined the critical issues facing medical schools and academic medical centres in Canada but also offered a new conceptual framework and recommendations for implementation, as it pertains especially to their mission, funding and organization (4).

Valberg and colleagues discussed the blurring of the boundaries between the missions and responsibilities of the various institutions involved and noted that “medical education has become increasingly linked with highly specialized clinical practices of clinical faculty members and the tertiary care functions of affiliated teaching hospitals” (4). They also noted that the organizational structure of AMCs is such that the lines of responsibility and authority are also blurred due to multiple sources of funding and thus impair the AMCs ability to effectively and efficiently implement its programmatic offerings. The authors offered that there is a need to re-examine the mission of the AMC to ensure that it includes: an explicit social contract focused on improving the health of the population; ensuring a population health perspective; and ensuring that the redefined mission balances between education, research and clinical services (4). They also advise that within this new framework there need to be a re-examination of the categories of appointment for clinical appointees in order to include roles such as, educator clinicians, investigator clinicians, clinician educators and professional service clinicians (4). Valberg and colleagues also recommend that the organization structure of the AMC needs to be re-examined to ensure that it includes the following: a collegial, participatory style of governance and management; proper accountability; promotion of professional career development planning; strategic alliances with other related institutions; and the incorporation of other health care professions (4).

Stoddart and Barer in their series on medical resource policies for Canada published in 1992 examined the current state of the academic medicine establishment. While they noted that AMCs through their education and research activities allow them to meet the future health care needs of the population, they also provide leadership on a variety of issues. Stoddart and Barer identify that “a fundamental problem with the mission of academic medical centres is that neither the public nor the representatives of the centres or their major funding agencies seem clear (much less in agreement) on the appropriate balance among the various roles” (19). They note that a major reason for this lack of agreement is the “absence of provincial (or broader) mechanisms by which all interested parties could develop and commit themselves to a “social contract” (19). Thus there remains a lack of clarity on the appropriate balance between the role of the AMC on the education for future physicians, as contributors to both basic sciences and clinical research, and as sites of tertiary and quaternary clinical care for patients. These issues have still hold relevance today as the next section will demonstrate.

Most Pressing Contemporary Concerns regarding Governance and Medical Education

Communities have problems and medical schools have departments…and that’s the problem. – Anonymous (20)
The organizational relationships among North American universities, medical schools and teaching hospitals are quite variable given local history, politics and economics, but are further complicated by the fact that clinical faculty rarely receive more than a fraction of their remuneration from their parent university (21). Most clinical faculty would be considered self employed and thus constitute an independent force as it pertains to the governance and corporate / economic arrangements that exist between universities and the hospitals. Ferris and colleagues describe that the “organizational structures range from operational aggregation – for example, a university, its medical school, and the teaching hospitals operate under one identity, to operational disaggregation – for example, a university, its medical school, and the teaching hospitals are governed more or less separately from each other” with variations in between (21).

Where the hospitals are autonomously governed, the collaboration with a university and / or medical school is typically codified in an affiliation or a partner agreement. Furthermore, practice plans may be autonomous from, or controlled all or in part by, either the university or the hospital (21).

This need to reconsider traditional governance structures is additionally supported by Watson, who notes, “a department-based governance structure was helpful for the growth of the research and clinical enterprises of the AMC, and was natural as long as medical knowledge was predominantly discipline-based” (11). Kenneth Berns, speaking of the education mission, in his 1995 AAMC chairman’s address said, “The days in which all of this could be accomplished in an ad hoc manner by simply summing the independent offerings of departments have clearly passed” (11).

The significant changes in organization (managed-care), delivery, and financing have also required the attention of both academic medical centers (i.e., medical schools and their owned or closely affiliated teaching hospitals) and their parent universities to find acceptable solutions. Many of the university-wide structures and policies that may have previously provided the medical school with the ability to accomplish its missions of education, clinical service and research are now viewed as being inflexible given the recent challenges placed upon the medical education system. On the other hand, many within the university view the medical school as having distant governance and administrative oversight, which is concerning for some given their sizable budget.

Medical schools are unique institutions in that they need to serve traditional missions of education, research and clinical care, but in order to meet the challenges that they currently and will face in the future, there is a need for them to become innovative to develop and implement new strategies. Griner and Blumenthal suggest that medical schools will need to:

…Experiment with educating students, interns, and residents in new settings; they must support and participate in new types of research, such as clinical and outcomes studies in community-based settings, and they must abandon old habits that reduce productivity, not only in clinical but also in academic area. The problem facing medical schools, however, is that neither the schools nor their faculties are organized to respond to these challenges (10).
Nonnemaker and Griner visited 14 medical schools from 1996 to 2000 and reported on the strategies being used to resolve issues that arise between medical schools and their parent universities (9). These strategies have included changes in the governance, organization and management of the medical school, through either corporate restructuring or the reorganization of the existing governance structure to establish a closer relationship between the medical school and the parent university, involving such things as “unified authority for health affairs, reengineered administrative systems, and increased autonomy in decision making” (9).

The status of governance within academic medical departments from several perspectives, including whether or not universities are autocratic by nature and whether there are generally accepted guiding principles for academic governance have been explored by Willing and colleagues (22). The authors conclude that academic medical departments are not “democratic” despite the fact that the universities they are embedded within “are characterized by participatory, decentralized and democratic governance arrangements” (22). Public universities, including those in Canada and the United States, as noted earlier, derive their governance structure from a variety of laws, documents and traditions. Typically, many of the principles regarding governance of a university are in a faculty constitution.

Willing and colleagues identify that “historically, the power of department chairs has been nearly absolute” and that by “concentrating such power in a single individual provides both opportunity and temptation to govern unilaterally” (22). The implications of such concentration of power grows when Chairs also hold a number of senior clinical appointments in academic health care settings as noted above. In the context of faculty relations, the authors note that very often the consultative process with faculty members and other stakeholders “is given lip service or bypassed altogether”, and this can have significant negative effects on both morale and loyalty (22). The authors further explore the issue of faculty governance by referring to the Statement on Government of Colleges and Universities published by the American Association of University Professors (AAUP).

[The AAUP] acknowledges the authority of university administration and governing bodies while calling for faculty participation in concerns such as planning, resource allocation, and budgeting. It calls for faculty participation at all levels of government at which faculty responsibility exists, such as curricula, academic standards, research, appointment, promotion, tenure, and dismissal (22,23).

Willing and colleagues conclude that while there has been “a long-standing tradition supporting faculty self-governance within the larger academic community”, there is “an equally strong tendency toward autocracy within academic medicine” (22). They caution that this tendency is a tradition and not a mandate, arguing that there is opportunity to rethink the realities of governance of medical schools, rather than continuing, as they suggest, to trend away from the larger university body on the issue of self-governance and faculty rights.

Another aspect of governance in medical schools is seen through the typical approach to managing medical curricula. Kaufman notes, that traditionally, the departments have played the key role in developing and implementing the curricula, with a centralized Office of Medical
Education and a Curriculum Committee overseeing the scheduling, room availability and progress of students (20). Medical schools that have attempted to integrate their curricula across departments have needed to increase the authority of the centralized Curriculum Committee, with a subsequent diminishment of the role of departmental chairs in determining and controlling the UGME program.

The example of the reinvention of the Academic Health Center (AHC) after the failed merger attempt at the Pennsylvania State University identifies nine critical success factors for transformational change (see Appendix 1) (24). The leaders of the AHC encountered a climate of readiness for a transformational change among the staff and faculty members after the de-merger that occurred in July 2000. This experience was described in the article “as close as you can get to building a new academic health center, without starting from scratch” (24). The authors note that reinvention on this scale is a complex multidimensional process and provide additional description to explain each of the nine critical success factors. One of the key factors in this example was the establishment of the unified campus teams governance structure, which both removed the departmental barriers or silos, and allowed the development of high performance in 8 areas (academic, clinical, research, strategic relations, human resources, finance, physical resources, and information resources) that promoted collaboration and greater participation with team-based leadership. “Leadership is understood and practiced increasingly as an organizational capacity generated as people work together to improve the entire institution” (24).

These and other papers have identified that the mission, funding and organization of AMCs must be re-examined to address the challenges that these institutions are facing. But the question remains, why after all these reports and papers have been published, do we see only minimal or superficial change and not the broader more systemic change advocated for by medical educators to address these deeper challenges?

Medical Education and Change

Medical education has served as a valuable mechanism to shape the current and next generations of physicians. The medical schools in Canada have been impacted dramatically by the work of Abraham Flexner in 1910 when he, through the funding of the Carnegie Foundation, proposed a framework for medical education in North America that has endured until now (13,25,26).

What had been for well over a century a frontier-oriented system, characterized by the methods of apprenticeship and a proprietary (private-for-profit) type of organization, was replaced by a combination of extended academic training within the laboratories and class-rooms of the university graduate school and bedside clinical teaching in university hospitals. Until today, three-quarters of a century later, this general form has persisted, producing an elite corps of highly trained medical specialists who are prepared to practice a science-based, technologically complex type of medicine (12).
The sociologist Samuel W. Bloom goes on to describe that North American medical schools are composed of two separate segments, the basic sciences and the clinical fields, each allotted half (2 years) of the teaching/learning time. Upon successful completion of this 4-year “undergraduate medical education (UGME)” program, the student is granted an MD degree. This model has served as the basis of medical education in North America since 1910. In Canada, the UGME period followed by a mandatory “postgraduate medical education (PGME)” training in family medicine (2-year program), or other specialist programs (between 4 – 6-years), in order for the trainee to obtain licensure to practice.

During the past 100 years Canada has continued to promote advances in medical education through its significant and unique contributions. These have included problem based learning curriculum, the Educating Future Physicians of Ontario (EFPO) Project in the 1980s, and the development and implementation of the CanMEDS Physician Competency Framework (27-29).

The CanMEDS Framework were adopted by the Royal College of Physicians and Surgeons of Canada (RCPSC) in 1996 and have been subsequently reviewed extensively, updated and re-launched in 2005 (29). The CanMEDS Framework is organized around seven roles (Medical Expert, Communicator, Collaborator, Health Advocate, Manager, Scholar and Professional) that were derived through public consultation as a means of describing essential physician competencies. To date, the CanMEDS Framework has been integrated into the Royal College’s accreditation standards, objectives of training, final in-training evaluations, examination blueprints for postgraduate medical education (PGME), but also the Maintenance of Certification program of the Continuing Professional Development (CPD) system. Recently, there have been localized discussions centered upon introducing the CanMEDS Framework into the undergraduate medical education (UGME) system. In fact, some undergraduate programs have proactively adopted the CanMEDS framework, aligning curriculum learning objectives and adjusting assessment forms to reflect the seven CanMEDS roles.

With the adoption of the CanMEDS Framework into PGME training programs across the country, a significant investment of time, funding, resources, infrastructure and also faculty development/professional development were required to change an entire system of education that had evolved over decades. The reactions of both faculty members and PGME trainees to the changes were not consistent throughout the country, as some were strongly supportive of the concepts and directions, while others have been vehemently opposed. Griner and Blumenthal point out, that:

The problem facing medical schools, however, is that neither the schools nor their faculties are organized to respond to these challenges…A number of academic health centers have concluded that this situation is unsustainable and have begun to reform faculty governance and management by making changes to strengthen the commitments between medical schools and their faculty, changes designed to serve core missions more effectively and to enlist faculty in that effort (30).

It is important to study the successes and challenges in implementing this CanMEDS into PGME training programs at the various medical schools as a way to formulate a more coherent
Bloom has written several key articles on the issues change in medical education, but more specifically about the resistance to change.

The practice of medicine, it is agreed by professional and nonprofessional alike, has changed radically in modern times and continues to change at a dizzying pace... A parallel transformation in medical education would be expected because medical schools, especially in the United States, determine who shall study medicine; as the major custodians of both basic and clinical medical research, they also determine what future physicians are taught. Yet it is agreed widely by medical educators that medical education has changed very little (8).

Bloom also quotes R. Ebert, a former Dean of Harvard University Medical School, who in 1977 stated, “In whatever way the education of the physician is viewed, it is remarkable how little change has taken place in the fundamental organization of medical education over the past half century” (12).

Why has the medical education system changed very little? Bloom explores the apparent paradox that exists between the profession and “its major socializing institution” (the medical school), which becomes even more evident given the strong desire and commitment for change that has been shown by medical educators (8). In fact there is a strong history of leaders of the profession sanctioning mandates for change at frequent intervals, yet as Bloom notes, “how can one explain this history of reform without change, of repeated modifications of the medical school curriculum that alter only very slightly or not at all the experience of the critical participants, the students and teachers?” (8). Bloom argues in his 1988 paper and similarly in a 1989 paper, that:

The structure of modern medical education was established 75 years ago for the purpose of incorporating the revolution in biomedical science; successful in that purpose, it added high-technology specialization as the main goal for clinical medicine. Preparation of physicians to serve the changing health needs of the society is asserted repeatedly as the objective of medical education, but (I will argue) this manifest ideology of humanistic medicine is little more than a screen for the research mission which is the major concern of the institution’s social structure. Education is secondary and essentially unchanging, even though brave ideological statements guide curriculum reforms that do little but mask the underlying reality (8).

Bloom refers to the 1998 World Federation of Medical Education (WFME) conference, which was held to determine the priorities for medical education. He includes a discussion on the eight interlinked propositions that he argues answers the following three questions, which were examined in a specially commissioned report. “Why are medical schools what they are
today? Why is change in these schools all but impossible? Why are innovations so taxing that innovators prefer to set up new schools?” (8,12). The eight interlinked propositions are listed in Appendix 3. Bloom begins his discussion in this paper by identifying the three critical factors that have contributed to the modern education of health care professionals and to the associate service institutions: “1) the establishment of health as a basic human right; 2) the rapid growth and institutionalization of the basic knowledge and technology of modern medicine; and 3) the organization of the physicians’ economic interests” (8). He argues that the division of the medical school into three faculties: basic scientists, specialized clinical scientists, and clinicians, was an unanticipated consequence of the 1910 Flexner Report. He goes on to argue that “Flexner intended to create a unified medical school, integrated within the university” but that this integration was never accomplished “because the university could not absorb the multi-organizational complex of laboratory science, clinical departments, and teaching hospital that constitutes the modern medical school” (8).

Thus the shift to the periphery of medical educators as faculty members in relations to the “big three” previously mentioned, in addition to the emphasis that has been placed on research and specialization as a means of incorporating modern medical science into medical education has resulted, as Bloom would argue, in the overwhelming of the educational purpose of the medical school. “Medical education,” Bloom critically writes, “has become a minor activity of the American medical school…other goals are more important, particularly research (and research entrepreneurship) and patient care (and family practice entrepreneurship)” (8).

Educational Change

Understanding educational change is difficult and this takes on particular significance in the area of medical education, where little research on this concept has been done. There is a growing literature on this subject of organizational change in general. While it is beyond the scope of this paper to review this literature we draw on Michael Fullan’s work to frame our literature analysis. Michael Fullan has published much on the process of educational change and the various factors that impact upon its success or its failure to produce lasting change, drawing from the Canadian context. For this reason we feel his work provides a good framework to consider the issue of medical education change in Canada.

In his book entitled The New Meaning of Educational Change, Fullan notes that one must have a clear understanding of the meaning of individual change in society at large before elaborating upon the subjective and then objective meaning of change (31). He identifies that educational change, just like change in general can be voluntary or involuntary. That is, change is considered voluntary when we actively participate in or perhaps even initiate and provide leadership to change our current circumstance that may be the source of dissatisfaction, inconsistency or intolerability. In contrast, Fullan describes involuntary change as often being imposed upon individuals either by natural events or through a process of deliberate reform.

Subjective Reality of Educational Change

Fullan argues, that subjectively, educational change is multidimensional and it revolves around three key concepts that Timperley and Parr explore in their research: beliefs and values;
knowledge and skills; and outcomes (31). Fullan draws two basic conclusions, which are applicable to the medical education system (31). For change to be successful, there must be a concerted effort to develop the appropriate infrastructures and processes that result in the engagement of faculty to actively participate in the creation of new knowledge, skills and understandings. Secondly, there is a deeper meaning that must be addressed when instituting new approaches to teaching and learning in order for change to be successful. Fullan notes “restructuring occurs time and time again, whereas re-culturing is what is needed” (31). While this statement was made while considering the education profession as a whole, it is also very appropriate for the medical profession specifically, which is highly traditional, and often “glacial” in its speed of change, much to the chagrin and frustration of younger members of the profession. Re-culturing, that is, the questioning and changing current beliefs and habits, requires significant time, concerted efforts and strategic plans in order to be successful.

Objective Reality of Educational Change

After noting that subjectively, educational change is multidimensional, Fullan suggests “It is possible to clarify the meaning of an educational change by identifying and describing its main separate dimensions” (31). He goes further to elucidate the three components or dimensions that are critical to the successful implementation of a new program or policy, which include: (1) the possible use of new or revised materials (such as curriculum materials or technologies); (2) the possible use of new teaching approaches or methodologies (such as new teaching strategies or activities); and (3) the possible alteration of beliefs (that is, pedagogical assumptions and theories that are integral to the proposed new policies or programs) (31). Fullan views that all three are “necessary because together they represent the means of achieving a particular educational goal or set of goals” (31). That is, in order for the proposed change to have a chance of affecting outcomes, it must address all three dimensions.

The Change Leader

For educational change to be successful in shifting culture and values, it is vitally important to have change leaders in place within the system. Lindberg notes that “strong leaders are needed to facilitate change…[to] develop plans and initiate action, without which the vision for change, however promising, is likely to atrophy” (32). In the educational system, the literature often will identify the key role that principals can play in creating the “right” environment to desire and support change, but also who often lead by example. The leadership style of the change leader is an important factor that can determine the success or failure of proposed change. Collins defined the effective leader as one “who catalyzes commitment to a compelling vision and higher performance standards,” while the executive leader is one “who goes beyond performance standards and builds enduring greatness” (33). Fullan in his earlier work on “The Change Leader” and then refined upon in “8 Forces for Leaders of Change”, he identifies and expands upon the eight essential components or forces that characterize leaders of change in the knowledge society: (1) engaging people’s moral purpose; (2) building capacity; (3) understanding the change process; (4) developing cultures for learning; (5) developing cultures
of evaluation; (6) focusing on leadership for change; (7) fostering coherence making; and (8) cultivating tri-level development (2,33). He argues that change leaders who share these characteristics must ensure that they create a supportive social but also educational environment, which will facilitate the individual learn in their context (that is, learning that is specific, situational and social) (33). In a more explicit way, Fullan argues:

> Enough research on implementation has been done in the past 35 years for us to say that if you don’t know the eight guiding principles / drivers of change (in the sense of being able to use them for insight and action), even the best ideas will not take hold. Without change knowledge, you get failure (2)

Fullan’s work can be very useful in considering how evolving organizational priorities can be fulfilled through organizational structures. Our search has not yielded any research to date that has directly extended Fullan’s model to the context of medical education. Lindberg was the only author we identified who looked at change specifically in the context of medical education. As a starting point, she applies Lewin’s model, which explores change as a three-step process. (32). Lewin’s model included: Stage 1 where leaders plan the innovation and create a climate for change; Stage 2, they institute the change; and Stage 3, the leaders reinforce the new order. Having found his model inadequate, Lindberg draws upon Fullan to tackle the nuances of effecting change. It is important to note that Lindberg never fully integrated Fullan’s model of change into her study methodology, even though she used his principles to make sense of the data collected with this project. There is obviously an opportunity to formally engage in research utilizing Fullan’s model of change in context of medical education.

**Removing Barriers to Change**

Watson notes in his article that “the greatest challenge to the successful future of medical schools is clarifying the roles of departments, particularly in relation to research institutes and the faculty group practice” (11). Watson further notes:

> Considering the issues involved, the question looms large whether the current organization of academic administrative units and departments is outdated and possibly needs to be replaced. The creation of a new structure for AMCs [Academic Medical Centres] is a serious undertaking and will encounter support as well as resistance (11).

These concerns are extremely valid given the strong history that is often behind the structures that have evolved in parallel in both the AMCs and medical schools. Even to suggest the creation of new units and departments, such as inter-disciplinary departments, within these organizations is met with great resistance given their potential to set precedence.

Reforming faculty governance will not succeed if the result is to distance faculty from the administration of schools or to reduce their loyalty to their institutions.
To prevent this, the increased accountability of faculty to schools must be balanced by effective accountability of schools to their faculty (10).

Steven Rosell in his report on renewing governance identifies several key areas that must be addressed to produce effective leadership and governance (1). The key areas that pertain to our discussions include: 1) creating shared meanings and frameworks; 2) developing a shared set of assumptions, perceptions, meanings and beliefs; 3) establishing a culture that view change as a continuous process; 4) recognizing the importance of a continuing process of dialogue, which enables people to create innovative solutions to particular problems; 5) governance needs to be built more around people than institutions. Through a continuous process of dialogue and learning, institutions, structures and roles are shaped and reshaped; 6) real dialogue must precede decision-making in order for this process to be coherent and productive; 7) develop shared frameworks to learn from others experience; and 8) develop a more inclusive and vibrant national dialogue (1). While this report is written from the perspective of senior executives from the private sector, organized labour, voluntary sector and Canada’s federal and provincial governments, these key areas also apply to the issue of governance in Canada’s medical education system.

**Implications for Undergraduate Medical Education in Canada**

1) Create a vision relevant to medical education in the 21st century. And by extension, to develop organizational structures that can best serve all the missions of the modern AMC (i.e., education, research and clinical care), by restoring the standing of education in the priorities of academic medicine.

2) Consider the experience of American Academic Medical Centers (AMCs) that have explored new governance structures to remove departmental “silos” and that facilitate the development and support of interdisciplinary and perhaps interprofessional collaboration. There is a need to clarify the roles of departments, particularly how they relate to research institutes and faculty members. Is the current, albeit traditional, organization of academic administrative units and departments outdated and should it be replaced? If so, what should this structure look like, and how can it be developed and implemented in such a way to maximize its support and minimize resistance?

3) Explore the development and establishment of new models of leadership and governance that are: more distributed (involving more people, especially students / trainees), more learning-based, more adaptive and more effective and efficient.

4) Consider how models of change, such as those described by Fullan and Lindberg can facilitate medical education restructuring.

5) Study the successes and challenges in implementing this CanMEDS into training programs at the various medical schools, in Canada and abroad, as a way to formulate a more coherent model for implementing such large-scale change in the future, for example, at the undergraduate level here in Canada.
6) Gather information on the governance models of Canadian medical schools utilizing the eight characteristics of good governance as a framework. This would be derived through a systematic process of interviewing key informants from each medical school in order to access non-public documents for review, but also to identify local strengths and weaknesses given the local variations in governance structures and processes as determined by provincial charters or acts.

Conclusion

Much of the current public and professional debate surrounding the profession of medicine is taking place against a background of significant changes in the delivery of healthcare, medical education, inter-professional collaboration and increasing involvement of governments and private-sector industry. “The ability of a society or an organization to prosper in this world of rapid change will depend on developing forms of leadership and governance that can operate effectively across the shifting boundaries of the information society and new economy” (1). Physicians must demonstrate leadership and ensure that the system that we have created and operate within is responsive to societal concerns and also become engaged with these critical discussions that have the opportunity to shape and mold the future of medicine. Fullan argues “we must go beyond superficial knowledge of the key concepts and move towards a deeper commitment to developing knowledge, skills, and beliefs related to being change agents in collaboration with others” (2).

Medical schools in Canada, as they do in the United States, are caught balancing the various aspects of their traditional missions, that is, research, education, scholarship of teaching and learning, and the provision of highly specialized health care services (25).

“For several decades now, members of the academic medicine community have recognized that as the size of faculties has increased, participation in the education of medical students has become a marginal activity for a large percentage of the medical school faculty…Medical schools of the 21st century should rediscover their original reason for existence. Simply stated, they, and only they, have the mission of selecting and educating the next generations of physicians responsible for the care of the public” (11).

There is a need to clarify the roles of departments, particularly how they relate to research institutes and faculty members and for us to explore whether the current, albeit traditional, organization of academic administrative units and departments are outdated and should be replaced. Watson suggests that we need to answer the following question, “how can education be best provided in a new AMC organizational and governance structure” needs to answered?” (11). He goes on to suggest considering,

“a centralized structure – an education center – overseeing teaching and learning, for providing logistical support for implementing the education programs, and for pursuing educational research…[and the] dean must remain responsible for the education mission, and personally involved in its vision and goals. The dean
delegates education management to a senior associate dean, who has responsibility for the mission, and the authority to implement decisions” (11).

Flexner’s critique of medical education in 1910 arguably gave momentum to a process of change that had already been underway in North America that resulted into a revolution, which swept across the continent (25). Since then, both medicine and the science that underpins it have made significant advances while the traditional structures and processes that comprise the medical education system have essentially remained unchanged. Bloom in his work identifies that despite significant changes in clinical practice in medicine over the last half of the 20th century, the process and structure of medical education has been relatively unchanged (12). The role of education in the medical school, Bloom argues, is secondary to clinical service and research, which have been the major forces in defining the structure and culture of medicine (8,12). The governance model of the modern medical school is incapable of meeting the needs of the medical profession and more importantly, the needs of society for the next 100 years. Coupled with inadequate resources and infrastructure, an overstretched and underappreciated faculty, and relatively poor resources to provide needed faculty development to assist in the creation of curriculum and new assessment, and increasing clinical loads, it has been difficult to shift the system to reflect what we now know about teaching and learning. While flexibility and the freedom to promote and implement change may have been Flexner’s message, as Cooke and colleagues suggest, practically speaking, it has been difficult to see broad evidence of this (25). Still there are positive examples of change in medical schools, where as Lindberg describes, “the vision that launches the innovation is clear and the plan for change is flexible, widely communicated, and inclusive rather than exclusive” (32).

Fullan notes that “real change involves changes in conceptions and behaviour, which is why it is so difficult to achieve…changes in beliefs and understanding (first principles) are the foundation of achieving lasting reform” (31). As we see in Fullan’s work, governance is only but one component that is necessary to ensure the successful development and implementation of educational change. However, as we recognize from what little literature there is on the topic, governance is the one component that has essentially remained unchanged since the release of the Flexner Report in 1910. Medical educators need to address the issue of governance in UGME here in Canada to ensure that we are positioning Canadian medical schools today to meet the needs and challenges for tomorrow.

Appendix 1

Snapshot of Canadian Medical Schools

Appendix 2

**Eight Characteristics of Good Governance for UGME in Canada**

*Derived from the UNESCAP Report on “What is Good Governance?” (3)*

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participatory</td>
<td>Participation needs to be an informed and organized process that occurs through direct or intermediate institutions or individuals.</td>
</tr>
<tr>
<td>Consensus oriented</td>
<td>Mediation of the different interests in society is required to reach to achieve broad consensus. This will require the understanding of the historical, cultural and social contexts of a given organization or institution.</td>
</tr>
<tr>
<td>Accountable</td>
<td>All organizations and institutions must be accountable to the public and to their institutional stakeholders (educators and learners). They must be accountable to those who will be affected by its decisions or actions.</td>
</tr>
<tr>
<td>Transparent</td>
<td>The development, implementation, and enforcement of decisions and policies must be done in a manner that follows the rules and regulations of the organization and institution. Information is freely available and directly accessible to those who will be impacted by those decisions and policies and their enforcement.</td>
</tr>
<tr>
<td>Responsive</td>
<td>Organizations and institutions must develop structures and processes that serve all stakeholders and that address their evolving needs, within a reasonable timeframe.</td>
</tr>
<tr>
<td>Effective and efficient</td>
<td>Organizations and institutions produce results that meet the needs of society while appropriately utilizing available resources in a sustainable manner.</td>
</tr>
<tr>
<td>Equitable and inclusive</td>
<td>All the members of the organization or institution must feel that they have a stake in ensuring its well-being. They must also ensure that all groups, but particularly the most vulnerable, are given the opportunity to improve or maintain their well-being within the organizations or institution.</td>
</tr>
<tr>
<td>Follows the rule of law</td>
<td>There must be impartial enforcement of fair legal frameworks to ensure the full protection of all members of the organization or institution. This includes a clear appeals process and structure for all members.</td>
</tr>
</tbody>
</table>

Appendix 3

**Nine Critical Success Factors for Organizational Transformation of the Academic Health Center** (24)

1) Performing a campus-wide cultural assessment and acting decisively on the results.
2) Making values explicit and active in everyday decisions.
3) Aligning corporate structure and governance to unify the academic enterprise and health system.
4) Aligning the next tier of administrative structure and function.
5) Fostering collaboration and accountability – the creation of unified campus teams.

6) Articulating a succinct, highly focused, and compelling vision and strategic plan.

7) Using the tools of mission-based management to realign resources.

8) Focusing leadership recruitment on organizational fit.

9) “Growing you own” through broad-based leadership development.

Appendix 4

Bloom’s Eight Interlinked Propositions (8)

1) Medical education, much like medicine itself, tends to be perceived primarily as an intellectual activity.

2) The curriculum is assumed to be the educational instrument that channels and controls the teaching of knowledge, skills, values, and attitudes.

3) Reform programs assume a consensus of faculty value orientation that does not account for the differences among educators according to their place in the social structure of the institution.

4) The modern medical school has grown to include the generic characteristics of large, complex social organizations in contemporary industrial society.

5) The crisis of medical education today is based in the clash between ideology and social structure.

6) The educational values oriented toward teaching humanistic and competent physician behavior are subordinated to the bureaucratic requirements of the modern medical center’s corporate structure.

7) The high-technology specialization orientations, already well entrenched, have been reinforced, crowding out the community-oriented primary care perspectives that were the focus of educational goals between 1965 and 1975.

8) The efforts to adapt to the real conditions of modern medicine will address the structural problems of organization, the sources of authority and allocation of resources, the power centers of decision-making.
Annotated Bibilography


   This statement is a revised version of the original document that was published in 1966 to discuss the importance of shared responsibility and cooperative action among the components of the academic institution as seen through the perspective of the AAUP.


   Bloom has written several key articles on the issues change in medical education, but more specifically about the resistance to change. In this paper, the author explores the content and structure of medical education, before describing eight interlinked propositions that answer the following three questions. “Why are medical schools what they are today? Why is change in these schools all but impossible? Why are innovations so taxing that innovators prefer to set up new schools?”


   The author discusses the same issues he mentions in the 1988 articles, but frames his discussion for a medical education audience.


   This report explores the issue of academic freedom as it pertains to clinical faculty. In this report, academic freedom includes the governance mechanisms that regulate the functions of the workplaces of clinical faculty.


   The authors provide a description of the governance structure of the University of Toronto and then modify McDonald’s concept, to identify four operational features of good governance: 1) appropriate oversight; 2) sound policies and guidelines; 3) effective implementation of policies and guidelines; and 4) continuous evaluation and feedback.


   The author discusses the five essential components characterize leaders in the knowledge society: moral purpose, an understanding of the change process, the ability to improve relationship, knowledge creation and sharing, and coherence making. Fullan develops this model further in the subsequent article.

The author identifies and expands upon the eight essential components or forces that characterize leaders of change in the knowledge society: (1) engaging people’s moral purpose; (2) building capacity; (3) understanding the change process; (4) developing cultures for learning; (5) developing cultures of evaluation; (6) focusing on leadership for change; (7) fostering coherence making; and (8) cultivating tri-level development.


The author notes that one must have a clear understanding of the meaning of individual change in society at large before elaborating upon the subjective and then objective meaning of change (31). He identifies that educational change, just like change in general can be voluntary or involuntary. This book chapter then explores the subjective meaning and objective reality of educational change and the critical related issues of shared meaning and program coherence.


This paper explores the challenges that medical schools are facing to meet the demands of a competitive marketplace while still meeting their mission of research, education and highly specialized clinical care.


Through a comparative study of ten centers, the authors explore the strategies that are being employed by academic medical centers to preserve their missions in the face of changing demands and declining resources.


The author explores models of higher education governance and expands upon the policy network approach to governance.


The authors explore the major historical developments in the evolution of Canadian university governance and provide an overview of university governance in Canadian higher education.
   The author describes leadership and governance issues in implementing curricular reform at the eight medical schools of the Robert Wood Johnson Foundation’s project, Preparing Physicians for the Future: A Program in Medical Education. He focuses upon governance structures and discusses the role of curriculum committees, the role of students, and the role of centralized education budget in instituting change at these schools.

   The authors discuss the failed merger that occurred at Penn State and the lessons that were learned in the reinventing of the Academic Health Center (AHC). They identify nine critical success factors for organizational transformation of the AHC.

   The process of change experienced at the eight medical schools of the Robert Wood Johnson Foundation’s project, Preparing Physicians for the Future: A Program in Medical Education, is described using Lewin’s three-stage model as a framework. The author also draws upon Fullan’s model of educational change to describe the decisions, activities, events and issues that influenced change at these schools.

   The authors visited 14 medical schools from 1996 to 2000 and report on the strategies being used to resolve issues that arise between medical schools and their parent universities. These strategies have included changes in the governance, organization and management of the medical school, through either corporate restructuring or the reorganization of the existing governance structure to establish a closer relationship between the medical school and the parent university.

   This report highlights the need for renewing governance and identifies nine key findings. The members of the roundtable included senior executives from the government, private sector, organized labour, and voluntary sector.

   This document discusses the concepts of governance and identifies 8 major characteristics of good governance. While written to describe governance at the governmental level, it also has applicability to organizations and institutions.
The author discusses the traditional mission of the medical school and the shift to the periphery of education in contrast to research and clinical care. He explores the possible explanations for this shift and offers suggestions to help medical schools rediscover their focus on education.

The authors examined the status of governance within academic medical departments from several perspectives, including whether or not universities are autocratic by nature and whether there are generally accepted guiding principles for academic governance. They identify that “historically, the power of department chairs has been nearly absolute” and that by “concentrating such power in a single individual provides both opportunity and temptation to govern unilaterally”.

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La gestion du changement et le leadership en éducation médicale

Résumé

Les facultés de médecine, de par leur rôle de formation, de recherche et d’institution ayant de l’influence, doivent contribuer à la capacité de répondre aux besoins sociétaux changeants. Elles se doivent d’exercer un leadership afin de préparer les médecins aux pratiques innovatrices (travail en équipe, médecine basée sur les données probantes, approche centrée sur le patient…). Pour réussir des changements aussi complexes de culture et de façon de faire, les facultés doivent favoriser la création de réseaux et de partenariats avec les différents détenteurs d’enjeux liés au système de santé afin d’élaborer ensemble une vision commune et des politiques de santé et initier les changements nécessaires à la formation médicale. Des leaderships individuels et collectifs sont nécessaires pour y arriver. Le leadership est décrit comme « l’exercice, à la fois individuel et collectif, d’influence via l’engagement plutôt qu’en dirigeant et contrôlant » (Mintzberg). Le leadership crée la vision de l’avenir, clarifie les enjeux, établit les stratégies et fait en sorte de faire bouger les gens grâce à la communication, l’engagement et la création d’équipe et d’alliances : il motive et inspire. On peut distinguer le leadership individuel (la vision traditionnelle de leadership) qui crée une relation verticale entre le leader et ses disciples et le leadership partagé (une vision plus récente) qui établit plutôt une relation horizontale entre partenaires. Ce dernier peut être défini comme « un ensemble de relations interpersonnelles qui maximise les capacités de ses membres à contribuer efficacement et à apprendre et s’adapter alors que l’environnement organisationnel est en constant changement ». L’intégration de nouvelles pratiques visant à répondre aux besoins locaux nécessite que les médecins en exercice exercent un leadership dans leur milieu professionnel et ait une bonne connaissance du système de santé et de ses enjeux. Ce leadership doit être surtout exercé au niveau des individus, des groupes ou du microsystème. Ce ne peut pas être qu’un leadership d’autorité; en effet, le leadership partagé de par sa nature horizontale et son accent sur la mise en commun des compétences aident à améliorer le fonctionnement des équipes. Les médecins doivent pouvoir se former au leadership et à la gestion, compagnon nécessaire du leadership. Les médecins enseignants doivent aussi exercer un leadership au sein de leur institution et réseau afin d’implanter au sein des facultés et dans les programmes de formation les modifications nécessaires pour préparer adéquatement les médecins aux pratiques changeantes et au leadership que cela nécessite. Par contre, la littérature sur le changement montre que son implantation n’est pas sans difficulté. Il faut une vision claire du changement souhaité, communiquer cette vision, s’assurer que le fonctionnement et la structure de l’organisation soient alignés en support au changement visé et, enfin, évaluer les résultats. Chaque faculté devra exercer un leadership externe pour faire partager la vision de ces membres et un leadership interne pour implanter localement cette vision commune; un leadership aussi pour obtenir les financements requis.
**Thèmes majeurs identifiés**

Les besoins changeants de la société incitent la culture médicale à s’orienter vers des valeurs plus collectives (travail en équipe, réseau, partenariat…).
Les facultés de médecine ont un rôle central de leadership à jouer pour initier, favoriser et supporter les changements requis.
Deux types de leaderships sont utiles; le leadership individuel (habituellement vertical) et le leadership partagé (plutôt horizontal).
Les médecins en exercice doivent exercer un leadership dans leur milieu afin d’implanter de nouvelles pratiques (notamment la pratique en équipe, l’approche centrée sur le patient…).
Les facultés de médecine et les enseignants doivent favoriser l’émergence de leaders et enseigner/ faire apprendre les savoirs, habiletés et attitudes nécessaires à l’exercice du leadership et de la gestion en commençant dès le prégradué.

**Conclusions et orientations**

Face aux changements sociétaux, les étudiants doivent être formés afin de comprendre les nouvelles pratiques (travail en équipe, approche centrée sur le patient…) et de pouvoir agir à l’intérieur des réseaux, les créer au besoin et les faire fonctionner. La maîtrise d’habiletés de gestion devrait donc être développée en démarrant dès le niveau des études médicales prégraduées.
Les facultés de médecine doivent effectuer des recherches en éducation afin de trouver les méthodes de formation et d’évaluation les plus efficaces.
Les facultés de médecine doivent nourrir, supporter et transmettre des valeurs et habiletés de leadership et faciliter/promouvoir l’émergence de leaders et cela en commençant tôt dans la formation
Un leadership devra être exercé pour mobiliser les ressources humaines et financières requises pour induire et soutenir les changements visés.

**Meilleures pratiques et innovations** (pas d’innovations spécifiques identifiées dans cet article sauf… des cours/ateliers offerts aux praticiens sur le leadership médical (McGill, U of T, AMC…).
L’évolution des besoins de la société nécessite d’apporter des changements au système de santé afin qu’il réponde plus adéquatement à ces besoins. Or, les Facultés de médecine sont elles-mêmes des acteurs de ces changements en améliorant la santé des Canadiens via la formation des professionnels, la recherche et en usant de leurs influences. Ce document examine le processus qui peut être mis en place pour susciter, accompagner ou gérer ces changements dans le domaine de l’éducation médicale et de la pratique clinique à partir du concept de leadership. « Le leadership est à la fois une pratique individuelle et collective d’influence à partir de l’engagement plutôt que de l’ordre et du contrôle » [1].

Nous examinerons dans un premier temps dans quelle mesure les Facultés de médecine doivent exercer un leadership. Dans un second temps, nous identifierons à partir de la littérature sur le leadership les différents modèles de leadership existants afin, par la suite, d’en déduire les formes de leadership qui peuvent favoriser l’implantation de changements en éducation médicale. Nous nous attacherons plus spécifiquement au leadership des Facultés de médecine, au leadership clinique ainsi qu’au leadership des éducateurs. Enfin, nous aborderons le problème de l’implantation de changements dans les Facultés de médecine et ses difficultés.

**Méthodologie**

Pour une meilleure définition du sujet, nous avons recherché dans un premier temps les publications liées à la gestion du changement, au leadership et aux enjeux en éducation médicale au Canada, à partir de la littérature grise (communications, rapports, rencontres, conférences) issue des sites des organisations professionnelles médicales au Canada (AMC1, FCRSS2, RCRPP3, Collège des médecins de famille du Canada, Collège royal des médecins et chirurgiens du Canada, Collège des médecins du Québec, AFMC4). D’autres recherches ont été réalisées à partir des principales bases de données en santé (Medline, Embase, CINAHL et ERIC), des moteurs de recherche sur Internet (Google, Exalead) avec les descripteurs suivants : ‘Education médicale’ ‘Leadership’ et ‘Canada’ en se limitant aux cinq dernières années.

Dans un deuxième temps, afin de délimiter le sujet, nous avons orienté les recherches de la revue littérature sur le leadership des facultés de médecine et les modèles d’exercice du leadership, en limitant la recherche aux facultés de médecine à l’échelle mondiale. Les sources sélectionnées et analyses sont issues :

- Des rapports d’organismes de santé (Commission Romanow sur le changement, FCRSS)
- De bibliographies de publications pertinentes ou de revues de littérature

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1 AMC : Association médicale canadienne
2 FCRSS : Fondation Canadienne de la recherche sur les services de santé
3 RCRPP : Réseaux canadiens de recherche en politiques publiques
4 AFMC : Association des facultés de médecine du Canada
Les Facultés de médecine doivent-elles exercer un leadership?

Afin de s’adapter à l’évolution des besoins de la société, la culture médicale s’oriente vers des valeurs plus collectives qui promeuvent la coordination des soins et le travail en équipe [2,3]. Selon Tyrell [4], les changements que les Facultés de médecine auront à intégrer dans l’éducation et la recherche médicale incluent plusieurs éléments : une emphase plus grande sur la prévention plutôt que sur le traitement; des politiques de santé, une gestion et des soins basés sur des données probantes; une plus grande attention aux résultats de santé; la prise en compte en éducation des problèmes éthiques et légaux; l’intégration dans les cursus de formation médicale de la communication, du travail en équipe et des approches centrées sur le patient ainsi que des éléments de génétique et de génomique. Ces différents éléments nécessitent que l’éducation médicale s’oriente vers le développement d’équipes, de réseaux et de partenariats afin d’échanger les informations, de partager les connaissances et de coordonner les compétences et les pratiques. Ces partenariats peuvent se constituer entre la Faculté de médecine et les autres acteurs du système de santé comme les professionnels de la santé, les communautés, les instances administratives et les agences fédérales et provinciales qui interviennent dans les politiques de santé [5]. De la même façon, des partenariats entre les équipes cliniques et ces acteurs pourront se développer.

La recherche dans les sciences de la santé évolue également vers des valeurs plus collectives. Selon Frank [6], les futures tendances de la recherche en sciences de la santé sont la constitution d’équipes, de centres et de réseaux, l’interdisciplinarité, l’échange de connaissances et des partenariats de collaboration avec les utilisateurs de la recherche, une multiplicité des formes et des sources de financement et une plus grande complexité de la planification de la recherche.

Les Facultés de médecine pourraient également être au cœur d’un autre partenariat ou réseau, celui des porte-parole de la médecine académique. En effet, au Canada, plusieurs organisations se partagent, aux yeux du public et des politiciens, la représentation de la médecine académique (Association Médicale Canadienne, Collège Royal des Médecins et des Chirurgiens du Canada, Instituts de Recherche en Santé du Canada …) [4].

Dès lors, il est nécessaire, pour les Facultés de médecine, de bien définir leur rôle et leur place au sein du système de santé et parmi ces organisations représentant la médecine académique. Elles peuvent contribuer à la constitution de ces réseaux et de ces partenariats, participer à la construction d’une vision commune et à l’élaboration de politiques de santé et initier des changements qui passeront par l’éducation médicale. Les Facultés de médecine devraient exercer un leadership en agissant au sein de ces réseaux et partenariat.
Comment exercer un leadership

« Le leadership est à la fois une pratique individuelle et collective d’influence à partir de l’engagement plutôt que de l’ordre et du contrôle » [1]. Pour Mintzberg [7] pour qui le leadership est de l’ordre de l’inspiration, de la relation et de la démonstration plutôt que de la décision. Le leadership est associé au changement [8]. Dickson et coll. [9] définissent le leadership comme « la qualité recherchée pour nous guider au cours d’un processus de changement dans un environnement complexe dont l’avenir est incertain et où les valeurs sociales sont en évolution et en concurrence ». Le leadership produit le changement et le mouvement en établissant la direction; il crée une vision, clarifie l’ensemble, établit des stratégies et il permet l’alignement des personnes par la communication, l’engagement et la constitution d’équipes et de coalitions; il motive et inspire [10].

Les travaux sur le leadership se sont d’abord centrés sur l’individu et on a étudié les traits de personnalité, les habiletés, les qualifications et certains comportements des leaders [10]. Dans une revue de la littérature, Dickson et Hamilton [1] identifient comme qualités d’un leader la passion, la détermination, l’humilité, la capacité à se représenter le futur, celle de renforcer et d’inspirer les autres, de penser les systèmes, de re-questionner les pratiques existantes et d’avoir une pensée stratégique. Le développement actuel de la notion de leadership s’éloigne d’une conception du leader fondée sur ses capacités de contrôle et de gestion du risque [11]. De plus, le leader développe des relations clés à l’intérieur et à l’extérieur des organisations et crée de nouvelles façons de travailler ensemble [12]. Afin de placer son organisation dans la dynamique du changement, il doit également connaître les traditions [11]. Certaines études ont montré qu’un leader charismatique pouvait améliorer la motivation, la performance et la satisfaction des personnes et implanter une vision qui suscite l’enthousiasme [13]. Toutefois, on n’a pu identifier des traits et des comportements universels qui assurent un leadership performant [10].

La recherche conceptuelle et empirique sur le leadership a conduit à un modèle dit de leadership réparti qui est en plein développement et de plus en plus utilisé. Il consiste en un ensemble de pratiques [14] qui est répartie parmi les membres d’un groupe ou d’une organisation [15]. Il peut se définir comme l’ensemble de relations entre les personnes qui maximise leurs capacités à contribuer, à apprendre et à s’adapter à un environnement changeant [1]. Cette vision repose sur un apprentissage commun et sur une conception particulière de soi fondée sur l’interdépendance avec son environnement plutôt que sur l’indépendance; pour permettre ce type de relations, l’accent est mis sur la communication [15]. Le leadership réparti peut se composer d’actes individuels agrégés mais peut être également une action concertée émergeant d’une collaboration spontanée, de relations de travail intuitives ou de pratiques institutionnelles [16]. Dans ce dernier cas, le leadership n’est plus seulement un intrant au processus du travail en équipe, il en est également un résultat qui se traduit par de nouvelles connaissances et habiletés acquises par les membres de l’équipe [17]. Dans le leadership réparti, les influences et les rôles de chacun évoluent avec le temps [18].

Alors que le leadership individuel crée une relation verticale entre le leader et les disciples (followers), le leadership réparti établit des relations horizontales. Pour certains chercheurs, les
modèles verticaux de leadership et les modèles horizontaux de leadership réparti sont mutuellement exclusifs alors que pour d’autres, ils sont dépendants, un leader assurant le bon fonctionnement du leadership réparti [19,20]. De plus le choix entre ces deux types de modèles peut dépendre du contexte dans lequel évolue le groupe et de la position du groupe dans son cycle de vie [19].

Le leadership réparti étant un concept en plein développement, peu d’études ont évalué son existence et ses avantages; son opérationnalisation a varié selon les études [20]. Celles-ci ont montré ses effets positifs lorsque l’équipe est engagée dans des tâches complexes qui requièrent un haut niveau d’interdépendance, mais on ignore ses effets pour des tâches plus routinières [20]. Les études portant sur le leadership ont encore trop peu tenu compte des éléments du contexte organisationnel comme, par exemple, la culture, les buts, les processus, la disponibilité des ressources, la structure des organisations, ou encore le facteur temporel et de leurs impacts sur le leadership; souvent elles ne s’attachent qu’à un seul élément de ce contexte [21]. De plus, ces auteurs soulignent que, bien qu’elles portent sur le changement, les approches de recherche sont statiques au lieu d’être dynamiques.

Le leadership des Facultés de médecine

Les Facultés de médecine peuvent exercer un leadership individuel et/ou réparti au sein de partenariats et de réseaux avec les autres acteurs du système de santé et les autres porte-parole de l’éducation médicale au Canada. Selon Boelen et Boyer [22], elles doivent initier le changement ou instituer de nouvelles façons d’améliorer la santé car elles ont un avantage sur les autres institutions en ayant une expertise sur la santé humaine (connaissances du domaine et recherche dans le champ de la santé). Par ces différents types de leadership, elles peuvent guider ou participer à la création de ces partenariats et réseaux et de leur vision commune. Ce leadership leur permettrait de jouer un rôle de premier plan pour l’amélioration de la santé des Canadiens et des Canadiennes.

Une étude menée par Dickson et coll. [9] a permis d’identifier les caractéristiques individuelles du leadership tel qu’il est entendu par les acteurs du système de santé au Canada. Les Facultés de médecine pourraient donc veiller d’une part à assimiler ces caractéristiques à tous les niveaux de l’organisation tout en les transmettant à leurs étudiants et à leur corps professoral et, d’autre part, à travailler avec ces valeurs et les promouvoir dans les réseaux et partenariats dans lesquels elles seront engagées. Ces caractéristiques individuelles sont :

1) préconiser la bienveillance (caring) : le leader suscite et encourage l’engagement en faveur de la santé, agit avec compassion, respecte la dignité de tous et fait preuve d’équité et d’un sens de la justice

2) favoriser son propre épanouissement et celui des autres : le leader a une bonne connaissance de soi et d’autogestion, une bonne personnalité, il permet aux autres de progresser et crée des contextes stimulants

3) entretenir de bonnes relations avec les autres : le leader communique efficacement, met sur pied des équipes multidisciplinaires, établit des réseaux, coalitions, partenariats et évolue avec aisance dans les environnements socio-politiques.
4) **Obtenir des résultats** : Le leader élabore une vision commune et la transforme en action, à la responsabilité des résultats et attend la même chose des autres, il tient compte de l’amélioration de la qualité et des données probantes dans la prise de décision et gère les ressources de façon responsable et ingénieuse.

5) **Modifier les systèmes** : Le leader s’assure que les individus et les organisations comprennent la complexité des systèmes de santé, il mobilise les connaissances pour remettre en question les processus et orienter le changement, il pilote les changements et les coordonne.

La littérature dominante sur le leadership est relative aux organisations et au leadership en leur sein. Nous avons pu extrapoler, dans une certaine mesure, cette configuration à celles de Facultés de médecine au sein de réseaux et de partenariats et du leadership qu’elles peuvent y exercer. Mais selon les acteurs avec qui les Facultés travailleront, l’objet de leur collaboration et leur contexte, leur leadership pourra être effectif ou non et sa forme varier. De plus, chaque Faculté de médecine peut avoir un style de leadership qui lui est propre, non seulement à cause de la personnalité de ses leaders mais aussi à cause de son histoire et de son environnement particulier [23]. Nous n’avons pas trouvé d’études empiriques relatives au leadership des Facultés de médecine au sein de partenariats ou de réseaux. Les études sur le leadership au sein d’organisations nous donnent peu d’information sur les configurations possibles de leadership selon les caractéristiques des organisations. C’est pourquoi nous ne pouvons aller plus loin dans cet exercice d’extrapolation.

**Le leadership des médecins en exercice**


En Grande-Bretagne, ces nouvelles dimensions de la pratique médicale s’inscrivent dans une réforme des services de première ligne qui repose notamment sur le développement de la gouvernance clinique et le leadership des médecins en exercice [24-27]. La gouvernance clinique est un type de gouvernance reposant sur la responsabilisation des organisations de santé et « la création d’un environnement dans lequel l’excellence des soins cliniques peut se développer » [28]. L’implantation d’un leadership clinique est justifiée par le rôle central qu’a le médecin dans tout processus de changement dans le système de santé [29]. La gouvernance clinique peut ainsi s’avérer un meilleur instrument de changement que les réformes structurelles qui ont peu d’effets sur la pratique médicale [29,30]. De plus, Gillies et coll. [30], ont trouvé que des insuffisances en termes de leadership peuvent être la cause d’un mauvais alignement entre le médecin et le système de santé. Face à des attentes dont l’horizon est souvent à court terme, il est important de noter que le changement reposant sur le leadership clinique est plus lent que celui produit par des réformes structurelles [27].
Dans la gouvernance clinique, le médecin leader doit avoir une perspective systémique [11,31] en se percevant comme un élément clé du système de santé [5]. Il doit alors trouver un équilibre entre son autonomie clinique et une responsabilité collective par rapport aux objectifs du système de santé [24,27]. On attend du médecin leader qu’il prenne conscience de la variété des points de vue devant un problème auquel lui aussi fait face, qu’il implique et écoute les autres acteurs afin de créer une synergie [32]. Au Canada, les médecins leaders auront à promouvoir et travailler avec les valeurs de leadership qui caractérisent le système de santé canadien mis en évidence par Dickson et coll. [9] (leadership réparti, travail d’équipe, etc. tel que discuté précédemment).

Le leadership clinique peut se révéler un bon moyen d’aligner le système et le médecin à la même vision. Il ne peut être restreint à un leadership d’autorité alors que l’évolution de la pratique médicale s’oriente vers le travail en équipe et la multidisciplinarité. Par sa vocation horizontale et sa mise en commun des compétences, le leadership réparti s’avère pertinent pour améliorer le fonctionnement des équipes de travail [17]. Citant une étude de Batalden et coll. [33], Dickinson et Ham [29] soulignent que les microsystèmes cliniques performants dans les organisations de santé se caractérisent par la présence de plusieurs leaders, souvent un leader médecin, un leader infirmier et un leader administratif. Les Facultés de médecine auront donc à susciter, faire émerger ou transmettre des valeurs et des capacités de leadership à leurs étudiants.

Toutefois, l’implantation d’un leadership clinique dans le système de santé ne peut se faire indépendamment d’autres parties du système de santé. Il est nécessaire de penser le leadership aux niveaux de l’individu, du groupe ou microsystème (l’équipe qui implante le changement), de l’organisation qui doit établir la vision et assurer le support et la disponibilité des ressources, ainsi que de l’environnement plus large [34]. Cette perspective permettrait notamment qu’un de ces niveaux ne soit pas une barrière à un changement implanté à un autre niveau. Mais la difficulté d’articuler le leadership clinique avec son contexte peut s’avérer l’une de ses limites [35]. Selon Shortell [36], cette approche du leadership est exigeante, demande beaucoup de temps et l’organisation n’est peut-être pas prête pour ce genre de leadership - soit de la part de l’équipe dirigeante, soit de la part d’autres parties de l’organisation; mais il conclut que cette pratique pourrait s’implanter malgré ces difficultés. La Kaiser Permanente aux États-Unis est l’un des exemples d’institut qui s’est investi dans un leadership médical performant au sein de leur organisation en encourageant les initiatives de groupe; Dickinson et Ham [29] citent à ce propos les études de Crosson [37, 38]. Dès lors, la formation en leadership des médecins doit être accompagnée d’une formation en développement organisationnel [36]. Shortell recommande que les organisations ayant réussi l’implantation du changement à partir d’un leadership en développement organisationnel soient mobilisées comme sites de formation par les instituts de formation en leadership.

Le NHS a démontré l’impact des programmes de formation en leadership médical sur la performance de l’organisation et sur l’amélioration des soins de santé. Ces évaluations ont permis de sensibiliser les équipes médicales et engager les médecins au leadership organisationnel [39]. Des programmes de formation en leadership sont actuellement développés:

- Des formations universitaires au niveau post-gradué. C’est le cas du Danemark et des Pays Bas qui ont intégré le leadership comme une des compétences du futur médecin en exercice (compétences inspirées des rôles CanMEDS développés au Canada) [39].
- Des formations universitaires en leadership reliées au domaine de la santé à l’intention des médecins en exercice : McGill [40], Toronto [41], Royal Roads University [42] (Canada), Harvard School [43] (États-Unis)…
- Des formations données par les associations professionnelles pour le développement en leadership médicale canadienne : AMC [44], Leadersforlife [45]… proposant à ses membres médecins, des programmes de leadership qui prennent la forme d’ateliers, conférences, forums et autres formules utilisant Internet, c’est le cas de l’AMC [44].
- Des formations données au sein de l’organisation de santé (hôpitaux ou système de soins de santé) développant des programmes de leadership en interne : NHS [46], Kaiser permanente [37-39], Columbus Children’s Hospital [47]…

**Le leadership des éducateurs médicaux**

De nombreux textes soulignent que les changements dans le curriculum, les méthodes d’enseignement et d’évaluation ne peuvent se faire au niveau institutionnel sans la formation du corps professoral [48]. Il est en effet important que les éducateurs aient un profil de leader afin qu’ils aient un rôle central dans le changement [23].


Ces projets de formation d’éducateurs leaders sont pour l’instant des initiatives individuelles des Facultés et reflètent dans une certaine mesure l’identité propre à chaque faculté [49]. Outre faciliter l’implantation de changements, ces programmes peuvent améliorer le taux de rétention des éducateurs au sein d’une Faculté [51]. Toutefois, l’emploi du temps souvent surchargé du corps professoral peut se révéler un obstacle important [52] comme également le besoin continu de financement pour ces programmes et la nécessité d’évaluer leurs impacts et leurs résultats dans un processus basé sur les données probantes [54]. Selon Gruppen et coll. [49], une collaboration entre Facultés permettrait des économies de ressources et d’effort.

**Le changement et ses difficultés**

La littérature sur le changement est surtout relative aux organisations, mais ici nous nous attacherons au changement dans les Facultés de médecine. Champagne [55] identifie dix perspectives différentes sur le changement organisationnel qui prennent la forme de modèles, d’approches ou de théories et dont fait partie le leadership individuel. Chacune de ces perspectives met l’emphase sur des dimensions particulières de l’organisation et du processus de changement. Ces dimensions sont la hiérarchie qui assure un contrôle de la planification, les caractéristiques psychologiques des acteurs du changement, leurs jeux de pouvoir, les caractéristiques de la structure de l’organisation, l’environnement externe qui peut déterminer le
succès du changement, le rôle des leaders, l’apprentissage organisationnel au changement, la complexification d’une organisation confrontée à un environnement turbulent [55].

Les étapes du changement (et les problèmes qui lui sont inhérents) sont selon Kotter [56] : 1) susciter un sentiment d’urgence à changer, 2) créer une coalition guidant le changement, 3) développer une vision et une stratégie, 4) communiquer la vision, 5) permettre une action à large échelle, 6) générer des victoires à court terme, 7) consolider les gains et produire plus de changement, 8) ancrer des nouvelles approches dans l’institution.

Les études empiriques que nous avons recensées et qui portaient sur les changements de cursus dans les Facultés de médecine américaines et dans des départements universitaires ont confirmé ces étapes. D’abord, la vision s’est révélée un élément primordial [50,57]. La communication y est également apparue centrale [50,57,58] comme elle l’a été pour des changements dans d’autres organisations de santé [59]. Elle s’est avérée un bon moyen pour inciter les professeurs à s’approprier le changement [58].

Ces expériences soulignent la nécessité d’engager autant de leaders formels et informels que possible [60]. L’évaluation a également joué un rôle important en guidant le changement, ainsi qu’un calendrier qui peut être extensible [57,60]. Le changement peut également être facilité par le recrutement de nouveaux professeurs [57], par la collaboration avec l’environnement externe [61] et par les demandes des étudiants [50,57] et des agences d’accréditation auprès d’acteurs qui freinent le processus de changement [23].

Si une certaine similarité dans les étapes et facteurs de changement apparaît se dégager de différentes expériences de changement, il est important de tenir compte de la diversité de Facultés. Même si elles avaient une vision commune des changements à introduire en éducation médicale, les processus d’implantation de ces changements dans chaque Faculté pourraient être différents et se réaliser avec plus ou moins de difficultés. Cela peut être dû, entre autres, à la taille de l’établissement, au nombre et à la nature des missions que chaque Faculté remplit ainsi qu’aux relations entre les départements au sein de l’institution [23] et tel que le montrent également les travaux de Roos et Fineberg [62] cités par Bland et coll. [61]. De plus, une organisation qui a dans le passé connu un échec dans une démarche de changement sera frileuse devant l’innovation, comme le soulignent Fullan et Stiegelbauer [63] cités par Bland et coll. [61].

L’échec d’un changement peut se produire à trois niveaux : les échecs de décision où la décision de changement n’a pu être prise, l’échec de l’implantation et l’échec de « la théorie de l’intervention » où, malgré une implantation réussie, les effets désirés n’ont pu être produits [55].

Aux États-Unis, le principal défi auquel font face les doyens des Facultés de médecine réside dans les contraintes financières lorsqu’il s’agit de développer, recruter et investir [64]. Au Canada, les Facultés de médecine auront à exercer un leadership pour obtenir les ressources nécessaires.

Le second défi est l’alignement stratégique liant la stratégie à la vision et aux buts de la faculté à tous les niveaux de l’organisation afin que tout le monde aille dans la même direction [64]. Cet alignement est d’autant plus problématique que l’évolution de la culture médicale et
l’établissement de partenariats avec les autres acteurs du système de santé pourraient amener un changement dans la culture organisationnelle des Facultés de médecine. Celles-ci pourraient avoir à trouver un équilibre entre les nouvelles valeurs imposées par des environnements changeants et leurs propres valeurs [64], reflétant pour chacune, d’une part, leur nature d’établissements d’éducation et de recherche médicales et, d’autre part, le caractère unique de leur histoire et de leur environnement particulier.

Cette imbrication ou négociation entre les valeurs externes et internes au sein d’une Faculté de médecine impose un modèle complexe de leadership. En effet, l’enjeu pour chaque Faculté est donc d’exercer un leadership externe notamment pour ce qui est de la vision commune de ses membres et un leadership interne pour l’implantation des éléments de la vision commune. Ces leaderships peuvent être de formes différentes, par exemple un leadership partagé en externe et un leadership individuel ou d’un petit groupe en interne, ce qui demande à une même organisation, voire à des mêmes personnes, de jongler simultanément avec plusieurs pratiques différentes de leadership. Cette multiplicité de leaderships peut être source de confusion et de tension [65].

Le leadership peut finalement s’avérer un levier nécessaire, mais non suffisant du changement [27]. Certaines contraintes venant du contexte, par exemple les modalités de régulation du système de santé, peuvent limiter un leadership. Il est donc nécessaire d’accompagner le leadership d’autres mesures pour en assurer l’exercice [65]. Sur le plan empirique, on ne peut associer un changement réussi dans une organisation à la seule présence d’un leadership efficace. Dans le cas souvent cité du Veterans Health Administration, la présence d’un leader charismatique bien qu’importante n’a pas été le seul facteur explicatif; il s’agit plutôt d’un ensemble de facteurs qui ont contribué de façon complexe à ce changement [66].

**Conclusion**

Le leadership est une dynamique qui peut être mise en place pour susciter, accompagner ou gérer le changement et l’enjeu des Facultés de Médecine est d’y avoir recours et de l’enseigner de telle sorte qu’il favorise le changement dans le domaine de l’éducation médicale et de la pratique clinique.

- Les Facultés de Médecine ont à construire une vision commune du futur de l’éducation médicale et elles pourraient le faire au sein de réseaux et de partenariats qui incluraient les autres représentants de la médecine académique et les autres acteurs du système de santé. Elles pourraient y exercer un leadership, individuel ou réparti, où les différents partenaires travaillereraient ensemble, les influences et rôles de chacun évoluant avec le temps.

- L’évolution des besoins de la société nécessite de nouvelles pratiques médicales. Cette évolution des compétences, déjà initiée dans le cadre de compétence CanMEDS, met l’accent sur la pratique du médecin au cœur d’équipes, de réseaux et de partenariats. Il est primordial que le médecin sache identifier ces différentes configurations de travail, qu’il comprenne leur fonctionnement et puisse y intégrer sa pratique. Les étudiants auront
donc à être formés non seulement pour agir au sein de ces groupes mais aussi assurer leur fonctionnement, voire les créer. C’est pourquoi l’accent devra être mis non seulement sur la formation à ces rôles mais aussi sur la compréhension des rôles de chacun au sein de ces équipes, réseaux et partenariats.

- Compte tenu de la nécessité de nouvelles compétences et de l’intégration de celles-ci (collaboration, multidisciplinarité, …), les Facultés auront à faire de la recherche en pédagogie pour mieux comprendre les différentes dimensions de l’approche holistique du développement des compétences requises afin de trouver des méthodes efficaces d’enseignement et d’évaluation.

- Ces dimensions de la pratique médicale s’inscrivent dans un leadership clinique qui peut être soit individuel, c'est-à-dire le fait du seul médecin, soit réparti, selon le contexte dans lequel se font les soins. Les Facultés de médecine auront donc à susciter, faire émerger ou transmettre des valeurs et des capacités de leadership à leurs étudiants. Il est important que les Facultés favorisent dès la formation médicale initiale l’émergence de leaders, notamment par des activités auprès des étudiants.

- Le médecin rencontrera également des situations où le leadership clinique s’articule difficilement avec le contexte local ou avec d’autres types de leadership, par exemples administratifs ou politiques. C’est pourquoi il est primordial de développer les capacités organisationnelles des futurs médecins et de donner aux leaders en émergence des pistes qui leur permettent de dépasser certains problèmes organisationnels. La maîtrise des capacités de gestion devrait être initiée dès les études prégraduées.

- Il est également important que le médecin ait une approche qui tienne compte des enjeux sociétaux, qu’il adopte une approche systémique et qu’il se perçoive comme un acteur-clé du système de santé. Les Facultés auront donc également à assurer une formation qui mette l’accent sur la compréhension du système de santé et de ses enjeux. Le médecin devra pouvoir évaluer dans sa pratique les actions qu’il pourrait engager pour répondre à ces enjeux et améliorer la santé des Canadiens.

Ces changements vont demander aux Facultés de mobiliser leurs ressources, tant financières qu’humaines et d’exercer un leadership pour obtenir des ressources supplémentaires et aligner tous les membres d’une Faculté à la vision du changement.
<table>
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<th>Article</th>
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<td>Dickson G, Briscoe D, Fenwick S, MacLeod Z, Romilly L. Le projet de Cadre pancanadien des capacités de leadership pour le système de santé (FCRSC). Ottawa: Fondation canadienne de la recherche sur les services de santé; 2007.</td>
<td>Cette recherche qualitative identifie les capacités traditionnelles et émergentes qui caractérisent les leaders dans le système de santé canadien : préconiser la bienveillance, entretenir de bonnes relations avec les autres, obtenir des résultats et modifier les systèmes.</td>
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Références


35. Touati N, Roberge D, Denis J-L, Cazale L, Pineault R, Tremblay D. Clinical leaders at the forefront of change in health-care systems: advantages and issues. Lessons learned from the evaluation of the implementation of an integrated oncological services network. Health Serv Manage Res. 2006 May;19(2):105-22.


Les domaines abordés dans cette revue de littérature, le leadership des Facultés de médecine, le leadership dans les organisations, le leadership médical, le leadership des éducateurs et le processus de changement dans les Facultés de médecine sont traités de façon indépendante dans la littérature.

Nous avons sélectionné des articles conceptuels, empiriques, méthodologiques et des revues de littérature. Pour les articles conceptuels et empiriques nous avons privilégié les articles qui avaient une vision globale de la problématique du leadership et du changement. Nous avons choisi des travaux qui, dans la mesure du possible, ne fragmentaient pas l’organisation dans laquelle s’inscrivait ce leadership et qui ancreraient le leadership médical dans le système de santé. Nous avons aussi mis l’emphase sur les revues de littérature préexistantes faisant l’objet en soi d’un document ou incluses dans un article conceptuel, empirique ou méthodologique. Nous avons également privilégié les articles conceptuels et empiriques qui abordaient les approches et les limites méthodologiques des perspectives qu’ils adoptaient ou mentionnaient.

Nous avons sélectionné les articles conceptuels et empiriques qui nous sont apparus suffisamment solides du point de vue scientifique. Les références sur le leadership en médecine académique sont des présentations de représentants de la médecine académique au Canada qui ont été faites lors d’un séminaire portant sur le leadership en médecine académique. Ce séminaire était organisé par l’Institut Canadien de Médecine Académique et s’est tenu en 2003. Son objectif était d’identifier le futur agenda de l’ICMA. Il nous est apparu représentatif des discussions actuelles sur l’avenir de l’éducation médicale au Canada.

Nous avons toutefois une réserve sur l’évaluation des programmes de formation en leadership des éducateurs qui était souvent mentionnée en termes vagues.
Arweiler, Delphine, PhD
Émilie Noyeau, MI (Info Sc), Bernard Charlin, MD, PhD, Bernard Millette, MD, MSc

Change management and leadership in medical education

Summary

Medical schools, through their role as training and research institutions and influential bodies, must contribute to society’s ability to meet changing needs. They must show leadership to prepare physicians to use innovative practices (teamwork, evidence-based medicine, patient-centred approach, etc.) To succeed in making such complex changes in culture and practice, schools must foster the creation of networks and partnerships with various stakeholders in the health system in order to develop a common vision and health policy and initiate necessary changes in medical training. Both individual and collective leadership is necessary to achieve this goal. Mintzberg defined leadership as the individual and shared use of influence through engagement rather than command and control. Leadership creates a vision of the future, clarifies issues, establishes strategies, and inspires action through communication, engagement, and building teams and alliances; it motivates and inspires. One can distinguish individual leadership (the traditional idea of leadership), which creates a vertical relationship between the leader and the led, and shared leadership (a more recent vision) which creates a horizontal relationship between partners instead. This second type can be defined as a set of interpersonal relationships that maximizes its members’ ability to contribute effectively, learn, and adapt in a constantly changing organizational environment.

The integration of new practices to meet local needs requires practicing physicians to show leadership in their professional setting and to have a good understanding of the health care system and its issues. Leadership is especially needed at the individual, group, and microsystem levels. It cannot simply be a leadership of authority, but rather shared leadership, which helps to improve team functioning through its horizontal nature and emphasis on pooled skills. Physicians must be able to develop their skills in leadership and its necessary companion, management. Instructor-physicians must also show leadership within their institutions and networks to make the necessary changes to their schools and training programs to prepare medical students for change in practice and the leadership this makes necessary. However, the literature on change shows that this is not a trivial task. One must have a clear vision of the desired change, communicate this vision, ensure that the organization’s functioning and structure are aligned to support the change, and evaluate the results. Each faculty must show external leadership to share its members’ vision, and internal leadership to put this common vision into practice locally. Leadership is also needed in order to obtain the necessary funding.

Major themes identified
- Society’s changing needs call on medical culture to orient itself towards more collective values (teamwork, networking, partnership, etc.)
Medical schools have a central leadership role to play in order to initiate, promote, and support the necessary changes.

There are two useful types of leadership: individual (usually vertical) and shared (usually horizontal).

Practising physicians must show leadership in their work environment in order to implement new practices (e.g. teamwork, patient-centred approach).

Medical schools and professors must promote the emergence of leaders and teach/encourage acquisition of the knowledge, skills, and attitudes necessary for leadership and management, starting from the undergraduate level.

Conclusions and orientations

In the context of a changing society, students must be trained to understand new practices (teamwork, patient-centred approach…) and to act within networks, create them when needed, and make them work. Mastery of management skills must be fostered starting from the undergraduate level.

Medical schools must conduct education research to find the most effective training and evaluation methods.

Medical schools must nurture, support, and transmit leadership values and skills and facilitate and promote the emergence of leaders, starting early in the educational career.

Leadership is needed to mobilize the human and financial resources necessary to induce and support the desired changes.

Best practices and innovations (no specific innovations mentioned in this article, except for… Courses and workshops on medical leadership offered to practitioners at McGill, U of T, AMC…).

Full Text

The changing needs of society mean that the health care system must also change to better meet these needs. In training health professionals, performing research, and using their influence, faculties of medicine contribute to this change. This paper examines how these changes in medical education and clinical practice can be incited, followed, and managed through the concept of leadership. “Leadership is both the individual and collective practice of influence through engagement rather than through command and control.” (1).

We will first examine the extent to which faculties of medicine must exercise leadership. Next, based on the literature on leadership, we will identify the various existing models of leadership to deduce which can promote the implementation of change in medical education. We will focus more specifically on leadership by faculties, clinical leadership, and leadership by educators. Finally, we will examine the implementation of change in faculties of medicine and the difficulties related to this.
Methodology

To better define the subject, we first referred to publications about change management, leadership, and issues in medical education in Canada, in the grey literature (correspondence, reports, meetings, conferences) from the Web sites of Canada’s medical professional organizations (CMA5, CHSRF6, CPRN7, College of Family Physicians of Canada, Royal College of Physicians and Surgeons of Canada, Collège des médecins du Québec, AFMC8). Additional research was carried out on the main health databases (Medline, Embase, CINAHL, and ERIC) and Web search engines (Google, Exalead), with queries for the terms “medical education,” “leadership,” and “Canada” limited to the last five years.

Next, to circumscribe the subject, we focused the literature review on leadership in faculties of medicine and models for practising leadership, limiting the research to faculties of medicine throughout the world. The selected sources and analyses came from:

- Searches in health databases (Medline 1996-present, EMBASE 1996-present) and the World Wide Web
- Health organization reports (Romanow Commission, CHSRF)
- Bibliographies of relevant publications and literature reviews
- Links to key articles through citations
- Empirical publications analysing change processes in faculties of medicine (with the search going further than the last five years).

Finally, we consulted with Prof. Nassera Touati with the École Nationale d'Administration Publique, who commented on an abridged version of this paper.

Do faculties of medicine need to show leadership?

To adapt to the changing needs of society, medical culture is orienting itself towards more collective values that favour coordination of care and teamwork (2,3). According to Tyrell (4), the changes the faculties will need to integrate into medical education and research include several elements: greater emphasis on prevention rather than treatment; evidence-based health policy, management, and care; consideration of ethical and legal problems in education; and integration of communication, teamwork, and patient-centred approaches as well as genetics and genomics into medical courses. These different elements require the medical education field to focus on developing teams, networks, and partnerships in order to share knowledge and coordinate skills and practices. These partnerships could link faculties of medicine to other stakeholders in the health care system such as health professionals, communities, administrative bodies, and federal and provincial agencies dealing with health policy (5). Similarly, partnerships could also be developed between these stakeholders and clinical teams.

5 CMA: Canadian Medical Association
6 CHSRF: Canadian Health Services Research Foundation
7 CPRN: Canadian Policy Research Networks
8 AFMC: Association of Faculties of Medicine of Canada
Health care research is also evolving towards more collective values. According to Frank (6), future trends in health sciences research include building teams, centres, and networks, interdisciplinarity, knowledge sharing and cooperation partnerships with research users, multiple forms and sources of funding, and more complex research planning.

Faculties of medicine could also have a central role in another partnership or network: that of representatives of academic medicine. In Canada, several organizations represent academic medicine in the public and political arenas (the Canadian Medical Association, the Royal College of Physicians and Surgeons of Canada, the Canadian Institutes of Health Research, etc.) (4).

Faculties of medicine must therefore robustly define their role and their place in the health care system and among organizations representing academic medicine. They can contribute to building these networks and partnerships, take part in building a common vision and developing health policy, and initiate change that involves medical education. Faculties of medicine should show leadership by acting within these networks and partnerships.

**How to show leadership**

“How leadership is both the individual and collective practice of influence through engagement rather than through command and control.” (1) Mintzberg (7) associates leadership with inspiration, relationships, and example rather than decision. Leadership is associated with change (8). Dickson et al. (9) define leadership as “the quality we look for to guide us through change in complex environments with uncertain futures and changing/competing societal values.” Leadership produces change and movement by setting the direction; it creates a vision, clarifies the whole, sets strategies, and gets people working together through communication, commitment, and building teams and coalitions; it motivates and inspires (10).

Work on leadership first centred on the individual and studied the personality traits, skills, qualifications, and certain behaviours of leaders (10). In their literature review, Dickson and Hamilton (1) identify passion, resolve, humility, the ability to envision a future, enabling and inspiring others, systems thinking, the ability to challenge existing practices, and strategic thinking as qualities of a leader. The concept of leadership is currently moving away from an understanding based on the ability to control and to manage risks (11). Leaders also develop key relationships within and outside their organizations and create new ways to work together (12). In order to enter a dynamic of change, they must also be familiar with traditions (11). Some studies have shown that a charismatic leader can increase the motivation, performance, and satisfaction of others and foster a vision that inspires enthusiasm (13). However, researchers have been unable to identify universal traits and behaviours that guarantee effective leadership (10).

Conceptual and empirical research on leadership has led to a model known as shared leadership, which is constantly being developed and is more and more widely used. It consists of a set of practices (14) shared by the members of a group or organization (15). It can be defined as a set of interpersonal relationships that maximizes the capabilities of its members both to contribute effectively and to learn and adapt as the organization’s environment continuously changes (1). This vision relies on common learning and a specific self-image based on interdependence with one’s environment, rather than independence, with this type of relationship made possible by an
emphasis on communication (15). Shared leadership can consist of a collection of individual acts, but can also be a concerted action emerging from spontaneous collaboration, intuitive working relations, or institutional practices (16). In the latter case, leadership is no longer simply an input into the teamwork process, it is also a result, leading to new knowledge and skills for the team members (17). In shared leadership, each person’s influences and roles evolve over time (18).

Whereas individual leadership creates a vertical relationship between the leader and the followers, shared leadership creates horizontal relationships. According to some researchers, vertical and horizontal models of leadership are mutually exclusive, while others see them as interdependent, with an individual leader able to ensure that shared leadership functions properly (19,20). Furthermore, the choice between these two models can depend on the group’s situation and stage in its life cycle (19).

As shared leadership is still being developed as a concept, few studies have evaluated its existence and advantages; its operationalization has varied from study to study (20). These studies have shown that it has positive effects when the team is engaged in complex tasks that require a high degree of interdependence, but its effects on more routine tasks are not known (20). Studies on leadership have, to date, not taken sufficient account of organizational factors, such as the culture, goals, processes, resource availability, and structure of the organization, or the time factor; often they only deal with a single factor in the situation (21). Moreover, these authors emphasize that, although the research deals with change, it takes a static rather than dynamic approach.

Leadership of faculties of medicine

Faculties of medicine can show individual and shared leadership within networks and partnerships with other health care actors and representatives of medical education in Canada. According to Boelen and Boyer (22), they must initiate change or implement new ways of improving health, as they have an advantage over other institutions due to their expertise in human health (knowledge of and research in health). Through these different types of leadership, they can guide or participate in the creation of these partnerships and networks and their common vision. Such leadership would allow them to play a leading role in improving the health of Canadians.

A study by Dickson et al. (9) identified the individual characteristics of leadership as seen by health care stakeholders in Canada. Faculties of medicine could therefore assimilate these elements into all levels of their organization and transmit them to their students and professors, on one hand, and work with these values and promote them in their networks and partnerships on the other. These individual characteristics are:

1) **Championing caring:** Leaders inspire and encourage a commitment to health, act with compassion, show respect for the dignity of all persons, and exhibit fairness and a sense of justice.

2) **Cultivating self and others:** Leaders demonstrate self-awareness and self-management, exhibit character, enable others to grow, and create engaging environments.
3) **Connecting with others**: Leaders communicate effectively, build multidisciplinary teams, develop networks, coalitions and partnerships, and navigate socio-political environments successfully.

4) **Creating results**: Leaders develop a shared vision and translate it into action, hold themselves and others accountable for results, integrate quality improvement and evidence into decision-making, and manage resources responsibly and creatively.

5) **Changing systems**: Leaders build personal and organizational understanding of the complexity of health systems, mobilize knowledge to challenge processes and guide change, lead changes consistent with vision, values and a commitment to health, and orchestrate changes to improve health service delivery.

Most of the literature on leadership deals with organizations and leadership within them. To a certain extent, we were able to extrapolate from this setting to that of faculties of medicine within their networks and partnerships, and the leadership they may exercise there. But depending on the stakeholders the faculties work with, the goal of their collaboration, and the situation, their leadership may be more or less effective and its form may vary. Furthermore, each faculty of medicine may have its own leadership style, not just because of the personality of its leaders but also because of its individual history and environment (23). We did not find any empirical studies on leadership by faculties of medicine within partnerships or networks. Studies on leadership within organizations give us little information on possible leadership configurations depending on characteristics of organizations. Accordingly, we can take these extrapolations no further.

**Leadership by practising physicians**

As the needs of society change, new dimensions of medical practice are coming to the fore, such as care not only for the physical aspects but also the social and psychological aspects of the person (11), the development of ties with other organizations (24), orientation towards multidisciplinarity and teamwork (25), and adaptation to local needs (26). Pedagogy research is necessary if faculties of medicine are to understand the various dimensions of the holistic approach and find effective training and evaluation methods.

In the United Kingdom, these new dimensions of medical practice are part of a reform of first-line services based in particular on the development of clinical governance and leadership by practising physicians (24-27). Clinical governance is a type of governance based on empowering care organizations and “creating an environment in which excellence in clinical care will flourish” (28). A move to clinical leadership is justified by the central role that physicians play in any change process in the health care system (29). Clinical governance may therefore prove a better instrument of change than structural reforms, which have little effect on medical practice (29,30). Moreover, Gillies et al. (30) found that lack of leadership can be the cause of misalignment between physicians and the health care system. When dealing with often short-term expectations, it is important to note that change based on clinical leadership is usually slower than that produced by structural reforms (27).

In clinical governance, leader physicians must have a systemic view (11,31), seeing themselves as a key element in the health care system (5). They must consequently strike a balance between
their clinical autonomy and their collective responsibility for the health system’s goals (24,27). Leader physicians are expected to be aware of the different points of view regarding a problem that they also face, and to involve and listen to other stakeholders to create synergy (32). In Canada, leader physicians have to promote and work with the leadership values of the Canadian health care system, as highlighted by Dickson et al. (9) (shared leadership, teamwork, etc., as discussed above).

Clinical leadership may be a good way to ensure that the system and the physician share the same vision. It cannot be restricted to leadership of authority while medical practice evolves towards teamwork and multidisciplinarity. The horizontal nature of shared leadership and its emphasis on pooling competencies show it to be an appropriate means of improving the functioning of working groups (17). Citing a study by Batalden et al. (33), Dickinson and Ham (29) emphasize that effective clinical microsystems in health organizations are characterized by the presence of several leaders, often a leader physician, a leader nurse, and a leader administrator. Accordingly, faculties of medicine need to kindle, foster, or transmit leadership values and abilities in teaching their students.

However, implementing clinical leadership in the health care system cannot be done independently of the other parts of the system. Leadership must be focused on at the level of the individual, of the group or microsystem (the team that implements the change), the organization that sets the vision and provides support and resources, and the greater environment (34). This vision ensures, in particular, that one level will not block change implemented at another level. But the difficulty of articulating clinical leadership with the environment can be one of its limits (35). According to Shortell (36), this approach to leadership is demanding, requires a great deal of time, and may face a structure that is not ready for it, whether management or another part of the organization; but he concludes that it is possible despite these difficulties. Kaiser Permanente in the United States is an example of an institute that committed itself to effective medical leadership by encouraging group initiatives; Dickinson and Ham (29) cite Crosson’s studies on this subject (37, 38). Accordingly, leadership training for physicians should be accompanied by organizational development training (36). Shortell suggests that organizations that have succeeded in implementing change through leadership in organizational development be mobilized as training sites by leadership training institutes.

The NHS has shown the effect of medical leadership training programs on organizational performance and improvement in health care. These evaluations have led to raised awareness in the medical teams and involvement of physicians in organizational leadership (39). A number of leadership training programs are currently being developed:

- University post-graduate courses: under development in Denmark and the Netherlands, which have incorporated leadership as one of the skills of future practising physicians (skills inspired by the CanMEDS roles developed in Canada) (39).
- University courses in leadership in the health field, targeting practising physicians: McGill University (40), University of Toronto (41), Royal Roads University (42) (Canada), Harvard School of Public Health (43) (United States), etc.
- Courses offered by professional associations to develop Canadian medical leadership: CMA (44), Leadersforlife (45), offering members leadership programs in the form of
workshops, conferences, forums, and Web-based methods, as in the case of the CMA (44).

- Courses offered within health care organizations (hospitals or health care systems) as part of internally developed leadership programs: NHS (46), Kaiser Permanente (37-39), Columbus Children’s Hospital (47), etc.

Leadership by medical educators

Numerous authors emphasize that changes to the curriculum, teaching methods, and evaluation methods are impossible without training professorial staff (48). It is important that educators have the characteristics of leaders in order for them to have a central role in change (23).

Numerous articles from North America deal with programs implemented for professors. Training programs for educators are being developed, with the goal of improving their teaching abilities, creating communities, and developing education leaders (49). In particular, these programs deal with the development of leadership and organizational skills and have positive results for these objectives (49-53).

These training programs for leader educators are currently individual initiatives of the faculties, and to a certain extent reflect each faculty’s own identity (49). Besides facilitating change, these programs can improve the retention rate for educators within a faculty (51). However, professors’ often overloaded schedules may prove a significant obstacle (52), as can the continual need for funding and the need to evaluate the programs’ impacts and results through an evidence-based process (54). Gruppen et al. (49) believe that collaboration between faculties would allow savings of resources and effort.

Change and its difficulties

The literature on change mainly deals with organizations, while we are dealing with change in faculties of medicine. Champagne (55) identifies ten different perspectives on organizational change in the form of models, approaches, and theories, including individual leadership. Each of these perspectives emphasizes specific dimensions of the organization and change process. These dimensions are the hierarchy that controls planning, the psychologies of those involved in change, their power games, the characteristics of the organizational structure, the external environment (which can determine the success of the change), the role of leaders, organizational learning on change, and the complexification of an organization facing a turbulent environment (55).

Kotter (56) lists eight steps to change (and its inherent problems): 1) creating a sense of urgency, 2) pulling together the guiding team, 3) developing the change vision and strategy, 4) communicating the vision, 5) empowering a large-scale action, 6) producing short-term wins, 7) consolidating gains and producing more change, and 8) anchoring new approaches in the institution.

The empirical studies that we gathered on changes to curricula in American faculties of medicine and university departments confirmed these steps. First, vision appeared as a primordial element
Communication is also central (50,57,58), as it is for changes in other health organizations (59). It was found to be a good way to stimulate professors to make the change their own (58).

These experiences highlight the importance of engaging as many formal and informal leaders as possible (60). Evaluation also played an important role in guiding change, as did an extendable timetable (57,60). Change can also be facilitated by recruiting new professors (57) and collaborating with the outside world (61), and by pressure exerted by students (50,57) and accreditation agencies on actors who are hampering the change process (23).

Though the various change experiences appear to share certain similarities in the steps and factors of change, it is important to account for the differences among faculties. Even if they shared the same vision of the changes to be implemented in medical education, the process of implementing these changes in each faculty could vary in nature and difficulty. This could be due, among other factors, to the size of the institution, the number and nature of the faculty’s mandates, and the relationships between the institution’s departments (23), as shown by the work of Roos and Fineberg (62) cited by Bland et al. (61). Furthermore, an organization that has suffered a failure in a change process will be wary of further innovation, as Fullan and Stiegelbauer (63) point out (cited by Bland et al. (61)).

Failure of change can occur at three levels: decision failures, where the decision to change could not be made; implementation failures; and “intervention theory” failures, where despite successful implementation, the desired effects were not produced (55).

In the United States, the main challenge faced by deans of faculties of medicine is the financial constraints on developing, recruiting, and investing (64). In Canada, faculties of medicine must show leadership to obtain the necessary resources.

The second challenge is the strategic alignment linking the strategy to the vision and goals of the faculty at all levels, so that everyone is moving in the same direction (64). This alignment is all the more problematic in that the evolution of the medical culture and partnerships with other health system actors could change the organizational culture of faculties of medicine. The faculties would then have to find a balance between the new values imposed by changing environments and their own values (64), reflecting their nature as medical education and research institutions on the one hand, and their unique history and environment on the other.

This intersection or negotiation between internal and external values in a faculty of medicine imposes a complex model of leadership. The issue for each faculty is to exercise external leadership for its members’ common vision, and internal leadership for the implementation of the common vision. These different types of leadership may take different forms, such as shared external leadership and internal leadership by an individual or small group; this calls on the same organization, perhaps even the same people, to juggle several different leadership practices at once. This multiplicity of leadership styles can cause confusion and tension (65).

In the end, leadership may prove necessary but not sufficient for change (27). Certain constraints imposed by the environment, such as the regulations of the health care system, may limit
leadership. It is therefore necessary to accompany leadership by other measures (65). Empirically, successful change in an organization cannot be associated solely with the presence of effective leadership. In the frequently cited case of the Veterans Health Administration, the presence of a charismatic leader, though important, was not the only explanatory factor; there were multiple factors that contributed in a complex fashion to the change (66).

Conclusion

Leadership is a dynamic that can be implemented to foster, accompany, or manage change. Its importance for faculties of medicine is for them to use it and teach it in order to promote change in medical education and clinical practice:

- Faculties of medicine need to construct a common vision of the future of medical education. They can do this within networks and partnerships that include representatives of academic medicine and other health care actors. They could show individual or shared leadership with the different partners working together, the influences and roles of each one evolving over time.

- Society’s changing needs require new medical practices. This evolution of skills, already begun through the CanMEDS competency, emphasizes physicians’ practice within teams, networks, and partnerships. It is essential for physicians to be able to identify these different working configurations, understand how they operate, and be able to integrate their practice within them. Students must therefore be trained not only to act within these groups but also operate and even create them. This is why it is important to emphasize not only training for these roles but also understanding of each person’s role within these teams, networks, and partnerships.

- Given the need to develop and integrate new skills (collaboration, multidisciplinarity, etc.), faculties will need to perform pedagogical research to better understand the various aspects of the holistic approach to the development of required skills to find effective methods of teaching and evaluation.

- These dimensions of medical practice are part of clinical leadership that can be either individual (shown by a single physician) or shared, depending on the context of care. Faculties of medicine will therefore need to kindle, foster, or transmit leadership values and abilities in teaching their students. It is important that faculties promote the emergence of leaders starting from the earliest stage of medical training, in particular through activities with the students.

- Physicians will also encounter situations where clinical leadership is difficult to square with the local environment or with other types of leadership, such as administrative or political leadership. This is why it is essential to develop future physicians’ organizational abilities and give emerging leaders methods to avoid certain organizational
problems. Mastery of management abilities should be fostered starting at the undergraduate level.

- It is also important for physicians to take social factors into account, to have a systemic approach, and to see themselves as key actors in the health care system. Faculties will therefore have to provide training that emphasizes an understanding of the health care system and its issues. As part of their practice, physicians will have to be able to evaluate actions to deal with these issues and improve the health of Canadians.

These changes will require faculties to mobilize their resources, both financial and human, and show leadership to obtain additional resources and bring all their members in line with the vision of change.

**Annotated bibliography**

<table>
<thead>
<tr>
<th>Article</th>
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<tr>
<td>Northouse PG. Leadership: Theory and Practice. 4th ed. London: Sage Publications Inc.; 2007.</td>
<td>This book identifies a set of leadership approaches ranging from individual characteristics to team-based leadership and leadership that takes the situation, the culture, etc., into account. Each approach is described along with its advantages, criticisms of it, and empirical studies concerning it.</td>
</tr>
<tr>
<td>Dickson G, Briscoe D, Fenwick S, MacLeod Z, Romilly L. Le projet de Cadre pancanadien des capacités de leadership pour le système de santé (FCRSC). Ottawa: Fondation canadienne de la recherche sur les services de santé; 2007.</td>
<td>This qualitative study identifies the traditional and emergent capacities of leaders in the Canadian health care system: caring, connecting with others, creating results, and changing systems.</td>
</tr>
<tr>
<td>Dickinson H, Ham C. Engaging doctors in Leadership: review of the Literature. Birmingham: Health Services Management Centre, University of Birmingham; 2008 Jan.</td>
<td>This literature review deals with clinical leadership in the UK. It focuses on how this leadership is anchored in the relevant organization and in the health care system.</td>
</tr>
</tbody>
</table>


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9. Dickson G, Briscoe D, Fenwick S, MacLeod Z, Romilly L. Le projet de Cadre pancanadien des capacités de leadership pour le système de santé : Initiative de recherche concertée visant à élaborer un cadre des capacités de leadership pour les services de santé au Canada. Rapport
final présenté à la Fondation canadienne de la recherche sur les services de santé (FCRSC). Ottawa: Fondation canadienne de la recherche sur les services de santé; 2007.


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Appendix

The fields studied in this literature review – leadership in faculties of medicine, leadership in organizations, medical leadership, leadership by educators, and the process of change in faculties of medicine – are dealt with separately in the literature.

We selected conceptual, empirical, and methodological articles and literature reviews. For conceptual and empirical articles, we preferred articles with a global view of the problem of leadership and change. We chose works that, as far as possible, did not divide up the organization in which the leadership was being shown, and that anchored medical leadership within the health care system. We also focused on pre-existing literature reviews, either as stand-alone articles or included in a conceptual, empirical, or methodological article. Finally, we focused on conceptual and empirical articles that dealt with the approaches and methodological limits of the perspectives they used or mentioned.

We chose those conceptual and empirical articles that appeared sufficiently solid from a scientific point of view. The references on leadership in academic medicine are presentations by representatives of Canadian academic medicine before a seminar on leadership in academic medicine organized by the Canadian Institute of Academic Medicine in 2003 with the goal of identifying the CIAM’s future agenda. To us it appeared representative of current discussions on the future of medical education in Canada.

We do however have reservations about the evaluation of leadership training programs for educators, which was often discussed in vague terms.
The Influence of Science and Evidence on Medical Education

Summary

A current and desirable principle underlying medical education is that it is informed by evidence from this field. An historical perspective on science and medical education reveals the underlying reasons for the justification of education and change to education based on evidence. Medical Curriculum is best characterized by slow and discrete changes, with three major shifts occurring in the last century. Flexner’s reform in the early part of the 20th century was followed 50 years later by a PBL innovation at McMaster and some 30 years on by CanMEDS or variants thereof.

The long view of innovative change in medical education is that curriculum is continuously changing in small discrete, cumulative ways with periodic spikes that set it on a different path. Flexner was associated with housing medical education in an academic setting and producing physicians capable of scientific practice. McMaster, recognizing the growing and individually overwhelming volume of medical information, opted to focus curriculum on learning to learn rather than to received knowledge. CanMEDS identified the objective of medical education as incorporating 7 complex competencies.

Each of these innovations arose as a result of tension both internal and external to medical schools. It would seem from the literature that the newest tension puts an emphasis on an academically based and scientific oriented curriculum with a community based and practice oriented one. The academic curriculum emphasizes traditional academic hospital sites for education and training as opposed to community, non teaching hospital sites. The former is internally driven by medical school faculty while the latter reflects more a community and public interest. The academic curriculum advocates more science and more research opportunities, whilst the practice curriculum advocates more primary, ambulatory care and earlier clinical exposure. Finally, the academic orientation emphasizes doing research and the practice orientation emphasizes the application of research findings in practice.

Major Themes

The tension between the two competing views of medical education will not dissipate until it is resolved by action to change the curriculum. The CanMEDS competencies are likely to flourish and form the bedrock of medical curriculum but with increasing emphases on advocacy, management, communication and collaboration competencies in line with a practice oriented curriculum. One way of reconciling the two competing views is to design different streams within the curriculum which contains a major component of common elements and unique opportunities for individual student choice between a scientific and practice option.
Best Practices and Innovations

A compromise curriculum that accommodates both positions is desirable. Students with an interest in pursuing an academic career should be provided with opportunities to do research projects and undertake an optional stream to enhance scientific knowledge and skills. Students with a predominantly practice orientation should analogously be streamed into a curriculum that enhances practice knowledge and skills and the application of evidence to each of them.

Full Text

Abstract

A current and desirable principle underlying medical education is that it is informed by evidence (1). This principle has not been historically the driver of curriculum change. Thus, the question is why this recent emphasis on evidence? Is it that a more mature and sophisticated approach to medical education is now extant and expressed as “evidence informed”, however ambiguous this term is? Or is it that medical education is beginning to model itself after contemporary medical practice whose high standards are claimed to be evidence based (2)? Or is it the pursuit of intellectual capital by portraying itself as influenced by science? Or is it that there is now a body of literature that is adequate to providing guidance for curriculum reform?

A historical perspective on science and medical education provides a way of understanding what has changed that now seeks evidence to justify curriculum change and a way of examining what it meant by science and evidence in the context of medical education. Hence this paper will explore how science and evidence influence contemporary positions regarding improvements to medical education and, more importantly, whether there is a sufficient aggregate of evidence to inform curriculum reform.

Potted History

Medical Education, specifically its undergraduate components, is not recognized for either the speed or magnitude of curriculum change (3). In the past century changes to the undergraduate curriculum have been small, discrete and cumulative, much like changes to the automobile in the same time period. Despite this preponderant slow and discrete pace of change, there were three major shifts that can be identified. Beginning with Flexner’s (4) reform, a hundred years ago, medical education was reinvented to occur in academic settings and designed to produce doctors capable of practicing scientifically, using basic sciences knowledge to guide clinical decision-making. Over 50 years later, McMaster (5,6) realizing the exploding knowledge base of medicine, derived from science and practice alike, set the curriculum agenda to focus on students learning to learn through Problem Based Learning (PBL). Some 30 years subsequently, in the early 1990’s, with a focus continuing on student learning, the perspective of the purpose to be achieved by undergraduate medical education was not just a scientifically
trained doctor (Flexner) who is a life long problem solving learner (McMaster), but a complex professional with a variety of skills expressed as CanMEDS (7,8) or variants thereof.

Each of the major shifts was the result of experienced tensions rather than evidence. In Flexner’s case, the perceived variability in the quality of medical services was the motivation for reform. In the McMaster innovation, it was the volume of knowledge, especially from medical and biological sciences that was seen as overwhelming the competence abilities of both students and curriculum in a 4-6 year curriculum time period. The final shift was partly the result of a public expression to educate doctors to be more amenable to patient concerns (9) and partly due to an internal recognition that graduates were being produced to handle a widening range of complexities in health and health care problems.

Flexner did investigate education and practice in both the United States and Canada. However, the information gathered was more a justification for following the Johns Hopkins model that it was an objective data collection and analysis. McMaster’s founders looked at a variety of literature principally those related to problem solving to justify the PBL approach eventually undertaken. The CanMEDS initiative was a sequel to the EFPO project in which the public nominated a list of desirable roles for physicians. The CanMEDS adaptation was just that: an adaptation. The competencies derived from EFPO were neither empirically established nor tested. The results were an accomplishment of medical as opposed to educational expertise, but not evidence.

The long view of innovation in medical education, derived from history, is that curriculum is continuously changing in small discrete ways with periodic spikes that set it on a different path. Also, it is apparent that the shifts are not local, nor national in scope, but now global. For example, PBL can equally be found in Shanghai as in Boston. Similarly, CanMEDS, identifying a number of skills sets, has taken hold of Stockholm and in Sydney. The long view tells us also that both small and large changes to medical education have not resulted from evidence or science. Rather the changes were, and continue to be, enacted as a function of an internal driven collective will plus the influence of prestigious medical schools. In regard to the latter influence, Johns Hopkins educational approach was viewed as a model to be emulated. The McMaster and Harvard PBL curricula had an enormous influence on curriculum around the world. The CanMEDS innovation accorded with a generally held observation that there was more to being a good physician than having expert knowledge. Hence the expanded list of competencies initially addressed to postgraduate education and more recently being incorporated into undergraduate programs (10, 11). Finally, it is worth noting that Canada has been inextricably associated with all three of the major shifts. All of which begs the question as to what the next big shift will be and when and where it will occur.

**The Contemporary Curriculum**

We may not have to wait too long for the next big shift to emerge. Already, the momentum for change is apace. Just as the history of innovations in science is replete with ideas that several people held simultaneously (12), so too it is the case with innovative ideas for medical education reform. Contemporaneously for instance, in Canada the AFMC project (13) is seeking to define the future of medical education while the American Medical Association (14) and the Carnegie
Foundation (15) in the United States have produced comparable platforms for potential large changes. In the United Kingdom, Lord Darzi at the Ministry of Health (16) is developing a long term plan for the future of National Health Services and, in consequence that of medical education and training to meet the projected service needs. Thus in about 15 years following CanMEDS a shared disposition across medical school for change is present. The tensions giving rise to this disposition may be more nuanced than heretofore. There is awareness that the historical tendency to cram more content into the curriculum, without an exit rule for subject matters that no longer have currency, is unacceptable. Moreover, while Harden et al’s (17) Spices Curriculum model, distinguishing learner versus teacher oriented curriculum, has still pertinence, the tensions unsettling the curriculum are now more complex and pervasive. How well these tensions are supported by evidence will be the focus of the balance of this paper.

As a means of organizing and discussing these current tensions, or drivers, of curriculum change, Table 1 provides a summary. The tensions are cast as continua rather than as dichotomies. It is not to say that the tensions line up neatly as described in Table 1. Nor is it the purview of the paper to sketch out other dimensions of the AC versus the PC such as (a) biological versus biopsychosocial emphases, (b) factual versus contextual orientations, (c) information management versus information sharing and (d) expert specialist versus expert generalist. Moreover, the science under review is educational with respect to informing change and other sciences such as basic, molecular, epistemological and social with respect to curriculum content. Rather two general positions emerge one identifiable as an Academic Curriculum (AC) and the other as a Practice Curriculum (PC). The AC is the creature of the Medical Sciences Centre and the University, assumes a conservative position regarding change and seeks to produce graduates who will, by becoming physician academics, sustain those curriculum features that have demonstrated “success” in the past. Also, the AC is intended, most often implicitly, to control the educational agenda of the academe and ensure its traditions, values and replications.

The PC on the other hand is driven by a commitment to serve the health and medical needs of the community. The PC is predominantly directed at serving the community, whereas its AC counterpart predominantly serves the academe. Each side would argue that by accepting its particular change agenda that the other side will achieve its objectives. In the case of AC’s hegemony, its proponents would insist, inter alia, that the health needs of the community is best served by physicians scientifically trained and scholarly (using evidence) in their approach to practice. The PC’s have a position claiming that there is nothing more scientific than good practice versus there is nothing more practical than good science, as AC proponents would claim. How well such sides’ claims are buttressed by evidence and influenced by science is the central subject matter of the paper.
## Table 1
Continua of Curriculum Emphases

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<thead>
<tr>
<th>The Academic Curriculum</th>
<th>The Practice Curriculum</th>
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<tr>
<td>1. Tertiary-Quaternary Sites</td>
<td>Community Settings</td>
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<td>2. Internally Driven</td>
<td>Externally Influenced</td>
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<td>3. More Science</td>
<td>More Primary &amp; Ambulatory Care</td>
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<tr>
<td>4. More Research Opportunities</td>
<td>More and Earlier Clinical Exposure</td>
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<tr>
<td>5. Doing Research</td>
<td>Applying Research Evidence in Practice</td>
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In the face of different positions along the curriculum continuum, health sciences institutions will tend to be incorporative, building into the curriculum, the best features of both sides. In the interests of funding, private and public alike, it is essential for the health sciences centre to show its societal value in terms of research innovation and productivity. In terms of community support, it is necessary to demonstrate a commitment to contributing numbers of and quality in graduates to meet health care needs. Attempting to be all things to all people may not serve either the academe or the community well. With the dilemma in mind, a closer look at the differences between the AC and PC positions will be explored.

### 1. Tertiary-Quaternary Sites  ➟ Community Settings

Since Flexner, undergraduate clinical medical education has occurred mainly in teaching hospitals affiliated with the Health Science Centre of the University. Often referred to as a “conventional or traditional” (18), the dominant values of this method are its departmental base, its specialist expertise exposure for students and its ecological appropriateness for future postgraduate training. Being educated elsewhere, for instance in community hospitals or practices, may be seen as a lowering of traditional standards, exposure to both doctors and non doctors whose knowledge is deemed inadequate and whose preparation for teaching and mentoring roles nonexistent.

Financial efficiencies and economic priorities have forced the teaching hospital to be the principal server of acute care cases with chronic disease care being provided for in the community. Notwithstanding the limitations of care addressed to acute and sometimes exotic diseases, the advocates of AC point out the richness and depth of teachable content entailed in acute and exotic diseases. Moreover, it is claimed that this teaching hospital setting is educationally and research oriented and contains multiple opportunities for educational interdisciplinarity (between medical specialists) and multi professionalism (between various healthcare disciplines). The teaching hospital is a total educational environment (19). Very little
of which claims are embedded in evidence. The case for Tertiary-Quaternary AC sites is principally based upon collective experiences, upholding traditions and culture and observing the successful contributions of graduates so trained to research and improved practice. Also, there is a bit of “look at me”, a graduate beneficiary of this educational system.

The case for community settings is no better informed by evidence than its AC counterpart. With a focus in acute care, the community has had to absorb those with chronic diseases, often complicating the practice base of physicians in the community, but nevertheless adding a rich stream of educational opportunities for undergraduates. The AC advocates assert that the teaching hospital is no longer an appropriate venue for undergraduates who will not see and learn how to manage common diseases. Furthermore, Chan (20) has shown that comprehensive primary care has steadily declined over the past decade. International challenges among community doctors can be remedied by Faculty Development programs and examples of successful, however brief and limited, programs in the community abound. The literature points to the benefits of “distributed learning”, for learners, teachers and the medical sciences centre (21).

Choice between the AC and the PC clinical curriculum is poorly guided by evidence. Accordingly, reform favouring one side or the other needs to be thoroughly evaluated. It is entirely legitimate to reform curriculum based solely on shared collective experiences, provided evaluative mechanisms and in place to alter or reverse the reform if so justified by evidence.

2. Internally Driven ➔ Externally Influenced

A growing literature exists connecting the health sciences centre with the community (22). Medical education has been criticized for losing touch with health needs in the community. Hence the reiteration of a social contract implying that medical schools, their students and teachers are granted certain rights and privileges requiring reciprocity to the community. This reciprocal relationship demands that students gain an understanding of basic community health needs by placements in appropriate community sites. The literature reveals that community based education for medical students is brief and not very significant in the whole scheme of things. The PC advocates support a larger curriculum concentration in the community to enhance students’ practice skills, to reflect the predominant realities of practice and to fulfill the social contract. Thus evidence of small success is established. The evidence for large-scale community education is not. A switch from the teaching to the community hospital or practice is an innovation awaiting validation.

Much the same criticism can be leveled at the teaching hospital as the primary site of undergraduate clinical training. Having 100 years of experience so doing, gives it credibility but not evidence. It is not known what balance of these experiences constitutes improved education. The current balance tipping in favour of community has more to do with the pragmatics of disease distributions and the sites in which they are managed; the sites of service has more to do with economic efficiency than idealism of medical-community reciprocity and contract.

In the 3 major reform of the last century the objective was to improve education with the overriding purpose of better serving the community. The specifics of curriculum organization,
content and methods were internally chosen. With CanMEDS and its variants adapted elsewhere, the origins reflected community interest, indicative of a pendulum swing favouring the external agenda. Reinforcing the swing to community based education is the well documented shortage of primary care physicians (23). The argument of exposure equaling career selection is not evidentially sound, but nevertheless trumpeted, as a means to meet community needs. The evidence for each side is not very strong. This weakness would argue in favour of experimentation with educational innovations rather than insisting on the status quo.

3. More Science ↔ More Primary & Ambulatory Care

The Flexner position regarding Basic Sciences as the foundation and an integral component of undergraduate medical education has not seriously been challenged by subsequent small changes or major reforms at least not intentionally. Although, the PBL innovation prevailed mainly as a preclerkship curriculum it inadvertently moved Basic Sciences instruction into a functional role in the service of clinical problem solving. In so designing the position of the basic scientist and sciences in preclinical education was eroded (24). Somewhat anomalously the preferred science of the undergraduate curriculum emerged as translational or application research, with epidemiology and the social sciences lagging behind in perceived importance (25).

In this Academic setting science has primacy in terms of resource allocation and prestige. The institution of medical education is now most commonly referred to as “the medical/health sciences centre” and not medical school. This nomenclature confirms the priority of science and the diminishing role of education. The logic of an institution so labeled would inevitably suggest an emphasis on science and research education and training. Hence the pull of curriculum towards a science based and research oriented curriculum. Supporting this position is the LCME & CACMS requirement in North America to provide research opportunities to medical students.

Even though the health sciences centre has a dominant focus on research and an environment where evidence has social capital far exceeding common sense or experience, the alarm of physicians shortages and unacceptable proportions of individuals without doctors is clearly heard. Thus despite the emphasis on science, the curriculum cannot ignore the community responsibility. In a condition of shortages and “orphan” patients the call for more primary and ambulatory care education is compelling and cannot be ignored.

The literature in education has not broached this ongoing and serious dilemma. The extension of the health science centre into under-serviced areas exemplified by Victoria and Prince George examples at the University of British Columbia or the alternative tactic of establishing a new school such as the Northern Medical School in Ontario have not yet borne evidence of worth in solving either shortages or orphans. That comparative studies of these different tactics are not done is a matter of failure to answer the larger education research questions.

4. More Research Opportunities ↔ More and Earlier Clinician Experiences

In the PC the object is to ensure that students acquire more and earlier clinical exposure. It is a learning-on-the-job orientation and one that students advocate as necessary and desirable.
The AC proponents point out that naiveté is not a substitute for knowledge and that before seeing patients some fundamentals of body structures and processes are *sine qua nons* of clinical care, even under supervision. The literature endorsing earlier clinical exposure is replete with examples of student attachments to family, for example, over the undergraduate time span. Students seem to favour these attachments partly because it provides grounding for conceptual knowledge and partly as a vehicle to leverage career choice.

The PC advocates recognize the increasing proportions of entry classes with advanced research degrees and the appropriateness of them continuing their research education. Health Sciences Centres normally contain multiple opportunities for research placements in multiple disciplines. Students also recognize the advantages to their career paths of a research track record.

The issue in question remains whether the health sciences centre can successfully play both sides and the empirical question of the effects of taking one or the other or both of these opportunities remains to be answered.

5. **Doing Research** ↔ **Applying Research Evidence in Practice**

This continuum is an extension of the tension between a curriculum that favours the doing of research as scholarship versus applying research evidence in practice settings as critical thinking. It is not to say that all scholarship is research or that all critical thinking is contained in the application of research to clinical decision-making. The AC position is that the doing of research (or participating in its doing) is the best route to understanding the appropriateness and limitations of applying research findings to clinical decisions. The AC group claims that critical thinking around clinical decision making involves balancing acumen with evidence and that this combination will lead to better and safer practice (28).

The question to be posed is must this tension be resolved solely by the undergraduate curriculum? We do not yet know which part of the educational continuum from undergraduate, postgraduate and continuing is best suited to honing research skills sets or learning how to balance clinical acumen and evidence application. The stock answer might be left to individual choice and decisions. However, such choices and decisions will not be “evidence informed” unless and until such educational research takes place.

**Summary and Next Steps**

There is little doubt that the debate between AC and PC will continue. That the literature is not adequate as a means of resolution should not be viewed negatively. The complexity of a research undertaking to clarify overall best educational practice regiments against its doing. Whilst the educational literature is evolving rapidly to answer small change questions, it does not, nor will it in the foreseeable future, be capable of answering big curriculum reform questions. Reform is best seen as innovation that should be subject to rigorous evaluation. Generalizations across curricula may be sought by comparative interinstitutional evaluative studies.
Predicting the future is a hazardous endeavour and one not likely to answer empirical questions (29). Thoroughly evaluated innovations are the preferred route to take.

Annotation re: The Influence of Science and Evidence on Medical Education: Cluster D


Peterson calls for a better understanding of medical education resulting from medical education research. Acknowledging that although there is not much of it, research in this field will yield a variety of benefits in curriculum design and assessment. He suggests that if medical education research is to inform more teachers it must become “accessible, comprehensible, convincing and demonstrably related” to the real issues faced by medical teachers.

Annotated Bibliography

   Harden and colleagues proposed six themes that distinguished traditional curriculum design from innovative design. The traditional curriculum is teacher centred, focused on information gathering and analysis, discipline based with a standard program and oriented toward apprenticeship training. The innovative curriculum on the other hand is student centred, problem-based, integrated, community based with electives and systematic. The Harden position was primarily based on principles underlying the McMaster problem based curriculum.

   Gladwell cites a variety of examples from different sciences to show that innovative ideas are often hold simultaneously by in different places by different scientists. He also points out the singularity of artistic geniuses in control to the multiplicity of similar innovations by scientists. In the sciences collaborative activity using eclectic information sources is often highly productive.

   Kay, a fellow of Apple Computer Inc., asserts that the best way to predict the future is to invent it. The making of the future is made possible by having science and technology allows envisioned ideas to actually be built. He describes the difficulty in predicting when immersed in the context, the futility of brainstorming as a means of coming up with new ideas. Our capacity to predict accurately is not dependent upon learning more but on how well we are able to unlearn. He provides a listing of pertinent wrong predictions, e.g. “There is no reason anyone would want a computer in their home”: Ken Olson, President, Chairman and Founder of Digital Equipment Corporation, 1977.

Frank and Langer claim that the training of future surgeons must be directed at meeting the needs of modern society. Accordingly, aside from knowledge and skills typically associated with surgery education and training the authors emphasize the patient centred skills related to collaboration, communication management and advocacy. They provide a description of these competencies and a developmental framework for their implementation in postgraduate surgical training programs across Canada.

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Ayelet Kuper, MD, DPhil, FRCPC

Brève Revue de la littérature sur la recherche en éducation médicale

Résumé

De nombreux travaux ont porté sur la recherche en éducation médicale depuis la fin des années 1990. Ces travaux ont touché à la qualité des travaux, le financement de la recherche, les défis et occasions de développement de la recherche en éducation médicale.

Selon Collins (2006), parmi les défis importants de la recherche en éducation médicale figure la formation insuffisante des chercheurs dans le domaine des sciences sociales, le fait que plusieurs centres de recherche ne comptent qu’un nombre restreint de chercheurs (ceci ayant pour effet de rendre difficile la création d’une masse critique et d’un environnement stimulant au plan intellectuel), et l’absence de moyen financier adéquat pour supporter la recherche. Gruppen (2007) met lui aussi en lumière ce qu’il estime être les points faibles de la recherche en éducation médicale: 1) des conditions de travail qui favorisent peu les échanges entre les chercheurs (en raison de leur nombre restreint dans les centres et bureaux de recherche); 2) l’absence de formation adéquate en recherche; 3) l’ampleur de la tâche administrative confiée aux chercheurs en éducation médicale, réduisant d’autant le temps consacré à la recherche. Ces contraintes ont pour effet de rendre difficile l’atteinte de standards de qualité élevée en matière de production scientifique.

Albert et al. (2007) rapporte qu’une majorité de figure de proue dans le milieu de la recherche en éducation médicale estime qu’en dépit d’un accroissement général de la qualité de la recherche en éducation médicale depuis le début des années 1990, un certain nombre de lacunes demeuraient toujours à être comblées : 1) le manque de formation des chercheurs – et ce, tant au plan de leurs connaissances au plan théorique qu’à celui de leurs connaissances en science sociale –; 2) le caractère répétitif des études – donnant l’impression que les recherches contribuent peu à l’avancement des connaissances en éducation médicale –; et 3) l’absence de programme de recherche à long terme, faisant en sorte que les projets demeurent de petite envergure. Trois facteurs ont été identifiés par les répondants pour expliquer les difficultés actuelles de la recherche en éducation médicale : les conditions de travail des chercheurs (les tâches administratives et de service considérables), les contraintes budgétaires en matière de financement de la recherche en éducation médicale (sources de financement réduites et irrégulières), et la conception dominante de la recherche dans le milieu médicale, très influencé par le modèle des sciences expérimentales.

Un seul article porte sur la qualité de la recherche visant les études sous-graduées (Baernstein, 2007). Les résultats montrent que bien que la qualité des études s’accroît, il reste encore place à l’amélioration. Les auteurs semblent toutefois considérer les essais randomisés comme le «gold standard» de la recherche; ce qui a pour conséquences de réduire sensiblement le registre des recherches qui répondent à leurs critères.

Les résultats de Cook, Bordage et Schmidt (2008) montrent que seule une minorité d’articles (12% du corpus analysé) ont pour objectif de générer une compréhension en profondeur des phénomènes étudiés; les autres articles se limitant à décrire une situation donnée ou à tester l’efficacité d’une intervention. Les articles classés comme étant les meilleurs se caractérisent par le fait qu’ils comportent un cadre théorique, ce qui leur permettrait de comprendre les mécanismes sous-jacents aux observations empiriques. Ce faisant, les auteurs soutiennent que ce type d’article est également celui qui permet d’avoir les plus grandes retombées sur les pratiques pédagogiques précisément parce qu’ils vont au-delà de l’observation factuelle et cherchent à comprendre le pourquoi et le comment des phénomènes.

Deux questions principales ont été abordées par les travaux sur le financement de la recherche en éducation médicale : 1) est-ce que la recherche en éducation médicale bénéficie d’un financement adéquat? 2) est-ce que les travaux de recherche subventionnés sont de meilleure qualité que ceux qui ne le sont pas? Pour ce qui est des travaux qui se sont concentrés sur la première question, deux conclusions ressortent : la recherche en éducation médicale est insuffisamment financée (Carline, 2004; Reed et al. 2005), et un financement accru contribuerait à créer les conditions favorables à la réalisation de travaux de meilleur qualité. L’étude qui s’est intéressée à question du rapport entre le financement de la recherche et la qualité des travaux (Reed et al. 2007) arrive à la conclusion que les travaux qui ont reçu un appui financier sont de meilleure qualité que ceux qui n’ont pas bénéficié d’un tel appui.

Thèmes majeurs identifiés :

- Les conditions de travail des chercheurs en éducation médicales favorisent peu les échanges entre les chercheurs (en raison de leur nombre restreint dans les centres et bureaux de recherche).
- La formation des chercheurs est souvent inadéquate.
- L’ampleur de la tâche administrative confiée aux chercheurs en éducation médicale réduit le temps consacré à la recherche.
- Les études sont souvent répétitives, ce qui donne l’impression que les recherches contribuent peu à l’avancement des connaissances
- Peu de chercheurs ont des programmes de recherche, ce qui fait que les travaux demeurent ponctuels et d’envergure réduite.
• Seule une minorité de travaux ont pour objectif de générer une compréhension en profondeur des phénomènes étudiés; les autres se limitant à décrire une situation donnée ou à tester l’efficacité d’une intervention.
• La recherche en éducation médicale est insuffisamment financée.

Conclusions et orientations

• Les limitations méthodologiques qui ont souvent cours dans la recherche en éducation médicale peuvent étouffer les vraies innovations dans les Facultés de Médecine en limitant les idées nouvelles à celles qui sont aisément étudiées dans les paradigmes de recherche les plus courants. L’interdisciplinarité et l’élargissement méthodologique de l’horizon des médecins en recherche sont deux manières d’éviter une telle réduction du point de vue et de permettre de réelles innovations dans les cursus, les objectifs et les outils d’évaluation en éducation médicale.

• Afin d’améliorer la recherche sur la formation médicale et mieux comprendre les facteurs qui participent à l’excellence en matière de formation des futures médecins, davantage de ressources doivent être allouées à la recherche en éducation médicale. Ces ressources devraient prioritairement être allouées à la formation d’équipes interdisciplinaires composées de chercheurs en sciences expérimentales et sociales.

• Si les Facultés de Médecine canadiennes veulent que leurs chercheurs en éducation médicale deviennent des leaders mondiaux, elles doivent éviter de les surcharger de tâches administratives et doivent leur apporter un support dans leur poursuite de l’excellence académique.

• Les facultés de médecine devraient donner l’occasion aux étudiants en médecine de se familiariser avec tous les types de recherche : recherche expérimentale, recherche clinique, recherche sociale quantitative et qualitative. Cette familiarisation devrait commencer au niveau sous-gradué pour que les étudiants puissent acquérir une connaissance exhaustive des diverses formes de recherche. Deux objectifs sont visés : a) s’assurer que les futures chercheurs en éducation médicale, issus des facultés de médecine, aient reçu une formation scientifique adéquate; b) s’assurer que tous les médecins puissent comprendre la spécificité des divers types de recherche et en tirer les informations pertinentes pour leur pratique clinique.

Meilleures pratiques et innovations :
Pas d’innovations spécifiques identifiées.
**Texte Intégral**

**Introduction**

De nombreux travaux ont porté sur la recherche en éducation médicale depuis la fin des années 1990. Ces travaux ont touché à plusieurs dimensions, par exemple : la qualité des travaux, le financement de la recherche, les défis et occasions de développement de la recherche en éducation médicale. D’autres travaux, ou, plus précisément, des commentaires et éditoriaux, ont porté sur la définition «légitime» de la recherche en éducation médicale. Ces textes ont mis de l’avant diverses positions quant au rôle que devrait jouer la recherche en éducation médicale, les méthodes qui devraient être utilisées pour parvenir aux meilleurs résultats possibles, et les lecteurs qui devraient être prioritairement ciblés par les travaux. La brève revue de la littérature qui suit vise deux objectifs : 1) rendre compte des travaux ayant porté sur la recherche en éducation médicale; et 2) rendre compte des principales positions dans le débat autour de la définition «légitime» de la recherche en éducation médicale.

**Méthode**


**Résultats**

La qualité de la recherche en éducation médicale

Un nombre croissant de travaux aux cours des dernières années a porté sur la question de la qualité de la recherche en éducation médicale. En effet, concurremment au développement de la recherche elle-même en éducation médicale, plusieurs chercheurs ont exploré diverses questions liées à la qualité. Dans un article faisant une synthèse partielle de la littérature sur les défis auxquels fait actuellement face la recherche en éducation médicale, Collins (2006) s’interroge sur les facteurs pouvant contribuer à l’amélioration ou, au contraire, à la diminution la qualité de la recherche. Selon l’auteur, parmi les défis importants auxquels fait actuellement face la recherche en éducation médicale figure la formation insuffisante des chercheurs dans le domaine des sciences sociales, le fait que plusieurs centres de recherche ne comptent qu’un nombre restreint de chercheurs (ceci ayant pour effet de rendre difficile la création d’une masse critique et d’un environnement stimulant au plan intellectuel), et l’absence de moyen financier adéquat pour supporter la recherche.

Dans une perspective similaire, Gruppen (2007a) met lui aussi en lumière ce qu’il estime être les points faibles de la recherche en éducation médicale. Certains des aspects qu’il met en lumière recoupent ceux déjà notés par Collins (2006): 1) des conditions de travail qui favorisent peu les
échanges entre les chercheurs (en raison de leur nombre restreint dans les centres et bureaux de recherche); 2) l’absence de formation adéquate en recherche; 3) l’ampleur de la tâche administrative confiée aux chercheurs en éducation médicale, réduisant d’autant le temps consacré à la recherche. Ces contraintes ont pour effet de rendre difficile l’atteinte de standards de qualité élevé en matière de production scientifique.

Dans une étude sociologique sur le champ de la recherche en éducation médicale, Albert et al. (2007) ont exploré le point de vue de 23 leaders sur l’état actuel de la recherche en éducation médicale et sur les moyens qu’ils privilégient pour favoriser l’amélioration de la qualité (dans l’éventualité où une telle amélioration apparaîtrait nécessaire). Une majorité de répondants ont estimé qu’en dépit d’un accroissement général de la qualité de la recherche en éducation médicale depuis le début des années 1990, un certain nombre de lacunes demeuraient toujours à être comblées. Parmi celles mentionnées le plus souvent figurent : 1) le manque de formation des chercheurs – et ce, tant au plan de leurs connaissances au plan théorique qu’à celui de leurs connaissances en science sociale –; 2) le caractère répétitif des études – donnant l’impression que les recherches contribuent peu à l’avancement des connaissances en éducation médicale –; et 3) l’absence de programme de recherche à long terme, faisant en sorte que les projets demeurent de petite envergure. Trois facteurs ont été identifiés par les répondants pour expliquer les difficultés actuelles de la recherche en éducation médicale : les conditions de travail des chercheurs (les tâches administratives et de service considérables), les contraintes budgétaires en matière de financement de la recherche en éducation médicale (sources de financement réduites et irrégulières), et la conception dominante de la recherche dans le milieu médicale, très influencé par le modèle des sciences expérimentales. Ces difficultés, on le voit, recoupent celles identifiées par Collins (2006) et Gruppen (2007a). Au chapitre des moyens pouvant contribuer à l’amélioration de la recherche, deux moyens principaux ont été mis de l’avant par les leaders : intensifier la collaboration entre les détenteurs de PhD et les cliniciens, et favoriser la diversification des disciplines engagées dans la recherche en éducation médicale.


Un seul article porte sur la qualité de la recherche visant les études sous-graduées (Baernstein, 2007). Les résultats montrent que bien que la qualité des études s’accroît, il reste encore place à l’amélioration. Les auteurs semblent toutefois considérer les essais randomisés comme le «gold standard» de la recherche; ce qui a pour conséquences de réduire sensiblement le registre des recherches qui répondent à leurs critères.

Un dernier article majeur portant sur l’évaluation de la qualité de la recherche en éducation médicale est signé par Cook, Bordage et Schmidt (2008). Les auteurs ont procédé au classement de 110 articles publiés en 2003 et 2004 dans six revues en éducation médicale en utilisant comme critère l’objectif de recherche poursuivi par les auteurs. Les résultats montrent que seule une minorité d’articles (12% du corpus analysé) ont pour objectif de générer une compréhension en profondeur des phénomènes étudiés; les autres articles se limitant à décrire une situation donnée ou a tester l’efficacité d’une intervention. Les articles classés comme étant les meilleurs se caractérisent par le fait qu’ils comportent un cadre théorique, ce qui leur permettrait de
comprendre les mécanismes sous-jacents aux observations empiriques. Ce faisant, les auteurs soutiennent que ce type d’article est également celui qui permet d’avoir les plus grandes retombées sur les pratiques pédagogiques précisément parce qu’ils vont au-delà de l’observation factuelle et cherchent à comprendre le pourquoi et le comment des phénomènes.

Sur la question de la qualité de la recherche en éducation médicale, on pourra lire également avec intérêt Lurie (2003), Reeves et al. (2006), Shea et al. (2004), et Todres et al. (2007).

Le financement de la recherche en éducation médicale

Certains travaux se sont intéressés au financement de la recherche en éducation médicale. Deux questions principales sont abordées par ces travaux : 1) est-ce que la recherche en éducation médicale bénéficie d’un financement adéquat? 2) est-ce que les travaux de recherche subventionnés sont de meilleures qualités que ceux qui ne le sont pas? Pour ce qui est des travaux qui se sont concentrés sur la première question, deux conclusions ressortent. La première est à l’effet que la recherche en éducation médicale est, de façon générale, insuffisamment financée (Carlone, 2004; Reed et al. 2005), et, la seconde, à l’effet qu’un financement accru contribuerait à créer les conditions favorables à la réalisation de travaux de meilleur qualité, et, par extension, avoir un plus grand impact sur la pratique de l’enseignement médicale (Carlone, 2004; Reed et al. 2005). Pour sa part, l’étude qui s’est intéressée à question du rapport entre le financement de la recherche et la qualité des travaux (Reed et al. 2007) arrive à la conclusion que les travaux qui ont reçu un appui financier sont de meilleur qualité que ceux qui n’ont pas bénéficié d’un tel appui. Ces résultats viennent supporter les conclusions des études sur le financement de la recherche selon lesquelles un meilleur financement pourrait contribuer à rehausser la qualité des travaux de recherche en éducation médicale.

Le débat autour de la recherche en éducation médicale

En parallèle aux travaux cités ci haut, un grand nombre de commentaires et d’éditoriaux portant sur ce que devrait être la recherche en éducation médicale ont été publiés depuis le milieu des années 1990. Compte tenu du nombre élevé de textes publiés sur le sujet, la question de la qualité de la recherche semble constituer l’une des préoccupations centrales parmi la communauté des chercheurs en éducation médicale. Nous ne ferons ici que résumer les principales positions exprimées, soient celles touchant à la théorie, à la méthodologie, et au rôle qui devrait être celui de la recherche en éducation médicale et au public qui devrait être visé par cette recherche.

En ce qui a trait à la théorie, le débat porte essentiellement sur la place de celle-ci dans la recherche en éducation médicale. Alors que certains estiment que la théorie est inutile étant donnée la dimension appliquée de la recherche en éducation médicale (Colliver, 2003), d’autres pensent au contraire que celle-ci est fondamentale si l’on souhaite comprendre les principes sous-jacents aux observations empiriques et intervenir plus efficacement dans les processus pédagogiques (Norman, 1999; Reeves et al. 2006).

Pour ce qui est du débat autour de la méthodologie, celui-ci oppose deux visions de la recherche. D’une part, certains chercheurs estiment que la recherche quantitative est la seule qui puisse
donner lieu à des résultats valides et, ce faisant, produire des «évidences» permettant de travailler à l’amélioration de la pratique pédagogique (Colliver, 2003; Lurie, 2003; Torgerson, 2002). D’autre part, certains chercheurs estiment plutôt que toutes les formes de recherche et toutes les méthodes sont valables dépendamment de l’objet de la recherche. Contrairement aux chercheurs précédents, ces derniers estiment que la recherche quantitative n’est pas la seule méthode légitime, mais que d’autres méthodes, telles les méthodes qualitatives, doivent aussi être utilisées lorsque l’objet de recherche le requiert (Buckley, 1998; Kuper et al. 2007; Murray, 2002).

Le troisième objet de débat touche au rôle qui devrait être celui de la recherche en éducation médicale et au public qui devrait être visé par cette dernière. Alors que certains chercheurs estiment que la recherche devrait être prioritairement être axée vers la résolution de problème et le service aux facultés de médecine (McGuire, 1996; Searle and Prideaux, 2005), d’autres pensent plutôt qu’il devrait y avoir un équilibre entre la recherche axée vers le service et la recherche visant l’avancement des connaissances théoriques (Bligh and Parsell, 1999; Gruppen, 2007b). Selon ces derniers, cet équilibre serait plus susceptible de favoriser la production de travaux à la fois rigoureux au plan académique et utiles au plan de la formation des médecins.

**Bibliographie annotée**


   Dans leur étude sur le point de vue de 23 leaders en éducation médicale sur l’état actuel de la recherche en éducation médicale, Albert et al. (2007) montrent qu’une majorité d’entre eux estime que la qualité de la recherche en éducation médicale présente un certain nombre de lacunes: 1) le manque de formation des chercheurs; 2) le caractère répétitif des études; et 3) l’absence de programme de recherche à long terme. Les facteurs pouvant expliquer ces lacunes sont : l’ampleur de la tâche administrative qui réduit le temps consacré à la recherche, les contraintes budgétaires en matière de financement de la recherche, et la conception dominante de la recherche dans le milieu médicale, très influencé par le modèle des sciences expérimentales.

2. **Collins J. Medical Education Research: Challenges and Opportunities. Radiology 2006;240:639-47.**

   En s’appuyant sur une revue de littérature exhaustive, Collins (2006) montre que les principales faiblesses de la recherche en éducation médicale sont : la formation insuffisante des chercheurs en sciences sociales, le nombre restreint de chercheurs dans plusieurs centres de recherche (ceci ne permettant pas de créer une masse critique de chercheurs), et l’absence de moyen financier adéquat pour supporter la recherche. Si Collins présente, à titre d’exemple, divers centres de recherche en éducation médicales considérés comme productifs, il ne mentionne pas cependant de pistes de solution aux problèmes qu’il a soulevés.
3. **Gruppen LD. Improving medical education research. Teach and Lear in Med 2007a; 19:331-5.**

Gruppen (2007a), met en lumière ce qu’il estime être les points faibles de la recherche en éducation médicale. Certains des aspects qu’il met en lumière recoupent ceux déjà notés par Collins (2006): 1) des conditions de travail qui favorisent peu les échanges entre les chercheurs; 2) l’absence de formation adéquate en recherche; 3) l’ampleur de la tâche administrative confiée aux chercheurs en éducation médicale, réduisant d’autant le temps consacré à la recherche. Ces contraintes ont pour effet de rendre difficile l’atteinte des plus hauts standards de qualité en matière de production scientifique.


Cook, Bordage et Schmidt (2008) ont classé 110 articles publiés en 2003 et 2004 dans six revues en éducation médicale selon leur objectif de recherche. Seule une minorité d’articles (12% du corpus analysé) ont pour objectif de générer une compréhension en profondeur; les autres articles se limitant à décrire une situation donnée ou a tester l’efficacité d’une intervention. Les articles classés comme étant les meilleurs comportent un cadre théorique, ce qui leur permettrait de comprendre les mécanismes sous-jacents aux observations empiriques. Les auteurs soutiennent que ces articles sont ceux qui permettent d’avoir les plus fortes retombées sur les pratiques pédagogiques parce qu’ils vont au-delà de l’observation factuelle et cherchent à comprendre les mécanismes sous-jacents aux phénomènes observés.

Références

Enseignement et pratique de la médecine : quels sont les principaux défis engendrés par les technologies de l’information et de la communication (TIC)

Résumé

Les technologies de l’information et de la communication (TIC) engendrent quatre défis principaux pour l’éducation médicale. Le premier concerne une meilleure préparation des futurs médecins à l’évolution du comportement des patients branchés sur internet, qui en connaissent beaucoup plus sur leur condition et sur le domaine médical. Le second consiste à sensibiliser les médecins aux nombreux avantages des TIC, tant au plan de la qualité des interventions et des soins fournis aux patients qu’à l’amélioration de l’organisation des soins de santé. Le troisième défi est d’amener les futurs médecins à faire usage des TIC pour s’informer, apprendre et se perfectionner. Ceci implique le développement de la compétence informationnelle (connaître et de maîtriser les techniques pour utiliser les divers outils qui facilitent l’accès à l’information (sites Web, bases de données, etc.) afin de trouver des réponses à des problèmes rencontrés en pratique. Finalement, le dernier défi est de changer les pratiques en éducation médicale, en milieu universitaire ou hospitalier.

Thèmes majeurs identifiés:

La présence exponentielle des TIC dans notre société, loin de n’être qu’un fléau pour la pratique et l’enseignement de la médecine, devrait plutôt être perçue comme un avantage important qui permettrait de faire usage des TIC pour s’infirmer, apprendre et se perfectionner. Ceci implique le développement de la compétence informationnelle (connaître et de maîtriser les techniques pour utiliser les divers outils qui facilitent l’accès à l’information (sites Web, bases de données, etc.) afin de trouver des réponses à des problèmes rencontrés en pratique. Finalement, le dernier défi est de changer les pratiques en éducation médicale, en milieu universitaire ou hospitalier.

Innovations, conclusion et orientations.

La littérature scientifique montre de nombreux avantages inhérents au e-learning, avec la flexibilité qui vient le plus souvent au premier plan. Ce mode d’enseignement, encore trop peu répandu dans bon nombre de facultés de médecine, constitue l’avenir de la formation médicale initiale ou continue. Le rôle des simulateurs virtuels, des animations 3D, des ressources et des communautés virtuelles est brièvement abordé puisqu’ils constituent des innovations importantes et prometteuses dans le domaine de l’éducation médicale. Il est nécessaire d’introduire les futurs praticiens à ces métamorphoses à venir afin de leur permettre d’en comprendre l’impact sur le
Texte intégral

Introduction

Ce texte présente une revue des principaux impacts et défis posés par les technologies de l'information et de la communication (TIC) sur la pratique et l’enseignement de la médecine. Quand on pense à l’impact des technologies dans certains domaines comme la médecine, on pense surtout aux avancées techniques, aux machines plus sophistiquées, mais très peu de personnes réalisent que les TIC sont aussi appelées à changer la façon dont on pratique et enseigne la médecine. De surcroît, tel que l’indique Fieschi (1), les TIC ont pris une place importante dans le domaine médical alors que la pratique et l’enseignement de la médecine vivaient une crise. Selon lui, les sociétés occidentales ont été assaillies au cours des 25 dernières années par plusieurs questions sur l’efficacité de l’enseignement et la pratique de la médecine. D'une part, « biological and surgical techniques were developed and extensively used and, on the other hand, medicine was fragmented into numerous sub-specialties as medical knowledge improved. As a result, the costs of medical procedures increased considerably. the quality of patient/physician relationships was tarnished and, in addition, iatrogenic risks were not and have not yet been fully controlled. » (1).

En 2008, Internet fête ses 39 ans. En l’espace de quelques années seulement, cet outil, d’abord réservé à l’armée et aux universités américaines, est devenu pour les individus de tous les continents un élément indispensable du quotidien, comme en témoigne le nombre d'internautes sur la Terre qui est passé de 16 millions en 19959 à plus de 1,407 millions en 200810 (voire Figure 1). Comme l’indiquait Kofi Annan lors du dernier Sommet mondial sur la société de l’information, nous vivons à une époque de mutations rapides où les technologies jouent un rôle de plus en plus central dans tous les domaines d’activité de nos vies ; elles ont également une influence importante sur l’évolution de l’ensemble des sociétés de la planète et affectent de façon significative toutes les dimensions économiques, sociales ou culturelles. Même si les TIC sont avant tout des moyens efficaces de diffusion de l'information et de communication, elles se sont rapidement faites remarquer par l'étendue de leurs domaines d'application dans diverses communautés professionnelles, dont la médecine.

Avec les TIC, tout change : notre façon de vivre, d'apprendre, de travailler, voire même de socialiser. Depuis quelques années, ces métamorphoses sociétales se sont encore plus accélérées avec l’arrivée du Web 2.0 où les interfaces permettent aux internautes d'interagir à la fois avec le

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9 Source : IDC (http://www.idc.com/)
10 Source : Internet World Stats (http://www.internetworldstats.com)
contenu des pages mais aussi entre eux. Contrairement à ses débuts où Internet contenait surtout des pages Web statiques, dans le Web2.0, l'internaute est plutôt considéré comme le héro du Web, le principal acteur qui contribue à alimenter le contenu du site, tout en informant ses pairs de son évolution. Avec le Web 2.0, les citoyens de tous les pays ont la possibilité d’être les artisans de leur destinée, et, donc, de participer activement à ce monde technologique. Le site YouTube, invention technologique de l’année 2006 selon le Time Magazine est un exemple de l’avancement du Web 2.0. Dans le domaine médical, on y retrouve quelque 84000 animations ou extraits de conférences, comme par exemple l’animation des mouvements du cœur (Figure 2).  

Figure 2 : Animation du site YouTube.com.

Selon Heath, Luff et Svensson (2), l’un des plus importants développements dans le domaine de la santé au cours des 25 dernières années est l’incursion des technologies de l’information et de la communication (TIC). Selon eux, ces technologies ont une variété d’impacts comme par exemple sur la pratique professionnelle, l’expérience vécue par les patients, la gestion ou l’organisation des systèmes de santé.

Premier défi : préparer les médecins à l’évolution du comportement des patients branchés :

Plusieurs études montrent qu’un des plus importants impacts des TIC sur l’enseignement de la médecine est celui de bien préparer les praticiens de demain à l’évolution du comportement des patients. En effet, les recherches montrent que les habitudes des patients ont beaucoup changé au cours des dernières années. Non seulement font-ils appel aux TIC pour mieux comprendre le domaine médical, mais ils sont aussi en réseaux afin de s’informer les uns les autres, de donner leur opinion sur leur médecin, de remettre en question certaines pratiques médicales, voire d’entreprendre des poursuites judiciaires. Pour Duvvuri et Jianhong (3), les TIC ont définitivement transformé la relation entre le patient et le médecin, ce qui implique selon eux une préparation différente des médecins en devenir. Fieschi (1), mais aussi Denef, Lebrun et Donckels (4) indiquent même que les patients ont une longueur d’avance sur les médecins quant à l’usage d’Internet pour s’informer dans le domaine médical et que, parfois, ils se retrouvent devant leur médecin en ayant plus d’informations que lui sur la maladie dont ils sont atteints. En fait, « avec l’omniprésence d’Internet dans les foyers et la présence grandissante de portails virtuels grand public comme Healthgate et Medecinenet.com de plus en plus de patients consultent le médecin après avoir navigué sur le Web » (5).

La littérature scientifique révèle également de nouvelles possibilités dans la relation patient-praticien, en particulier dans le cas de malades qui se sentent isolés ou qui ne sont pas en contexte hospitalier comme les personnes âgées (6) ou encore les personnes atteintes de maladies
chroniques. Tel que l’indique Lucas (7) avec les TIC, les patients « can link with others, again using the Internet and mobile telephone networks, to share information, seek advice [...] ».

Avec Internet, la connaissance dans le domaine médical n’est plus l’apanage des spécialistes de la santé. Il y a, en quelque sorte, une démocratisation du savoir scientifique et médicale qui affecte de façon profonde la relation traditionnelle entre le patient, jadis néophyte, et le praticien qui possédait un statut de savant.

Ce changement de rapport entre le patient et le praticien fait en sorte que les pratiques médicales sont de plus en plus remises en question, d’une part, mais aussi que le statut associé à la profession médicale est solidement ébranlé par les TIC (8).

Malgré cette métamorphose de la relation entre le patient et le praticien, Willmer (9) souligne que l’usage de plus en plus important des TIC, tant par les patients que par les praticiens, permettra en bout de ligne d’améliorer la qualité des soins offerts aux patients. Certains, comme la Commission européenne, semblent même avoir embrassé cette nouvelle attitude des patients et voient dans cela une façon de les rendre plus responsables de leur propre santé. Les patients ainsi mieux informés sont souvent plus enclins à être impliqués dans la gestion de leur santé : « they want to be part of the health decision process and are increasingly requesting access to the data contained in their medical records. » (1). Gatzoulis et Iakovidis (10) parlent de « citizen-centered care » qui implique nécessairement une plus grande implication de la part des patients, et ce, à tous les niveaux de la pratique médicale (prévention, diagnostic, traitement et suivi).

L’arrivée des TIC, c’est un changement de paradigme dans la pratique et l’enseignement de la médecine ; c’est une place plus importante accordée au partage de l’information, c’est un peu ce que Fieschi (1) appelle le patient empowerment. Les TIC ne devraient donc pas être perçues, comme c’est le cas pour plusieurs praticiens, comme un fléau, mais plutôt comme un moyen d’impliquer davantage les patients dans leur propre santé. En outre, tel que l’indique Broom (8) « it is argued that the ways in which these specialists are adapting to the Internet and the Internet user should be viewed as strategic responses, rather than reflecting a breakdown in their authority or status. ».

Dans les pays où la population a largement accès à Internet, comme c’est le cas pour l’Amérique du Nord où quelque 73 % des foyers sont branchés, cette nouvelle attitude du patient est appelée à changer la pratique médicale et pose par le fait même de sérieux défis à la formation initiale et continue dans le domaine de la médecine.

**Deuxième défi : sensibiliser les futurs praticiens aux nombreux avantages des TIC :**

La présence exponentielle des TIC dans notre société, loin de n’être qu’un fléau pour la pratique et l’enseignement de la médecine, est susceptible d’engendrer de nombreux avantages tant pour les patients et les médecins que pour l’organisation et la gestion des soins de santé.

**Avantages concernant la qualité des interventions et des soins fournis aux patients :**

Au-delà des défis que posent les TIC à la relation médecin-patient, il faut aussi voir dans ce virage technologique de nombreux avantages. Les TIC permettent notamment aux patients d’interagir plus facilement avec les experts du domaine de la santé, sans pour autant devoir se déplacer. Stretcher (11) souligne, par exemple, l’avantage des systèmes qui tentent d’appliquer le
jugement d’un expert à des logiciels. Il démontre également l’intérêt des interfaces qui permettent à un patient de communiquer, en direct et en ligne, avec un expert de la santé, 24 heures sur 24, 7 jours sur 7. Il pointe notamment l’avantage de tels systèmes pour certains patients qui, « because of stress, pain, or the cancer treatment itself, have irregular sleeping habits » (11). L’initiative de la cybercompagnie Medem Inc. (http://www.medem.com) est un bon exemple d’une telle interface; elle permet aux patients d’obtenir une consultation en ligne avec un médecin en tout temps, ou presque. Tel que le font remarquer Norman et ses collègues (12), le développement rapide des technologies interactives en termes de capacité de storage et de transmission de l’information multiplie donc les possibilités d’intervention entre le patient et le médecin. Alors qu’il n’y a pas si longtemps les médecins ne disposaient que de systèmes permettant d’avoir accès à des données statiques, il leur est dorénavant possible de consulter, en quelques clics, des données dynamiques, mises à jour en temps réel, et même de communiquer ou de voir son patient pour obtenir des précisions sur ces données, augmentant par le fait même la qualité des soins qui lui sont fournis.

C’est pourquoi le domaine de la télémédecine, soit l’exercice des différentes facettes de la pratique médicale (prévention, diagnostic, traitement et suivi) à distance, est de plus en plus populaire, tant pour la formation initiale que pour la formation continue des médecins (13). En fait, la télémédecine fait de plus en plus partie des systèmes de services de santé de nombreux pays industrialisés comme le Canada, les États-Unis, l’Angleterre, l’Allemagne, la France ou la Norvège (14). Le projet HERMES (15), réalisé en Europe, est un bon exemple d’une telle initiative en télémédecine. La télémédecine permet, entre autres, de poser des diagnostics à distance, d’assister des médecins spécialistes lors d’opérations compliquées, ou de faciliter aussi le suivi de patients à risque (16). Pour Suarez (16), la télémédecine facilite aussi « la pathologie centralisée, la prestation de services ruraux, la délégation des soins, les soins en milieu hostile ou inhabituel […] ». Pour Ganapathy (14), un des grands avantages de la télémédecine est qu’il est possible, en quelques secondes, d’avoir l’opinion de divers experts de partout dans le monde afin de trouver la meilleure solution à un problème rencontré. Ganapathy (14) souligne même que les spécialistes n’auront bientôt plus besoin de se déplacer pour diagnostiquer des patients: « Like most other professionals, the telespecialist of the future will offer advice from home without having to travel long distances to a hospital. Junior hospital staff currently depend on advice received by telephone, which has considerable limitations. Soon, using telemedicine, the senior consultant can evaluate the patient and the investigations from outside the hospital and make a correct decision. The patient needs (?) not wait for the next day’s ‘rounds’. » (14).

Remarquons aussi, comme l’indique Suarez (16) que la télémédecine permet d’offrir des formations ponctuelles ou continues aux experts de la santé qui travaillent en milieu hospitalier, sans qu’ils n’aient à quitter leur lieu de travail. Pour Sargeant (17), la télémédecine devient un outil hautement sophistiqué dont l’efficacité n’est plus à démontrer. Selon lui, cette technique serait aussi particulièrement efficace pour l’enseignement de la chirurgie. De plus, des environnements virtuels de télémédecine qui intègrent aussi la vidéoconférence et l’Internet permettent non seulement des consultations en temps réel avec d’autres collègues experts (18), mais aussi et surtout le suivi continu lors de procédures chirurgicales dans le cas d’internes qui sont placés dans des régions éloignées, voire dans d’autres pays.

De tels systèmes mettent de plus en plus en évidence le fait que le médecin du XXIème siècle devra aussi posséder des compétences technopédagogiques, acquises lors de sa formation universitaire, pour remplir pleinement son rôle de médecin (5). Sensibiliser les futurs professionnels de la
médecine à de telles innovations devrait donc faire partie du curriculum de la formation des
futurs médecins.
Il faut enfin souligner, tel que le fait remarquer Strecher (11), que l’usage des TIC pour la
prévention est plutôt limité et que c’est surtout pour le traitement qu’on y a recours. Selon lui, ce
fait n’est pas surprenant et devrait être vu comme un défi que les praticiens auront à surmonter.
L’usage de services préventifs doit ainsi être encouragé afin d’amener les citoyens à être plus
responsables de leur santé.

**Avantages concernant l’amélioration de l’organisation des soins de santé :**

Selon Lucas (7), « there is a growing consensus that the impact of ICT on health systems will be
substantial or even revolutionary [...] ». Même si cela n’est pas directement lié à l’enseignement
de la médecine, il semble important de signaler que plusieurs auteurs soulignent les bienfaits des
TIC pour l’organisation des soins de santé. Oh et ses collègues (20) se sont même soigneusement
penchés sur le concept de *eHealth* qui réfère avant tout au lien étroit entre l’organisation du
système de santé et aux technologies. Parmi les principaux avantages des TIC pour l’organisation
des soins de santé, Haux (21), ou Duvvuri et Jianhong (3) remarquent que les TIC permettent
avant tout l’accès à une multitude d’informations concernant le patient, présentes dans son
« dossier informatisé ». Ces informations, disponibles de façon électronique, facilitent ainsi le
suivi, la téléconsultation du dossier du patient, voire même l’éducation du patient pour qu’il
apprenne à mieux connaître sa condition médicale. Duvvuri et Jianhong (3), Ganapathy (14),
Bulterman (22) et Fieschi (1) insistent particulièrement sur les possibilités de télégestion de la
santé, tant pour la médecine préventive et les diagnostics que pour le suivi des maladies
chroniques. Les TIC permettent, par exemple, de prendre des décisions « once the parameters
delivered at home have been analyzed » (1). Internet facilitera de plus en plus cela et participera
résolument à la croissance de services de santé de qualité à distance. Il existe enfin un nombre
croissant d’appareils portatifs qui permettent de nouvelles applications prometteuses : « The
work done so far has demonstrated the potential of these platforms to enable personalized care
by empowering people to adopt a preventive lifestyle with an emphasis on early diagnosis. »
(10). Comme le font remarquer Norman et ses collègues (12), ces appareils portatifs qui sont de
plus en plus utilisés pour transmettre de l’information sur un patient, mais aussi pour bonifier le
suivi qui en est fait. Par exemple, de plus en plus d’appareils portatifs sont équipés de senseurs
qui transmettent, sans effort de la part du patient, une série d’informations au spécialiste de la
santé, lequel est ainsi en mesure de poser un meilleur diagnostic, voire d’agir si la situation du
patient le nécessite.
La formation médicale devrait, semble-t-il, sensibiliser les futurs médecins à ces divers
avantages des TIC afin de leur permettre, à leur tour, d’en tirer profit quand ils feront partie de
ces organisations (23, 1).
Haux (21) souligne également que les TIC permettent de d’évaluer, plus facilement et de façon
plus systématique, les organisations des soins et que ces mesures permettent notamment de
favoriser « quality and efficiency of patient care ». L’explosion technologique aurait aussi
favorisé une meilleure rationalisation des ressources (15, 24, 1, 21), les changements amenés par
les TIC dans l’organisation des soins de santé et dans la pratique de la médecine entraînent une
vision plus macroscopique du dossier du patient tout en favorisant le passage d’un système
d’information propre à un hôpital à un système d’information pour l’ensemble des soins de santé,
appartenant à chaque citoyen.
Troisième défi : amener les futurs médecins à faire usage des TIC pour s’informer, apprendre, se perfectionner :

Plusieurs études ont souligné les lacunes des facultés de médecine en ce qui a trait à l’intégration des TIC dans la formation médicale initiale ou continue. Par exemple, Suarez (16) indique qu’il y a peu ou prou de formation ou d’initiation aux TIC appliquées à la santé dans la plupart des cursus de formation initiale en médecine. Pourtant, selon plusieurs (25, 23, 26, 27), les TIC devraient impérativement faire partie de la formation initiale et continue des médecins car elles sont, d’une part, omniprésentes dans leur contexte de travail et, d’autre part, essentielles à l’actualisation des connaissances d’un professionnel de la santé qui œuvre dans un domaine où le savoir évolue constamment. Certains auteurs tels Harden (28) indiquent principalement deux usages des technologies qui pourraient être appliqués à la formation des futurs médecins : le e-learning et l’usage de simulateurs. D’autres considèrent les animations virtuelles 3D comme une des innovations les plus prometteuses pour la pédagogie médicale (29). Des chercheurs comme Valcke et De Wever (23) ou Fieschi (1) signalent quant à eux que savoir accéder à des ressources en ligne, ou encore posséder une grande compétence informationnelle (30), doivent aussi faire partie de la formation initiale des futurs médecins.

L’importance de la compétence informationnelle :

Avec la multitude de ressources disponibles sur Internet, le concept de compétence informationnelle (information literacy) redevient à la mode, en particulier dans le domaine médical. La compétence informationnelle, c’est, entre autres, le fait de connaître et de maîtriser les techniques pour utiliser les divers outils qui facilitent l’accès à l’information (sites Web, bases de données, etc.) afin de trouver des réponses à des problèmes rencontrés (30). Kwankam (31) résume bien l’importance de la compétence informationnelle lorsqu’il indique que la technologie « has become indispensable to health workers, as the volume and complexity of knowledge and information have outstripped the ability of health professionals to function optimally without the support of information management tools ». Les résultats des travaux de Kisilowska (32) ou de Bennett et al. (33) illustrent bien l’importance de développer, chez les futurs médecins, la compétence informationnelle. En effet, les conclusions de leurs travaux indiquent que les plus grandes difficultés rencontrées par les praticiens qui cherchent de l’information sur Internet concernent, d’une part la quantité phénoménale d’information qu’il est possible de trouver sur un thème mais aussi, d’autre part, les difficultés à trouver des informations plus spécifiques sur d’autres sujets.

La compétence informationnelle est d’autant plus nécessaire que les futurs médecins évoluent de plus en plus dans un contexte de mutation par rapport au savoir : « en médecine, on n’apprend plus uniquement du professeur et du livre. Internet est maintenant pour beaucoup la première source d’accès à la connaissance […] » (5). Les TIC fournissent donc déjà des solutions pour répondre au besoin grandissant d’information et de partage du savoir pour les praticiens actuels et futurs médecins. Les TIC permettent avant tout aux spécialistes actuels et en devenir d’être mieux informés et de communiquer entre eux plus facilement. Une étude de Bennett et ses collègues (33), effectuée auprès de quelque 3347 médecins, montrait d’ailleurs que presque tous avaient accès à Internet et que la plupart considéraient cet outil comme important pour améliorer
la qualité des soins fournis au patient. L’usage le plus fréquent est de loin la recherche d’information (sur les dernières recherches, sur une maladie particulière ou encore sur un problème particulier rencontré par un patient).

Les ressources virtuelles disponibles :

Il existe de nombreuses ressources destinées aux professionnels des sciences de la santé. Mattheos et ses collègues (34) ont tenté de les regrouper. On retrouve d’abord les tutoriels et autres applications permettant l’apprentissage assisté par ordinateur (cédéroms, pages Web didactiques, etc.). Le projet mené par Nosek, Cohen et leurs collègues (35) est un bon exemple de site Web didactique destiné tout particulièrement aux étudiants intéressés par la génétique et le cancer (http://casemed.case.edu/cancergenetics). L’initiative de Black et Smith (36) a montré comment de tels tutoriels, accessibles en ligne, étaient aussi susceptibles de favoriser de meilleurs apprentissages. Néanmoins, tel que le font remarquer Letterie (37) ou Valcke et De Wever (23) peu d’études scientifiques démontrent les bienfaits de l’apprentissage assisté par ordinateur lorsque comparé à d’autres modalités plus traditionnelles. L’idée n’est pas d’écarter les avantages inhérents à la présence des TIC, mais plutôt de souligner le manque de recherches dans ce domaine, comme si les acteurs de l’éducation médicale étaient plus préoccupés par la mise en place d’innovations que par leur évaluation systématique.

Mattheos et al. (34) précisent qu’il existe également de nombreuses bases données, dont la plus populaire est Medline. De tels outils permettent aux professionnels de la santé de retrouver rapidement l’information cherchée. Selon Kwankam (31), ces systèmes ou bases de données sont essentiels et peuvent soutenir « the mind’s limited capacity to sift through large quantities of health facts and identify those items that bear directly on a given situation ».

Il existe aussi plusieurs jeux pour favoriser l’apprentissage de connaissances médicales. Bien que la quantité de recherches soit relativement limitée dans ce domaine, Valcke et De Wever (23) soulignent que de telles innovations possèdent un potentiel éducatif puisque les apprenants sont confrontés à des situations complexes où ils doivent appliquer des connaissances apprises, émettre des hypothèses (souvent, des diagnostics), et les tester afin de recevoir un feedback immédiat. Sargeant (17) soutient d’ailleurs que la « computer-mediated multi-media instruction and the Internet can effectively link learners to learning materials and information resources, to each other, and to instructors ». Plusieurs autres études ont montré les nombreux avantages associés aux systèmes d’apprentissage interactif en ligne. Chan et Dovchin (38) ont ainsi fait remarquer l’avantage de tels systèmes pour la formation médicale dans les pays dits en voie de développement. D’autres auteurs concluent que de tels systèmes ont un impact important sur l’habileté des futurs médecins à générer des hypothèses (39), à développer leur pensée critique (40, 41), à accroître leur niveau de réflexivité sur la pratique (42), à développer leurs stratégies métacognitives (43), à raffiner leur diagnostic de cas cliniques présentés (44). Certains voient même dans de tels systèmes des avantages pour les formateurs universitaires comme la possibilité d’accroître leurs habiletés à évaluer les étudiants en stage (45). D’autres indiquent aussi que les facultés de médecine peuvent en profiter, notamment en ce qui a trait aux stratégies de recrutement (46).
Les travaux de Charlin et ses collègues (47,48) ont montré qu’il était envisageable, pour les futurs médecins, de développer leur raisonnement clinique par l’interactivité rendue possible par les TIC. Concrètement, Charlin et ses collègues ont mis en place un test de concordance comme outil d’évaluation en ligne du raisonnement des professionnels en situation d’incertitude (les praticiens ou futurs praticiens sont confrontés à des problèmes complexes ou mal structurés qui nécessitent une réflexion d’ordre supérieur de même que la mobilisation de connaissances diverses). La réponse du praticien est alors comparée à celle de divers experts dans le domaine. La littérature scientifique confirme, de façon générale, l’efficacité des outils et systèmes d’évaluation soutenus par les TIC, en particulier en ce qui a trait aux apprentissages réalisés par les apprenants (49, 23).

On retrouve enfin des sites Web spécialisés qui revêtent une importance capitale dans la recherche d’information. En effet, comme le soulignait Karsenti (5), la mise à disposition des apprenants d’une grande variété de sources d’information est importante et doit être grandement favorisée dans les formations en médecine. Sur le Web, il existe ainsi de nombreux exemples d’institutions de formation à la médecine qui ont favorisé l’accès à une grande variété d’informations comme par exemple la Tufts University School of Medicine de Boston (www.tufts.edu/med/), la University of Nebraska Medical Center (www.unmc.edu) la Stanford University(summit.stanford.edu/cqi/), l’Université catholique de Louvain (www.md.ucl.ac.be/luc/netlinks.htm) ou l’Université Bordeaux II (www.apprentoile.u-bordeaux2.fr/default.htm) (5). De tels sites facilitent également la collaboration interuniversitaire en pédagogie médicale (17). Pour Fieschi (1), la disponibilité d’un contenu de qualité sur Internet devrait ainsi faire partie intégrante des formations initiale et continue dans le domaine médical.

Il faut noter que de plus en plus de références scientifiques sont également disponibles sur Internet, et ce, sans enfreindre le droit d’auteur. De nombreuses initiatives telles PLoS ou BioMed Central participent à ce partage de la connaissance scientifique dans le domaine médical. Ces initiatives, jumelées à des mouvements comme le Directory of Open Access Journals (qui indexe actuellement plus de 3000 revues) ou encore les licences de droit d’auteur plus flexibles comme celles adhérant à Creative Commons ou Science Commons facilitent aussi l’accès et le partage d’un plus grand nombre de ressources via Internet.

La littérature scientifique fait état de répertoires ou sites indexés contenant des objets d’apprentissage (learning repositories) qui sont fort importants pour les apprenants (50). Ces répertoires d’objets d’apprentissage permettent aux formateurs de retracer facilement différents matériels pédagogiques utiles pour leur enseignement. Un des plus importants répertoires d’objets d’apprentissage est MERLOT (http://www.merlot.org/), dont l’acronyme signifie Multimedia Educational Resource for Learning and Online Teaching. MERLOT est une ressource gratuite et exempte de droit d’auteur, créée principalement pour les formateurs et les étudiants de l’université. Ce site propose notamment des supports pédagogiques évalués par les pairs : animations, plans de leçons, évaluations, etc. Néanmoins, tel que le soulignent avec raison Valcke et De Wever (23), aucune évaluation scientifique n’a encore été publiée pour montrer l’efficacité de telles ressources.
Les communautés virtuelles :

Les cédéroms, bases de données et sites Web de ressources sont importants pour la formation médicale. Néanmoins, ils limitent en général l’interaction entre l’usager et l’interface. Plusieurs études ont montré que le fait de rajouter la communication à l’information disponible, en particulier dans le domaine médical, engendre des résultats positifs, notamment sur le plan de l’apprentissage (23, 51). Ainsi, en plus de permettre l’accès à de nombreuses ressources, parfois difficilement accessibles, les technologies de l’information et de la communication facilitent aussi une mutualisation des connaissances, voire le réseautage des futurs médecins ou des praticiens. D’après Fillion-Carrière et Harvey (24), les TIC favoriseraient ainsi davantage l’échange d’informations « entre les chercheurs et les praticiens puisque la littérature scientifique est beaucoup plus accessible et que les communications entre professionnels ainsi que le partage d’expertise sont simplifiés ».

Il existe plusieurs communautés virtuelles de professionnels intéressés par des thématiques particulières qui échangent régulièrement via le réseau Internet. On retrouve de plus en plus de blogs, sites d’individus mis à jour régulièrement, qui permettent aux personnes intéressées de lire et de répondre à des messages affichés. Par exemple, les blogs scienceroll.com, clinicalcases.org, healthcarebloglaw.blogspot.com ou askdrwiki.com, primés à de nombreuses reprises, ont été visités par des millions de personnes. Il s’agit de sites qui s’adressent tant aux étudiants de médecine qu’aux praticiens en exercice. Ces ressources leur permettent d’échanger sur les meilleures pratiques, les meilleurs sites, les dernières découvertes, ou les derniers remèdes, dans le but d’être de meilleurs praticiens. Zobitz et ses collègues (52) ont montré les retombées positives d’une expérience, réalisée à la Mayo Medical School, qui consistait à mettre en place une communauté virtuelle pour faciliter les échanges entre futurs médecins, mais aussi entre l’équipe de formateurs et les étudiants. De tels sites spécialisés sont donc une façon de pouvoir suivre la croissance exponentielle de l’information liée au domaine médical, mais aussi de pouvoir utiliser les compétences individuelles et collectives pour trouver des solutions à des problèmes liés à la santé (31).

Un autre outil couramment utilisé est la liste de discussion ou la liste de diffusion électronique. Les listes de discussions sont, en général, réservées à de plus petits groupes puisqu’elles permettent les échanges entre les participants. Les travaux de De Wever, Van Winckel et Valcke (25) ont montré que la construction du savoir, un plus haut niveau de réflexion de même que le développement de la pensée critique étaient favorisés par l’usage de groupes de discussion électroniques durant les stages réalisés par de futurs médecins. Les listes de diffusion, quant à elles, s’adressent à de plus grands groupes puisqu’elles ne permettent pas aux abonnés d’échanger, mais plutôt uniquement de recevoir de l’information. Selon Castel et ses collègues (53), de telles listes « have also been shown to be very useful in bringing information that is otherwise inaccessible to professionals working in less well-developed settings […] ».

Le e-learning :

Tel que l’indiquent Muirhead (54), Harden (28), Jones et al. (55) ou Chryssafidou et Arvanitis (56), un des grands défis des facultés de médecine est d’introduire le e-learning en formation initiale et continue. La littérature scientifique montre de nombreux avantages inhérents au e-
learning, avec la flexibilité qui vient le plus souvent au premier plan. Les apprenants ont ainsi la possibilité d’apprendre à leur rythme, d’où ils le souhaitent, souvent de la façon qui leur sied le mieux (57). Kunnath (58), Heywood et al. (59), Relan et Krasne (60), Seelinger et Frush (61), tout comme Haigh (62), voient aussi comme avantage dans le domaine médical la possibilité de transmettre du contenu de haute qualité, d’offrir soutien à la formation continue ou post-graduée, ainsi que de multiplier les possibilités de communication pendant l’apprentissage. La communication accrue est effectivement un autre des avantages majeurs du e-learning. Castel et ses collègues (53) soulignent par exemple que « with further outreach than conventional distance learning, and taking advantage of interactivity among students and teachers in a virtual community and hypertext and hypermedia facilities, e-learning has become a useful and widely accepted tool for [...] training and continuous professional development programmes ».

Néanmoins, même si les bénéfices de la collaboration avec les TIC ont été largement soulignés dans d’autres contextes (voir par exemple les travaux de Henri et Lundgren-Cayroll, 63), ils l’ont beaucoup moins été dans le domaine de la pédagogie médicale (23). En effet, très peu d’expériences sont documentées comme celle de Lu et Lajoie (64) afin de montrer que le contexte de collaboration favorise, par exemple, le processus de prise de décision lors de la pratique de la médecine. Il en est de même pour la vidéoconférence dans l’éducation médicale, domaine pourtant largement documenté dans la littérature scientifique dans d’autres contextes :

« There is a lack of literature and formal studies on the use and effects of videoconferencing to enhance real-time synchronous delivery » (65).

Tel que le souligne Harden (28), même s’il est difficile de prédire exactement les futures formes que prendra le e-learning, il semble inévitable que les étudiants de médecine de demain seront de plus en plus appelés à apprendre en ligne. D’ailleurs, des études réalisées bien avant 2002 montraient déjà que les étudiants des facultés de médecine étaient prêts à apprendre à distance (66). Le e-learning constitue irrémédiablement l’avenir de la pédagogie médicale, et ce, malgré les nombreux problèmes à surmonter de même que le manque évident de documentation ou d’évaluation liés aux expériences mises en place (5).

**Les simulateurs virtuels :**

Comme l’indique Harden (28), les simulateurs dans le domaine médical ont connu, au cours des dernières années, un développement fulgurant. Selon lui, ils sont à la fois très efficaces sur le plan éducatif, en plus de bien compléter la formation en contexte de pratique. Les simulateurs virtuels ont surtout été mis en place pour diminuer les erreurs médicales (67). L’expérience menée par Doiron et Isaac (68) est un bon exemple de simulation créé afin de tenter de diminuer les erreurs médicales des médecins en formation. Leur projet avait pour but de reproduire, par le biais d’un jeu de rôle en ligne, une salle d’urgence où l’apprenant doit prendre des décisions rapides tout en s’occupant de stabiliser l’état du patient ou de réaliser un diagnostic.

Les simulateurs virtuels représentent, en quelque sorte, un changement de paradigme pour la formation de futurs médecins chez lesquels la réalité virtuelle sera éventuellement amenée à jouer un rôle majeur dans la formation initiale et continue. Toujours selon Harden (28), les simulations facilitent notamment l’apprentissage « through the provision of : effective feedback, repetitive practice, a range of difficulty, multiple learning strategies, clinical variation, a controlled learning environment, and individualised learning. ». Au Canada, les TIC ont notamment permis « l’amélioration et la personnalisation de l’enseignement de techniques et
d’habiletés cliniques qui, livrées de façon traditionnelle, pouvaient dans certains cas nuire au bien-être du patient » (24).
L’ensemble de la brève littérature scientifique sur les simulateurs virtuels montre, de façon indéniable, l’avantage de cet usage des TIC pour la formation médicale (69, 70). Néanmoins, tel que le font remarquer Valcke et De Wever (23), cela est particulièrement vrai (a) quand la formation s’adresse à des débutants et (b) lorsque les habiletés technologiques ne constituent pas un frein à l’usage du simulateur virtuel. D’où, selon nous, l’importance d’introduire les futurs médecins, dans le cadre de leur formation initiale, à de telles innovations.

**Les animations 3D sur le Web :**

La présentation graphique de l’information semble être centrale dans l’acquisition de connaissances dans le domaine médical (23). C’est possiblement pour cette raison que les facultés de médecine et autres organismes dans le domaine médical ont conçu, depuis un bon nombre d’années, d’importantes banques d’images pour aider les spécialistes à mieux comprendre des questions médicales diverses. La littérature scientifique actuelle montre effectivement que les images, disponibles en ligne, favorisent aussi l’acquisition de connaissances, et ce, dans divers domaines scientifiques (71, 72). Dans le domaine médical, les études révèlent pareillement l’importance d’introduire des représentations graphiques avancées, en particulier dans des contextes de téléapprentissage où le formateur n’est pas présent pour commenter l’image (23). Les animations en trois dimensions, souvent appelées animations 3D, sont des exemples de ces représentations graphiques avancées. Elles ont aussi l’avantage de faciliter l’acquisition de connaissances, tout en montrant une représentation de la réalité en trois dimensions, contrairement aux images dites plus traditionnelles qui la représentent sur deux plans. Lorsque de telles ressources pédagogiques sont disponibles sur Internet, les apprenants ou les formateurs ont aussi le loisir d’en profiter de n’importe où, à n’importe quel moment, tant qu’ils possèdent un ordinateur branché. John (29) précise que les représentations en trois dimensions sont particulièrement utilisées pour les cours d’anatomie et que leur impact sur l’apprentissage semble clairement démontré, même s’il est évident que de telles ressources doivent être utilisées conjointement avec d’autres types de supports pédagogiques comme des clips vidéos, des textes, etc. Entre autres, John (29) souligne que plusieurs évaluations ont montré l’efficacité de cette stratégie pédagogique. C’est peut-être pourquoi de plus en plus de facultés de médecine utilisent les animations en trois dimensions sur le Web pour la formation médicale initiale, comme c’est le cas, par exemple, à l’Université de Lyon I, en France. Leur expérience pousse même plus loin les animations 3D en permettant aux formateurs ou aux apprenants de manipuler l’animation, c’est-à-dire de la faire bouger, de la faire pivoter ou de la déplacer, virtuellement du moins, pour mieux la présenter aux étudiants. Quoique leur récente expérience n’ait pas encore fait l’objet d’une publication scientifique, la réaction des étudiants qui ont participé à l’expérience et qui ont eu la possibilité de faire bouger des organes ou des os d’un corps humain virtuel, à l’aide d’une télécommande Wii, laisse entrevoir d’intéressantes possibilités pour le futur11. De plus, comme l’indique John (29), l’émergence de nouveaux standards et d’une communauté d’usagers très active est de bon augure pour le futur des applications 3D sur le Web pour la formation médicale initiale ou continue.

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Quatrième défi : changer les pratiques en pédagogie médicale :
Un autre des défis inhérents aux TIC et à l’éducation médicale demeure évidemment l’implantation d’un tel changement, d’une telle innovation dans la pratique de la pédagogie médicale, en milieu universitaire ou hospitalier. Dans le domaine plus large de la pédagogie universitaire et des TIC, les références et publications sont nombreuses sur les enjeux à considérer pour favoriser un tel changement (19,73). La littérature scientifique dans le domaine de l’enseignement universitaire semble indiquer qu’il existe en quelque sorte un dilemme cornélien auquel font face les formateurs universitaires : « faut-il que le contenant (méthode d’enseignement) s’adapte au véhicule (technologie) ou que le véhicule s’adapte au contenant? » (24). En fait, les recherches actuelles dans le domaine de la pédagogie universitaire montrent plutôt que la pédagogie doit être la principale priorité et que c’est à la technologie de s’adapter. Néanmoins, de récentes études montrent aussi que la pédagogie peut évoluer lorsqu’elle est en contact avec de nouvelles technologies. Les TIC deviennent donc, dans certains contextes et selon des usages précis, des catalyseurs de changement en pédagogie universitaire. L’expérience de Nosek, Wang et al. (74) est un bon exemple où les technologies ont servi de catalyseur à l’innovation dans les pratiques pédagogiques. Leur expérience fait état de formateurs qui souhaitaient rendre l’apprentissage plus actif, tout en étant confrontés à de grands groupes. L’usage de télévoteurs par les participants durant les cours magistraux a su favoriser l’apprentissage actif et un intérêt accru des étudiants. De surcroît, leur étude montre aussi une amélioration de la performance des futurs médecins (lors d’examens officiels) après avoir participé à une telle expérience. Certains se demandent également si les TIC seront « à même de modifier les pratiques des médecins de terrain et le comportement des patients face à leur maladie […] et par là, un vecteur de l’amélioration de la qualité des soins et de la prévention des maladies? » (4). Une des avenues proposées par Ward et Moule (75), afin de garantir un meilleur changement dans les pratiques des médecins, c’est aussi de faire usage des TIC durant la formation pratique des futurs praticiens afin qu’ils puissent apprendre à faire usage des TIC pour leurs besoins académiques, pour communiquer avec les superviseurs universitaires, mais aussi pour améliorer les soins fournis aux patients lors de leurs séjours en milieux de pratique. Certains vont même jusqu’à proposer un système de gestion, en ligne, du curriculum de formation (76).

D’autres chercheurs (77) pensent que l’usage du e-portfolio serait susceptible d’amener le futur praticien à faire usage des TIC, non seulement pour apprendre, mais aussi démontrer la qualité du travail réalisé. Les e-portfolios sont de plus en plus utilisés, non seulement dans le cadre de la formation universitaire, mais également en milieux de pratique. Ils sont également, selon plusieurs, des moyens à la fois créatifs et efficaces pour organiser, résumer, présenter et partager de l’information inhérente à l’enseignement ou à l’apprentissage de la profession médicale, voire au développement personnel et professionnel d’une personne. Selon Lewis et Baker (77), l’usage du e-portfolio peut donc servir de catalyseur à l’usage des TIC pour la pratique de la médecine.
Conclusion :

Cette revue de la littérature a présenté les principaux défis engendrés par les technologies de l’information et de la communication sur l’éducation médicale et la pratique de la médecine. Le premier défi présenté est celui de mieux préparer les futurs médecins à l’évolution du comportement des patients, de plus en plus branchés et qui, parfois, semblent mieux informés sur leur maladie que ne l’est le praticien. Dans un contexte nord-américain où la très grande majorité des foyers a accès à Internet, cette nouvelle attitude du patient est appelée à transformer la pratique médicale, et les futurs médecins doivent être préparés à cette nouvelle réalité. Pour le praticien, l’idée n’est pas de limiter l’information à laquelle peut accéder le patient mais plutôt de se servir de ces nouvelles habitudes comme levier afin de le rendre plus responsable de sa santé. Le terme *patient empowerment* est ainsi de plus en plus utilisé dans la littérature, même si comme Haux (21) l’indique, « *patient empowerment is still in [its] early stages* ».

Le deuxième défi, intimement lié au premier, est celui de sensibiliser les futurs praticiens aux nombreux avantages que comportent les TIC pour améliorer la qualité des interventions et des soins fournis aux patients, mais aussi pour mieux organiser le système des soins de santé. La présence exponentielle des TIC dans notre société, loin de n’être qu’un fléau pour la pratique et l’enseignement de la médecine, devrait plutôt être perçue comme un avantage important qui pourrait permettre aux médecins d’améliorer leur relation avec le patient, de même que la qualité des soins prodigués. Les exemples de la télémédecine et des communautés virtuelles de pratique ne sont que quelques uns des nombreux autres avantages que permettent les TIC afin d’améliorer la qualité de la pratique médicale. Lucas (7) précise que les TIC ont aussi un impact majeur sur le système de santé ; il semble donc nécessaire d’introduire les futurs praticiens à ces métamorphoses à venir afin de leur permettre d’en tirer éventuellement profit, et ce, dans le but d’améliorer la qualité des soins prodigués.

Amener les futurs médecins à faire usage des TIC pour s’informer, apprendre et se perfectionner constitue le troisième défi présenté. Dans ce contexte, la compétence informationnelle est notamment mise de l’avant. Elle est décrite comme une habileté devant impérativement faire partie de la formation de tout médecin. La question du e-learning est également abordée puisque ce mode d’enseignement, encore trop peu répandu dans bon nombre de facultés de médecine, constitue l’avenir de la formation médicale initiale ou continue. Le rôle des simulateurs virtuels, des animations 3D, des ressources et des communautés virtuelles a été brièvement abordé puisqu’ils constituent des innovations importantes dans le domaine de l’éducation médicale. Il est essentiel d’initier les futurs médecins à leur usage, mais aussi aux impacts de ces technologies sur la pratique médicale.

Changer les pratiques en pédagogie médicale constitue le quatrième et dernier défi relevé dans la littérature scientifique. L’arrivée massive des technologies dans la société n’influence pas seulement les habitudes du patient, mais aussi celles des médecins en devenir. La pratique de la pédagogie médicale doit donc s’adapter. L’idée n’est pas d’opposer pédagogie et technologie comme plusieurs l’ont fait (24), mais plutôt d’adapter les technologies aux besoins pédagogiques, tout en étant conscient de l’effet innovant des technologies sur les pratiques d’enseignement.
Il appert aussi essentiel de signaler à nouveau que les défis engendrés par les TIC sur l’éducation médicale et la pratique de la médecine sont encore peu documentés sur le plan scientifique (23, 78). Comme le font remarquer Lau et Bates (65), le manque de détails méthodologiques, la petite taille des échantillons – l’étude de Nakamura et Lajoie (39) où il n’y avait que 16 participants reflète bien cette lacune – et les technologies spécifiques mises de l’avant rendent souvent impossible la généralisation du peu d’études réalisées à d’autres contextes. Letterie (37) et Valcke et De Wever (23 vont plus loin et dénoncent plutôt l’absence d’études scientifiques en mesure de démontrer clairement les bienfaits de l’apprentissage avec les TIC : « *There are no comparative studies...that demonstrate a clear-cut advantage [...]in addition to descriptive studies, more evaluative studies of ICT tools are required, focusing on the efficiency and the impact on students’ learning.* ». Tel qu’indiqué plus tôt, il ne s’agit pas de mettre en doute les nombreux avantages inhérents à la présence des TIC, mais plutôt de décrier le manque de recherches scientifiques, comme si les acteurs de l’éducation médicale étaient plus préoccupés par la mise en place d’innovations que par leur évaluation systématique.

**Références**


**Karsenti, Thierry, MA, MEd, PhD**

*Information and Communication Technologies (ICT) in Medical Education and Practice : the Major Challenges.*

**Summary**

This paper identifies four major challenges in raising physician awareness about the benefits of using ICT in education, training and practice. The first of these challenges is to better prepare future physicians for the changing patterns of behaviour of patients, increasingly more sophisticated regarding the use of the internet to learn more about their disease condition(s). The second challenge is to educate physicians in the multiple benefits of using ICT to improve health care delivery and understand the organization and processes of the health care system.

The third challenge is to motivate students to critically use ICT to search, find and use appropriate information that enhances learning and development. This challenge additionally requires ICT literacy as a mandatory skill for all medical students. The final challenge is to change medical teaching/learning practices. The evidence demonstrates how ICT stimulates innovation in teaching practice and prepares physicians to use ICT for their academic and practice needs.

**Major Themes:**

- ICT with regard to medical education is in an early stage of development. Rather than being reactive to ICT innovation and development, the author delineates ways in which ICT can be adapted and used to improve education and practice standards.

- It is also evident that widespread population access to the internet has begun to change patient behaviours in terms of knowledge of disease and ability to engage with the physician practitioner in partnership concerning health care decision making. Moreover, virtual reality technologies have the potential to improve both educational and health care practice.

A case is made that there is a lack of scientific research in this area. Medical educators seem to be more concerned with devising and implementing innovations rather than systematically studying and assessing them.

**Best Practices and Innovations:**

The e-learning approach to education, training and practice represents the future of initial and continuous medical education. Virtual resources and network communities, simulations and 3D animations are being used to (a) conduct more diagnoses at a distance, (b) assist in long procedures, (c)
follow up with high risk patients at home, (d) rural health care delivery, (e) delegated nursing care and (f) sharing information and skills among practitioners. The use of hand held devices have enabled personalized care by facilitating people to adopt preventive lifestyles and are increasingly being used to transmit patient information and provide better patient follow up.

Full Text

Abstract

This literature review addresses the main effects and challenges in using information and communications technologies (ICT) in medical education and practice. The first challenge is to better prepare future physicians for the changing behaviours of patients, who are increasingly Internet-savvy and who sometimes appear to know more about their diseases than their physicians. The second challenge, which is closely linked to the first, is to raise awareness among physicians in training of the many benefits of using ICT, to improve not only the quality of interventions and health care delivery, but, from a broader perspective, the organization of the health care system itself. The third challenge is to motivate medical students to use ICT to find information, learn and develop. It is proposed that informational literacy should be a mandatory skill for all medical students. The e-learning mode of training is also addressed. Although under-employed in most medical faculties, it represents the future of initial and continuous medical training. Virtual resources and communities, simulations and 3D animations are also discussed. The fourth and final challenge is to change medical teaching practices.

Description of Search Strategy

In our review, we used 78 references. We searched both the UofM library as well as the following databases: Medline and Premedline (2000-June 2008), EMBASE (2000-May 2008), Web of Science (all years), Information Sciences Abstracts (2000-May 2008), Library Information Sciences Abstracts (2000-May 2008), AACE (2002-2008), ERIC (2000-2008). We used mainly ICT, Medical Education and Medical Practice as keywords.

Introduction:

This paper reviews the main impacts and challenges in using information and communication technologies (ICT) in the practice and teaching of medicine. When considering the impact of technologies on fields such as medicine, the first images that come to mind are advanced techniques and highly sophisticated machines. However, few are aware that ICT have also changed the ways in which medicine is practiced and taught. As Fieschi (1) explains, although ICT have assumed an important role in medicine in the last 25 years, the effectiveness of medical teaching and practice in Western societies has been brought into
question, and some say it is in crisis. On the one hand, “Biological and surgical techniques were developed and extensively used and, on the other hand, medicine was fragmented into numerous sub-specialties as medical knowledge improved. As a result, the costs of medical procedures increased considerably, the quality of patient/physician relationships was tarnished and, in addition, iatrogenic [i.e. inadvertently caused by a medical professional] risks were not and have not yet been fully controlled” (1).

In 2008, the Internet celebrated 39 years of existence. Originally the province of the army and a handful of American universities, a few short years later it has become an indispensable, everyday tool for people on every continent. The number of Internet users in the world has catapulted from 16 million in 1995\(^1\) to over 1407 million en 2008\(^13\) (Figure 1). In the words of Kofi Annan, speaking at the World Summit on the Information Society, “A technological revolution is transforming society in a profound way. If harnessed and directed properly, information and communication technologies (ICT) have the potential to improve all aspects of our social, economic and cultural life.” Originally conceived as efficient means to distribute information and communications, ICT have rapidly been appropriated by all manner of professional circles, including medical practitioners and students.

With the introduction of ICT, everything changes – our ways of living, learning, working and socializing. And the pace of societal change has accelerated with the recent arrival of Web 2.0, with interfaces that enable Internet users to interact with Web pages and other users. Unlike users of the fledgling Internet, which consisted mainly of static Web pages, users of Web 2.0 are Web protagonists, or principle actors who input site content and keep peers abreast of new developments. With Web 2.0, citizens in every country can create their own destinies and actively contribute to the technological world. According to *Time Magazine*, the invention of YouTube in 2006 exemplifies the advances made by Web 2.0. In the medical field, over 84,000 animations and conference extracts are featured on the Web, for example, a demonstration of how the heart works (Figure 2).

![Medical animation of a heart](image)

Figure 2 : Animation du site YouTube.com.

In the opinion of Heath, Luff and Svensson (2), one of the key developments in health care in the last 25 years is the incursion of information and communications technologies (ICT). These

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\(^{12}\) Source : IDC (http://www.idc.com/)

\(^{13}\) Source : Internet World Stats (http://www.internetworldstats.com)
authors feel that ICT wield a wide range of impacts on medical practice, patients’ experiences and health-care management, to name only a few.

The first challenge: to prepare physicians for the changing behaviours of Internet-savvy patients:

Several studies have found that one of the most important impacts of ICT on medical education is that tomorrow’s physicians must be well prepared to cope with changing patient behaviours. Research has shown that patients’ habits have changed significantly in recent years. Not only do they use ICT to better understand medical issues, but they also use networking to inform each other, rate their doctors, question medical procedures and launch malpractice suits. For Duvvuri and Jianhong (3), ICT have definitively transformed the physician-patient relationship, which implies a new kind of training for tomorrow’s medical practitioners. Fieschi (1) and Denef, Lebrun and Donckels (4) go so far as to claim that patients are far ahead of doctors in their use of the Internet to learn about medical developments, and they are sometimes better informed on their illnesses. “With the omnipresence of the Internet in homes and the growing presence of public virtual portals such as Healthgate and Medecinenet.com, increasing numbers of patients are consulting their doctors after having navigated the Web” (5). [translated]

The literature also reveals new possibilities for physician-patient relationships, particularly when patients are isolated or away from hospital settings, such as elderly persons (see Magnusson et al., 6), or chronic disease sufferers. According to Lucas (7), by using ICT, patients “can link with others, again using the Internet and mobile telephone networks, to share information, seek advice [...].”

With the advent of the Internet, medical knowledge is no longer the prerogative of health-care experts. A kind of democratization of scientific and medical knowledge has come about, which profoundly affects the traditional relationship between the patient, who used to be relatively ignorant, and the physician, who used to be the fount of wisdom. This relational shift between physician and patient means that, on the one hand, medical practices have been increasingly called into question, and on the other, the status of the medical profession has been profoundly shaken (8).

Willmer (9) points out that, despite the realignment of the doctor-patient relationship, the increasing use of ICT by patients and medical practitioners alike improves the quality of health care delivery in the end. Some, like the European Commission, appear to have embraced this new patient attitude, viewing it as a way to make people more accountable for their health. Thus, better informed patients are usually more inclined to get involved in health management. “They want to be part of the health decision process and are increasingly requesting access to the data contained in their medical records” (1). Gatzoulis and Iakovidis (10) discuss “citizen-centered care,” which requires greater patient involvement at all levels of medical practice (prevention, diagnosis, treatment and follow-up.) The arrival of ICT has caused a paradigm shift in medical practice and teaching. Greater importance has been placed on information sharing, akin to what Fieschi (1) calls patient empowerment. Therefore, ICT should not be perceived as a nuisance, as many doctors do, but rather as a way to get patients more involved in managing their health. Moreover, as Broom (8) explains, “It is argued that the ways in which these specialists are adapting to the Internet and the Internet user should be viewed as strategic responses, rather...
than reflecting a breakdown in their authority or status.”
In countries where most people have Internet access, as in North America, where about 73% of households are connected, this new patient attitude is changing the practice of medicine, and it poses serious challenges to the ways that initial and continuous medical training are handled.

**The second challenge: to raise awareness among physicians in training of the benefits of using ICT:**

The exponential rise of ICT in our society, far from being a nuisance factor in medical practice and instruction, has many potential benefits for patients and doctors in the areas of health-care organization and management.

**Benefits for the quality of interventions and health-care delivery:**

Along with challenges to the physician-patient relationship, this technological shift brings many benefits. For instance, using ICT, patients can readily interact with health-care experts without having to leave home. Stretcher (11) describes the benefits of software systems that can “analyze” medical situations. He also demonstrates the utility of interfaces that enable patients to communicate directly with an online health-care specialist, 24/7. He particularly stresses the benefits of these systems for patients who, “because of stress, pain, or the cancer treatment itself, have irregular sleeping habits” (11). Medem Inc. (http://www.medem.com), a cybercompany that provides web-based physician-patient communications services, uses a similar interface so that patients can consult a physician on line at all hours. As Norman and colleagues (12) point out, the rapidly developing capacity of interactive technologies to store and transmit data multiplies the possibilities for physician-patient interaction. Although physicians have had access to statistical databases for just a short time, they can now consult continuously updated data in just a few clicks of the mouse. They can also communicate with their patients (and even “see” them), get more detailed information first-hand and provide better treatment.

For these reasons, the field of telemedicine, or practicing various aspects of medicine (prevention, diagnosis, treatment and follow-up) at a distance, has become increasingly common in both initial and continuous medical training (13). In fact, telemedicine is gaining ground in the health-care systems of many industrialized countries, including Canada, the United States, Great Britain, Germany, France and Norway (14).

The HERMES project (15) in Europe is one such initiative. Telemedicine can be used to make diagnoses at a distance, to assist other surgeons in complicated operations, and to follow up high-risk patients in their own homes (16). According to Suarez (16), telemedicine also facilitates centralized pathology services, rural health-care delivery, delegated nursing care, and the provision of health-care in hostile or unusual circumstances. For Ganapathy (14), a major advantage of telemedicine is that it enables diverse experts around the world to share their opinions in a few seconds and find the best solution to a particular problem. Ganapathy (14) also suggests that specialists will soon go farther to diagnose their patients: “Like most other professionals, the telespecialist of the future will offer advice from home without having to travel long distances to a hospital. Junior hospital staff currently depend on advice received by telephone, which has considerable limitations. Soon, using telemedicine, the senior consultant
can evaluate the patient and the investigations from outside the hospital and make a correct
decision. The patient’s needs cannot wait for the next day’s ‘rounds.’” (14).

In addition, as Suarez (16) explains, telemedicine enables occasional or continuous training to
be offered to hospital health-care specialists, who would otherwise have to leave the workplace.
In the view of Sargeant (17), telemedicine has become a highly sophisticated tool with a
convincingly demonstrated efficiency. For instance, it is a particularly effective way to teach
surgery. In addition, virtual telemedicine environments that integrate the Internet and
videoconferencing allow not only real-time consultations with other specialists (see Loke
Jennifer, 18), but also, and most importantly, continuous follow-up during surgical procedures
when interns are assigned to isolated regions or foreign countries.

These systems increasingly require physicians in the 21st century to acquire technopedagogical
skills as part of their university training to effectively fulfill their roles as medical healers (5).
Raising awareness among future medical practitioners of these innovative methods should be
part of the basic training program for all physicians.
Finally, as Strecher (11) points out, the use of ICT for preventive purposes is relatively limited,
and it is still primarily used for treatment. According to him, this is not surprising, and it should
be viewed by practitioners as a welcome challenge. The use of preventive services should also be
promoted as a way to motivate citizens to be more accountable for their health management.

**Benefits of improved health care organization**

In the words of Lucas (7), “‘[t]here is a growing consensus that the impact of ICT on health
systems will be substantial or even revolutionary [...]’” Although this point is not directly linked
to medical teaching, it is important to mention that several authors have underscored the benefits
of ICT for health care organization. Oh and colleagues (20) extensively discuss the concept of
eHealth, which refers to the application of information and communications technologies in the
health sector, from purely administrative to health care delivery, or alternatively, as healthcare
practice that is supported by electronic processes and communication. Among the many benefits
of ICT in health care systems, Haux (21) and Duvvuri and Jianhong (3) note that ICT are
incomparable for providing access to a vast store of information about the patient in the form of
a digital file. This electronically available information facilitates follow-up, teleconsultation of
the patient’s file, and patient education so that patients can learn more about their condition.

Duvvuri and Jianhong (3), Ganapathy (14), Bulterman (22) and Fieschi (1) place particular
emphasis on the potential of health telemanagement for prevention, diagnostics and follow-up on
chronic diseases. For example, ICT allow decisions to be made “once the parameters delivered
at home have been analyzed” (1). And the Internet will only make this easier in future, which
will undoubtedly contribute to the growth of distance health-care delivery. Finally, there are a
growing number of handheld devices that support new and promising applications. “The work
done so far has demonstrated the potential of these platforms to enable personalized care by
empowering people to adopt a preventive lifestyle with an emphasis on early diagnosis” (10). As
reported by Norman and colleagues (12), these handheld devices are being used increasingly to
transmit patient information and provide better patient follow-up. For example, many portable
devices are equipped with sensors that automatically send a range of patient information to the
health-care specialist, with no effort on the patient’s part, so that physicians can make better
diagnoses and take action as needed. It would appear required for medical training programs to raise awareness among medical students of the various benefits of ICT so that they can use them to advantage when they eventually join medical organizations (23, 1).

Haux (21) argues that ICT enable health-care specialists to organize health care delivery better, more easily and more systematically, and that this advances the “quality and efficiency of patient care,” among other things. The technology explosion also has the potential to promote better rationalization of resources (14, 24). For Fieschi (1) and Haux (21), the changes that ICT has wrought in health care organizations and medical practice have led to a more macroscopic vision of the patient’s file through the transformation from a hospital information system to a more inclusive health care information system that belongs to all citizens.

The third challenge: to motivate physicians in training to use ICT to find information, learn and develop:

Several studies have noted the shortcomings of medical faculties in terms of integrating ICT into initial and continuous medical training. Suarez (16) found relatively little initiation to ICT applied to health care in most initial medical training programs. However, according to many researchers (see 25, 23, 26, 27), ITC should be a mandatory component in initial and continuous medical training. On the one hand, ICT are omnipresent in the workplace, and on the other hand, they are vital for health-care professionals to update their knowledge in a field where that knowledge is constantly evolving. Some authors, such as Harden (28), suggest two main technologies to apply to medical training: e-learning and simulators. Others consider virtual 3D animations one of the most promising innovations in medical education (see 29). Researchers such as Valcke and De Wever (23) and Fieschi (1) mention that knowing how to access online resources and informational literacy (30) should be required competencies in initial medical training.

The importance of informational literacy:

Given the vast amount of resources available on the Internet, the concept of informational literacy has received much attention, particularly in the medical field. Informational literacy is defined as knowledge and mastery of a variety of technical tools that facilitate access to information (Web sites, databases, etc.) in order to find solutions to problems that arise (see 30). Kwankam (31) sums up the importance of informational literacy as follows: “ICT has become indispensable to health workers, as the volume and complexity of knowledge and information have outstripped the ability of health professionals to function optimally without the support of information management tools.” Results of the studies by Kisilowska (32) and Bennett et al. (33) illustrate the importance for future physicians to develop informational literacy. Their findings indicate that the greatest problems facing physicians who seek information on the Internet are the phenomenal quantity of facts that are available, on the one hand, and on the other, the difficulty of finding more specific facts on certain topics. Informational literacy is all the more necessary for the physicians of tomorrow, who will work in an environment of ever advancing knowledge. “En médecine, on n’apprend plus uniquement du professeur et du livre. Internet est maintenant pour beaucoup la première source d’accès à la
connaissance […]” [In medicine, learning is not transmitted by professors or books alone. The Internet has become the primary source of knowledge] (5). Thus, ICT are already providing solutions to the growing need for information and knowledge sharing by today’s and tomorrow’s physicians. Most importantly, ICT allow physicians to stay better informed and to more easily communicate with each other. A study by Bennett and colleagues (33) conducted on 3,347 physicians shows that almost all had Internet access, and that most considered the Internet important for improving the quality of care they provided to their patients. The most frequent use by far was seeking information (on the latest research or a particular disease or problem presented by a patient).

Virtual resources:

There are many resources that specifically target health care professionals. Mattheos and colleagues (34) attempted to organize these into categories. First, there are tutorials and other applications for computer-assisted learning (CD-ROMs, instructional Web sites, etc.). To illustrate, Nosek, Cohen and colleagues (35) set up an instructional Web site targeting students in the fields of genetics and cancer (http://casemed.case.edu/cancergenetics). Black and Smith’s (36) initiative also demonstrates how online tutorials can foster better learning. However, as pointed out by Letterie (37) and Valcke and Wever (23), few studies have compared the benefits of computer-assisted learning to more traditional methods. The idea here is not to denigrate the inherent advantages of using ICT, but rather to underscore the lack of research in this area. It appears that medical educators are more concerned with implementing innovations than with systematically assessing them.

Mattheos et al. (34) report on the large number of medical databases available, the most popular being Medline. These platforms allow medical professionals to rapidly find the information they need. According to Kwankam (31), the essential advantage of these systems and databases is that they can offset “the mind’s limited capacity to sift through large quantities of health facts and identify those items that bear directly on a given situation.”

There are also many games designed to motivate students to absorb medical lore. Although few studies have addressed this area, Valcke and De Wever (23) point out the enormous educational potential of these tools, as they confront learners with complicated situations where they have to apply their theoretical knowledge, come up with hypotheses (usually diagnoses) and test them. Immediate feedback is then provided. Sargeant (17) provides support for this argument, contending that “computer-mediated multi-media instruction and the Internet can effectively link learners to learning materials and information resources, to each other, and to instructors.”

Several authors have enumerated the advantages of interactive online learning systems. Chan and Dovchin (38) highlighted the benefits for medical training in so-called developing countries. Others conclude that these systems will wield a significant impact on the abilities of tomorrow’s physicians to generate hypotheses (see 39) develop critical capacities (see 40, 41), develop reflective practice and the provision thereof (see 42), develop metacognitive strategies (see 43), and refine their diagnoses of clinical cases (44). Some authors see in these systems benefits for university educators, such as improving their abilities to assess interns (45). Others contend that medical faculties could make greater use of these systems in their recruitment strategies (46).
The studies by Charlin and colleagues (47, 48) found that physicians in training could develop clinical reasoning through the use of interactive ICT applications. Charlin and colleagues (48) set up an online Script Concordance test to assess the clinical reasoning of medical practitioners, residents and students in uncertain situations. Participants were asked to handle complicated or poorly structured problems that required clinical reasoning and the mobilization of a sound knowledge base. Their responses were then compared to those of a variety of experts in the field. The literature generally confirms the effectiveness of ICT-supported assessment tools and systems, particularly for active learning (49, 23).

Finally, a number of specialized Web sites are dedicated to research data. As argued by Karsenti (5), it is important to make available to learners a wide variety of informative sources, and medical training should actively promote this. The Web also contains many sites of medical training institutions that have encouraged access to a wide range of medical information, such as the Tufts University School of Medicine in Boston (www.tufts.edu/med/), the University of Nebraska Medical Center (www.unmc.edu), Stanford University (summit.stanford.edu/cqi/), l'Université catholique de Louvain (www.md.ucl.ac.be/luc/netlinks.htm) and l'Université Bordeaux II (www.apprentoi.le.u-bordeaux2.fr/default.htm) (see 5). These sites also facilitate interuniversity collaboration in medical teaching (see 17). For Fieschi (1), the availability of high-quality content on the Internet is a vital factor for initial and continuous training in the medical field.

Note also that an increasing number of scientific references are available on the Internet, and many circumvent copyright issues. Thus, initiatives such as PLoS and BioMed Central are willing to share medical knowledge with all comers. Along with movements such as the Directory of Open Access Journals (which currently indexes over 3,000 journals) and more flexible copyright systems such as the Creative Commons and Science Commons licenses, these initiatives facilitate access to and sharing of vast quantities of resources via the Internet.

The literature reports on many indexed digital directory sites containing highly useful learning repositories (50). These learning repositories allow educators to quickly retrieve all kinds of useful pedagogical materials. One of the most extensive learning object repertories is MERLOT (http://www.merlot.org/), which stands for Multimedia Educational Resource for Learning and Online Teaching. A free resource that imposes no copyright conditions, it was created mainly for university educators and students. Among other things, it offers peer reviewed teaching materials: animations, lesson plans, assessment methods, etc. However, as rightly pointed out by Valcke and De Wever (23), no scientific assessment of the effectiveness of such resources has been published to date.

Virtual communities:

CD-ROMs, databases and Web sites are important resources for medical training. However, they usually offer limited user-interface interaction. Several studies have shown that adding the capacity to communicate and input content engenders positive outcomes, particularly in medical education (see 23, 51). Besides making hard-to-access resources readily available, information and communications technologies facilitate knowledge sharing and networking between physicians in training and practitioners. In the view of Fillion-Carrière and Harvey (24), ICT foster greater information exchange between researchers and practitioners. They render the
literature much more accessible and they simplify communications and knowledge sharing between professionals.

There are many virtual communities of professionals who are interested in particular topics and who regularly communicate through the Internet. Meanwhile, blogs have sprouted everywhere. These are individual, regularly updated sites that allow anyone interested to read and respond to posted messages. For example, scienceblog.com, clinicalcases.org, healthcarebloglaw.blogspot.com and askdrwiki.com, all award-winning sites, receive millions of visitors. These sites target medical students as well as practitioners. Such resources allow the exchange of best practices, best sites, recent discoveries and the latest cures, in the aim of improving medical practice. Zobis and colleagues (52) reported the positive effects of an experiment conducted at the Mayo Medical School. A virtual community was created to facilitate exchanges between medical students and between teams of educators and the students. These specialized sites are not only a way to keep abreast of the exponential growth of information in the medical field, but also a way to mobilize individual and collective skills to find solutions to health problems (31).

Other popular tools are the discussion list and the electronic distribution list. Discussion lists are usually dedicated to small groups because they allow exchanges between members. A study by De Wever, Van Winckel and Valcke (25) found that knowledge building, which is a higher-level process than reflection or the development of critical thought, is fostered by the use of electronic discussion groups in medical study programs. Distribution lists address larger groups, as they are used uniquely to transmit information and do not enable members to exchange views. According to Castel and colleagues (53) these lists “have also been shown to be very useful in bringing information that is otherwise inaccessible to professionals working in less well-developed settings [...].”

E-learning:

As explained by Muirhead (54), Harden (28), Jones et al. (55) and Chryssafidou and Arvanitis (56), one of the key challenges facing medical faculties is to introduce e-learning into initial and continuous training programs. The literature reports on the many inherent advantages of e-learning, with flexibility the most often cited. Users of e-learning can proceed at their own pace, wherever they happen to be, and usually in the way that best suits them (see 57). Kunnath (58), Heywood et al. (59), Relan and Krasne (60), Seelinger and Frush (61), and Haigh (62) also cite as advantages in the medical field the transmission of high-quality content, support for continuous and post-graduate education, and multiple possibilities for communicating while learning. Broader communication is another key advantage of e-learning. Castel and colleagues (53) explain that “with further outreach than conventional distance learning, and taking advantage of interactivity among students and teachers in a virtual community and hypertext and hypermedia facilities, e-learning has become a useful and widely accepted tool for [...] training and continuous professional development programmes.” Nevertheless, although the benefits of collaborating with ICT have been extensively exploited in other contexts (see for example the studies by Henri and Lundgren-Cayroll, 63), they are still under-employed in medical pedagogy (23). For instance, very little research has investigated whether this form of collaboration fosters
decision-making in medical practice. One such study was conducted by Lu and Lajoie (64). The same holds true for videoconferencing in medical education, an area that has been extensively documented in other settings: “There is a lack of literature and formal studies on the use and effects of videoconferencing to enhance real-time synchronous delivery” (65).

As Harden (28) argues, although it is difficult to accurately predict the forms that e-learning will take in future, it seems inevitable that medical students will be increasingly required to learn online. Moreover, studies conducted long before 2002 have shown that medical students are ready for distance learning (see Akinyemi, 66). It appears undeniable that e-learning is the wave of the future in medical pedagogy, despite the many problems to be surmounted and the evident lack of documentation or assessment of past experiences (see Karsenti, 5).

Virtual simulators:

As reported by Harden (28), the use of simulators has grown tremendously in the medical field in recent years. They are as effective in education as they are in practical training. Virtual simulators have been used primarily to reduce medical error (see, 67). The experiment conducted by Doiron and Isaac (68) demonstrates how simulation can reduce the medical errors of physicians in training. Using an online game, the authors reproduced an emergency room where learners had to make rapid decisions as they tried to stabilize patients and make diagnoses. Virtual simulators represent a paradigm shift in medical education, and virtual reality is expected to play a key role in initial and continuous training in future. Again according to Harden (28), simulations facilitate learning “through the provision of: effective feedback, repetitive practice, a range of difficulty, multiple learning strategies, clinical variation, a controlled learning environment, and individualised learning.” In Canada, ICT are used to improve and personalize teaching methods and clinical skills, which when delivered in the traditional way, can sometimes compromise the patient’s well-being (24).

The literature on virtual simulators documents the clear advantages of using ICT in medical training (see 69, 70). However, as pointed out by Valcke and De Wever (23), this is particularly true when (a) neophytes are trained in the use of ICT and (b) use of the virtual simulator is not limited by lack of technological skills. Hence the importance of introducing physicians in training to these innovations at the initial training stage.

3D animations on the Web:

Graphic representation of information appears to be central to the acquisition of medical knowledge (see 23). For some years now, medical faculties and other medical organizations have constructed extensive image banks to help specialists better understand a variety of medical issues. The literature shows that online images foster knowledge acquisition in a variety of scientific fields (see 71, 72). In the medical field, studies have shown the importance of incorporating advanced graphic representations, particularly in e-learning, when the educator is not available to comment on the image (see 23). Three-dimensional animations, commonly called 3D animations, are examples of advanced graphic representations. They have the advantage of facilitating knowledge acquisition through a realistic three-dimensional visualization, which is superior to the traditional two-dimensional image. When these pedagogical resources are available on the Internet, learners and educators have the flexibility to
watch them at any time, in any place, as long as they are connected to the Internet. John (29) explains that 3D representations are particularly useful for anatomy classes, and they have shown a clearly demonstrable impact on learning, although it is evident that such resources must be used in combination with other types of pedagogical support, such as video clips, textbooks, etc. John (29) reports that many assessments have shown the effectiveness of this pedagogical strategy. Thus, increasing numbers of medical faculties are using three-dimensional animations on the Web in initial training, for example, at l’Université de Lyon I in France. They have pushed the envelope even further by conducting an experiment in which educators and students can manipulate the animation, i.e. move it, pivot it, or change its position, at least virtually, to improve the presentation. Although their results have not yet been published in a scientific journal, the reactions of the students who participated in the experiment and were able to move the organs and bones of the virtual human being using a Wii remote (a.k.a. Wiimote) raise interesting possibilities for the future. In addition, as John (29) contends, the emergence of new standards and a very active user community augurs well for the future of 3D Web applications for initial and continuous medical training.

The Fourth challenge: to change medical pedagogy practices:

A further challenge inherent to the use of ICT in medication education is how to implement this innovation into medical pedagogy in universities and hospitals. There are many references and publications on the issues to consider in the broader area of integrating ICT into university teaching (see for example 19, 73). The literature on university teaching reveals a sort of Cornelian dilemma facing university educators (i.e. a lose / lose situation): should the content (teaching method) be adapted to the vehicle (technology), or should the vehicle be adapted to the content? (24). In fact, researchers in university pedagogy generally feel that pedagogy should be the main priority and that technology should be adapted to it. Nevertheless, recent studies have shown that pedagogy can evolve when it comes into contact with new technologies. In certain circumstances, therefore, and for specific uses, ICT can be catalysts for change in university pedagogy. The study by Nosek, Wang et al. (74) shows how technologies can be used to spur innovation in teaching practices. The authors worked with professors of very large classes who wanted to help their students engage in more active learning. The use of televoters by the participants during lecture classes fostered active learning and increased students’ motivation. In addition, their results show improved performance by medical students (in their official exams) after participating in the study. Some authors wonder whether ICT can really change physicians’ practices on the ground and the behaviours of patients towards their diseases, which would promote improved quality of care and disease prevention (see 4). Ward and Moule (75) suggest that physicians could improve their practice by employing ICT during their practical training so they would know how to use ICT for their academic needs, to communicate with university supervisors, and to improve patient care delivery during their internships. Some go further by proposing an online management system for the training curriculum (see 76). Other researchers (77) feel that use of the e-portfolio would inspire physicians in training to use ICT not only to learn, but also to showcase their accomplishments. Thus, e-portfolios are increasingly being used not only for university training, but in medical practice as well. According to many sources, they are also a creative and effective means to organize, summarize, present and share information for medical teaching and learning, and for personal and

14 Details of the experiment are provided at: http://www.univ-lyon1.fr/1205315796141/0/fiche___actualite/&RH=PRAC_ACT-SER
professional development. According to Lewis and Baker (77), the use of the e-portfolio can incite the use of ICT in medical practice.

Conclusion:

This literature review presents the main challenges of using information and communication technologies in medical education and practice. The first challenge is to better prepare medical students for the changing behaviours of patients, who are increasingly connected to the Internet and sometimes better informed on their disease than their physician. In North America, where the vast majority of households have Internet access, this new patient attitude will transform the practice of medicine, and physicians of the future must be prepared for the new reality. For the practitioner, the idea is not to limit the information to which the patient has access, but rather to use these new skills as leverage to make patients more accountable for their health. The term patient empowerment is increasingly used in the literature, but, as Haux (21) points out, “Patient empowerment is still in [its] early stages.”

The second challenge, closely tied to the first, is to raise awareness among physicians in training of the many benefits of ICT for improving the quality of interventions and care provided to patients, and for better organizing the health-care system. The exponential rise of ICT in all societies, far from being considered a nuisance in medical teaching and practice, should instead be perceived as a significant advantage that could improve the physician-patient relationship as well as the quality of health care delivery. The examples of telemedicine and virtual communities of practitioners are only a few of the many benefits of ICT for improving the quality of medical practice. Lucas (7) explains that ICT wield a major impact on the health-care system. It would therefore appear necessary to introduce medical students to these changes now so they can take advantage of them later to improve the quality of health care delivery.

Motivating medical students to use ICT to find information, learn and develop is the third challenge. The focus here is on informational literacy, which is considered a mandatory skill in the training of all physicians. The issue of e-learning is also addressed, because although this teaching mode is not very widespread in medical faculties, it represents the future of initial and continuous medical training. The role of virtual simulators, 3D animations, and virtual and community resources as important innovations in medical education is briefly discussed. It is essential to instruct physicians in training in their use and the impacts on medical practice.

Changing practices of medical pedagogy is the fourth and final challenge addressed in the literature. The massive incursion of technologies in our societies influences the habits of not only patients, but also physicians in training. Medical teaching practices must adapt accordingly. The idea is not to place pedagogy and technology in opposition, as many have done (see 24), but rather to adapt technologies to pedagogical needs, while being mindful of the innovate effects of technologies on teaching practices.

We must reiterate that the challenges engendered by ICT in medical education and practice are still underdocumented scientifically (23, 78). As noted by Lau and Bates (65), lack of detailed methods, small sample sizes (e.g., the study by Nakamura & Lajoie (39), where only 16 participants were studied) and the specificity of the technologies examined make it impossible to generalize results from the few studies conducted. Letterie (37) and Valcke and De Wever (23) go further by deploring the absence of studies that clearly demonstrate the benefits of learning with ICT: “There are no comparative studies [...] that demonstrate a clear-cut advantage. [...] In addition to descriptive studies, more evaluative studies of ICT tools are required, focusing on the efficiency and the impact on students’ learning.”
As mentioned above, it is not a matter of calling into question the many inherent advantages of ICT, but rather of noting with disapproval the lack of scientific research in this area. It appears that medical education stakeholders are more concerned with implementing innovations than systematically assessing them.

References


CLUSTER 3: Medical Students, Selection, Support and Assessment of Competence

Les étudiants en médecine: sélection, support et évaluation des compétences

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Summary

Brief Summary:
Cognitive and non-cognitive factors have long been the primary consideration in medical school admissions. More recently, diversity and equity and the need to consider selecting students more likely to practice in under serviced or rural areas have been added.

Cognitive factors are typically measured by university grade point average and MCAT, predictors of medical school academic achievement. Non-cognitive factors are typically measured using an interview process.

The social accountability of medical schools include the need to select students reflecting the population served by the medical school and as a means to form curriculum research and service in the community. Excellent summaries of outreach to aboriginal communities, admission policies and reduction of financial and other barriers have recently been published by the Indigenous Physician Association of Canada and the Association of Faculties of medicine of Canada. Strategies to increase admission of rural students to medicine include outreach to high school students, pre-med summer school programs and reduction of financial barriers to admission.

Major Themes:
The assessment of medical school applicants will continue to include a balance of cognitive and non-cognitive factors. Student selection will need to reflect the population served by the medical school. Orientation to medical education programs and the removal of financial and other barriers are essential to improve the number and quality of applicants from Aboriginal and rural communities.

Best Practices and Innovations:
Medical schools recruitment and admission policies should be based on a balance of cognitive and non cognitive factors, but also be based on a balance of evidence with local experience.
Full Text

Introduction
Medical schools have established admission criteria and selection processes that attempt to select the optimal candidates for admission. A brief review of current issues in Canadian medical student recruitment was conducted.

Methods
An electronic search of PubMed and MedLine data base was done. MeSH terms used were “Schools, Medical/Education” or “Schools, Medical Standards” and “Schools, Medical trends” with admissions as a key word. In addition admission and recruitment resources that were available from the Indigenous Physicians Association (IPAC) and the Association of Faculties of Medicine of Canada (AFMC) were obtained.

Key Findings

Cognitive and Non-cognitive factors
Cognitive and non-cognitive factors have long been the primary consideration in medical school admissions. More recently, the importance of diversity and equity and the need to consider selecting students who have a greater propensity to practice in rural or under serviced areas has been recognized.

Cognitive factors have long been emphasized because of the need to select students who must meet the academic challenge of medical school. Undergraduate grade point average (GPA) and the medical college admission test (MCAT) are predictors of medical school academic achievement (1, 2). It has been suggested that a GPA of 3.0 is a reasonable minimum threshold (1). Eleven of the seventeen Canadian medical schools require the MCAT as part of the admission process (3).

The traditional evaluation of non-cognitive factors has been by an interview process. The multiple mini-interview (MMI) was developed at McMaster University as a method of assessing non-cognitive variables (4). The MMI was the interview method employed for all medical applicants invited to interview at eight of the seventeen Canadian Medical Schools in 2008 and it was used for a cohort of interviewees at an additional school and run on a trial basis at one more (3).

Social Accountability
The social accountability of medical schools includes the need for the students selected to reflect the population they serve as well the need for curriculum, research and service activities to be community focused (5, 6).

Aboriginal and students from rural areas have been significantly under represented at Canadian medical schools (7).
Recruitment of Aboriginal Students

In 2003 a review of the sixteen existing Canadian medical school websites was done to identify aboriginal admission policies, recruitment initiatives and aboriginal health as part of the curriculum (8). There were specific aboriginal admission policies and recruitment initiatives at greater than 50% of the medical schools (8). The number of first year aboriginal students from 1992-2002 ranged from 8 to 18. At that time over 75% of aboriginal medical students were in the Western provinces (8).

In 2006 and 2007 there were respectively 41 and 53 first year, self-identified aboriginal medical students admitted. Greater than half were admitted to Eastern medical schools (9).

The Indigenous Physicians Association of Canada (IPAC) and the Association of Faculties of Medicine of Canada (AFMC) have collaborated on initiatives and strategies of to recruit and retain aboriginal medical students (10, 13). Excellent summaries of their findings and recommendation have recently been published (10, 13). These include outreach to aboriginal communities, admissions policies and processes and reduction of financial and other barriers (10, 13).

Recruitment of Students with a Rural Background

Rural background students are less likely to apply to medical school than urban students. Those who do apply have comparable in GPA and MCAT scores and are as likely to be admitted as applicants of urban origin (14, 15). Family medicine graduates with a rural background are 2.5 times more likely to be in a rural practice (16).

Strategies to increase the admission of rural students to medicine include pipeline initiatives such as outreach to rural high schools, pre-med summer school programs, reduction of financial barriers and changes to the admissions process (16).

Implications

The assessment of medical school applicants will continue to include a balance of cognitive and noncognitive factors. Student selection needs to support the social accountability of the medical school and to reflect the population that it serves. Pipeline initiatives and the reduction of financial and other barriers are necessary to increase the number of applications from Aboriginal students and students of rural background. Medical school recruitment and admissions policies and processes should be based on evidence in the literature and local experience.
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Physician wellness is more widely recognized now as an important issue for recruitment, retention and quality of professional and personal life. Canada in particular has made advancements in this area with provincial programs for physician wellness and firmly established expectations for its inclusion in medical curricula. There is widespread belief, however, that physicians remain at risk for work-related deterioration in physical, mental and emotional wellbeing and that further development of programs to help address this risk are needed.

Sources of stress for medical learners include acquiring and maintaining clinical competence, meeting academic requirements, long and intense work hours, intimidation and harassment, personal responses to pain and suffering, sleep deprivation, poor nutrition, and learner debt. Evidence suggests that medical education has a detrimental effect on mental health including increased rates of diagnosable conditions such as depression and, in females, increased rates of suicidality. Yet medical learners are no more likely to seek formal help or treatment than control matched peers. Studies have verified a high rate of burnout in the profession and have linked origins to as early as medical school. In addition, empathy, humanism, and compassion have been found to decrease as years in practice increase. Finally, other lapses in professionalism in the training years are associated with professional breaches later in practice.

Efforts to increase wellness in medical trainees have been successful. Traits commonly sought in medical learners, such as ambition and dedication can predispose them to the detrimental effects of stress but studies have shown that coping strategies rather than personal traits are more important in helping learners deal with work stress. While no program format has clearly been shown to be superior, most studies report multiple positive effects of formal programs, especially in those which involve students in the design and organization of the program. There needs to be more emphasis on caring for each other within the profession including instruction on how to be vigilant for colleagues under stress and how to care for physicians when they are one’s patient. Students need to be formally taught about wellness and provided with coping strategies. Both the formal and informal curricula need to be consistent in emphasizing wellness, including systematic discouragement of and intolerance for student maltreatment. Finally, efforts to address the needs of physicians with disabilities and to protect those who seek help from professional and social stigma are necessary to ensure engagement of individuals at risk.
**Major Themes:**

Physician wellness is an important contributor to excellence in patient care, career longevity and physician health. Evidence suggests that many wellness behaviours, coping skills, and maladaptive strategies are influenced by experiences in medical training. Medical learners are at increased risk for mental health, burnout and professional lapses and formal training programs aimed at coping strategies and prevention are key to mitigating this risk. Systematic issues such as solid teaching around how to deal with physicians as patients, pervasive strategies to reduce physician maltreatment, and protection for those who need or have sought help are required.

**Best practices and innovations:**

Formal curricula addressing sources of stress with a focus on coping strategies seems to have the most support in the literature. Student involvement in the design, planning and organization of the programs is important. (Shapiro S, Shapiro D, Schwartz G. Stress management in medical education: a review of the literature. Acad. Med. 2000; 75 (7):748-759.)

Institutional and provincial programs must be designed to recognize the unique aspects of physician wellness and provide support, prevention strategies and treatment for affected and at-risk physicians. (Puddester D. Canada responds: an explosion of doctors’ health awareness, promotion, and intervention. Med. J. Aust. 2004; 181:386-388.)

**Full Text**

**Introduction**

Canada is considered a world leader in physician health and well-being (1). Every province and territory has access to a physician health program, many academic centres are developing site-specific physician/medical student wellness programs (2), formal pedagogy in physician health is now required in specialty training programs (3), and national centres and educational programs are having an influence on medical leadership, management, and policy. The theme of sustainability and health appears to be one of the most relevant issues in any discussion on the future of medical education and training in Canada.

This paper, commissioned by the AFMC as part of the Future of Medical Education project, is designed to briefly summarize key trends and directions reported in the literature over the past decade. As Canada strategically crafts future innovations in medical education and training, it is critical that medical schools formally and informally address issues of learner health, wellness, and sustainability. These issues are complex, multifactorial, and challenging for systems to address; however, as generational expectations and demands shift, educational systems must be nimble, innovative, and thoughtful in order to ensure Canada’s future physicians are resilient, reliable, and resourceful.
Methods

Ovid MEDLINE was searched using the terms: medical student, resident, physician, stress, well-being, wellness, burnout, work-life balance, and health. Limits were set for papers with English abstracts, those published in the past ten years, and those including reviews. This strategy resulted in 24 papers, of which 9 met inclusion criteria set by the authors (relevance to undergraduate education and training, readily accessible, relevance to the Canadian context of medical education and practice). The authors agreed that the following thematic areas were not adequately addressed in the review and ran additional focused searches on professionalism and resiliency, which resulted in an additional 3 papers being included. Other articles, based on the opinion of the authors, were cited to frame the overall context and direction of this paper as well.

Findings

Sources of Stress amongst Medical Students: Complex Sources

Qualities which make students competitive for entry into medical school may inadvertently set them up for difficulties. These include perfectionist traits, being overconscientious, high achievers, and various types of resiliency and are commonly associated with practicing physicians. As students move into clinical work, they are quickly socialized to skillfully perform in an intense milieu while learning to manage sleep deprivation, poor nutrition, their own responses to pain and suffering, academic demands, and personal challenges such as soaring learner debt.

Intimidation, harassment, and frank abuse (sexual, physical, and psychological) are obvious sources of stress. 40% of medical students and up to 93% of residents report such maltreatment at some point in their training. Less than one third of medical students report abuse for fear of academic repercussions highlighting the need for formal training and skills development in this area.

Mental Health Issues amongst Medical Students

Prevalence of depression in medical trainees exceeds that of the general population and their non-medical school age matched peers, with one study reporting a factor of three times. Although it is unclear in the literature whether particular characteristics of students accepted for medical training puts them at greater risk for developing depressive illnesses, there is consistent evidence that medical education has a general negative effect on mental health. The prevalence of depression increases during undergraduate training with a trend toward a peak in second year, and studies examining rates of anxiety in medical students indicate a similar increase compared with the general population. Of note, female medical students are at increased risk of psychological distress compared with their male colleagues, and given their increased numbers in training, schools will need to consider how best to support these growing needs.
Mental distress has multiple consequences in medical learners, including impaired academic performance, professional competencies and behaviours, and general physical and psychological health (6). Critically, mental health problems were identified as the second most documented reason for leaving medical training (7). In spite of this, medical trainees are no more likely to seek help for mental health problems than their non medical peers, and they identify multiple barriers to accessing care including time pressures, stigma, lack of confidentiality, fear of harm to their academic record, and perceived academic consequences (7, 4).

**Burnout**

Burnout is a term from occupational medicine that refers to an ongoing state of emotional exhaustion, depersonalization, cynicism, and feelings of decreased personal accomplishment. Burnout is associated with occupational factors including high workload intensity, overwhelming work demands and feeling uncertain about the future as well as personal factors such as poor emotional self awareness and poor work/life balance. Prevalence data suggests rates of burnout in residents range from 17% to 76% (11, 12, 8), and studies in postgraduate trainees also reports that burnout negatively affects patient care (11, 8). Burnout has not been adequately studied in undergraduate medical education, but the literature suggests that rates seen in residency and medical practice have their beginnings in medical school (7).

**Substance Use**

Substance use disorders continue to be one of the most common reasons for medical student and physician involvement in a physician health program. Physicians have a 2-14% lifetime prevalence of impairment by drugs or alcohol (5). However, patterns of use in medical students are similar to their age matched peers with up to 20% of first year students reporting excessive alcohol intake (6). Illicit drug use is comparable or less than their age matched peers, with most problematic drug use starting prior to medical school (6). Reasons for use include anxiety, stress, and academic pressures. Medical school may present a unique window of opportunity to promote healthier methods of coping, identify learners with pre-existing or emerging substance use disorders, and offering formal treatment, monitoring, and recovery programs.

**Suicide**

Rates of suicide in physicians are equal to their age matched peers except for female medical students who have a three to four fold increased likelihood compared with the comparable female general population. Up to 6% of all medical students reported having active suicidal ideation (6).

**Professionalism**

Medical education appears to have a negative effect on the development of certain professionalism competencies, with studies indicating that empathy, humanism and compassion decline with advanced years of medical training (13). Residents and practicing physicians who experience distress or burnout are even more likely to show less compassion and empathy, display unprofessional behaviours, and provide suboptimal care (8, 13). These correlations are
even more concerning given that learners tend not to appreciate the direct relationship between their own health and well-being and their ability to provide quality patient care (13).

Furthermore, a retrospective case-controlled study of over 700 US physicians completed by Papadakis et al. (14) uncovered that unprofessional behaviour in medical school was associated with later disciplinary action by a medical board. The undergraduate behaviours most correlated with later disciplinary action were severe irresponsibility (e.g. repeatedly late to clinic, not following up on critical patient care issues), severely diminished capacity for self-improvement (e.g. failure to accept constructive criticism, argumentativeness, poor attitude). The most common disciplinary matters identified in practice were use of drugs or alcohol (in a manner that placed patients in danger), unprofessional conduct, conviction of a crime, and negligence.

**Resiliency**

Key to the promotion of the well-being of medical trainees is the identification of factors that protect from the consequences of stress and promote resilience. Personal characteristics include the presence of a strong support network (7), active coping abilities (10), strong work relationships, (11), the ability to discuss personal concerns, and prioritizing time for social and leisure activities (9). Given that coping skills are consistently reported to be more significant to sustained well-being than personality factors (10), schools may wish to consider formal skills development in this particular domain.

**Prevention**

A review of stress management programs for medical students and residents revealed that regardless of program format, any curricular intervention in medical education aimed at improving coping skills had multiple positive outcomes including improved immunologic function, decreased depression and anxiety, increased spirituality and empathy and increased knowledge about positive coping skills (15). Although no gold standard intervention has been identified, examples include instruction in mindfulness based stress reduction, cognitive behavioural and stress management techniques, as well as self-hypnosis, relaxation therapy, and group discussion/support groups (15). Some have suggested that programs that are student led may have a more significant effect on developing coping skills (6).

**Implications**

**Admissions:** Papadakis (14) work has led to a vigorous argument that the technical standards for admission to medical school ought to be such that there are clear and agreed-upon expectations for professional behaviour, use of standardized instruments to assess personal qualities of medical school applicants (e.g. resiliency, emotional intelligence,), and detailed background checks to identify previous criminal or disruptive behaviour (16). These are complex demands, particularly given the resources and demands placed on admissions committees at present.

**Accreditation Standards:** Given the importance associated with medical student/physician health, consideration ought to be given to develop new accreditation standards in this thematic
area for undergraduate education and training, and formal evaluation of knowledge, skills, and attitudes at the local and national level.

**Undergraduate Clinical Curriculum:** Two clear trends clearly emerge from the literature. First, it is essential that medical schools formally train physicians to care for their colleagues. Multiple review articles and policy statements strongly encourage physicians to have, and utilize, a primary care provider on a regular basis. Yet, few medical schools offer formal curriculum and evaluation of knowledge, skills, and attitudes required for the competent practice of physician health. Essential issues such as boundaries and limit setting, self diagnosis and treatment, confidentiality and privacy, practical/ethical/legislative reporting requirements, transference/countertransference, and health promotion/disease prevention ought to be formally integrated into the curriculum, formally evaluated at the local and national level, and considered for postgraduate education and training as well. Such content would be best presented in a spiral or developmental approach consistent with other complex themes in medical education and training, and clearly and formally addressed in the clerkship as well.

Second, medical schools need to formally train physicians to care for themselves. Personal resiliency development, using active learning processes and strategies, reduces learner distress and promotes better patient care (10). Thus, the idea of caring for and maintaining the self in the process of caring for others needs to be formalized in medical curriculum, and viewed as a mandatory requirement in providing sustainable patient care (13).  

**Promotion of Healthy Educational Settings**

The need to introduce wellness education beyond formal medical education, and into the informal and ‘hidden’ curricula has been identified (8, 13). Efforts to enhance the informal curriculum of medical education through promotion of faculty mentorship and interaction can decrease trainee stress and increase student well-being (6). There has been a call to effect change in the institutional culture where medical education takes place, particularly in the clinical years given that acts of unprofessional behaviour can occur not from lack of awareness but from burnout. Efforts to reduce medical trainee maltreatment have been identified as key drivers of this cultural change (8).

**Clinical Implications:** Promoting learner awareness of stress, coping, resiliency and sustainability is an important part of any effort in medical student health and wellness; however, it is equally important that accessible, competent, confidential, and appropriate support services are in place. Indeed, most Canadian medical schools have dedicated resources to promote medical student health and resiliency. These valuable services often require specialized support which is often not in place or difficult to access. For example, ongoing counseling services, psychoeducational or neuropsychological assessments, health and/or behavioural monitoring, confidential and timely access to general and specialty care by physicians skilled and comfortable working with medical students, and career counseling. Medical schools ought to partner with their Provincial Physician Health Programs as much as possible, but also need to develop their own local expertise and procedures that often are required to augment and complement provincial-level expertise. It is essential that such clinical resources be of no or minimal cost to the learner, be considered from a university-wide approach, be highly
confidential and private, and delivered by trained experts familiar and skilled in the care of medical professionals.

Medical schools also need to develop formal accommodation processes and pathways for learners living with disabilities. The pathways need to be fully transparent, linked to best practices, and welcoming. Particularly challenging issues in medicine include accommodation for fatigue management (e.g. part time studies or limited on-call hours), learning disabilities, sensory or motor disabilities, and mental health disabilities. These challenges are significant, but are not without solution.

Finally, transparent policies need to be developed and applied that ensure learners who require health leaves are adequately supported when they return to training. Such supports may include formal health monitoring and reporting by a Provincial Health Program, particularly for health issues that are more vulnerable to relapse (e.g. mental health diagnosis, substance use disorders).

**Interprofessional Education:** Literature focused on intimidation, harassment, and other forms of maltreatment repeatedly highlight the need for all health professionals to be formally trained in interprofessional collaboration, conflict management, professionalism, and collegiality. Models of such educational interventions are still novel, and research into such efforts is important.

**Conclusion**

Medicine is a vibrant profession and its future will without be bright and exciting. However, as the profession moves forward, more attention needs to be paid to the humanity and health of its members. These are complex constructs and require significant and meaningful commitments from medical schools in order to facilitate improvement. A physician life cycle approach to health, wellness, and sustainability framework is required to guide the future, well trained and resourced clinical resources need to be developed and harnessed to promote health and minimize the impact of illness, transparent and practical policies need to be developed and evaluated, and scholarly activity of physician health in the Canadian context needs to be encouraged. Healthy physicians practice healthier medicine – both reasonable and achievable goals for the future of medicine in Canada.
Annotated Bibliography


The above two papers highlight research completed on American and Canadian medical students’ rates of mental health problems. They clearly demonstrate that trainees experience significant distress during training, that health promotion strategies can have a positive and sustained impact, and that medical school’s can develop and sustain a culture of wellness with relative ease.

3- **Eva K, Reiter H, Rosenfeld J, Norman G. The Ability of the Multiple Mini interview to Predict Pre-clerkship Performance in Medical School. Acad Med. 2004;79(S): S40-S42**

Innovation at the admissions committee level may be of value in recruiting medical trainees who are resilient to some of the challenges of medical training, education and practice, and may also be of value in identifying learners at risk of unprofessional behaviours. This study is one of the key papers in the admissions literature to formally assess the utility of innovative admissions processes in promoting physician health.


Physician health was embedded in the Professional role in the last iteration of the CanMeds project. The RCPSC is now investing considerable educational resources into developing curriculum in physician health targeted at the postgraduate population as well as College members. This model, and its associated resources, may be of value to undergraduate educators as they consider how best to design, implement, and evaluate physician health curriculum.


Norway has collected data related to physician health for several decades, and has the richest database of physician health data in the world. This study focused on the strengths of medical students as demonstrated during their formative medical training, and highlights areas of resiliency and vulnerability, as well as identifying several strategies that promote sustainability and good health.
This landmark study is highly relevant to those interested in the evolution and impact of disruptive behaviour amongst physicians. This paper emphasizes the need for admission committees and undergraduate educators to pay particular attention to behavioural traits that may result in future harm to patients.

Short overview of the unique and successful Canadian efforts to promote physician and medical student health.

A unique review of health promotion strategies utilized in medical education, including a summary of what was found to be helpful as well as inefficient.

9- Yiu V. Supporting the Well-Being of Medical Students. CMAJ. 2005; 172(7): 889-90.
A Canadian perspective focused on health promotion and disease prevention amongst the medical student population.

Other key resources

The Canadian Medical Association has a rich web page dedicated to physician health which can be found at www.cma.ca.

Of particular relevance to AFMC will be the CMA Position Paper on Physician Health and Well Being (the first, and only, such statement in the world) and the CMA Guide to Physician Health and Well Being (a useful summary of the literature, Canadian physician health programs, and issues unique to the academic setting).

The Canadian Psychiatric Association also has a position paper “Treatment of the Mentally Ill Physician” which can be found at http://publications.cpa-apc.org/media.php?mid=160. This landmark position paper has been cited globally as a useful standard of care for both medical students and practicing physicians.

Finally, Dr. Michael Kaufman, Director of the Ontario Medical Association’s Physician Health Program has authored an excellent and practical series of articles on medical student and physician health with both a health promotion and an intervention focus. These can be accessed at www.omaphp.org.
References

Hodges, Brian, MD, PhD, FRCPC

Assessment and Medical Education: Major Trends and issues for the future of medical education in Canada

Summary

There is probably no aspect of medical education that is more discussed and debated than assessment. It has its own journals, conferences and grants, and also appears in every set of standards that apply to the nature and quality of medical education in Canada. The literature on assessment in medical education is enormous. For example, there are nearly 900 peer-reviewed publications on the OSCE (Objective Structured Clinical Examination) alone. An important element of this review is to consider emerging work on systems of assessment. The assessment process is influenced by significant changes in the organization and practice of medicine itself, which the review briefly highlights as well.

Major Themes

- Hodges identified the following major themes: use of blueprints and competency frameworks to structure assessment programs; attention to the development of systems of assessment; use of multiple methods and taxonomies of competence; invention and evaluation of assessment tools; development of methods for assessing the quality of assessment instruments; need for more research on the effects (and unintended side-effects) of different assessment approaches.

Conclusions and Directions

- Hodges identified the following: programs should focus on the design and quality of assessment systems; a mixture of expert judgment/global ratings should be combined; assessment should include observations in practice; the effects and unintended effects of assessment should be considered; the iterative link of assessment to learning via feedback and goal setting should operationalized; development of reflection and maintenance of competence should be included in an overall assessment system; the need to adopt broader conceptions of competence; the need to develop continuous rather than point assessment; future use of models such as 'guided self-assessment' need to be concretized in assessment methods and programs; the assessment of team competencies in interprofessional settings needs development; need for more comprehensive approaches to the evaluation of assessment (i.e. use of qualitative and narrative methods).
Best Practices and Innovations

- In this thoughtful review, Epstein outlined the core elements of an assessment systems in terms of: defining the goals of assessment; defining what to assess; considering how to assess; and considering cautions

- Epstein and Hundert (34) reviewed a wide range of articles published between 1966 and 2001 that looked at the assessment of competence of medical students, residents and physicians

- These authors review the elements of an effective, integrated assessment system.

- These authors reviewed 55 papers that met inclusion criteria in terms of their demonstration of reliability and validity of postgraduate examination, in Canada, US, UK and Australia/New Zealand.

- The authors conducted a search of 50 years of literature related to the relation of measurements obtained in medical schools (in the US context) in relation to future performance in medical practice.

Full Text

Introduction

There is probably no aspect of medical education that is more discussed and debated than assessment. Unlike many aspects of medical education, assessment is the subject of entire journals (Evaluation and the Health Professions), conferences (The International Ottawa Conference) and Grants (Stemmler Foundation, Medical Council of Canada Research Grants). Further, assessment is a major focus of almost all other medical education journals, conferences and grant competitions. Assessment is a major activity of many education organizations including the Royal College of Physicians and Surgeons of Canada, the College of Family Physicians of Canada and the Medical Council of Canada, all of whom have full time staff dedicated entirely to research, development and administration of medical education assessments. Medical schools across Canada have benefited from a large influx of faculty members trained in psychometrics and other aspects of measurement and evaluation since the
late 1970s and many have committee or units that specifically oversee administration of or research on assessment. Finally, assessment appears in every set of standards (LCME, RCPSC, CFPC, etc) that apply to the nature and quality of medical education in Canada.

The literature on assessment in medical education is enormous and it is one of the few areas in which the number of review papers is also quite substantial. Developing a deep understanding of the philosophical, sociological, psychometric and research aspects of assessment probably requires graduate training in the domain. Even to master the literature on one method is not easy – there are, for example, nearly 900 peer-reviewed publications on the Objective Structured Clinical Examination alone. How then does one derive from this massive archive on assessment, the pressing themes and challenges that will inform and shape the future of medical education in Canada in the next decades? This brief review is an attempt to glean from a vast literature some of the most urgent, hotly debated and innovative issues that are currently in play. Such a review is necessarily highly condensed and can, in no way, provide a detailed summary of individual methods and tools. Thus, in relation to tools I have only highlighted the relatively advanced state of reviews available and provided some examples. More importantly, this review also addresses emerging work on *systems* of assessment, recognizing that simply lumping together a collection of even the most psychometrically reliable and valid tools does not create an effective system.

The selection of tools and creation of systems is today highly influenced by significant changes in the organization and practice of medicine itself, and this paper briefly highlights those changes as well. Finally, the paper concludes with some consideration of implications for undergraduate medical education.

**Methods**

Data was sought from several sources. First, the University of Toronto Scholars Portal – a tool that simultaneously searches Multiple-Data Bases (including Medline, Psych Lit, ERIC, etc) was used targeting the period from 1998 to 2008. To illustrate the magnitude of literature in this area, the search words “medical”, “education” and “assessment” yielded over 13,000 peer reviewed articles during this ten-year span. By restricting the search to papers that used the word “review” in the title, 279 papers were identified. Of these, papers not dealing with assessment specific to medical education and those addressing specific knowledge or skills domains (eg. cardio-pulmonary resuscitation) were eliminated. Articles published in languages other than English; those that did not provide sufficient detail about programs, methods or findings; and comments, editorials, letters or abstracts were excluded, with a few exceptions noted below. To make up for the limitations inherent in any literature search strategy the online tables of contents of relevant journals for issues published in 2007 and up to May 2008 were also searched. These included Academic Medicine, Advances in Health Sciences Education and Theory, Medical Education, and Medical Teacher. A total of 20 in-depth meta-analyses and review articles were identified and many of these are described below in the text or annotated bibliography. An additional 21 review papers addressing important systematic issues related to assessment were identified. These were more likely to be theoretical reviews and syntheses rather than meta-analyses. A very small number of editorials speaking to current “hot issues” are also included.
Findings

Context of Assessment

The assessment of competence at all points on the continuum of medical education has evolved tremendously in the past 3 decades. Major changes include:

- Widespread use of blueprints and competency frameworks to structure assessment programs (e.g. ACGME competencies (USA), CanMEDS framework and its variants (Canada, Holland, New Zealand, Switzerland, Denmark, etc).
- Attention to the development of “systems” of assessment (rather than isolated use of single assessment methods) and the use of multiple methods to examine a range of domains of competence (knowledge, skills, attitudes and values) at different levels using taxonomies of competence (e.g. Miller’s pyramid (1), Dreyfus and Dreyfus (2).
- Invention and evaluation of a much wider set of tools and instruments for assessment (performance-based assessments such as Objective Structured Clinical Examinations (OSCEs), Clinical Examinations (CEXs); web-based assessment tools; in-training measures such as multi-source feedback (360 degree evaluations); specific instruments to measure communication skills; assessment using high fidelity simulation, including standardized patients; etc)
- Development of sophisticated psychometric methods (reliability, validity, generalizability) for assessment of the quality of assessment instruments and programs and for standard setting and decision making
- A much greater body of research on the positive and consequential effects of assessment (curriculum reform, patient safety, quality improvement of services, etc) and unintended side-effects (problems related to overuse of checklists, cognitive problems related to overuse of MCQs, sociological implications of too much simulation; “poorer” performance of experts who use pattern recognition; promoting cramming and superficial learning; etc.) of various forms of assessment (3).

All of these developments set the stage for thinking about assessment in a medical education context that has evolved significantly from the era during which most medical schools adopted their current assessment systems.

Assessment tools

There is only one sort of licensing test that is significant, namely a test that ascertains the practical ability of the student confronting a concrete case to collect all the relevant data and to suggest the positive procedure applicable to the conditions disclosed. A written examination may have some incidental value; it does not touch the heart of the matter.” Abraham Flexner 1910 (page 169) (4).
The domain of specific assessment tools is subject to continual invention, debate over which tools are appropriate, research on the contextual reliability, validity and resources implications of various tools and most recently discussion about the adverse effects of the use of particular tools. The literature in this area is vast and it is well beyond the scope of this brief review to broach the selection of tools, much less recommend specific ones. However it is important to note that in this area there is not only rich research on individual tools and their use, but also a substantial number of reviews and meta-analyses. This means that it is possible to make, in some domains, evidence-based choices about assessment tools. For example, the assessment of communication skills has been the subject of hundreds of studies over 3 decades and there are reviews that describe and rate the properties of a variety of widely available tools. See for example see Boon et al. (5) and Shirmer et al. (6) (Annotated Bibliography). For new tools, such as portfolios, reviews have focused on what works and what doesn’t, highlighting areas where further research is still needed. See for example Driessen’s review (Annotated Bibliography) (7).

On the other hand, there are topics for which attempts at reviews and meta-analyses have come up with very limited conclusions that suggest the need for more research and reconsideration of the domain itself. An example of this is the area of “professionalism”. Several reviewers have attempted to review evidence for assessment tools without much success (For example Jha et al (8) and Veloski et al. (9). - see Annotated Bibliography) Similarly, reviews of useful tools in the area of “self-assessment” have lead to puzzling and troubling findings. Medical educators looking for evidence-based tools in such areas might be better off reading the debates about the degree to which the constructs of “professionalism”(10) and “self-assessment” (11) are themselves valid.

Finally, although created for postgraduate education, both the ACGME (Assessment Tool Box) (12) and the RCPSC (The CanMEDS Assessment Tools Inventory) (13) are resources that contain lists of various assessment instruments, the evidence for their use and annotated references for each.

**Assessment systems**

“It is easy to find writers concerned with how to produce a better multiple choice question, how to handle test results statistically, or how to compensate for the fact that different examiners respond differently to a given piece of student work. It is much less easy to find writers questioning the purpose of assessment, asking what qualities it does or should identify, examining its effects on the relationship between teachers and learners, or attempting to relate it to such concepts as truth, fairness, trust, humanity or social justice” (14). Derek Rowntree

Imagine that we put together the world’s highest quality bicycle tire, a top quality tractor engine and one wing from a state of the art airplane. In terms of transportation we will not have created anything of value. In assessment, while there are many helpful reviews about the technical aspects of tool selection (as reviewed above) it is not at this level that the most important implications for medical education lie. Rather, it is at the higher philosophical and sociological levels where we find the most pressing questions, such as: “What is assessment for?” “How does a particular system of assessment drive particular kinds of learning and particular kinds of practice?” “What are the positive and negative effects of various systems of assessment?”, etc.
As van der Vleuten and Shuwirth, two of the best thinkers in assessment in the world have recently written, “We should not evaluate individual methods, but provide evidence of the utility of the assessment programme as a whole” (15).

Epstein and Hundert provide a comprehensive review of the elements of medical competence and how various approaches to assessment are over or underutilized in each domain (16). Epstein later summarized the most important qualities of a good assessment system emphasizing integration of knowledge, “habits of mind”, reflectivity and other higher order domains as being more important than basic knowledge and skills (17). Howley agreed in her review of performance-based assessment in medical education. She wrote “clinical competence is an extremely complex construct and one that requires multiple, mixed and higher order methods of assessment to support valid interpretations. Although medical students and residents are one of the most frequently tested groups in higher education, the methods of assessment are still primarily focused on low-level skills” (18).

Patel, in her comprehensive review of the relationship of major transformation in the healthcare system and its relation to assessment pointed out that assessment must be based in cognitive and learning sciences and also respectful of some crucial trends that include team performance, cultural competence and simulation-based learning, among others (19).

The literature contains several thoughtful reviews of characteristics of effective assessment systems. van der Vleuten and Shuwirth (15) have reviewed the elements of a good assessment system. They highlight the need to use a conceptual taxonomy or framework (they suggest Miller’s Pyramid) to organize the entire system of assessment. They also argue for a shift away from individual assessments of bits and pieces of competence toward an emphasis on holistic, integrated competence. They also argue that programmatic planning and the relation of the assessment system to educational outcomes is more important than the psychometric properties of individual measures.

There is also relevant work in the postgraduate realm where organizations are working to integrate a whole set of tools that will ensure competence according to broad frameworks. For example, in the US the Accreditation Commission on Graduate Medical Education (ACGME) has developed an Outcome Project (20) which has reviewed a great deal of literature and held expert consultations that resulted in a proposed framework of general and specific characteristics for a model assessment system. Similarly, in the UK, the Postgraduate Medical Education Training Board has published standards for a good assessment system in medical education (21). Hutchinson and colleagues have reviewed the evidence for reliability and validity of evaluation systems for certification as a whole, around the world. They provide evidence for the approaches most likely to be associated with various kinds of validity, though comment that very little research links examinations of any kind with actual practice outcomes. (see Annotated Bibliography) (22). Hamdy and colleagues did something similar in reviewing studies that linked data collected in medical schools (primarily in the US context) with results in residency and practice. They found, not surprisingly, that like measures correlated best with each other and that very few measures of competence in practice were available (23). Finally, despite the challenges of assessing outcomes for education program by using results on assessments, Fowell et al. argue...
that it is this constant attention to trying to identify outcomes of an assessment system that is the most important aspect of maintaining standards (24).

Implications for undergraduate medical education

There are a number of implications for undergraduate medical education programs in Canada. These touch the administration of programs (policy and practice) as well as the areas in which more research and development is needed.

Implications for policy and practice of assessment

- Programs should focus on the design and quality of assessment systems, not just individual tools. Good assessment systems integrate all sources of assessment information on the basis of an overarching theoretical construction of competence
- An assessment program should include elements from the whole spectrum of levels of competence, as is appropriate for stage of the learner from novice to expert, and as framed by a rubric of competence (for example Miller’s pyramid – know/knows how/shows how/does)
- A mixture of expert judgment/global ratings should be combined with more reductionist, checklists-type measures, again suited to the situation and context
- Broad sampling (multiple observations, source of data) is more important than rigid standardization
- Assessment should include observations in authentic settings of practice (ecological validity)
- The effects of assessment, including unintended effects (pseudo empathy arising from too much simulation (25), shot gun interviewing (26), etc should also be considered (Consequential validity)
- The iterative link of assessment to learning via feedback and goal setting should planned, operationalized and use best practices of feedback
- The development of reflective ability is essential to life long learning and maintenance of competence, but can be seriously in conflict with externalized systems of assessment – consideration of an overall assessment system should build in both (27).
- Once in independent practice, physicians must engage in programs of maintenance of competence. Assessment systems used in training should be explicitly linked to such programs by introducing their philosophy and methods during training.
- There should be a process in place of assessing the assessment systems itself. Attention needs to be given to contextual appropriateness of various tools. Validity and reliability are not inherent properties of particular testing tools, but of the derived measures and how they are used. Therefore data regarding the validity, reliability and effects must be collected for each context in which they are used.
Implications for research and development in assessment

As noted, the literature on assessment in medical education has broadened significantly in recent years. Several important contextual issues in medical education are shaping the way medical educators think about assessment systems and their purpose. Below is a list (far from exhaustive) of some of the key issues that have important implications for assessment system research and design. In these areas the literature is insufficient to recommend clear evidence-based choices for undergraduate education programs.

- There is a need to move beyond exclusive use of psychometric parameters to understand and track the quality and effectiveness of assessments tools and programs. Qualitative and narrative methods have promise but need more research (28, 29).
- Adoption of broader conceptions of competence require the development of tools for difficult-to-assess areas that are not clearly in the cognitive or skills areas, such as health care advocacy, ethical and professional behavior, etc.
- Movement toward continuous rather than point assessment requires the development of methods to track competence over time, recognizing that widely used global assessments (in training evaluations) are widely considered to be psychometrically and practically very problematic (30).
- Extensive literature that shows that physicians and students are poor self-assessors yet the profession needs to retrain strong practices of self-assessment and practice-improvement. Models such as “guided self-assessment” currently in the theoretical stage will need to be concretized in assessment methods and programs (31)
- The dream of competence-based assessment and, by extension, the tailoring of length of training based on competency assessment remains a ways off. Yet this is a priority for funders and educational organizations. Methods of assessment that will allow competence-based, rather than time-based training in the health professions need to be explored.
- Teams in inter-professional settings deliver healthcare, yet assessment remains rooted in a discourse of competence as an individual characteristic, often a solo performance. Assessment tools and methods must be developed to evaluate the competence of teams and of institutions, as well as individuals’ performance as part of teams and institutions, and in interactions with other professionals in various settings (32).
Annotated Bibliography

Review papers related to specific assessment tools

Communication Skills Assessment Measures


The assessment of communication skills is a major priority for medical schools and licensing organizations. Multiple tools are available to assess communication competence but this study that compares their effectiveness. Using a consensus panel of six educators, 15 instruments measuring the physician-patient interview were evaluated using the Kalamazoo Consensus Statement (KCS), which derived from a multidisciplinary panel of experts seven essential elements of physician-patient communication. Clear descriptions and data are provided for each of the commonly used scales.

Portfolios


As medicine is moving toward competence-based education, there is a need for the development of instruments that support and assess the development of competencies broadly. The portfolio has grown in use for this purpose. These authors conducted a comprehensive review of 3 decades of literature and specifically reviewed 30 empirical studies that met their inclusion criteria. Positive effects were strongest in undergraduate education, and there was evidence of good psychometric properties. The authors reviewed the criteria for successful use of portfolios and noted in particular their vulnerability to “competition” from other summative assessment instruments.

Professionalism


The assessment of “professionalism” is a topic of major interest to medical educators. These authors conducted a comprehensive literature and identified 97 articles that met their inclusion criteria for the assessment of professionalism. Most measures dealt with specific ethical issues, the doctor-patient relationship or cultural issues; very few with an integrated concept of “professionalism”. A subset of 44 reported psychometric data. There were no reports of changes in attitude over time. The authors concluded that there is little evidence of reported measure that are effective in assessing attitudes towards professionalism in medicine as a whole and scant evidence of intervention that influence attitude change over time.
In a review of 134 studies related to assessment of professionalism, these authors found only 11 that addressed a comprehensive construct. Most were specific to local situation and populations and few provided psychometric or other data that would allow assessment of their suitability for wider application.

**Self-Assessment**

Davis, DA; Mazmanian, PE; Fordis, M; Van Harrison, R; Thorpe, KE; Math, M; Perrier, L; Accuracy of physician self-assessment compared with observed measures of competence: a systematic review. JAMA. 2006, 296:1094-1102.

Arguing that core physician activities of lifelong learning, continuing medical education, re-licensure, specialty recertification, and clinical competence are linked to the abilities of physicians to assess their own learning needs and choose educational activities that meet these needs, these authors conducted a comprehensive search for research on self-assessment (33). Of 725 articles they identified 20 studies that compared self and external assessment and met the authors’ inclusion criteria for rigor. Of these 13 showed little, no or an inverse relationship, and in a number of studies physicians who were the least skilled were the most confident.

**Review papers related to assessment systems**

In this thoughtful review, Epstein outlined the core elements of an assessment systems in terms of: defining the goals of assessment; defining what to assess; considering how to assess; and considering cautions. In this later domain he highlight the need to beware of unintended effects of testing; avoid punishing experts who use valuable shortcuts; not to assume that quantitative data are more reliable, valid or useful than qualitative data, etc.

Epstein and Hundert (34) reviewed a wide range of articles published between 1966 and 2001 that looked at the assessment of competence of medical students, residents and physicians. They argued that assessment systems often test core knowledge and basic skills but under-emphasize important domains of professional practice such as interpersonal skills, lifelong learning, professional behaviours and integration of knowledge into practice. They provide a comprehensive taxonomy of competence and review approaches to assessment of each aspect of it.

These authors review the elements of an effective, integrated assessment system. This includes: A blend of methods to cover all competencies of Miller’s pyramid; A shift away from individual assessment methods for separate parts of competencies toward assessment that is woven together with other elements of the training program; Assessment framed as an educational design issue rather than a psychometric problem; Programmatic in design and surpasses the autonomy of the individual course developer or teacher; etc.
These authors reviewed 55 papers that met inclusion criteria in terms of their demonstration of reliability and validity of postgraduate examination, in Canada, US, UK and Australia/New Zealand. The paper examines validity of various examination systems in terms of tools used, populations tested, purposes of assessment and various measures of reliability and validity demonstrated.

The authors conducted a search of 50 years of literature related to the relation of measurements obtained in medical schools (in the US context) in relation to future performance in medical practice. 175 studies were reviewed in details, 38 met inclusion criteria and 19 had sufficient data to be included a meta-analysis. Overall undergraduate grades and rankings were moderately correlated with internship and residency performance, to the greatest degree when similar instruments were used. There was little data regarding correlation of medical school data to performance in practice.

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CLUSTER 4: Curriculum Design and Implementation /  
*L’élaboration et la mise en place des cursus*  

Neville, Alan, MD  

*AFMC-Medical Education in Canada: A Review of Undergraduate medical curricula*  

Summary  

There has been a prevailing model of medical education in North America for almost a century, typified by a step-wise model from undergraduate to postgraduate and from classroom-based education to clinical experiences. The majority of programs involve a four-year undergraduate curriculum with two notable exceptions in Canada. Social accountability sensitivities and pressures to adopt competency-based education have stimulated thought about lengthening the curriculum. The need to increase physician supply and fiscal constraints have stimulated thoughts to shorten the curriculum. Adult learning theory has suggested the greater integration of basic and clinical sciences and an emphasis on experiential learning are optimal for learning and retention. These theories have lead to experiments with vertically integrated curricula and case- or problem-based learning. There are also theoretical benefits to this form of learning in that clinicians may have a better ability to focus on addressing the problem in the face of rapidly changing knowledge than those who have studied under a more traditional knowledge-based curriculum. Efforts to encourage students to acquire and use knowledge more efficiently have lead to experiments with horizontal integration wherein subject matter is taught simultaneously in the context of broad topic areas or cases. In some programs, similar problems or contexts are revisited after learners have had a chance to learn more about related areas and can approach the problem with new skills and knowledge – the so-called spiral model. All of these initiatives have resulted in the widespread practice of hybridizing programs to include both didactic and problem-based learning, blur the distinctions between levels of learner, and reduce the balkanization of medical content into specific discreetly-taught topic areas.  

In spite of all of this focus on undergraduate curricular models, there is no prevailing evidence of the superiority of one model over another. Recent studies and meta-analyses have demonstrated that problem-based curricula may lead to better problem-solving, lifelong learning, social dimensions and cognitive reasoning, but to inferior knowledge and factual bases. Problem-based learning curricula are also associated with more interest in generalism and primary care but the causal relationship is not proven. The impact of differences in curricular models on eventual quality of care and health outcomes has not been determined.
Major Themes:

There is no generally accepted ‘best’ model for undergraduate curricula. This applies to length of training, curriculum design, and singular pedagogical techniques. Evidence suggests that curricula that combine didactic factual teaching with experiential integrated (vertically and horizontally) learning have the best chance of success. The social accountability mandate is resulting in efforts to make curricula more responsive to societal need, more accountable for educational outcomes, and more competency-based. Evidence suggests that condensed or accelerated curricula do not result in inferior ability of graduates to practice, but do result in decreased perceptions of preparation and in-depth knowledge. Competency-based education may make length-of-training debates mute as decisions for promotion will be based on readiness rather than time spent in training.

Best practices and innovations:

University of Dundee (spiral model of education), McMaster University and Manchester University (integrated PBL curriculum), Duke University (exploration and scholarly development), and Brown University (Competency-based education/promotion).

Full Text

Abstract

The Association of Faculties of Medicine of Canada (AFMC) has initiated a wide-ranging environmental scan of practices and pedagogy in medical education as part of its “Future of Medical Education” project. A series of articles is addressing not only the content and pedagogy of medical curricula across the world, but how and where medical education is delivered in relation to health science centers and the community. This article provides an overview of pedagogical approaches to the medical school curriculum and then explores the debate about the length of the curriculum and the amount of basic science content. The review concludes with an assessment of how these factors impact on learning outcomes in medical education.

Introduction

The Association of Faculties of Medicine of Canada (AFMC) has embarked on an ambitious endeavor to consider the future of medical education in Canada. Central to this project is an assessment of the current status of undergraduate medical school curricula across the country, reviewed in the context of developments in medical education around the world over the past generation.

Most individuals involved in medical education are aware of the transformative report prepared for the Carnegie Foundation by Abraham Flexner in 1910 (1). In his introduction to
this report, Henry Pritchett’s words of almost one hundred years ago ring true compellingly, today, as the AFMC and Canadian medical schools embrace the notion of Social Accountability. “And yet in no other way does education move closely touch the individual than in the quality of medical training which the institutions of the country provide. Not only the personal well-being of each citizen, but national, state, and municipal sanitation rests upon the quality of the training which the medical graduate has received. The interest of the public is to have well-trained practitioners for the needs of society” (1).

This review will address issues of the pedagogy as well as the context and duration of undergraduate medical school curricula. There will be an exploration of the change from a “teacher-centered” “discipline-oriented” Flexnerian approach to medical education, enunciated in the early years of the last century to the many varieties of more “student-centered” and “integrated” curricula that have developed over the past 30-40 years. These changes have not been without controversy in an era where an explosion in the knowledge base of the biological sciences has occurred while, perhaps paradoxically, medical schools have typically reduced curriculum hours in the traditional basic medical biological sciences, with their attendant laboratory exercises and instead introduced more content from the social and behavioral sciences, irrespective of the pedagogical model of curriculum delivery. The debate about the place of basic science - indeed its very definition – in the curriculum will be addressed and a number of examples will be provided to illustrate the various approaches taken by medical schools to this issue.

While the Flexnerian “traditional” medical school curriculum model embraces two “basic science” years followed by two “clinical years”, the optimal length for an undergraduate medical school curriculum is a second area of debate. Many may have forgotten that a curtailment of the 4-year curriculum to 3 years occurred in the United States and Canada during World War II, in an attempt to transiently graduate additional physicians for military service (2). Arguments for 4-year or 3-year curricular in the current era will be described.

The review will conclude with a discussion of how Canadian medical schools – and medical schools around the world – have moved towards an outcomes-based approach in defining curricular goals and objectives; increasingly, outcomes are being - expressed as competencies that define the expected performance of graduating medical students in clinical practice. Within Canada today, graduating medical students are entering postgraduate residency training, having been exposed to new areas of curriculum developed collaboratively by medical schools across the country(3). These curricula have both undergraduate and postgraduate objectives and physician competencies, which is encouraging medical educators to look across the undergraduate to postgraduate medical curriculum divide and break out of the silos that have hitherto kept them separate.

Medical education has increasingly included ambulatory and community – based teaching as well as interprofessional learning – these aspects will not be addressed in this review.

Methods

Given the nature of the literature on the sub-topics of this review, original studies, systematic reviews, non-systematic reviews, and editorial articles were all included. Searches of MEDLINE
Part 1 – From Lectures to Cases to PBL

The ground breaking Flexner report of 1910 ushered in an era of coherent medical school curriculum organization in the United States and Canada which replaced the uncontrolled “trade school” practices that preceded it (1). The 4-year curricula that developed emphasized a dichotomy of teaching the basic sciences of medicine first and then the subsequent clinical application of the sciences to medical practice. At the same time, instruction was largely lecture-based and the “courses” in the sciences were delivered by faculty from basic science departments such as physiology, anatomy, biochemistry and pathology.

Over the ensuing years of the 20th century, a number of major changes have occurred both in what is being taught as well as how curricular material is being learned. While maintaining a separation of the “basic science years” and the “clinical years” some medical schools, particularly in the UK integrated some of the basic sciences “horizontally” (e.g. biochemistry and physiology) which broke down departmental barriers but left the traditional pedagogical model intact (4). The greater change, of course, has been the development of “vertical integration” of the curriculum, where the basic science and clinical sciences have become integrated in what developed as case-based or “problem-based” curricula. The shift towards vertically integrated medical school curriculum in Canada and the United States began over 40 years ago.

In reviewing the development of “small-group” tutorial problem-based learning (PBL) in Canada, it is important to recognize that while PBL curricula employ “cases”, a curriculum using cases may not reflect a “problem-based” approach to learning. Barrows identified a number of ways in which clinical cases can be used in the instructional setting (5). The “case method”, in which students are given a case to study in preparation for a class discussion with a faculty facilitator, combines both student-directed and teacher-directed learning – but students do not actively derive their learning objectives from going through the clinical case and thus are not engaged in PBL. The case-method was described in medical education as far back as 1906 (6).

The pioneers in the development of PBL curriculum had a vision for medical education that would better prepare graduates for life-long clinical practice. The problems with conventional curricula were felt to be 1) irrelevance to clinical practice of some of the excessive material taught 2) lack of integration of the basic and clinical sciences and 3) the need for continuing education after graduation (7). The evidence from the cognitive psychology literature to support the development of PBL curriculum was scanty in the 1960’s and much of the rationale for the early PBL medical schools has been derived post hoc. Basically, according to the learning theory of Anderson (1977), three principles are important in the acquisition of new knowledge:
a) activation of prior knowledge, b) encoding specificity, whereby the closer the resemblance between the situation in which, something is learned and the situation in which it is applied, the better the performance and c) elaboration of knowledge e.g. by developing hypotheses around a problem. Several authors have adduced evidence to show that a PBL learning environment promotes these cognitive tenets (8).

Over the past 30-40 years, Canadian medical schools have adopted varying degrees of curriculum integration with a reduction in lecture hours, more “self-directed: student activity and, in some cases, PBL in whole or in part (9). While it is beyond the scope of this article to thoroughly review the evidence for or against the widespread introduction of PBL methodology to Canadian medical schools, some comment is necessary given the relevance of considering how Canadian medical students should be taught in the future.

A number of overviews or meta-analyses of PBL curricula and their outcomes have been published (10,11,12,13,14); only the most recent analysis reviewed controlled studies to determine whether PBL during medical school resulted in greater physician competencies after graduation (14). While differences between PBL and conventional curricula tend to be minor – and the “effect sizes” small, PBL graduates tend to have performed less well on basic science testing, engage in more backward than forward reasoning, perform better on clinical examinations, enjoy their medical education more – and in the most recent analysis, demonstrate greater competency after graduation in social (e.g. communication, team, ethical skills) and cognitive (e.g. Coping with uncertainty, use of evidence-based approach to medicine) dimensions (14). Students are also more likely to choose Family Medicine as a career. Commenting on the small effect-size seen in many studies comparing PBL and conventional curricular, Albanese opines that effect sizes of 0-8 or greater are an unreasonable expectation of PBL – requiring PBL curricular to result in very large changes in individual student performance (15). He also proposed that Cooperative Learning, Self-Determination Theory and Control Theory – manifest in the benefits of collaboration when problem-solving, increased student motivation in the PBL setting, and relative autonomy or freedom are all additional theoretical constructs that underpin PBL beyond information-processing theory (15).

There is general agreement that PBL is faculty resource intensive, especially with class sizes in excess of 100 (10). Small group teaching requires more classrooms and library resources. Those responsible for resourcing Canadian medical schools need to weight the putative benefits of small group tutorial PBL against the passive learning environment of the large lecture hall and memory-based recall exams redolent in traditional curricula. In addition, despite the cognitive psychological theories advanced by PBL advocates to support this method of instruction, others have sounded a note of caution, suggesting that minimal guidance constructivist approaches to learning are ineffective (16). Invoking “Cognitive Load Theory”, Sweller has suggested that novice learners, who lack proper schemes to integrate new information with their prior knowledge, generate a heavy working memory load when exploring new material in a highly complex environment – and this is detrimental to learning (17). Kirschener and colleagues argue that schema-acquisition which is the hallmark of the development of expertise in any domain is impeded when forward-directed reasoning problem-solving strategies are used as a learning strategy. They conclude that the practice of a profession is not the same as learning to practice the profession (16).
Others have criticized the use of “clinical problem-based solving cases” for “pre-clinical” medical students, arguing that students in the first two years of medical school have no realistic basis for formulating or solving clinical problems (18).

Despite these concerns with the fundamental pedagogy of PBL, approximately 60 medical schools in North America have adopted some form of PBL in the past two decades (16). A review of medical education in Australia in 2001 showed that about 30% of medical students were graduate-entry students in PBL courses – and most schools have increased vertical integration of basic and clinical sciences organizing the curriculum by themes rather than by disciplines (19). In the United Kingdom, three established medical schools namely Manchester, Glasgow and Liverpool have well-developed PBL curricula – and as the University of Manchester has demonstrated, the graduates appear better prepared to become “residents” than, historically, graduates from their previous curriculum (20).

In a comparative review of medical schools in Canada, Australia and the UK published in 1999, PBL was reported to be predominant pedagogical model in 46%, 75% and 38% of the curricula respectively (4). Some schools have examined Barrows’ model of case-based learning described earlier and have implemented a variety of case-based methods in different parts of the curriculum – using various modified terminology such as “problem-focused” learning, “problem-initiated” learning and a problem-centered discovery” learning (21).

One final criticism of PBL curricula relates to a later section on Basic Science in the medical school curriculum but will be mentioned here. Acknowledging that the core basic science of a PBL curriculum must be selective, Giele laments the superficial coverage of the basic sciences which “are the fundamental building blocks in the foundations of medical education and that not only are the basic sciences required to understand many of the disciplines that underpin medicine but that such knowledge is also required in clinical practice” (22).

**Cases – PBL – Summary**

Comparisons of PBL and conventional curricula are difficult, given the heterogeneity in the definition and application of PBL in different medical schools (10). The evidence suggests that large group lectures of factual content are received poorly by medical students – and information delivered is no guarantee of information usefully processed and understood. Students and many faculty appear to enjoy the active learning environment of PBL tutorials (10). It would seem useful to attempt to address the perceived weaknesses of PBL curricula by using content-expert faculty to provide students with sufficient underlying concepts in new domains such that they have a basis for working with the tutorial cases (9). Multiple case examples from the same domain can facilitate analogous transfer of underlying concepts (23). Tutorial cases – or problems become not diagnostic dilemmas but vehicles for deriving useful learning objectives that explain clinical or non-clinical phenomena in the case. In this way, PBL in the future can evolve towards a better facilitated collaborative case learning model – and the typical Canadian medical school curriculum will be a hybrid of didactic and small group instructional settings.
From Pedagogy to Curriculum Organization

The discussion so far has centered on the strategy for delivering the curriculum, but has not addressed the organization of the content to be delivered. The traditional curriculum has been organized around departmental courses such as anatomy and physiology in the pre-clerkship years and a similar clinical department orientation during the clerkship.

A first step in breaking down departmental barriers was the development of “horizontal integration” of basic science courses into “systems-based courses” (24). Thus a cardiovascular course would integrate normal anatomy and physiology and biochemistry etc. Most PBL curricula require horizontal integration of basic science content to produce cases (10).

As more schools developed case-based teaching methods, including PBL, there was a further move to “vertical” integration of the basic sciences and clinical medicine (24). The rationale was that clinical examples would make the importance and relevance of the basic sciences more evident and consequently increase motivation to obtain and then retain deeper theoretical knowledge (25). As Dahle et al from Linkoping noted in describing their own experience with vertical integration in the medical school curriculum, many other schools had moved in this direction in Europe, North and South America and Australia (24). Elliot’s review, identified earlier, noted that by 1999 over 50% of Canadian, 88% of Australian and 50% of UK medical schools had horizontal integration of their undergraduate medical curricula (4).

A further development of integration is the iterative revisiting of topics or themes throughout the course of the curriculum (26). The concept of spiral curriculum has not been restricted to medical education but, in any domain, has the following elements a) topics are revisited b) there are increasing levels of difficulty c) new learning is related to previous learning and d) student competence increases with each turn of the spiral (26). This has become a commonly-used term in medical education, but at the University of Dundee, this spiral curriculum organization is very explicit and well-developed (21).

In 1994, the University of Calgary implemented a different approach to curriculum organization by adopting a Clinical Presentation model, based on the way patients present to physicians (27). Competency-based terminal objectives for the graduating medical student were developed for each presentation. Students are provided with explicit schemes or frameworks for considering each presentation and can practice using these schemes in problem-solving sessions. A similar approach was taken by the University of Florida in 1998 and the University of Manchester in 1999 (28), and the Medical Council of Canada adopted a clinical presentation model to the organization of its objectives (29). A rationale for deriving algorithmic schemata for each of the presentations can be found in the cognitive psychology literature, where Regehr and Norman have proposed that “true understanding of a domain is defined not simply by the quantity of information that a person processes, but by the extent to which this information is organized into a coherent mutually supportive network of concepts and examples”(30).
Basic Science Content of the Medical School Curriculum

While it was not the purpose of this review to address individual curriculum content topics in depth, the issue of the place of the so-called basic sciences in medical education deserves some extended discussion given the debate that has arisen amongst medical educators in the past 10-20 years. Basic Sciences became the backbone of the medical curriculum following the report of Flexner in 1910 (1). Workshops and conferences have been held where opportunities have been provided for opposing views about the place of basic science in the curriculum-and even the very definition of basic science to be voiced, with and without the evidence to support these views (31). A group of Canadian medical educators who convened in 1999 to discuss the role of basic science in medical education agreed that “basic” included the biological sciences such as molecular biology, anatomy, biochemistry, physiology etc., as well as epidemiology, the social sciences and informatics (31).

The issues of “how much” basic science to teach, “where” to place it in the curriculum and “how” to teach it are somewhat clouded by the work of cognitive psychologists who have been able to demonstrate that clinicians make very little use of basic science in routine diagnosis (32). However, as was already mentioned in the pedagogy section of this review, “the practice of a profession is not the same as learning to practice the profession” (16). Furthermore, a more recent cognitive study by Woods et al suggests that knowledge of basic science may have value in clinical diagnosis by “helping students recall or reconstruct the relationships between clinical features and diagnoses” (33).

Perhaps the most significant factor impacting the teaching of the basic sciences has been the move to both horizontally and vertically integrate the basic sciences through the curriculum – as was described earlier in this review. As Koens et al have noted, “today, the most important criterion is often the relevance of basic science knowledge for the practice of medicine, rather than the conceptual coherence of the sciences themselves” (34). At the clinical biomedical level, there is evidence that basic science educators and clinical teachers can agree on the priority concepts (35). Koens and colleagues went further and investigated the degree of agreement between clinical and basic science faculty on the “depth” of knowledge required for the graduating medical students (34). Four levels of depth were addressed 1) clinical 2) organ 3) cellular 4) molecular level – and faculty were asked to consider for each item whether students should have “ready knowledge of the topic”, should be able to “recognize the right answer” or “would not need to have any knowledge about it”. The study participants were also asked to consider whether the topic should be included in the curriculum. At the clinical level, both basic science and clinical faculty agreed on the required knowledge; but as might be expected, basic science faculty rated items at the organ, cellular and molecular level more highly (34). While this study investigated faculty opinions, it did not answer the question “what is the appropriate amount and depth of basic science knowledge required for a competent graduating medical student?”

There is currently no consensus in the literature to answer this question. Norman has concluded that there is evidence to support three propositions: 1) some specialties are heavily rooted in basic science 2) all specialties need basic science occasionally and 3) basic science is
an essential underpinning for real understanding (36). Norman further argues that learning is
facilitated by understanding, and “to the extent that basic science provides a basis for
understanding clinical medicine, it might be viewed as a precondition for efficient learning;
however there is no guarantee that students once taught basic science can or will use these
concepts later”(36). He then goes on to advocate for pedagogical approaches in curriculum that
promote analogous transfer – whereby a concept learned in one context is applied to solve a
problem in another context (36). This, of course, can theoretically be achieved in the vertically
integrated, PBL and spiral curricular models described earlier.

Even after arguments about what basic science content should be included in the curriculum
are settled, there is the issue of who is to teach the sciences. The move toward developing
integrated curricula has left many basic science faculty feeling disenfranchised from and hostile
toward participating in medical education (22). Another study has suggested that an increasing
number of faculty members in basic science departments are not trained in and are therefore not
prepared to teach medical students the preclinical elements of those disciplines (37). Likewise
basic scientists may believe that practicing clinicians lack the current or new insights and
understanding of the basic sciences to be solely responsible for teaching medical students (22).

Perhaps some of the debate about basic sciences and medical school curriculum reflects a
conflict in defining the desired outcomes of a medical education (38). While the use of
“outcomes” in medical education is discussed more fully in a later section of this review, it is
worth considering the balance between “job training” and educating for “the skills of the
scientific method as applied to both the biological and behavioral sciences to function in the
complex arena of clinical reality (38). The skills required to make routine diagnostic
assessments may be achieved with a smaller background of basic science than an appreciation of
the inadequacy of a standard treatment and an understanding of what might be required to
improve or advance diagnostic or therapeutic outcomes. Does this perhaps suggest that medical
school curricula should have different streams – to separate the future general practitioners from
the future medical scientists? (39)

At Duke University School of Medicine, one of the curriculum goals is to: “promote and
encourage the highest level of scholarship by providing opportunities for exploration, creative
thinking and discovery in medicine” (40). The third year of this four-year curriculum is a 10-12
month scholarly experience that requires a scientific thesis for completion. A “continuity clinical
experience” is also expected during this year (40). Following a first year curriculum which has a
series of horizontally integrated basic sciences, this medical school has clearly enunciated an
emphasis on the role of the basic sciences and research in medical education. A review of the
AAMC CurrMIT database demonstrates that many medical schools in Canada and the USA
provide an opportunity for student-research to help develop skills in scientific method (41).

Length of the Medical School Curriculum

The 1910 Flexner report ushered in the era of the 2 years science plus 2 years clinical
medical school curriculum (1). This model remains in place to this day. Students are accepted
into medical school upon completion of an undergraduate degree. In the UK, Europe and
Australia/New Zealand, students have traditionally entered medical school from high-school
without a prior degree – and these programs were originally six years in length. Horizontal integration of basic science content has resulted in six-year courses becoming 5 years in length.

There has been discussion about whether the medical school curriculum should be maintained at 4 years or reduced to three (42), increased beyond 4 years to include the “post-graduate” years to allow for the ever-expanding list of required curricular topics (43) or made flexible, with a shift to a competency-based time-independent curriculum (44).

While the US and Canada introduced “accelerated” three year curriculum programs during World War II to provide physicians for the war effort, the traditional four-year approach was the norm in both the US and Canada (2). Between 1969 and 1976 a number of US medical schools developed three-year curriculum programs, spurred on both by the financial incentives of the 1971 Health Manpower Legislation, which allowed medical schools to acquire additional funding by converting to three year curricula, and a number of political considerations in particular the desire to increase physician supply over the short term (45,46). In 1978, the AAMC published a report on the “experiment” of graduating medical students after three years of medical school (45). Data were collected from 18 medical schools which were in three categories: a)conversion from four to three years b) new schools, opening with a three-year program and c) four-year curriculum schools which offered a three year option.

A review of curricular hours and content of the “converting” medical schools reveals that the three-year curricular were “accelerated” versions of the four-year model, with an equivalent and occasionally increased number of instructional hours (47). While several comparative studies failed to show significant differences in performance of graduates from accelerated programs, residency program directors reported less satisfaction with these graduates’ maturity and in-depth knowledge; the greatest opposition to three year programs come from basic science faculty, who criticized the loss of content hours and some of their control over the curriculum (45).

While about 23% of US medical schools adopted this type of three-year curriculum, by 1978 only 8% offered any form of accelerated program (45).

In 1969 in Canada, McMaster University initiated a 130 week three-year PBL curriculum which made no attempt to compress the content of a traditional four-year program into three years (9). In 1970, the University of Calgary admitted its first cohort of 32 students into a three year program (27). Currently McMaster and University of Calgary are the only integrated three year MD programs in North America.

With the demise of the three year curriculum experiment in the US and with just two out-lier medical schools in Canada offering a three year program, why is there again debate about the length of the curriculum?

The rising tuition costs of a medical education appear to be deterring some potential medical students from applying to medical school – and skewing the number of applicants from lower socioeconomic groups (48). Shortening the curriculum or making it more flexible has been advocated as a strategy to ameliorate this problem although medical school tuition in the three
year accelerated programs in the US in the 1970’s was the same as in the four year program of the same school (42,45). Whether this would occur by simply removing one curriculum year or integrating the fourth year of medical school with the first post-graduate year remains an intriguing area for discussion (49).

Recently, in 2006, the Lake Erie College of Osteopathic Medicine introduced a three-year accelerated pathway with the content of the four-year curriculum’s clinical components focusing on “primary care” (50). The goal is to provide a primary care-oriented curriculum at less expense to the students (50).

In contradistinction, an argument can be made for lengthening the medical school curriculum in Canada because of the need to include new areas of curriculum (43) – (several of which have developed from initiatives of the Social Accountability movement in Canadian medical education e.g. Palliative and End of Life Care, Public Health and Aboriginal Health curriculum). While it can be argued that elective time occupies much of the fourth year curriculum in many four-year curricula, there is a strong argument for creating linkages between the medical school and postgraduate curricular to provide coherent integration of these new topics into the education of future physicians (43).

Perhaps there should not be a fixed duration for the medical school curriculum. As will be described in the last section of this review, medical educators have embraced the notion of “outcomes-based” education, with “competencies” as the measured outcome (51). The time taken for different medical students to attain or master certain core competencies may vary. Accordingly, curricula may need to reflect greater flexibility in both structure and duration (44).

Pedagogy, Curriculum Organization and Duration-Leading to Outcomes in a Climate of Social Accountability

Tamblyn has stated that “the most fundamental expectation that society has of medical schools is that they prepare practitioners who are capable of delivering the highest standard of medical care” (52). Over the past 10-20 years, increased attention has been paid to the specification of learning outcomes in medical education, although, as Tamblyn points out, assessment of learner outcomes has been mainly limited to assessment of intermediate markers of standards of medical care, namely, the clinical competence of graduates (52). Harden has developed a framework for specifying the learning outcomes of a medical curriculum (51). He proposed a “three-circle” model: 1) what the doctor should be able to do (doing the right thing) 2) the approaches to doing it (doing the thing right) and 3) the development of the individual as a professional (the right person doing it) (51). As well as describing criteria for specifying outcomes, Harden identified twelve major learning outcomes e.g. clinical skills, patient management, personal development, that fell within one of the three “circles” (51).

In conjunction with the move towards specifying learner outcomes has come the corollary of expressing these outcomes as “competencies” i.e. performance-based criteria (51,52,53). Brown University Program in Medicine has developed a comprehensive competency-based curriculum that sets benchmarks and standards that each student must attain before graduation (53).
Defining the desired competencies is a prerequisite for developing curriculum and outcome assessment tools. In Canada, a number of related initiatives has influenced the definition of performance - based competencies in medical school curricula. In 1990, a collaborative project was launched in Ontario to determine what the people of the Province expected of their physicians and how the programs that prepare future physicians should be changed in response (54). The Educating Future Physicians for Ontario project identified eight "physician roles", that were then adapted by the Royal College of Physicians and Surgeons of Canada as the seven CanMEDS roles (55). These have become incorporated in both postgraduate and undergraduate medical education in Canada (and increasingly, around the world) (55). These competencies have become central to the design of current Canadian medical school curricula and are entirely consistent with the vision of the "the development of an effective social accountability model for medical schools (which) will provide the basis for all partners to work collectively on meeting the needs of the Canadian population in a collegial and collaborative manner"(56). Social Accountability – A Vision for Canadian Medical Schools has become a central tenet of the 17 Canadian medical schools, and all of the new collaborative curriculum initiatives developed under the auspices of the AFMC are competency-based and closely allied with the principles of social accountability. Much collaborative work needs to be done however, to relate these remarkable changes in medical education curriculum to measurable healthcare outcomes (52).

Summary

This review has demonstrated that over the past 20-30 years medical education has undergone significant reforms from the model proposed in the early years of the twentieth century. There has been a trend toward increasing learner participation in their own education and integrating the basic and clinical sciences of medicine. Many of these curricular changes have had relatively small "treatment effects" on the outcomes typically measured in medical school, although a few studies have looked at competencies post-graduation in comparing PBL versus traditional curricula. In an environment where the information explosion in human biology is occurring in conjunction with a proliferation of potential new curricular topics (many couched in terms of social accountability) the content and length of the undergraduate medical curriculum is a matter of on-going debate. This review has identified that a number of medical educators have suggested that the undergraduate MD and postgraduate residency curricula be more closely linked. The basic sciences of medicine may then spiral in an integrated fashion through several years of a "medical education", allowing learners to address fundamental concepts in a number of curricula settings e.g. lecture, PBL case, clerkship seminar or academic half-day during residency.

There is currently no clear pedagogical winner in curriculum delivery methods; at the very least, more studies with relevant patient healthcare outcomes would be needed to settle the debate about the relative merits of PBL and traditional curricula. There is sufficient evidence using intermediate outcomes, however, to suggest the use of a hybrid of concept- overview presentations from expert faculty combined with well-facilitated case-based small-group activity and an opportunity for independent learning.
This review has concentrated on pedagogical issues, curriculum organization, the role of the basic sciences, curriculum duration and the use of outcome competencies in defining the medical school graduate. There are obviously other important aspects of medical education such as the teaching of clinical skills, use of simulation and the move of medical education into distributed sites which are not addressed have but are the subject of other reviews in this series.

**Summary List of Implications for Medical Education**

- The medical education community has embraced active learning over didactic teaching, but wide variations exist in the definition of PBL and the use of cases.

- There is some evidence from the cognitive psychology literature to support tutor-facilitated small group learning – using tutors who have enough content knowledge to guide students and provide feedback.

- The use of multiple cases in PBL may enhance analogous transfer of concepts and reduce the “context-binding” of using single cases to cover particular topics.

- Almost universally, both horizontal and vertical integration of the basic sciences and clinical curriculum has been occurring in medical schools.

- The place and quantity of basic science teaching in medical school remains the subject of an unsettled debate worldwide.

- The move towards “competency-based” approaches to medical education suggests that the debate about the appropriate duration of the medical school curriculum may be less important than determining when students are “ready” to graduate.

**Annotated Bibliography**


The above two papers should be reviewed together since they present contrasting cognitive approaches to problem-based learning. Norman and Schmidt advance evidence to suggest that recall of new information is enhanced when subjects activate relevant knowledge, that elaboration of knowledge at the time of learning enhances subsequent retrieval and that matching context facilitates recall. They also explore cognitive issues related to case-based reasoning and analogous recall.

In contrast, Kirschener and colleagues argue from the standpoint of memory research and human cognitive architecture that while minimally guided approaches to student learning
(such as PBL) are appealing, there is sufficient evidence to suggest that they are both less effective and less efficient. While the arguments in the second paper do not completely refute all the cognitive issues raised in the first article, the truth probably lies somewhere in between; active self-directed learning guided by knowledgeable faculty.

While this article reviews the debate about measuring “effect sizes” in analyzing outcome differences between PBL and traditional curricula, more importantly it raises questions about how any educational curriculum intervention should be evaluated. Albanese also advances several educational theories that, in his opinion, are sounder justification for adopting PBL than the oft-quoted contextual learning theory.

While this commentary on basic science in the medical curriculum is best read in conjunction with others published along with it from a symposium on this topic, it gives an overall perspective on the unresolved debate about whether we need more or less basic science “taught” to medical students. Norman describes potential roles for the use of basic science by clinicians, arguing that different specialties make more “daily” use of basic science in practice than others. He addresses the role of basic science in enhancing learning and reviews how basic science might be taught in ways that it will not be quickly forgotten. He concludes that basic science learning may well serve an essential role in providing prior knowledge to facilitate understanding and efficient learning of clinical knowledge.

In an era of social accountability of medical education and “outcomes-based”, competency-based curricula, there is a need to choose “outcomes” that mean something to the consumers of healthcare. Tamblyn starts with the premise that “the most fundamental expectation (of society) is that medical schools prepare practitioners who are capable of delivering the highest standard of care”. Up till now, most “outcome” assessments of medical school graduates have used intermediate markers of clinical competence. Tamblyn describes the challenges in assessing the contributions of individual physicians to the standard and outcome of care delivered and describes some potential methodological solutions to the issue of measuring performance in practice.
References

The Future of medical education in Canada: Simulation in Medical Education

Summary

The current breadth of simulation in medical education is in constant development due to an exponential growth in engineering technology. Predictive validity is established for part task simulation. Other types of simulation have established mainly construct, content and face validity. Simulation technologies are being introduced for summative assessments. Emerging educational themes and challenges in simulation include: curricular integration; interprofessional education; patient safety; deliberate practice; feedback and supervision; and balancing operational expense.

Major themes

Hayter et al identified the following main themes: the involvement of standardized patients to promote realistic learning; the use part-task trainers; the use of virtual patients; the use of computerized enhanced mannequin simulators; reliability and validity of simulated learning; the evaluation of simulated learning; simulation issues linked to patient safety; curricular integration; feedback and supervision; the role of deliberate practice and proficiency based training; interprofessional simulated education; feasibility and cost-effectiveness issues.

Conclusions and Directions

Simulation is a new (but growing) approach in Canadian medical education. More work is needed to increase the value of simulation and integrate this type of learning into the mainstream medical curricula. Team-based interprofessional simulation can provide an effective approach to improve the management of clinical crises and so improve patient safety. More effective approaches to the assessment of simulated learning are needed. Successful integration into curricula requires a comprehensive approach to faculty development. More rigorous evidence of the effects of simulation is required.
Best Practices and Innovations

Randomized controlled trial assessing the effect of adding standardized patients (SP) to an educational intervention for smoking cessation. Students in the SP group had significantly more patients abstain from smoking at one year than the control group.

Review paper of performance assessment and SPs.

Studied a multi-station simulation based objective structured assessment of technical skill in surgical residents, established feasibility, construct validity and found the test to have good reliability.

Studied the application to medical school over a 3 year period following the addition of the study sample assessment procedure (SSAP) which focused on independent studying, collaboration with peers, and providing information to SPs. Applied generalizability theory to assess reliability of the SSAP to the other procedures. Found that the SSAP and the interviews had the highest reliability coefficients.

Case control study of cardiac arrest team responses. Outcome measure was adherence to advanced cardiac life support (ACLS) protocols through medical records. Found computer enhanced mannequins (CEM) augmented education program improved quality of care at cardiac arrests.
Introduction

The Halstedian apprenticeship model of medical education, which is founded on a gradual reduction of clinical supervision, is undergoing a fundamental change (1). The impetus for this change is multifaceted. Firstly, there is an international move to decreased working hours that has reduced the opportunity for clinical experience and is threatening the apprenticeship model. Secondly, there is an increasing focus on patient safety, and an expectation for accountability to the public (2-4). Thirdly, there is an exponential growth in both new medical knowledge and technology (5-8). Finally, reduced patient accessibility with a trend towards same day admission, and reduced faculty availability from increased clinical production pressures, have resulted in decreased clinical teaching time (9).

It is widely accepted that we are on the brink of a shift to a new paradigm for medical education (6, 10). This shift consists of multiple simultaneous developments including a move towards outcome based training and advancements in simulation-based education technology. Medical simulation involves a range of technology from standardized patients to automated virtual patients. The following discussion on medical simulation, will define simulation as any teaching method that attempts to imitate live patients, anatomic regions, clinical tasks, or clinical scenarios involving learners through interactive role-play (11).

Methods

Search process

We searched Medline using the on-line search engine PubMed using the search terms: ‘standardized patients’; ‘education’; ‘high-fidelity simulation’; ‘virtual reality’; ‘part task simulation’; ‘part task simulator’; ‘simulation technical skill’; ‘computer simulation’ and ‘OSATS’ alone and in various combinations. We hand searched the references of papers found for further papers. Our original Medline search was limited to the years 2003-2008 but we also included important articles from before that period. We focused on original articles that investigated either a teaching intervention or evaluation method and had an experimental design comparing more than one group.

Analysis and synthesis

Papers were categorized according to the technology used, whether it was a teaching or evaluation study, the domain of learning or evaluation, the study design, subject demographics, outcome measures, number of subjects, methodological problems and important findings. Many papers that were initially reviewed suffered from methodological flaws such as not being true comparative studies with an appropriate control group. In accordance with the mandate of the Association of Faculties of Medicine of Canada we have focused on papers with the potential to have a significant impact on undergraduate and postgraduate medical education in Canada.
Headlines

1. The current breadth of simulation in medical education is in constant development due to an exponential growth in engineering technology.
2. Predictive validity is established for part task simulation. Other types of simulation have established mainly construct, content and face validity.
3. Simulation technologies are being introduced for high-stakes summative evaluations.
4. Emerging educational themes and challenges in simulation include: curricular integration, interprofessional education, patient safety, deliberate practice, feedback and supervision, and balancing operational expense.

Breadth of Simulation

Standardized Patients (SP)

Standardized patients (SP) are actors trained to play the role of a patient and were first introduced into medical education in the 1960s (12, 13). SPs are differentiated from simulated patients who are patients with medical illnesses that role play for educational purposes, and are not included in this report (12). In medical education, the SP provides consistent verbal and non-verbal feedback and can mimic a range of physical findings for the trainee (12). Psychological fidelity is defined as the degree to which a trainee believes that the simulation is a believable surrogate for the actual clinical experience. More so than other forms of simulation, the success of SPs for curricula and evaluation is dependent on psychological fidelity.

Part-task trainers (PTT)

Part task trainers (PTT) encompass a wide range of technology and fidelity. They can either simulate an anatomical region or a specific procedure. PTTs are characterized by the following:

- anatomical and non-anatomical models
- simulations of basic psychomotor tasks, individual surgical tasks and whole procedures
- presence or absence of haptic (force) feedback
- synthetic materials, cadaveric, and animal tissue
- virtual reality (VR)
- augmented reality (AR) – a hybrid technology combining synthetic material and VR (14).

Anesthetized animals can be used for simulation of procedures and have very high fidelity although anatomical representation is never perfect. However, the use of live animals is expensive, there are ethical issues, and considerable veterinary facilities and preparation are required (8, 15).
PTTs can be used with SPs in hybrid simulations in order to contextualize technical skills (16). Full patient computerized enhanced mannequins have also been used instead of part task trainers to teach a specific procedural skill within a broadened context (17).

Engineering fidelity is defined as the degree to which a simulation device replicates the actual task – often through the incorporation of evolving high tech components. The face validity of PTTs improves by increasing engineering fidelity through its impact on psychological fidelity. However, there is some evidence that increasing engineering fidelity does not necessarily improve learning, especially in the early stages of motor skill acquisition (18).

**Virtual Patients (VP)**

Virtual simulation can be either static or dynamic based on the type of feedback they provide the learner. Historically, computer simulation in medical education was static and used mainly for teaching students to ask the relevant questions and order the correct diagnostic tests (19). However, the virtual learning environment has evolved to include dynamic patient simulations and can simulate physiological events such as respiration, bleeding and patient discomfort - forms of feedback that are absent from mechanical PTTs. More recently virtual patients (VP) have evolved to provide an interactive learning environment. VPs use computer technology that simulates reality via the use of a VR-helmet and a VR-glove. VP consists of a computer display that simulates the real world and has a three-dimensional VP that interacts with the trainee through voice recognition (11, 20). The VP has several advantages over SPs: 1) they provide a safe, controllable, and secure learning environment; and 2) they have the ability for unscheduled repetitive practice (20, 21). There is limited data currently on the role VPs will play in the instruction and evaluation of medical trainees. Huang 2007 provides a concise review of the current uses of VP in the United States and in Canada (22).

**Computerized Enhanced Mannequin (CEM) Simulators**

Computer enhanced mannequins (CEM) are full body mannequins that are driven by computers. Similar to part-task trainers (PTTs), these simulators replicate human anatomy with a high degree of likeness. However, they differ from PTTs in that through the computer interface they can respond to medical interventions, including the administration of medications and a variety of procedures. These responses can be pre-programmed or driven by an operator using the computer interface. They can be used to train individuals or healthcare teams. There are currently three commercial manufacturers of CEMs: Laerdal, Medical Education Technologies Incorporated (METI), and Gaumard.

Environment fidelity is defined as the degree to which the setting in which the simulator reproduces the clinical realm. More so than other forms of simulation, the success of curriculums and evaluation utilizing CEMs is more dependent on environment fidelity as opposed to engineering fidelity.
Reliability and Validity of Simulation Based Education

Reliability in evaluation refers to the reproducibility of a test. Simulations have intrinsic reliability in that every subject is presented with exactly the same scenario and situation. The production of objective evaluation metrics for procedural skills such as time, economy of movement and error scores are incorporated into the process of some simulators, avoiding problems of inter-rater reliability. If a supervisor is rating the subject then the reliability of the evaluation is also dependent on the evaluation tool and the training of the supervisor.

Many studies have attempted to validate simulation for education and assessment. Initial studies focused on ensuring that the content of the simulation curriculum being delivered was appropriate. However the vast majority of studies involving simulation have attempted to establish construct validity for simulation based education and assessment by proving that it can be shown to discriminate between different levels of training and expertise. Construct validity is a continuum, with better established construct validity if an evaluation tool can distinguish between more similar levels of expertise. As construct validity makes assumptions about the population of subjects, positive findings should be confirmed by repeating the experiment in another center. A potential downfall of construct validity is that experience is used as a surrogate for ability, but this is not necessarily always the case (23).

The “gold standard” in validation for simulation is predictive validation: proving that either simulation based teaching, or good performance when assessed using simulation results in better care of actual patients. Given the breadth of simulation literature and the importance of predictive validation – the remainder of this report will focus mainly on the predictive validity of medical simulation.

Standardized Patients (SP)

Predictive validity has been established for the domain of standardized patients (SP) and communication skills (24, 25). A randomized control trial assessed the efficacy of an educational program teaching smoking cessation counseling in actually helping patients abstain from smoking. The results at one year follow-up show that patients counseled by physicians in the in the SP intervention arm had significantly higher rates of abstinence (24). SPs have also been shown to improve long term retention of physical examination skills (25). At 18 months, medical students exposed to both the SP practice abdominal exam and the didactic lecture performed significantly better than the didactic lecture only group (25).

Construct validity has been well established in earlier studies on standardized patients (26, 27). Other more recent studies seem to contradict these earlier findings. Discrepancies have been attributed to the use of binary checklists instead of global rating scales as the assessment tool. These discrepancies are unlikely to be a true threat to the validity of SPs, but may instead illustrate the weakness of some constructs to determine validity (28-33).
**Part-task Trainers (PTT)**

There are numerous commercially available part-task trainers (PTT) in many surgical fields, anesthesia, radiology and interventional medical specialties. Predictive validity is well established for teaching laparoscopic cholecystectomy using three models: (i) a non-anatomic mechanical PTT (10, 34), (ii) the MIST virtual reality (MenticeMedical Simulation, Gothenburg, Sweden), a relatively low-fidelity PTT (it has no haptic feedback and is non-anatomic) (6, 10, 35) and (iii) the higher fidelity, anatomic LapSim (SurgicalScience, Gothenburg, Sweden) (36). Proficiency based training using the LapSim has resulted in trainees demonstrating less error and less variability in the performance of laparoscopic cholecystectomy after training for up to 10 patient operations (36). In other domains of learning, predictive validity has been established for endotracheal intubation (17), dissection and division of the saphenofemoral vein (37) colonoscopy and flexible sigmoidoscopy (38-40).

A consequence of the rapid growth in simulation technology is that innovation outstrips validation (41). For instance, although only virtual reality (VR) PTTs without haptic feedback have been shown to have predictive validity for the domain of laparoscopic surgical skill, there have been considerable improvements in the technology since then: anatomic VR with haptic feedback, variable levels of difficulty and the ability to use different types of surgical instruments (42). When predictive validity has been established for a type of simulation it may be overcautious to wait for further evidence of predictive validity for each new innovation in simulation that has been demonstrated to have superior construct and face validity (14) before using them to improve training. However, it is also essential that we do not miss the opportunity that simulation, and especially VR technology, gives us to acquire data for research and quality assurance. It is especially important to determine the best point on the continuum from novice to expert for each new simulation. It is also of note that procedural skills are currently a poorly evaluated domain of learning and that robust evaluation is necessary both for competency-based training and in order to measure the benefit of an investment in simulation based education.

**Computer Enhanced Mannequins (CEM)**

Predictive validation of computer enhance mannequins (CEM) is by far the most challenging of all simulations. Predominantly, CEM’s are used to teach the management of clinical crises. Crises are clinical events that occur rarely but are ‘high stakes’ situations associated with significant morbidity and mortality. Since these situations are rare and unpredictable, it is difficult to measure the effectiveness of simulation education in the clinical context. Furthermore, there are ethical concerns allowing trainees to fully manage a patient crisis without intervention from a senior clinician. As such, there is a paucity of prospective data evaluating the educational efficacy of CEMs.

However, a recent retrospective case control study examined the advanced cardiac life support (ACLS) management of patients, comparing the management of those who had received training in a simulator with those who had not (43). They found that those who had learned on a CEM were more likely to adhere to the ACLS guidelines than those who had learned by more traditional methods.
Most recently, research from our institution demonstrated that the skills required to wean a patient from cardiopulmonary bypass (a high stakes, reproducible, crisis management clinical situation) are learned more effectively with CEMs than by conventional didactic instruction (44).

**Simulation for Summative Evaluation**

**Standardized Patients (SP)**

In the domain of high stakes evaluations, standardized patients (SP) are part of the final OSCEs for national licensure and/or certification in many countries including Canada, the United States, and the United Kingdom. In these evaluations, physicians serve as the evaluators. SPs have been implemented because they allow for a standard, systematic and quantitative means of evaluation in the multi-station OSCE (45). SPs have also been implemented in the medical school entrance procedure in the Netherlands in an attempt to standardize the process (46). The Netherlands study includes a study sample assessment procedure (SSAP) in the entrance selection process in addition to their regular entrance requirements. The SSAP involves an applicant studying and explaining a clinical disease process to another applicant. The second applicant must then answer questions posed by two different SPs regarding the disease process (46). The interview and the SSAP components of the admission process were moderately correlated (46).

In light of reduced physician availability and in an attempt to reduce inter-rater variability in evaluation of trainees, SPs have been studied for use as examiners in OSCEs. SPs consistently rate trainees significantly higher than faculty proctors (47, 48). Regardless of this discrepancy faculty and SP assessments do correlate well (48). Recently, an OSCE was developed to assess the 7 CanMEDs physician competencies and found a strong correlation between faculty and SPs in the following domains: ‘communicator’, ‘medical expert’, and overall score (49).

**Part-task Trainers (PTT)**

When feasible the gold standard for the evaluation of procedural skills should be considered to be direct observation of performance on a patient, by an expert, trained in the use of a valid and reliable assessment tool. However, there are circumstances when simulation may be as or more appropriate than evaluation using patients; for example after simulation training, to evaluate whether a doctor is ready to attempt a skill on a real patient. Also, procedures such as emergency cricothyrotomy are uncommon and may not be performed supervised during training, even in specialties where it is a key skill.

Simulation allows for standardization of the types and difficulty of tasks. This makes evaluation by trained assessors in a multi-station format feasible, as demonstrated by the Objective Surgical Assessment of Technical Skills (OSATS) (50-52). OSATS have also been adapted for laparoscopic and gynecology procedures (53) and have repeatedly been shown to be reliable (52-55), have construct validity (51-54), concurrent validity by correlating surgical faculty rankings (50) and have been described as suitable for high stakes summative evaluation (56).
Computer Enhanced Mannequins (CEM)

Computer enhanced mannequins (CEM) are beginning to be incorporated into high-stakes evaluation. They have been used in the UK Fellowship examination for anesthesiology and are now a mandatory part of the Israeli anesthesiology board exams (57). In Canada, the reliability and validity of incorporating a simulation based examination in anesthesiology was tested in a previous study by the authors (58). This study demonstrated a moderate significant correlation between the simulation examination and the “gold standard” oral examination with a degree of unexplained variance (58). In other words, there was some disconnect between “knowing how” and “showing how” in all aspects of performance (59). Although concurrent and content validity have been described, neither construct nor predictive validity has been demonstrated for using CEMs for this purpose.

Educational Themes and Challenges

Patient safety

Almost a decade ago, in their landmark publication “To Err is Human”, the Institute of Medicine suggested in recommendation 8.1 that “patient safety programs should establish interdisciplinary team training programs, such as simulation, that incorporate proven methods of team management” (2). Simulation allows training in a controlled environment before actual patient encounters, preventing risk to patients early in a learning curve and has been described as an ethical imperative (60). In addition, simulation is useful to teach the management of crises - clinical events that occur rarely but are often high stakes associated with significant morbidity and mortality. Prior to simulation the management of these situations was difficult to teach clinically, as crisis situations necessitate management by the most qualified clinicians as opposed to a trainee. Simulation provides trainees an opportunity to fully manage these situations in a patient safe environment.

Curricular integration

Simulation allows standardization of tasks that can be integrated into the rest of the medical curriculum rather than being dependent on unpredictable patient factors.

When integrating simulation based education into medical curricula attention should be paid to the interval between learning sessions which is described as the inter-study interval (ISI). If the ISI is zero then learning is described as massed as opposed to distributive (61). Distributive learning has been shown to be superior to massed learning for retention (62, 63). The retention interval refers to the time between the last episode of learning and to the first attempt to recall the information. Retention of factual information improves by increasing the ISI up to certain point (optimal duration), where it begins to deteriorate. The optimal duration varies depending on the objectives, simulation modality, and the interval between learning and retrieval for patient care. It is more harmful to be shorter than the optimal duration than longer (63).
Historically the main use of standardized patients (SPs) has been within Objective Structured Clinical Exams (OSCEs) and the Clinical Practice Examination for assessment purposes (45). However, since their inception for examinations, SPs have also been integrated into curricula. SPs allow students to demonstrate history taking and physical exam skills, and integrate their findings with their medical knowledge. Furthermore, they can be used to demonstrate complex interpersonal skills by explaining their findings, educating, and counseling the SPs (45).

Part-task trainers (PTTs) are currently only available with sufficient levels of complexity to teach relatively early stages of skill acquisition. However, technological advances are constantly improving both fidelity and the level of difficulty that can be presented. PTTs are likely to become valuable for experts. For example, there is a description of a VR simulator incorporating actual patient anatomy from recent imaging for procedure rehearsal of a challenging carotid stent procedure (64).

Computer enhanced mannequins (CEMs) are used to introduce junior trainees, to a particular clinical encounter prior to actual patient contact. Trainee confidence improves with familiarity to a particular clinical situation. In addition, this introduction can help alleviate anxiety of trainee disorientation of the clinical environment (i.e. OR, emergency room, ICU, etc.) (65).

CEMs are most commonly used to teach the management of uncommon clinical crises. With a high degree of environment fidelity including an interprofessional team, CEMs allow for trainees to rehearse their technical management of a particular crisis including diagnostic and procedural skills. Perhaps more importantly, trainees can also practice non-technical behavioral skills (i.e. communication, prioritizing, working with a team, situation awareness, re-evaluating when a situation changes, and decision making) that are applicable to all crises (66, 67).

Feedback and supervision

Reflection and feedback is essential following a simulated experience. Kolb described a model of learning where a concrete experience is reflected upon, and the reflections are distilled into abstract concepts that can then be tested in new simulator or clinical experiences (68). Simulation can be the first stage of a concrete experience and feedback should be a reflective process incorporating the participants’ ideas about their experiences. It has been demonstrated, that performance does not improve in the absence of formal debriefing (11). In other words, a simulation experience alone is ineffective for learning (58). In a systematic review of simulation, feedback has been found to be the most commonly reported feature of simulation based education that leads to effective learning (69).

In contrast to traditional teaching, feedback after simulation based training may come from a variety of sources. In addition to faculty, feedback can include reflections from peers who have taken part in the scenario, or who watched the simulation through one-way glass or closed circuit television. As such, debriefing of experiential learning can be foreign and intimidating to the learner - but it is invaluable if managed sensitively.
Standardized patients (SPs) can be used effectively in the absence of a physician instructor reducing the number of faculty that need to be present for supervision. A recent trial compared first year medical students taught by either an SP or a physician instructor. The SPs were as effective at teaching the physical exam skills as the physician instructors, as measured by equal performances between groups on the post-test OSCE (70).

Virtual reality (VR) and augmented reality simulators can provide intrinsic feedback - feedback from the simulator itself rather than from faculty. This allows unsupervised and unscheduled practice. Feedback can include time taken, number of errors, economy of hand movements, and whether the attempt has been successful. VR simulators can give continuous multimodal feedback, can be interrupted at any point to review performance, or can produce a hard copy of data for review by the trainee after the end of the simulation (8). There is some evidence that retention of memory of factual matter is improved if feedback is delayed, and this could potentially be accomplished by providing subjects data from simulations in an electronic format to review later (63). This could include data outputs from VR simulators or videos of both simulated scenarios and the subsequent debriefing sessions.

The role of deliberate practice and proficiency based training

Thousands of hours of deliberate practice are key to obtaining expertise in many non-medical fields (71). Until relatively recently, such deliberate practice has not been possible in medicine. Simulation can allow clearly defined outcomes and a controllable range of difficulty. This enables proficiency-based learning: deliberate practice until a pre-defined criterion based level of ability has been demonstrated. Learning curves vary significantly between individuals (72,73) and proficiency based learning has been shown to be an effective form of simulation based training in surgery (6) and in teaching novices orotracheal intubation (17).

Interprofessional education (IPE)

Training of healthcare professionals is generally compartmentalized, working within the well established structural boundaries of different professions, specialties and subspecialties. However, in clinical practice we need to interact with other groups as part of a team. Simulation can be used to break down these barriers and teach what other professionals have to offer, leadership and communication skills. SPs and CEMs have a wide range of applicability in interprofessional education and have been used for training a variety communication and diagnostic skills (74-76). The use of SPs in interprofessional education can be successful in highlighting the roles other team members play in our multi-disciplinary health care system.

The feasibility and cost-effectiveness of simulation based education

The most obvious obstacle to increasing simulation-based education is that of financial cost. There is evidence that relatively inexpensive, low-fidelity models result in equivalent learning outcomes to high-fidelity PTTs in early stages of skill acquisition (77, 78). Acquiring a suitable range of simulators that accommodate a range of expertise is more cost effective than only considering the latest technology.
The capital outlay, maintenance and update costs must be balanced against the potential financial benefits of better efficiency of OR time (79), improved patient safety and decreased litigation. Cost effectiveness is dependent on scheduling that maximizes utilization to justify the high capital outlay. This may be best achieved by centralizing simulation centers; however, centralization must be balanced against excessive traveling time that may prevent effective curricular integration.

Implications

1. Simulation is in its infancy in Canada. The establishment of centres administering any or all modalities of simulation is growing slowly. The present limited availability of this resource has resulted in only episodic incorporation simulation into established curricula. The power of simulation is best harnessed if it is fully integrated into curricula. It should be valued equally to didactic lectures, seminars, problem-based learning, etc. University investment in this resource should be balanced against the benefits of improved patient safety and optimized clinical training.

2. Stronger evidence of predictive validity will inevitably be required before generalized acceptance of all modalities of simulation based learning. These challenging studies must be undertaken. However, advances in engineering fidelity, levels of difficulty and demonstration of face, content and construct validity continue to coincide with the educational and ethical challenges of a patient safety culture. Regardless, research should not delay the integration of simulation into curricula. As David Gaba, inventor of one of the first computer enhanced mannequin said, “no industry in which human lives depend on the skilled performance of responsible operators has waited for unequivocal proof of the benefits of simulation before embracing it.”

3. Simulation based education differs from traditional teaching methods. Specifically, there is a greater importance of deliberate practice, and feedback. We cannot assume that faculty inherently possesses all the tools to teach in these environments. Successful integration into curricula includes faculty development focused on teaching in this unique environment. Currently, faculty development is done on an “ad-hoc” basis at various institutions. Organizing formal programs for faculty development locally and nationally will mitigate some of the obstacles to integrating simulation in medical education.

4. Currently, most assessments function at the lower “knows” and “know how” levels of clinical competence (59). Simulation can allow both formative and summative examinations to test at the higher “shows how” level of clinical competence by providing a highly reliable environment that replicates the clinical realm for greater face validity.

5. The benefits of interprofessional education (IPE) are discussed elsewhere in this document. Simulation provides a patient safe environment for teams to interact and deconstruct the power relationships that exist in medicine. Specifically, successful management of patient crises depends on team management which can be practiced with a simulator. Simulation is a particularly useful tool to further the IPE agenda.
Annotated Bibliography

1. **Ahlberg 2007 (36)**. Studied 13 residents with the LapSim VR. Supervised, distributive, proficiency-based training with a VR PTT with high-fidelity anatomic images but no haptic feedback results in less error and less variability when performing laparoscopic cholecystectomy on actual patients, up to 10 operations after training.

2. **Cornuz 2002 (24)**. Randomized controlled trial assessing the effect of adding SPs to an educational intervention for smoking cessation. Students in the SP group had significantly more patients abstain from smoking at one year than the control group.


4. **Martin 1997 (51)**. Studied a multi-station simulation based objective structured assessment of technical skill (OSATS) in surgical residents, established feasibility, construct validity and found the test to have good reliability.

5. **Oosterveld 2004 (46)**. Studied the application to medical school over a 3 year period following the addition of the SSAP which focused on independent studying, collaboration with peers, and providing information to SPs. Applied generalizability theory to assess reliability of the SSAP to the other procedures. Found that the SSAP and the interviews had the highest reliability coefficients.

6. **Savoldelli 2006 (58)**. Compared a CEM based examination in anesthesia to Canadian “gold standard” oral examination. Found concurrent validity for simulation exam but some variance – explained as disconnect between “knowing how” and “showing how”.

7. **Wayne 2008 (43)**. Case control study of cardiac arrest team responses. Outcome measure was adherence to ACLS protocols through medical records. Found CEM augmented education program improved quality of care at cardiac arrests.

8. **Ziv 2003 (60)**. A discussion of the potential of simulation based training to impact positively on patient safety and of the ethical implications of not using simulation in the healthcare professional education.

References

18. Chandra DB, Savoldelli GL, Joo HS et al. Fiberoptic Orotracheal Intubation: The Effect of Model Fidelity on Training for Transfer to Patient Care. Anesthesiology 2008; Accepted for publication, SRI.


Appendix

We performed a quality assessment of all papers. Greater consideration was given to original research than to review articles or editorials. Discursive and opinion pieces were considered to be suitable for inclusion if they had significant on the field. For original research, emphasis was given to randomized controlled trials, cohort and case control studies. The “gold standard” in validation for simulation is predictive validation: proving that either simulation based teaching, or good performance when assessed using simulation results in better performance in actual patients. Given the breadth of simulation literature and the importance of predictive validation – this report focused mainly on the predictive validity of medical simulation. The majority of papers that were identified suffered from weak and/or flawed methodology including small sample size, no description of power calculation, lack of control group, observational studies, poor description statistical methodology, poorly defined outcome measures, and failure to assess the long term retention of learning.
Brown, Adrian, R.H., MD

The Future of Medical education in Canada: Community-based Education: Brief review

Summary

Increasingly, medical education has moved from hospital-based settings to ‘distribute’ learning experiences. A key component in this movement has been linked to the social accountability of medicine and an attention to consulting and including the wider community. Placing medical students in these community settings requires planning to ensure appropriate curricula, assessment of learning, faculty development and site/program accreditation. It has been found that difficulties do arise in programs as community-based learning needs to be adapted and modified for its situational needs and resources. Despite these difficulties, early sustained exposure to community-based learning experiences can encourage generalist physicians to practice in underserved areas.

Major Themes:
Brown identified the following: the growth of various community-based initiatives such as outreach programs; the need for funding for community-based initiatives; the need for changes in medical school admissions processes; the use of community-based programs to promote physician involvement in underserved areas; a growth in medical schools offering community-based programs; the use of patient and multi-professional teamwork as key community experiences for students; the use of community-based learning as a way of overcoming barriers to medical school expansion; the use of information and communication technologies; the need for effective faculty development.

Conclusions and Directions:
Community-based learning appears to be comparable with traditional medical education in regards to skills acquisition and examination performance. It also has beneficial effects of increasing the proportion of primary care practitioners more likely to locate themselves in underserved areas. Challenges that need to be addressed include recruiting, developing and compensating new faculty as well as ensuring the evaluation processes are rigorous. Re-locating to community learning sites can, however, be costly in terms of travel, accommodation, faculty development and the use of information technologies.

Best Practices and Innovations:
There are several innovative programs in this field both in Canada and internationally. The websites of a few of these are listed below:

- UBC (www.med.ubc.ca/education/distributed_programs.htm)
- Schulich School of Medicine and Dentistry (www.swomen.ca/)
- WWAMI (http://uwmedicine.washington.edu/Education/WWAMI/)
Introduction

Increasingly, and for several important reasons, medical education has moved from strictly hospital-based, high acuity, research-intensive settings to include both geographically distant and philosophically different models that incorporate concepts of community health, disease prevention, inter-professional education and continuity of care. The impetus to ‘distribute’ learning experiences in this manner is based upon sound pedagogical principles, expansion of medical trainee numbers with saturation of existing sites and the understanding that there exists a social accountability of medical schools to provide appropriately trained practitioners for the communities that they serve. This latter responsibility involves “community consultation and community inclusion in the entire health care enterprise” (1) to ensure society’s needs are being met. Placing learners in these distributed settings requires forethought and planning to ensure appropriate curricula are developed, experiences are evaluated, sites and programs accredited, faculty nurtured and compensated and that, ultimately communities will be served. There is a growing body of evidence in the literature to suggest that this is the case. Difficulties arise when comparing various programs as there is no one model of community-based learning as each has adapted to its own situational needs and resources. There exists a range of educational models to include increasing trainee exposure in the community at existing sites, forming regional campuses that may provide part or all of the undergraduate curriculum, establishing new medical schools for this purpose or forming a collaborative network to fulfill the teaching mandate. Regardless of the form that it may take, early sustained exposure to community-based learning experiences makes more likely a graduating pool of generalist physicians who will decide to practice in underserved areas.

Definitions

As with any review of the literature, defining terms is crucial and lays the foundation for all that follows. “Distributed Medical Education” (DME) has no rigorous, universally accepted or used definition and, in fact, many interchange the words “community-based”, “decentralized”, “rural” and “distance”, the latter implying only remote learning opportunities. Others choose to emphasize the communication technology side defining it more in terms of getting the information ‘out there’. As this is a Canadian document, all variations will be entertained and a compromise achieved by reviewing articles involving learning outside the traditional Academic Health Science Centre (AHSC) in-patient teaching model.

Methods

An electronic search of Medline was undertaken using the key terms 'community-based education', 'distributed medical education' and 'systematic review'. There exist many brief descriptive articles on various innovative medical education programs in this field with supporting documents of financial feasibility studies, environmental scans and logistical analyses generated by provincial agencies and ministries in Canada and other funding sources in other jurisdictions. Given the relative “newness” and diversity of these learning models, a seminal review paper of the entire scope with long term outcomes does not yet exist. The exuberant...
uptake of DME on an international level suggests such publications will be forthcoming.

Key Findings

Countries with widely dispersed populations in often inhospitable environments will all likely face the double pronged problem of access to health care and recruitment of health care professionals. A “geographic pipeline” has been described that helps flow future rural physicians through the continuum of learning starting as early as the secondary school or pre-medical education stage to enhance enrolment by individuals from these underserved areas. (2) Various strategies including outreach programs, innovative funding initiatives and changes in medical school admissions processes have been recommended both in Canada and abroad. (3) A selective medical school admissions policy combined with increased learning in out-patient settings was initiated as early as 1974 at Jefferson Medical College in Philadelphia as part of the Physician Shortage Area Program (P.S.A.P.) with long term data now confirming an increase in the number of primary care physicians practicing in underserved areas. (4-5) A further finding was that “current in patient-oriented training programs strongly push students away from a primary care career”. (6) Another long established collaborative rural training program in the United States run through the University of Washington School of Medicine covers the states of Washington, Wyoming, Alaska, Montana and Idaho (W.W.A.M.I.) and has found that 61% of graduates stay in the five state area, that approximately 50% choose careers in primary care and that about 20% will be working in underserved areas. (7-8) The Australian experience seems to be similar and community based medical training was boosted by a 2001 government mandate that required each medical school to allow for 25% of its students to train for up to 50% of their time in rural or remote settings. (9-11) A recent questionnaire across numerous medical schools in developing countries also found that 91% were addressing community-based education in their undergraduate curricula and the formation of generic objectives may be of help to ensure consistency and ease the evaluation process. (12) With the establishment of four new medical schools in the U.K., emphasis was placed on early patient contact, community wide experiences and multi-professional teams that is in keeping with some of the findings and recommendations of an independent inquiry into modernizing medical careers chaired by one of the new medical schools founding deans. (13-14) For Canadian medical undergraduates, there has been a growing emphasis on these community learning experiences and the establishment now and in the future of branch or “satellite” campuses to teach some or all of the curriculum and the formation of a new medical school, the Northern Ontario School of Medicine (N.O.S.M.) in 2005 with this as its primary mandate. (15-16) At the postgraduate level with regard to family medicine training, “the percentage of residency positions that are rural now equals the proportion of the general population in Canada living in rural areas”. (17)

The uptake of distributed education models while fulfilling many desired goals and essentially spreading the teaching responsibilities, brings with them logistical challenges that are in addition to the usual ‘barriers to expansion’ such as cost, classroom space, etc… (18) Recruiting new faculty and maintaining standards such that trainees achieve the same learning goals as their more traditionally trained peers requires vigilance and often novel approaches to faculty development. (19) The advancement of information and communication technologies has allowed for the timely dissemination of knowledge, the ability to interact from multiple distant
sites simultaneously and all in a manner that does not seem to compromise the students’ learning experience. (20-21) When comparison cohort studies have been undertaken between learners at distributed sites and those at more central teaching hospitals with regard to examination performances and skills development, the results have not shown consistent differences. (22-24) This would support the statement from a recent medical education review article that “cognitive psychology has demonstrated that facts and concepts are best recalled and put into service when they are taught, practiced, and assessed in the context in which they will be used.” (25)

Implications

With the expansion of medical student numbers and the concomitant saturation of traditional learning venues added to the increasing clinical loads and shrinking time for teaching, it is apparent that change is required. Learning outside of the classic A.H.S.C. appears to be comparable with regards to skills acquisition and examination performance with the beneficial effects of an increase in the proportion of primary care practitioners and those more likely to locate in underserved areas. A 2007 discussion paper of the College of Family Practitioners of Canada (C.F.P.C.) has said that “medical schools will become academic health sciences networks located in distributed sites including smaller and rural communities. It is important for all sites to contribute to planning and implementation of the curriculum with no site dominating the network.” (26)

Challenges that have to be addressed include recruiting, developing and compensating new faculty and ensuring the evaluation process for learner and preceptor are as rigorous as those on the ‘main campus’. Re-sourcing such sites may be costly in the short term as travel, accommodations, training and the introduction and support of information and communication technologies all add up, but the finished product and the ultimate goal of serving communities demand this investment. Distributed medical education should be seen as a necessity rather than a substitute, a complimentary model rather than a competing model of medical training. “The value derived from sharing the teaching load, taking the students to where most of the clinical material resides and where most will practice cannot be underestimated” (27).

Innovative Programs

There are several innovative programs in this field both in Canada and internationally. The websites of a few of these are listed below:
  - U.B.C. (www.med.ubc.ca/education/distributed_programs.htm)
  - Schulich School of Medicine and Dentistry (www.swomen.ca/)
  - WWAMI (http://uwmedicine.washington.edu/Education/WWAMI/)
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5. Rabinowitz HK, Diamond JJ, Markham FW, Harelwood CE. A program to increase the number of family practitioners in rural and underserved areas. JAMA. 1999 Jan;281(3):255-60.


Please see Addendum for Distributed Medical Education Innovation and New Directions: A Focus on Rural Education
Distributed Medical Education and Distance Learning: Brief review

Summary

Distributed medical education (DME) is regarded as a cost-effective solution to the delivery of training to remote and rural communities. DME covers a range of undergraduate, postgraduate and continuing medical education events and activities which are outside the immediate classroom or clinical site. Successful DME requires support political, professional and educational commitment, as well as leadership. It also requires reliable technologies that can incorporate real time, interactive, multipoint videoconferencing, web-based imaging tools, course management software and indexing systems. Evaluation frameworks must be in place to determine the impact of DME programs.

Major Themes:
Bell identifies the following major themes: technological needs of DME; frameworks for distributed learning; underpinning theories of DME; distributed learning processes; curriculum planning issues; evaluation of DME; the management of organizational change; sustainability of DME and cost-effectiveness.

Conclusions and Directions:
Bell outlines the following: DME programs need to address individual learning needs and have elements of self-direction, reflection, interaction and facilitation; pertinent theories need to be applied to the design and implementation of DME programs; infrastructural issues need to be addressed; faculty and learners require preparation is required; DME requires more evaluation.

Best Practices and Innovations:
Comprehensive paper addressing the major themes in distributed education which may be used to stimulate in-depth, strategic discussions of distance and distributed education.

This paper describes the steps in the development of an e-learning environment that facilitates medical knowledge translation where a commercial content management system was modified and extended to create this unique platform.

Olson C and Shershneva M. Setting quality standards for web-based continuing medical education. JCEHP 24(2):100-11, 2004
This paper describes five sets of published standards from the distance education literature and explores the value of these standards to the design and delivery of web-based CME.
Objective

To describe how emerging instructional technology can overcome geographic barriers, enhance learning, and medical education delivery at undergraduate (UG), postgraduate (PG) and Continuing Medical Education (CME) levels.

Introduction

Nationwide we face health care challenges in providing and delivering services and training to remote and rural communities. There is a serious shortage of health care providers in Canada which threatens the future of our health care system. Urban, rural and remote areas are lacking family physicians and specialists. One solution offered for this problem is developing a cost-effective, distributed model of medical education (DME), practice and research.

Canadian DME initiatives began in Nova Scotia and Alberta in 1995. Over the past 10 years, these initiatives have expanded to virtually all Canadian medical schools, most recently at University of British Columbia, Sherbrooke, and Northern Ontario School of Medicine. Pioneers in medical education and medical informatics led to the creation of the AFMC’s Resource Group on Medical Informatics in 2000.

DME encompasses a broad definition of activities. In UG, PG and CME, educational events and activities involve learners and teachers who are outside the immediate classroom or clinical site. Successful introduction and maintenance of DME requires political will, support from the deans, administrative leadership, and an integrated, reliable technology infrastructure. Evaluation frameworks must be in place to determine the impact of this change in paradigm.

The technology requirements of successful DME are major and include: real time, interactive, distributed delivery systems; large scale, high band width, multipoint videoconferencing; integration of web-based imaging tools; course management software and indexing systems; and a highly trained administrative infrastructure.

The introduction of new educational processes require: a strategy for physician recruitment, reward, and workload determination; a method for creating and preparing new settings for clinical education and attention to health care efficiencies; adjustment of the learners; partnership and collaboration development; multiple levels and methods of evaluation; and measures of health care quality.

Recruiting from and training students in rural and remote communities may make it more likely that students will practice where they graduated. DME is one vehicle by which we may sustain and improve access to care for the Canadian population.
Methods

An electronic literature search of Medline, ERIC, RDRB, Cinahl for the years 1950-2008 was performed Feb 28, 2008 by 2 reference librarians at separate locations. The MESH headings and key terms included: distributed medical education (n=16), undergraduate, postgraduate and continuing medical education, and distance learning in continuing medical education (n=95) Citations were abstracted when English abstracts were available. Duplications in abstracts were removed by the reviewer. In total 25 full articles were reviewed.

Themes

The topics and themes explored in this literature are diverse and include: student learning; strategic goals and intended audiences; market dynamics; organization and governance; partnerships; quality; policy; barriers; and leadership.

Key Findings

Technical

Technology allows us to link learners, instructors, course materials and information resources. New instructional methods, such as computer assisted instruction (CAI) programs, based on internet technologies, provide new opportunities. In medical education there is a trend to move from CAI to computer-based instruction (CBI) with the development of new software. This will facilitate distance and distributed learning. The use of this technology will improve access to education where there are limited resources or where logistics create a significant barrier. Virtual reality development tools (Flatland), artificial intelligence-based simulation engines (The Access’ Grid – Internet 2 VRE platform) and connecting software will allow distributed training and psychomotor skills development over hours or days, which can be developed for different levels of expertise, and allow the transfer of new knowledge and skills to practice. Skill retention can be tested and direct observation of care can occur. Treatment plans can be reviewed and patient outcomes assessed. This technology also allows us to have different interaction types such as presentations, browsing, tutorials, dialogue, drill and practice, and simulation.

Frameworks for distributed learning

Distributed learning can occur synchronously or asynchronously, in groups, or to individuals. Done well, virtual universities with e- learning curricula will flourish.

Theories

The theoretical underpinning of distributed education and distance learning includes the application of the Theory of Social Interaction (social affordances, sociability, social preferences) and other educational theories including procedural learning, adult learning, staged learning and cognitive behavioral learning. Learning processes may be both cognitive and socio-emotional (learning, group forming, group structure, group dynamics).
Processes

Successful teaching and learning in a distributed education model or distance learning environment occurs when participants work on a common task, achieve interaction, have a higher level of discussion, a new learning, and there is support of the virtual teams at the social, emotional, motivational and contextual levels. Teachers will require support in course design, site navigation and entertaining using technology. Issues to be addressed when training faculty will include: scheduling, planning content, evaluation, equipment, and reliability of connection.

Curriculum planning

Performance expectations must be developed at the both the individual and team levels. Participants require time to adapt and practice with the new technology. Hybrid computer -- mediated instructional delivery systems show promise (web+CD ROM). A hierarchy of effective teaching and learning resulting in competence in evidence-based medicine (EBM) has been described and includes: level I, interactive and clinically integrated activities; level IIa, interactive but classroom based activities; level IIb, didactic but clinically integrated activities; and level III didactic classroom or stand alone teaching.

Evaluation

Evaluation of the impact of distance learning must include assessment of structure, process, and outcomes. Levels of evaluation include teacher, learner and system. Student academic performance may be evaluated at the undergraduate level with progress tests, OSCE, pre-clerkship tutorial evaluations and clerkship scores. At the postgraduate and CME levels the impact of distributed and distance learning can be assessed with knowledge tests, assessment of confidence, and clinical performance. Faculty performance requires observation and feedback, use of survey techniques, and self reflection. Evaluation of impact should also include the interaction between faculty and learner as well as learner and learner. Evaluation of the system requires assessment of efficiency and effectiveness of the program including accreditation, health human resource outcome, public health outcome and quality of care.

Internet education has been shown to lead to short-term improvements in clinician knowledge, confidence and communication practices. The long-term impact of different strategies for delivering an online curriculum requires testing. Future study should compare the impact of required versus elective courses and self-reported versus objective measures of behavior change.

Organizational change such as in-service training, patient notification procedures, hiring of new staff, development of discharge plans, changes in administration, development of treatment protocols and cooperative relationships, may be assessed and facilitators of change should be articulated.
Sustainability

Sustainability and impact of distance learning has not been evaluated. It is being used to increased capacity and reaches a broader audience. Although distance learning programs are flexible, portable and provide access to high-quality material there are significant risks of low retention rate, participants having more constraints, and lack of learner support.

Cost-effectiveness

Economic analyses of this form of learning need to be performed.

Other

Issues with using technology for learning include network congestion, band width allocation, network security and cost.

Implications

- Educational and social theories need to be applied to the design, implementation and evaluation of quality distance learning programs. Quality programs will address individual learning needs, and have elements of self-pacing, self-direction, an opportunity for reflection, good educational design, as well as quality and quantity of interpersonal interaction (social comfort, educational value, and expert facilitation).
- An infrastructure to support faculty and learners is required for success of this educational paradigm switch.
- Faculty and learners require preparation for this change in instructional technology.
- The impact of change in instructional technology requires evaluation.
- A new approach to distance CME includes collaborative online learning. This may be international in scope, asynchronous in delivery, flexible, responsive to learner needs in real time, and may effect change in clinical practice.

Annotated Bibliography

   Comprehensive paper addressing the major themes in distributed education which may be used to stimulate in-depth, strategic discussions of distance and distributed education. Excellent overview for leaders and providers alike.
This paper describes the steps in the development of an e-learning environment that facilitates medical knowledge translation where a commercial content management system was modified and extended to create this unique platform.

3. Olson CA and Shershneva MB. Setting quality standards for web-based continuing medical education. JCEHP 24(2):100-11, 2004
This paper describes five sets of published standards from the distance education literature and explores the value of these standards to the design and delivery of web-based CME.

This abstract describes the design of an individualized web-based CME program using stages of change theory, the incorporation of branching pathways into individualized responses, benchmarking and performance feedback. This format may be linked in an automated fashion to administrative data files at relatively low cost.

References


L’intégration du transfert des connaissances à la pédagogie médicale et au cursus / Integrating knowledge translation in medical education delivery and curriculum

Résumé

L’amélioration des processus et des résultats reliés aux soins de santé requiert l’application par les professionnels des « meilleures pratiques » se basant sur les connaissances récentes issues de la recherche; or, selon les études, ce n’est pas le cas. Le transfert des connaissances (TC) « knowledge translation ») est défini comme « l’échange, la synthèse et une application respectant l’éthique des connaissances via un système complexe d’interactions entre chercheurs et utilisateurs… » et comme « un processus d’intégration des meilleures évidences dans les pratiques courantes des patients, des praticiens, des équipes et des systèmes de soins de santé... ». Le TC peut être influencé par l’éducation, des facteurs sociaux et organisationnels et des incitatifs. Les approches éducatives les plus efficaces selon les recherches sont interactives, offertes périodiquement, localisées dans le milieu de travail, impliquent les participants dans la planification et incluent des opportunités d’autoréflexion avant, durant ou après l’activité. Les formations médicales utilisant l’apprentissage par problèmes sont associées selon les recherches à de meilleures connaissances et compétences sociales. Un élément important de l’apprentissage continu tout au long de la carrière (« life-long learning ») est la capacité d’autoréflexion. L’utilisation durant la formation médicale de « journaux » ou de portfolios supporte le développement de la pratique réflexive, mais, selon les recherches, cette utilisation doit être bien intégrée dans le cursus et requiert un mentorat spécifique. Le TC est plus efficace via des interactions en personne (face-à-face), l’utilisation de leaders d’opinion, de champions… Même si les recherches sont maigres, le mentorat semble être une bonne stratégie pour un TC efficace. L’organisation de la pratique localement influence le TC (approche d’équipe, utilisation d’outils durant la pratique, aide informatique à la décision). L’adhérence aux nouvelles pratiques peut être motivée en rendant publiques des données sur la performance ou en les fournissant aux professionnels en les comparant à leurs pairs ou aux standards reconnus (peu de recherche). L’utilisation de l’évaluation multisource (360°) est un outil de plus. Enfin, l’information directe aux patients pour influencer la pratique de leur médecin semble efficace.

Il y a eu peu de recherche sur l’efficacité de la formation médicale actuelle pour aider le TC. La plupart des programmes utilisent l’étude de cas et l’immersion en milieu clinique pour un projet supervisé d’amélioration de la qualité de la pratique.
Thèmes majeurs identifiés

La formation médicale ne prépare pas suffisamment les futurs médecins au TC. Le TC doit faire l’objet d’une attention particulière durant la formation afin de préparer le médecin à l’apprentissage continu tout au long de sa carrière, ce qui inclue l’acquisition de la capacité de pratique réflexive, de communication et de collaboration. Le TC est facilité par les approches interactives, les contacts directs, l’étude ou le travail en équipe interprofessionnelle, le mentorat ainsi que par la façon de fonctionner des équipes interprofessionnelles en milieu clinique et l’utilisation de l’informatique.

Conclusions et orientations

Il faudrait incorporer le TC comme une compétence de base pour les responsables de l’éducation médicale nationale et l’intégrer aux plans stratégiques des facultés. Il serait pertinent de former les enseignants à l’animation des petits groupes et au mentorat. Le TC peut être introduit dans le cursus médical par des projets localisés dans les milieux de pratique où l’étudiant identifie un problème de soin et développe, implante et évalue une intervention d’amélioration de la qualité de la pratique. L’évaluation par les pairs est un stimulus fort. Il faut faire des recherches sur la pratique réflexive, l’apprentissage interprofessionnel, le mentorat et l’évaluation par les pairs ainsi que sur l’intégration du TC dans les cursus médicaux.

Meilleures pratiques et innovations

L’intégration au programme d’étude d’activités d’apprentissage consistant pour les étudiants à réaliser un projet d’amélioration de la pratique dans un milieu clinique réel. L’intégration au cursus d’un mentorat utilisant le portfolio

Summary

To improve health care processes and results, professionals must apply “best practices” based on up-to-date knowledge derived from research. However, studies show that this is not being done. Knowledge translation (KT) is defined as “the exchange, synthesis, and ethical application of knowledge through a complex system of interactions between researchers” and “a process of integrating best evidence into the behaviour of patients and health care practitioners, teams, and systems.” KT can be influenced by education, social and organizational factors, and incentives. According to research, the most effective educational approaches are interactive, are offered periodically and in the workplace, include the participants in planning, and include opportunities for reflection before, during, or after the activity. Studies link medical training using problem-based learning to better knowledge and social skills. An important element of life-long learning is the capacity for self-reflection. The use of journals or portfolios in medical training supports the development of reflection, but research shows that it must be well integrated into the course
and requires specific guidance. KT is more effective if it includes face-to-face interaction, the use of opinion leaders and champions, etc. Even if research is scarce, mentorship seems to be a good strategy for effective KT. Local organization of practice influences KT (team approach, use of tools in practice, computer-assisted decision making). Use of new practices can be stimulated by making performance data public or providing them to professionals so they can compare themselves to their peers or recognized standards (the research is scarce). The use of multisource (360°) evaluation is an additional tool. Finally, directly providing information to patients to influence their physicians’ practice also appears to be effective.

There has been little research on the efficacy of current medical training in assisting KT. Most programs use case studies and clinical immersion for supervised practice quality improvement projects.

**Major themes identified**
- Medical education does not adequately train future physicians in KT.
- KT must receive special attention during training to prepare physicians for lifelong learning, including reflective practice, communication, and collaboration skills.
- KT is promoted by interactive approaches, direct contact, study and work in interprofessional teams, mentorship, the functioning of interprofessional teams, and the use of information technology.

**Conclusions and orientations**
- KT should be recognized as a basic skill by those in charge of national medical education and should be integrated into schools’ strategic plans.
- Educators should be trained in leading small groups and in mentorship.
- KT may be introduced into the course of medical study through localized projects in practice environments where students identify care problems and develop, implement, and evaluate measures to improve practice quality.
- Peer evaluation is a powerful stimulus.
- More research is needed into reflective practice, interprofessional learning, mentorship, and peer evaluation as well as the integration of KT into medical curricula.

**Best practices and innovations**
- The integration into the course of study of learning activities in which students carry out a practice improvement project in a real clinical setting.
- The integration into the course of study of mentorship using a portfolio.
Introduction

Research, practice and policy in the health care sector focus on improving care delivery and outcomes. Critical to achieving these objectives is the need for compliance with ‘best practice’ according to currently available knowledge generated through research. Knowledge syntheses such as patient decision aids, practice guidelines or policy briefs provide the evidence base for health care decision-making at the clinical, management and policy levels but research shows that they are often poorly utilized. For example, population-based assessment of performance on 439 recommendations for 30 conditions spanning preventive, acute and chronic services found that 55% of patients in the United States received recommended care (1). Population-based studies in Canada also demonstrate low compliance with national guidelines, including control of asthma, high blood pressure, diabetes and breast cancer treatment (2-5).

The concept of transferring research to practice has been studied as evidence-based medicine, the adoption of innovations and, more recently, knowledge translation (KT). KT has been defined as “the exchange, synthesis and ethically-sound application of knowledge within a complex system of interactions among researchers and users…” and the “process of integrating best evidence into the routine practice of patients, practitioners, health care teams and systems…” (6). In contrast to evidence-based medicine, which trains health professionals to seek, appraise and apply information in circumstances of clinical uncertainty, it is a more holistic, proactive approach to quality improvement that draws from several bodies of knowledge to package and deliver information using a variety of strategies that influence awareness of, agreement with, adoption of, and adherence to appropriate practice (7).

It has been said that “a curriculum focused on disease and disease management is no longer adequate for training physicians who are expected to practice in an environment where medical errors, system shortcomings, and physician and practice scorecards are the norm” (8). Many believe that lack of physician exposure to, and engagement in KT represents the single most important obstacle to achieving best practice since they play a central role in resource allocation and patient care decisions (9). Physicians hold multiple responsibilities during their careers, including that of health care provider, opinion leader, educator, manager, learner and researcher. KT is inherent in each of these activities, from conveying information to patients as part of shared decision-making, training interns and residents, conducting personal continuing professional development, to managing the organization and delivery of services within their own practice or in the context of larger, more complex health care systems. Hence, to truly improve the quality of health care each and every physician should be equipped with KT knowledge and skills. To understand how this might be achieved, this report will:

1. Review key KT concepts, highlighting their relevance to medical education
2. Describe models or curricula for medical education that incorporate KT concepts
3. Identify KT gaps in medical education practice and research
4. Issue recommendations for integrating KT in medical education
Methods

To provide an overview of KT, strategies were categorized by their underlying mechanism for prompting change, including educational, social, organizational, or incentive approaches. For each topic a literature search was conducted in MEDLINE, the Cochrane Collaboration of Systematic Reviews, and the University of Toronto Research and Development Resource Base (http://128.100.115.20/), a publicly available repository of research literature relevant to KT. Syntheses of empirical literature were selected when available to describe the extent of knowledge on each KT approach, and how key elements of each approach have been applied in medical education. Additional literature was selectively chosen to provide contextual details for the selected studies, and reveal where further research is needed.

To describe medical education models or curricula incorporating KT concepts a scoping review of the literature was conducted. A scoping review is an appropriate approach for a topic that is complex or has not previously been reviewed (10). A scoping review can establish how much is known on a particular topic prior to conducting a comprehensive systematic review, or identifies topics for which further primary research is necessary. For this scoping review MEDLINE was searched from 1998 to March 25, 2008 to encompass the most recent ten-year period during which time KT, a relatively new field of study, may have been introduced to medical training. Medical Subject Headings that reflected the concepts of medical education and those most closely matching KT were used. These included (education, medical, graduate or education, medical, undergraduate or "internship and residency") and (teaching or models, educational or curriculum or competency-based education or problem-based learning) and ("diffusion of innovation" or guideline adherence or information dissemination or evidence-based medicine or quality assurance, health care or benchmarking or total quality management or knowledge translation.mp.). To make up for the limitations inherent in any literature search strategy and identify recent publications not yet indexed in the MEDLINE database we also searched the online tables of contents of relevant journals for issues published in 2007 and up to March 25, 2008. These included Academic Medicine, Advances in Health Sciences Education and Theory, BMC Medical Education, Medical Education, and Medical Teacher. Articles published in languages other than English; those that did not provide sufficient detail about programs, methods or findings; and comments, editorials, letters or abstracts were excluded. A single individual conducted the searches, selected articles and extracted data.

Findings

Relevance of KT to Medical Education

Many KT strategies are available for applying new practices, or improving the appropriateness by which health care is organized and delivered. The effectiveness of these interventions is discussed here, and the extent to which these approaches are used in the delivery of medical education.
When awareness about new or different knowledge, practices or technology is lacking then educational approaches are required to transmit the information to target users. Systematic review of studies evaluating educational strategies demonstrates that educational materials or meetings can achieve small changes in behaviour and associated outcomes (11). The effectiveness of educational approaches could be improved by combining them with additional strategies. For example, learning theory suggests that educational meetings have greater impact if they are interactive, delivered periodically, work-situated and participants are involved in planning (12). Additional mechanisms that may enhance learning objectives include opportunities for reflection on practice before, during or after meetings, explicitly stating the actions and outcomes that are expected based on the educational material, and asking participants to formally or informally commit to that behaviour (13,14). Further research is required to investigate how the impact of educational interventions in different contexts could be improved by combining materials or meetings with these, and other complementary mechanisms.

While some medical education is didactic by necessity, many schools have incorporated small group problem-based learning into their curricula to enhance interaction, stimulate self-reflection and foster self-directed learning (15). Systematic review of the impact of problem-based learning on physician competencies after graduation identified positive effects, particularly in social and cognitive dimensions (16). Four competencies had moderate to strong levels of evidence in support of problem-based learning for both self- and observed assessments: coping with uncertainty (strong), appreciation of legal and ethical aspects of health care (strong), communication skills (moderate and strong respectively) and self-directed continuing learning (moderate). An exploratory study involving interviews with residents identified that faculty skill development in small group facilitation and incorporation of some elements of traditional medical programs such as lectures on health care problems might improve problem-based learning medical education, so more investigation is required to establish the optimal blend of self-directed and traditional learning (17). Self-reflection is an important skill that contributes to life-long learning. A systematic review on reflective practice found that journals or portfolios have been used to facilitate self-reflection during medical education, but more research on how to structure and evaluate reflective learning is required (18). Another systematic review revealed that the use of portfolios to support and assess competence development during medical education could be enhanced through better integration with the curriculum and portfolio mentorship (19).

Social KT approaches can be used to generate both awareness and acceptance of new knowledge or practices. In-person interaction or ‘knowledge exchange’ has been repeatedly cited as the most influential factor determining the use of research evidence (20-22). Knowledge exchange is thought to be enhanced with the use of intermediaries, also known as knowledge brokers, opinion leaders, facilitators, or champions (23). Systematic reviews have synthesized considerable research on the identification and impact of opinion leaders, who can contribute to small changes in learning, behaviour or associated outcomes (24,25). Studies evaluating this type of intervention have not applied consistent methods for identifying and engaging intermediaries.
thus further research is required to determine the characteristics and actions of successful intermediaries (26).

As discussed, social interaction is already a feature of medical training via small-group learning and work-situated placements. Another important form of knowledge exchange that warrants discussion is that of mentorship. There is general agreement that a mentoring relationship involves knowledge acquisition through interpersonal interaction of the protégée with a mentor who possesses greater experience, influence and achievement; and consists of emotional or psychological support, direct assistance with professional development, or role modeling (27). Factors that appear to influence the perceived effectiveness of formal mentoring programs include input into the matching process and quality of the training component, while mediating factors appear to be protégé understanding of the program’s goals and elements, and protégés believing that their mentor is committed (28). There is little empirical research to guide the format and evaluation of mentoring programs, particularly in the health care context, where mentorship between faculty and medical students can enhance tacit knowledge about ethics, values, professionalism, and the art of medicine (29,30). A systematic review of the impact of mentorship on career development in academic medicine reported that less than 50% of medical students and 20% of junior faculty members had a mentor (31).

Organizational

Many health care services are delivered either concurrently or consecutively by multiple providers whose behaviour is thus influenced by organizational factors including relationships and interactions with other members of the health care team, and institutional capacity to support the practice in question (32). Adoption of new knowledge or practices can be enhanced when teamwork is coordinated with point-of-care tools in which best practice recommendations are embedded (33). Little research has rigorously evaluated tools such as clinical pathways that clarify specific actions, timing, location and responsibility (34). Implementation of new practices may be more effective when integrated within electronic systems. A systematic review of the impact of computerized decision support showed that performance improved in 64% (62/97) of studies, particularly by systems that automatically prompted users compared with those launched through user activation (35). Computerized decision support systems vary widely in their purpose and functionality, so more research is required to examine how different types of technology can be used to optimize the appropriateness of health care delivery (36,37).

Teamwork in the setting of medical education can be achieved through small group learning and work-situated placements, although the concept of collaboration has not been the focus of evaluation in studies examining these curriculum components. It is thought that interprofessional learning, or the education of medical students or junior doctors alongside other health care professionals, promotes teamwork and collaboration, leading to improved patient care (38). In 1999, a Cochrane Collaboration systematic review of six randomized or controlled studies concluded there was no evidence that interprofessional training for practicing physicians improved service delivery or patient outcomes (39). A subsequent review with less stringent eligibility criteria considered 24 research papers and 36 literature review or descriptive papers focused on interprofessional learning by medical students (38). Given that many studies were qualitative in nature or based on self-report of knowledge and attitudes, the authors suggested
that further, more rigorous research was required to objectively evaluate the benefits of interprofessional learning during medical education.

**Incentives**

Adoption of, and adherence to new practices can be motivated by publicizing performance data or providing health professionals with data on their own performance in comparison to that of their peers or recognized standards of care. Also known as audit and feedback, this strategy can have a small to moderate effect when baseline adherence is low, data is individualized, and delivery is intensive, characterized by repeated in-person delivery by an influential peer or supervisor (40). Systematic review of studies involving the public release of performance data found that physicians paid little attention to this data (41). More recently pay-for-performance has been implemented and evaluated, but systematic review suggests that the benefits of rewarding performance with financial incentives is not yet clear (42,43). A patient-mediated approach is potentially more effective for incenting behaviour change than the use of performance data. This involves providing patients with educational material, decision aids or tracking tools, or information to share with their physicians. This type of intervention appears to have a moderate to large effect on clinical care but further investigation is needed to establish how patients can most effectively influence the services they receive (44).

Within the medical education setting, multisource feedback, also known as 360-degree evaluation, is a form of peer assessment that is increasingly being used. A review of empirical research on multisource feedback produced several recommendations and caveats (45). While not a replacement for objective audit to evaluate clinical outcomes, multisource feedback is a suitable approach for assessing and guiding performance on interpersonal, communication, professionalism or teamwork behaviours provided that instruments assess factors over which the physician has control, and threats posed to the individual are minimized. Given that these are critical competencies for medical students, further investigation is needed to develop and evaluate valid tools by which to provide multisource feedback.

**Integration of KT in Medical Education**

A total of 293 articles describing any inclusion of KT concepts in medical education were identified by searching MEDLINE. Of these, 10 articles were considered eligible for review (46-55). No additional relevant items were revealed by browsing journal tables of contents. Study details are summarized in Table 1. All studies were based in the United States, where the Accreditation Council for Graduate Medical Education stipulates that one of six core competencies is practice-based learning and improvement. Three studies described such programs, two studies surveyed medical students or medical education experts for opinions about quality improvement curricula, and five studies used observational designs to evaluate knowledge about, and attitudes to quality improvement, and capacity to plan and/or implement a quality improvement project. Three of these studies demonstrated clinical outcomes as a result of the quality improvement effort. Two studies provided examples of KT learning objectives and competencies, which are summarized in Table 2.
With respect to program format, most involved some didactic and case-based introduction to the topic of quality improvement prior to placements where students were responsible for identifying, researching, planning and implementing quality improvement projects under the supervision of both faculty preceptors and placement supervisors. These programs ranged from four weeks to one year. In one four year undergraduate program, exposure to quality improvement was embedded within 13 different courses and clerkship. Overall, few medical education programs offering exposure to KT concepts have been evaluated. Most of these could be considered pilot programs since they involved small numbers of students and rudimentary assessment largely based on self-report of knowledge or attitudes, or somewhat subjective evaluation of quality improvement proposals. However, the findings are promising because projects undertaken by some placement students contributed to improved clinical care.

Implications

This scoping review examined the relationship between KT and medical education in two major dimensions. First, since KT is concerned with packaging and delivering knowledge in ways that optimize its use, this report addressed how KT approaches could be used to improve the way that medical education is structured and delivered. Many KT strategies based on educational, social, organizational or incentive approaches have been used to some degree in the context of medical education but could be better, or more broadly implemented. Second, since KT is inherent in most aspects of medical practice, this report analyzed the degree to which medical students and trainees are exposed to KT knowledge and skills. Few studies have evaluated the integration of these concepts in medical education programs, although several medical schools in the United States, where this is a required competency, appear to have done so through practice-based learning. The information within this report is limited because it was not assembled through systematic review of the literature, and syntheses on particular topics were selectively chosen rather than compiling data from individual studies. However, the purpose of a scoping review is to gain an appreciation of what is known on a particular topic and, more importantly, what is not known so that recommendations for policy, practice and further research can be generated.

Following are recommendations for integrating KT in medical education programs in Canada, with particular emphasis on research that is required to understand how this can be achieved.

Policy

- Incorporate KT as a core competency within national medical education governing bodies
- Incorporate KT within the strategic plans of individual medical schools

Practice

- To improve the delivery and outcomes of problem-based learning and reflective practice, medical school faculty may require training in small group facilitation and mentorship
- Mentorship is important to many aspects of medical education but may not be taking place so formal, structured programs must be developed, implemented and monitored
- Collaboration is essential to medical practice so interprofessional education is needed to develop knowledge, attitudes and skills conducive to teamwork
- Peer assessment of performance is a strong trigger for learning so multisource feedback is a useful tool by which medical students and trainees can be evaluated by their colleagues
• KT can be introduced into the medical curriculum as preceptored, work-situated practical projects where students identify and research a health care problem, and develop, implement and evaluate an improvement intervention

Research
• How are problem-based, reflective and interprofessional learning, mentorship, and peer assessment currently integrated within medical education programs in Canada?
  o what are the barriers and enablers?
  o how could they be optimally integrated and evaluated?
• How is KT integrated within medical education programs in Canada, and at leading medical schools elsewhere?
  o How could KT concepts be integrated and evaluated in medical education programs?
  o What is the impact of exposing medical students and trainees to KT?

Annotated Bibliography

   The authors use data from a survey of 3,014 family physicians and pediatricians in the United States (response rate 66.2%) about national pediatric vaccine recommendations to confirm and discuss the cognitive and behavioural steps physicians take when exposed to a new practice, including awareness, acceptance, adoption and adherence.

   A systematic review and concept analysis based on theory from 13 different bodies of literature relevant to KT which identifies and defines factors that may influence how new knowledge or technology is adopted within organizations, for example, system readiness for change, providing us with insight on how to implement evidence within organizations or issues to consider when tailoring implementation strategies.

   Systematic review of 235 randomized or controlled studies studies reporting 309 comparisons of single or multiple implementation strategies. Commonly evaluated single interventions were reminders, dissemination of educational materials, and audit and feedback. There were 23 comparisons of multifaceted interventions involving educational outreach. No relationship was found between the number of component interventions and the effects of multifaceted interventions. The majority of interventions observed modest to moderate improvements in care, with considerable variation in the observed effects both within and across interventions.

   Systematic review of 12 randomized or controlled studies. The use of local opinion leaders can successfully promote evidence-based practice but the effects are small: the adjusted absolute risk difference of non-compliance with desired practice varied from -6% (favouring control) to +25% (favouring opinion leader intervention). Given these findings, and the fact optimal methods for selecting and engaging opinion leaders are unclear, the benefit of this approach is uncertain.


   Systematic review of 118 randomized or controlled studies. Audit and feedback can be effective in improving professional practice. The effects are generally small to moderate: the median-adjusted risk difference of compliance with desired practice was 5% for dichotomous outcomes and 16% for continuous outcomes. The absolute effects of audit and feedback were larger when baseline adherence to recommended practice is low and intensity of audit and feedback is high.


   Review of empirical evaluations of seven performance measurement programs in the United States. Consumers and purchasers rarely search out the information and do not understand or trust it. Physicians are skeptical about such data and only a small proportion claimed make use of it. In a limited number of studies, the publication of performance data has been associated with an improvement in health outcomes, largely through hospital manager response.


   Concept analysis and systematic review of 29 articles on reflective practice, of which 17 were qualitative in nature, and most focused on nursing practice or medical student training. None of the empirical studies linked reflective practice to health service delivery or outcomes but reflection can lead to deeper learning provided the learning environment is conducive.


   Systematic review of 39 studies to assess the impact of mentorship on career development in academic medicine. Mentorship was reported to have an important influence on personal development, career guidance, career choice, and research productivity, including publication and grant success, but less than 50% of medical students and 20% of faculty members had a mentor.
Systematic review of 60 studies on interprofessional learning involving medical students. Many were descriptive rather than evaluative. Those that collected quantitative data primarily included self-reported knowledge or attitudes to interprofessional education. Since collaboration is inherent in medical practice, further research is necessary.

The author reviews key literature on multisource feedback to provide practical advice on designing and implementing multisource feedback tools and programs.

References


<table>
<thead>
<tr>
<th>Study</th>
<th>Level</th>
<th>Design</th>
<th>Details</th>
<th>Measures</th>
<th>Results</th>
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<tbody>
<tr>
<td>Canal</td>
<td>Graduate</td>
<td>Before-after</td>
<td>15 general surgery residents at Indiana University over a two-year period were exposed to a six-week quality improvement curriculum during dedicated research year involving didactic lecture, discussion, and design of a quality improvement project</td>
<td>Knowledge, attitude to quality improvement; planning of a quality improvement project</td>
<td>Knowledge, self-efficacy and interest improved significantly; within teams, several projects were created</td>
</tr>
<tr>
<td>Varkey</td>
<td>Undergraduate</td>
<td>Descriptive</td>
<td>Four year curriculum on quality improvement at Mayo Medical School through exercise-based discussions, video sessions followed by debriefing, simulations, case-based discussions and lectures in 13 courses and clerkship</td>
<td>Feedback from faculty and students; number students completing curriculum and taking part in a quality improvement project; OSCE station performance</td>
<td>First year not completed at time of publication so data not yet available</td>
</tr>
<tr>
<td>Krajewski</td>
<td>Graduate</td>
<td>Descriptive</td>
<td>Four-week elective in quality assurance for radiology residents at single hospital associated with Harvard Medical School uses didactic teaching, self-learning and practical experience (participation in hospital quality assurance meetings and initiation of a mentored project)</td>
<td>Completion of online modules; adverse event investigation report; performance improvement proposal; presentation of project at grand rounds</td>
<td>The program takes one resident at a time; thus far 15 projects have been completed</td>
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<tr>
<td>Djuricich</td>
<td>Graduate</td>
<td>Observational</td>
<td>44 medicine and pediatric residents at University of Indiana exposed to quality improvement curriculum involving one hour didactic lecture, case based discussion, and planning and presentation of a quality improvement project</td>
<td>Knowledge, interest, self-efficacy; planning of a quality improvement project evaluated according to PDSA framework, feasibility, relevance, affordability and measurable outcomes</td>
<td>Actual and perceived knowledge, and self-efficacy improved significantly. The mean project score was 81.7% (SD 8.3%)</td>
</tr>
<tr>
<td>Gould</td>
<td>Undergraduate</td>
<td>Survey</td>
<td>Comparison of quality improvement curriculum, and senior medical student rating of curriculum between 1999 and 2001 between 18 Undergraduate Medical Education for the 21st Century (UME-21) schools and other medical schools</td>
<td>Proportion of schools with curriculum on quality improvement; proportion of senior medical students rating quality improvement instruction as adequate</td>
<td>11 of 18 UME-21 schools had curriculum on some aspect of quality improvement; at these schools student rating of adequacy rose from 49% to 66% compared with a change from 43% to 56% at other medical schools</td>
</tr>
<tr>
<td>Ogrinc</td>
<td>Undergraduate and</td>
<td>Survey</td>
<td>Literature review from 1996 to 2001 on quality improvement and medical education coordinated at University of Dartmouth; a six-member expert panel discussed the findings by teleconference and in person to issue recommendations</td>
<td>Findings considered according to Dreyfus model of skill acquisition and Institute for Healthcare Improvement model of improvement in health care</td>
<td>Of 27 articles, 22 were case reports and 2 were based on an experimental design; the panel recommended several objectives and associated measures for students at different levels</td>
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<tr>
<td>Study</td>
<td>Level</td>
<td>Design</td>
<td>Details</td>
<td>Measures</td>
<td>Results</td>
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<tr>
<td>Coleman</td>
<td>Graduate</td>
<td>Observational</td>
<td>Teams of family medicine residents and faculty affiliated with University of Louisville were given six months to conduct clinical improvement projects in one of three ambulatory care training sites, and present the findings</td>
<td>Practice-based use of quality improvement</td>
<td>Pre-post chart audits showed clinical improvement; quality improvement tools demonstrated root cause analysis and understanding of the process; plan-do-study-act cycle worksheets revealed the change process</td>
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<tr>
<td>Mohr</td>
<td>Graduate</td>
<td>Observational</td>
<td>8 of 36 consenting senior pediatric residents at University of North Carolina clinic were involved in a one-year practice-based quality improvement effort involving an introductory didactic and discussion session, followed by planning meetings two times per month to monitor chart audit, process mapping, and intervention progress</td>
<td>Rate of immunization by 24 months of age; proportion charts available at clinical encounter</td>
<td>Clinic immunization rates increased from 60% at baseline to 86% at one-year (p=0.04) as did proportion of charts available at clinical encounter (36% to 75%, p&lt;0.01)</td>
</tr>
<tr>
<td>Gould</td>
<td>Undergraduate</td>
<td>Observational</td>
<td>77 second year students at the University of Connecticut working in groups of two to four conducted quality improvement projects on diabetes mellitus at 24 community-based primary care practices involving baseline data collection, intervention, and six-month analysis</td>
<td>Knowledge and attitudes about quality improvement; clinical improvement</td>
<td>Students recognized the benefit of quality improvement but were frustrated by the tedium of chart audit; documentation of performance of foot (51.3% to 70.2%, p&lt;0.001) and eye (26.9% to 37.8%, p&lt;0.001) exams increased significantly; mean glycohemoglobin dropped from 7.7% to 7.2% (p&lt;0.001)</td>
</tr>
<tr>
<td>Paulman</td>
<td>Undergraduate</td>
<td>Descriptive</td>
<td>University of Nebraska introduced quality improvement in rural family medicine preceptorship involving problem identification and planning of a suitable project. The program has resulted in several changes to preceptors practice patterns</td>
<td>Literature search, chart review, data analysis, proposal development, presentation of proposal</td>
<td>Over 80% of students indicate intent to implement quality improvement principles in practice (data on number of participating students not provided)</td>
</tr>
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</table>
### Table 2. KT learning objectives and competencies identified in reviewed literature


<table>
<thead>
<tr>
<th>Level of Training</th>
<th>Knowledge</th>
<th>Measurement</th>
<th>Competency</th>
<th>Application</th>
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<tbody>
<tr>
<td>Beginning medical student</td>
<td>Demonstrate how improvement principles are useful to patients and medical students</td>
<td>• Understand the variation inherent in health care systems</td>
<td>• Understand basic change concepts</td>
<td>• Understand how the introductory concepts of improvement science are used to improve health care outcomes</td>
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<td></td>
<td></td>
<td>• Introductory assessment of health summary statistics for populations of patients</td>
<td>• Identify a health care scenario where changes can be applied</td>
<td>• Understand how improvement science is complementary to other scientific methods of building knowledge</td>
</tr>
<tr>
<td>Advanced medical student</td>
<td>Be able to map the process of care from a patient’s point of view for a clinical encounter</td>
<td>Identify outcome and process measures appropriate for a clinical problem</td>
<td>Be able to recommend changes in clinical processes for a group of patients</td>
<td>Apply the introductory concepts of improvement science to patient-focused outcomes</td>
</tr>
<tr>
<td>Beginning resident</td>
<td>Demonstrate an appreciation of patients’ needs and explore how those needs can be met</td>
<td>Begin to measure and describe the processes and outcomes of care for the resident’s own patients</td>
<td>Identify services in the resident’s own practice that can be changed to affect the processes and outcomes of care</td>
<td>Apply continuous improvement to one’s own patient panel</td>
</tr>
<tr>
<td>Advanced resident</td>
<td>Identify needs within the resident’s patient population and initiate changes to meet those needs</td>
<td>Be able to use balanced measures to show that changes have improved care for the resident’s patients</td>
<td>Demonstrate how to use several cycles of change to improve the care delivery system</td>
<td>Apply continuous improvement to a discrete population or have several efforts directed at different sub-populations</td>
</tr>
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</table>


**Knowledge**
- Health care as a process and system
- Principles of process analysis and process redesign
- Epidemiology of medical errors
- Principles of implementing patient safety
- Principles of evidence-based medicine

**Beliefs / Attitudes**
- Significance of quality improvement in medical care
- Need to work collaboratively in teams

**Skills**
- Assess the gap between existing practices and best practices
- Measure change
- Participate in planning tests of change
- Quality measurement
- Analyzing medical errors
Appendix

We performed a quality assessment of all papers. Greater consideration was given to original research than to review articles or editorials. Discursive and opinion pieces were considered to be suitable for inclusion if they had significant on the field. For original research, emphasis was given to randomized controlled trials, cohort and case control studies. The “gold standard” in validation for simulation is predictive validation: proving that either simulation based teaching, or good performance when assessed using simulation results in better performance in actual patients. Given the breadth of simulation literature and the importance of predictive validation – this report focused mainly on the predictive validity of medical simulation. The majority of papers that were identified suffered from weak and/or flawed methodology including small sample size, no description of power calculation, lack of control group, observational studies, poor description statistical methodology, poorly defined outcome measures, and failure to assess the long term retention of learning.
The Culture of Medicine

Summary

With the emergence of the cultural competence movement, culture has recently won a place in medical school curricula. Cultural competence efforts, however, generally treat culture as existing in the domain of patients, and rarely address the culture of medicine itself. Yet the culture of medicine demands critical reflection, because it is seen as “key to the transmission of stigma, the incorporation and maintenance of racial bias in institutions, and the development of health disparities across minority groups.” Qualitative research into the culture of medicine can contribute to discussions of medical education by clarifying how medicine is shaped by broader social and cultural contexts, and how its social and material consequences may ramify beyond the clinical setting.

Studies carried out within institutional sites most widely recognized as within the medical domain (e.g., medical schools, clinics, and research laboratories) explore the workings of culture there in the heart of medicine’s “culture of no culture.” Some document how, alongside their explicitly avowed purposes, medical training and practice effectively reproduce hierarchical social relations, and distinctive modes of embodiment, perception and expression, as well as transmitting assumptions and values that remain both unreflected and unacknowledged. Others document practices of caring and healing that are creatively improvised in the course of practitioners’ everyday work, but which are not explicitly articulated or represented within the official discourse of medicine. Such improvisation at the level of practice is one factor contributing to the considerable variation and diversity that exists within the culture of medicine (efforts toward standardization and aspirations to universality notwithstanding). Other contributing factors include locally variable values and beliefs and, perhaps most importantly, stark social inequalities of wealth and power. A concern with such inequalities leads some researchers to situate medical professionals and institutions within broader political and economic structures that implicate them in the quest for pharmaceutical profits, involve them the exercise of state power, and link them to impoverished and disempowered communities from which they draw labor force, clinical research subjects, and bodily materials needed for education, treatment and research. By showing how places, people and things not ordinarily understood to be part of the culture of medicine are nonetheless connected to it, such studies disrupt common-sense understandings of where the boundaries of the medical domain lie.

Major Themes:
Culture does not only pertain to patients. Even within medicine itself, distinctive patterns of thought and patterns of social interaction shape and constrain the work of alleviating human suffering.
The human suffering that healthcare professionals work to alleviate often has its deeper sources in poverty, oppression, and social relations of inequality. The culture of medicine may be framed in a variety of ways, yielding suggestions for change that, correspondingly, range from relatively modest interventions within existing curricular and institutional frameworks, to more ambitious calls to reenvision medicine and its place in social life.

Conclusions and Directions
Rather than look to research on the culture of medicine only for specific lessons to take away, work to build capacity to generate high-quality studies of social and cultural dimensions of medicine itself. Teach and emphasize forms of inquiry that support critical inquiry into social and cultural aspects of medicine. Address both disease processes within the individual human body, and their social origins in patterns of difference and inequality.

Best practices and innovations:
None

Full Text

With the emergence of the cultural competence movement, culture has recently won a place in medical school curricula. Cultural competence efforts, however, generally treat culture as existing in the domain of patients, and rarely address the culture of medicine itself. Yet the culture of medicine urgently demands careful critical reflection, because it “is now seen as key to the transmission of stigma, the incorporation and maintenance of racial bias in institutions, and the development of health disparities across minority groups.” Qualitative and ethnographic research into the culture of medicine can contribute to discussions of the future of medical education by clarifying how medicine is shaped by broader social and cultural contexts, and how its social and material consequences may ramify far beyond the clinical setting. Such inquiries are conceptually framed in a range of different ways that offer distinct perspectives and insights. Studies carried out within those institutional sites most widely and readily recognized as within the medical domain (e.g., medical schools, clinics, and research laboratories) explore the workings of culture there in the heart of medicine’s “culture of no culture.” Some document how, alongside their explicitly avowed purposes, medical training and practice effectively reproduce hierarchical social relations, and distinctive modes of embodiment, perception and expression, as well as transmitting assumptions and values that remain both unreflected and unacknowledged. Others document practices of caring and healing that are creatively improvised in the course of practitioners’ everyday work, but which are not explicitly articulated or represented within the official discourse of medicine, much less formally codified and taught within medical curricula. Such improvisation at the level of practice is one factor contributing to the considerable variation and diversity that exists within the culture of medicine.
(efforts toward standardization and aspirations to universality notwithstanding). Other contributing factors include locally variable values and beliefs and, perhaps most importantly, stark social inequalities of wealth and power. A concern with such inequalities leads some researchers to situate medical professionals and institutions within broader political and economic structures that implicate them in the quest for pharmaceutical profits, involve them the exercise of state power, and link them to impoverished and disempowered communities from which they draw labor force, clinical research subjects, and bodily materials needed for education, treatment and research. By showing how places, people and things not ordinarily understood to be part of the culture of medicine are nonetheless connected to it, such studies disrupt common-sense understandings of where the boundaries of the medical domain lie.

**Key Findings:**

- Culture does not only pertain to patients. Even within medicine itself, distinctive patterns of thought and patterns of social interaction shape and constrain the work of alleviating human suffering, in ways that deserve careful critical reflection.
- The human suffering that healthcare professionals work to alleviate often has its deeper sources in poverty, oppression, and social relations of inequality.
- Medicine’s task of understanding and ameliorating the health of individuals is therefore inseparable from the tasks of engaging in critical self-reflection, understanding social life, and working to make it more equitable and just.
- Physicians can and ought to be better prepared to understand and address ways that culture and power intersect -- in their own work, in the problems they treat, and in the social world more broadly.
- The culture of medicine may be framed in a variety of ways, yielding suggestions for change that, correspondingly, range from relatively modest interventions within existing curricular and institutional frameworks, to more ambitious calls to reenvision medicine and its place in social life.

**Recommendations:**

- Rather than look to research on the culture of medicine only for specific lessons to take away, work to **build capacity** to generate high-quality studies of social and cultural dimensions of medicine itself, as well as of the problems it addresses.
- Teach and emphasize forms of inquiry that support critical inquiry into social and cultural aspects of medicine, including those that work to document, recognize and value the knowledge embedded in care practices.
- Address both disease processes within the individual human body, and their social origins in patterns of difference and inequality.
- Seek out and learn from multiple voices and perspectives, especially of people other than those recognized as medical authorities -- including patients, other health care workers, and indeed medical students themselves.
- Work to involve medical students, professionals, and institutions in broader efforts to achieve social justice.
  - promote increased diversity among medical professionals.

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o teach physicians to practice “mini-ethnography”
o create more varied opportunities for service learning
o develop and support interprofessional and interdisciplinary collaborations in teaching and research
o give greater emphasis to, and integrate fully into the curriculum, fields that take the social context of health as their primary object (including medical ethics, public health, anthropology, sociology, and history)

Annotated Bibliography

   This study draws upon qualitative interviews to examine how health care providers and Mexican migrant workers in Montana understand barriers to accessing health care. The authors find that while providers emphasize the migrants’ cultural beliefs and practices, the migrants themselves emphasize structural factors, including the physical peril of migration, long hours, and low wages as barriers to health care access. “Cultural competence” training as currently formulated does not meaningfully address such sources of health care disparities. The authors suggest that provider training might better incorporate approaches that address the more critical comments offered by these workers, who sought from their providers not increased understanding of their culture, but rather increased attention to the material conditions impeding their access to health care.

   This article draws on ethnographic research among medical students working at a free clinic for the homeless, to reflect on earlier studies’ conclusion that medical training has the effect of transforming students’ subjectivity as they become agents of a “medical gaze” that objectifies patients. The author finds that while such processes are indeed at work, medical students involved with the clinic also actively resisted them, in part through working to articulate “witnessing” as an alternative mode of relating to patients that retains a moral concern with suffering. Such service learning may help individual students retain empathy, and may feed back into formal educational arenas as well.

   This article offers an example of ethnographic examination of medical practice may helpfully illuminate the culture of medicine and its consequences for patient care. The authors document that pediatric rehabilitation therapists in Chicago and Los Angeles, in their practice, cultivate “healing dramas,” that transform routine exercises and treatment activities into narrative plots that matter greatly to patients, and effectively engage them in the necessary hard work of rehabilitation. These healing dramas, however, very often pass unnoticed or are abandoned by their creators, for reasons directly connected to the culture of the clinical world, especially its emphasis on technology, its valorization of the
routine over the dramatic, and interprofessional hierarchies that devalue therapists’ knowledge.

   This article draws upon ethnographic research among ob-gyn practitioners in Japan to document how they understand pregnancy, and more specifically how they assign responsibilities to the pregnant patient. The author shows that Japanese ob-gyns, informed by the local orientation that characterises medical theories about gestation in contemporary Japan, highlight women’s behavior and health (rather than genes and chromosomes) as the major factors of fetal health.

   This article, based on ethnographic research with immigrants seeking asylum in France, examines how medicine becomes entangled with state power. The authors examine the changing role of the “medical certificate” verifying asylum-seekers’ tales of past torture. Although intended to verify and support their claims, the medical certificate has become an increasingly narrow objectification of asylum-seekers’ bodies, that has the effect of turning medical experts’ words into the “ultimate truth” on which the entire existence—both physical and political—of the asylum seeker depends.

References


Appendix: Search Methods

The literature reviewed for this report was searched using the online research databases Web of Science (which indexes scholarly literature in the sciences, social sciences, arts, and humanities) and Anthrosource (containing fully searchable articles from all issues of all journals published since 1902 by the American Anthropological Association). This involved searches by key terms (e.g., “culture of medicine”) as well as literature-cited searches for current work that continues research directions charted out by certain key classic texts in the field. Articles and books have been selected for clarity of writing, interest, currency, and coverage of important issues.
D’Eon, Marcel, MEd, PhD

*Hidden Curriculum*

**Summary**

The term “hidden curriculum” is used in diverse ways in the medical education literature but is generally considered to be “processes, pressures, and constraints which fall outside of, or are embedded within, the formal curriculum and which are often unarticulated or unexplored” (Cribb & Bignold 1999.) The hidden curriculum is associated with the structural and cultural environment of the medical school and powerfully influences the progress, educational experiences, and developing professional identity of medical students and residents.

Much of the hidden curriculum is learned through the enactment of the formal curriculum. For example, the importance of being punctual, sincere, and deferring to authority may all be taught parallel to and within the structure of the formal curriculum (though not intentionally). The stated goals and objectives and methods of the formal curriculum are never part of the hidden curriculum but the structure of the formal curriculum provides an opportunity for learning the hidden curriculum. The hidden curriculum is never formal but unidentified and arcane elements associated with the formal curriculum are one of the forces behind the hidden curriculum. The modeling of practicing physicians is often identified as being the most common or most powerful way that the hidden curriculum is taught and learned and physician educators and teachers in particular play an important direct or indirect role.

The hidden curriculum is more powerful than the formal curriculum in teaching attitudes and inculcating approaches to the practice of medicine. Whether the learning is in ethics, communication, or interprofessional education, the formal curriculum is limited in its ability to completely form the students and much of that work is accomplished by, in, and through the hidden curriculum. Furthermore, the influence of hidden curriculum is not always in the direction set out by the formal curriculum and it is this conflict that has aroused such great interest within medical education in the hidden curriculum. Attitudes of empathy and respect for all clients may be assailed. Students experience a loss of idealism and emotional desensitization. The ethical dilemmas are often moral failures of supervisors and mentors to live up to an ideal and these may be unknown to the perpetrator. In fact, the formal curriculum may be overtly creating this incongruence by trying to train the kinds of doctors that their teachers and preceptors are not.
Major Themes

Much of the hidden curriculum is learned through the enactment of the formal curriculum. The modeling of practicing physicians is often identified as being the most common or most powerful way that the hidden curriculum is taught and learned and physician educators and teachers in particular play an important direct or indirect role. Whether the learning is in ethics, communication, or interprofessional education, the formal curriculum is limited in its ability to completely form the students and much of that work is accomplished by, in, and through the hidden curriculum.

The influence of hidden curriculum is not always in the direction set out by the formal curriculum.

The formal curriculum may be overtly creating this incongruence by trying to train the kinds of doctors that their teachers and preceptors are not.

Conclusions and Directions

The hidden curriculum needs to be uncovered, examined, modified, and in places supported to allow for better alignment and even integration with the formal curriculum. The hidden curriculum might be studied in a number of ways including an ethnographic participant observer method. Authors have recommended that instructors and preceptors incorporate a discussion of ethics in every aspect of their teaching.

To create lasting and meaningful change, support to mentors and practicing health professionals should be provided so they can better understand their role in the formation of learners. Faculty development could be transformed to account for the full nature of teaching, including its hidden elements. Groups of teachers who work together might think about their practice and its purpose and not just learn more techniques and strategies.

Students too need to be made aware and given instruction on what to do in such dilemmas and how to align their own behaviour with that of the goals of the explicit formal curriculum.

Certain forces are changing medical schools in ways that support goals of the formal curriculum and these can be better understood and supported. For example, in the formal curriculum there is increasing emphasis on communication skills, ethics, psychosocial issues, and community and population health promotion. Using more generalist teachers and engaging in interprofessional education could support these more recent emphases as could more education about and experiences with palliative care units. Of course, once this kind of action is taken, the hidden curriculum ceases to be entirely “hidden” and is harnessed in service of the formal curriculum.

Best practices and innovations:

None
Introduction

Researchers express concerns about the attitudinal development of medical students and the process of being socialized into the profession of medicine that at times runs counter to stated goals and objectives of the formal curriculum especially in the areas of ethics, professionalism, communication, and teamwork, among others. The literature is silent on the effects of the hidden curriculum in areas such as surgical technique, chemotherapy, or radiological interpretation.

Definitions and background

The term “hidden curriculum” is used in diverse ways in the medical education literature but has been generally accepted to be “processes, pressures, and constraints which fall outside of, or are embedded within, the formal curriculum and which are often unarticulated or unexplored” (Cribb & Bignold, 1999, p. 197). In two separate articles the term “latent” was used synonymously for “hidden” (Hafferty & Franks, 1994; Herbert, 2003). The hidden curriculum is associated with the structural and cultural environment of the medical school and powerfully influences the progress, educational experiences, and developing professional identity of medical students and residents (Hafferty & Franks, 1994). Kibble et al (2006) report that even medical physiology has a strong hidden curriculum teaching about the use of animals, ethical and social aspects of physiology, and the nature of intelligence. Similarly, learning anatomy, especially if that involves cadaver dissection, includes often as a hidden or tacit element of the curriculum experiences of working as a team, showing respect for the dead and body parts, and coping with expectations of medicine (Pangaro, 2006; Swick, 2006).

Medical education is a process of professional socialization much of which does not take place in formally organized teaching and learning sessions (Hafferty and Franks, 1994). Frequent use is made of Merton et al’s (1957) definition of socialization: the “processes by which people acquire the values and attitudes, the interests, skills, and knowledge – in short, the culture – current in the groups of which they are, or seek to become, a member” (found in Hafferty & Franks, 1994; Cribs & Bignold, 1999).

Definitions of the hidden curriculum have built on a previously advanced literature and definition beginning perhaps with John Dewey and “Democracy and Education.” The first recorded use of the term “hidden curriculum” comes from Philip Jackson’s 1968 book “Life in Classrooms” where he explained the process of socialization that takes place in schools and classrooms. This theme is later advanced by Benson Snyder in his 1970 book “The Hidden Curriculum.” Snyder laments the power of the unstated academic and social norms that stunt the potential growth of students. He sees the hidden curriculum powered by the assumptions and values of the teachers, the students’ expectations, and the social context (Wikipedia, “Hidden Curriculum”). These themes are taken up by Hafferty and Franks (1994) and others as they apply to the formation of professional identity for medical students within the social context of medical education.
“Informal” curriculum (and “informal” teaching and learning) is often used to mean learning from experience: *ad hoc* interpersonal interactions such as watching and asking co-workers, trial and error, independent and self-directed learning (Hafferty, 1998). The informal curriculum contrasts with the hidden curriculum in that informal learning and curricula are not restricted to socialization, to learning the norms of institutions and to taking on a particular identity defined by that group. People may informally learn certain explicit technical skills and knowledge related to the work of the profession. Furthermore the informal curriculum is often not hidden and can be identified by all parties though it may not be formally recorded. The hidden curriculum is entirely a subset of the informal curriculum but they are not synonymous though sometimes assumed to be (Fins et al, 2003; Cushing et al, 2005).

The informal curriculum is different from the “formal” curriculum of pre-requisites, tests and grades, certification, and scheduled learning time and/or explicit, intended, and endorsed learning objectives and goals (Hafferty, 1998). But formal curriculum is not the opposite of the hidden curriculum since much of the hidden curriculum is learned through the enactment of the formal curriculum. For example, the importance of being punctual, sincere, and deferring to authority may all be taught parallel to and within the structure of the formal curriculum. The stated goals and objectives and methods of the formal curriculum are never part of the hidden curriculum but the structure of the formal curriculum provides an opportunity for learning the hidden curriculum. The hidden curriculum is never formal but unidentified and arcane elements associated with the formal curriculum are one of the forces behind the hidden curriculum. Hafferty (1998, p. 404) writes: “[the hidden curriculum is…] a set of influences that function at the level of organizational structure and culture.”

“Extra-curricular” activities go beyond the scope of the formal and explicit curriculum such as art and yoga classes and horseback riding in which some students might engage on their own time. These are not necessarily hidden from view and they do not usually address knowledge and skills central to the formal curriculum or contribute to professional socialization. Some activity might be considered co-curricular: learning is not formally organized and required by the institution but which is supported and which supports the goals of the formal curriculum. An optional course on the Canadian health care system or an elective clinical rotation over and above those required could both be considered co-curricular but are neither part of the informal or formal curricula. Because extra- and co-curricular activities are overt and transparent they do not directly form part of or contribute directly to the hidden curriculum.

The modeling of practicing physicians (what Hafferty (1998) considers to be the informal curriculum) is often identified as being the main, most common, or most powerful way that the hidden curriculum is taught and learned (Dodson & Webb, 2004; Rose et al, 2005; Brimstone et al, 2006) and physician educators and teachers in particular play an important direct (Brainard & Brislen, 2007) or indirect role (Glicken & Merenstein, 2007). The interactions with patients, other professionals, family members, the health care system, and students and the schools of medicine all are potential teaching and learning opportunities within the hidden curriculum. One paper highlights the prior expectations and perceptions of students themselves as a component of the hidden curriculum (Draper & Louw, 2007). The patterns created by these interactions and behaviours enact the norms of the institutions and place pressure on those who are or want to become members to comply and to accept these patterns and the identities associated with them.
The power of the hidden curriculum

Many authors note that the hidden curriculum is more powerful than the formal curriculum in teaching attitudes and inculcating approaches to the practice of medicine (Hafferty & Franks, 1994; Hafferty, 1998; Cribb & Bignold, 1999; Ratanawongsa et al, 2005; Jaye et al, 2006; von Gunten, 2007). Whether the learning is in ethics, communication, or interprofessional education the formal curriculum is limited in its ability to completely form the students and much of that work is accomplished by, in, and through the hidden curriculum (Ratanawongsa et al, 2005). Often, an informal and hidden curriculum operates when and where the formal curriculum is completely absent (McClean & Card, 2004). “Indeed, a great deal of what is taught – and most of what is learned – in medical school takes place not within formal course offerings but within medicine’s ‘hidden curriculum’” (Hafferty, 1998, p. 403).

Furthermore, the influence of hidden curriculum is not always in the direction set out by the formal curriculum and it is this conflict that has aroused the great interest in the hidden curriculum. Attitudes of empathy and respect for all clients may be assailed (Reisman, 2006). Students experience a loss of idealism and emotional desensitization (Cribb & Bignold, 1999). Students, unknown to them, experience a subtle change in their attitudes towards the pharmaceutical industry through interactions with them (Fitz et al, 2007). The ethical dilemmas are often moral failures of supervisors and mentors to live up to an ideal (Jaye et al, 2006) and these may be unknown to the perpetrator (Kim, 2004). In fact, the formal curriculum may be overtly creating this incongruence by trying to train the kinds of doctors that their teachers and preceptors are not (Jaye et al, 2006). Yet many preceptors and mentors provide exemplary modeling that reinforces and extends the formal curriculum (Lempp & Seale, 2004; Thiedke et al, 2004).

Possible action

The hidden curriculum needs to be uncovered, examined, modified, and in places supported to allow for better alignment and even integration with the formal curriculum (Cribb & Bignold, 1998; Draper & Louw, 2007). D’Eon et al (2007, p. 295) state: “We contend that it makes little sense for medical schools to rigorously teach and evaluate professionalism for students when the destructive elements of the hidden curriculum go unchecked.” The hidden curriculum might be studied in a number of ways including an ethnographic participant observer method (Adler et al, 2006) or a “pedagogy of discomfort” (Aultman, 2004). Goldie et al (2003) recommend that instructors and preceptors incorporate a discussion of ethics in every aspect of their teaching. To create lasting and meaningful change, support to mentors and practicing health professionals could be provided so they can better understand their role in the formation of learners (Crib & Bignold, 1998; Ratanawongsa et al, 2005). Faculty development could be transformed to account for the full nature of teaching, including its hidden elements. Groups of teachers who work together might think about their practice and its purpose and not just learn more techniques and strategies. “Once norms are explicit, they can be explained, justified, or changed and in changing the norms, one changes the practice” (D’Eon et al, 2000, p. 159).

Students too need to be made aware and given instruction on what to do in such dilemmas and how to align their own behaviour with that of the goals of the explicit formal curriculum (Goldie
et al, 2003; Kibble et al, 2006). By reflecting on their experiences and the lives of patients, especially in the context of the medical humanities and palliative care (Fins, 2003), students can cultivate, sharpen, or revive their curiosity and intellectual and relational capacities (Louis-Courvoisier, 2003) often dulled by the hidden curriculum.

Certain forces are changing medical schools in ways that support goals of the formal curriculum and these can be better understood and supported. For example, in the formal curriculum there is increasing emphasis on communication skills, ethics, psychosocial issues, and community and population health promotion. Using more generalist teachers and engaging in interprofessional education could support these more recent emphases (Cribb & Bignold, 1999) as could more education about and experiences with palliative care units (Olthuis & Dekkers, 2003). Of course, once this kind of action is taken, the hidden curriculum ceases to be entirely “hidden” and is harnessed in service of the formal curriculum. Real change in the hidden curriculum will certainly involve “whistle blowing” by participants including students (Goldie et al, 2003) at great sacrifice to the messenger (Kim, 2004). In some cases better instruction through the formal curriculum may actually improve skills and result in better performance among newer physicians (Cushing et al, 2005) perhaps where there is little resistance but low levels of skills among practicing clinicians.

Annotated Bibliography:

   Written by medical students and based on anecdotes collected over four years from five different medical schools this article paints a distressing and convincing picture of the pernicious aspects of the hidden curriculum on learning professionalism.

   It outlines three areas in which the influence of the hidden curriculum has been documented: loss of idealism, professional identity, and emotional socialization and mental health. The central thesis, an excellent example of the power of the hidden curriculum, is that the situation of having certain types of research in medical education privileged over others is a component of the culture and influences the professional development of medical students.

   This article places the reform of teaching within a cultural context and though it does not employ the term “hidden curriculum” it clearly addresses the taken-for-grantedness of teaching classifying it as a “social practice.” The suggestions for how faculty
development can contribute to the reform of the hidden curriculum are feasible and consistent with theory.

This study highlights the role that students themselves play in the hidden curriculum. Here, student expectations of what makes for a good doctor and what studies in medical education should be like are examined and explored to reveal at times some tension with the formal curriculum.

This article reports the effect on students of a lack of professionalism in education on the part of their teachers. It makes the case for the professionalization of medical educators through concerted faculty development and the development and acceptance of ethical standards of teaching.

This is one of the most referenced and influential articles in the medical education literature. The author tackles the phenomenon of “reform without change” where curriculum committees attempt to make important and necessary changes to what and how medical students learn without accounting for the power of the hidden curriculum.

This is one of the most referenced and influential articles in the medical education literature. The central thesis is that ethics teaching needs to reach beyond the formal, stated curriculum into the hidden curriculum if it is to be at all effective. The conclusion calls for the transformation and reorientation of the professional culture threatened by an ambiguous training process with too many mixed messages.

Though based on a relatively small one-time sample this study provides some evidence that the hidden curriculum can support and reinforce the formal curriculum. Students rated their community-based physicians high on demeanor with patients but lower on modeling interviewing techniques learned in class.
References:

Search Strategy

The search took place in layers and levels:

1. First, an electronic collection: There were 163 results from the original search of the literature. See the details below.
2. Second, a manual superficial scrutiny: Titles and abstracts were read and on that basis some articles were selected for further study and inclusion (27)
3. Third, a manual comprehensive scrutiny: One article was not used. (26)
4. Fourth, a second stage manual inclusion. One article known to the author was located and included as were three articles referred to in other previously selected articles, found to be useful, were included in the complete General References (30).
5. Fifth, general background from other disciplines. Wikipedia “Hidden Curriculum” was searched to this narrow and selective search (limited to medical education) within the broader social science context.

Ovid Technologies, Inc. Email Service

Search for: limit 16 to (yr="2003 - 2008" and (english or french))
Results: 1-9

Database: Ovid MEDLINE(R) <1950 to January Week 3 2008>
Search Strategy:

1 (hidden or tacit or unstated or unspoken or informal).mp. [mp=title, original title, abstract, name of substance word, subject heading word] (17978)
2 curriculum/ (43373)
3 teaching/ (32681)
4 culture/ (18557)
5 socialization/ (4992)
6 attitude of health personnel/ (64208)
7 organizational culture/ (8192)
8 Schools, Medical/ (16448)
9 Students, Medical/ (13625)
10 exp Education,medical/ (97763)
11 2 or 3 or 4 or 5 or 6 or 7 (158981)
12 1 and 11 (1129)
13 hidden curriculum.mp. (82)
14 12 or 13 (1152)
15 8 or 9 or 10 (113189)
16 14 and 15 (231)
limit 16 to (yr="2003 - 2008" and (english or french)) (114)
from 17 keep 1-2,4-10 (9)

Database: EMBASE <1980 to 2008 Week 04>
Search Strategy:
--------------------------------------------------------------------------------
1 curriculum/ (11036)
2 teaching/ (11090)
3 socialization/ (2139)
4 physician attitude/ (16562)
5 1 or 2 or 3 or 4 (38415)
6 exp medical education/ (83363)
7 medical student/ (15757)
8 6 or 7 (87906)
9 hidden curriculum.mp. (59)
10 (hidden or tacit or unstated or unspoken or informal).mp. [mp=title, abstract, subject
headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer
name] (12197)
11 5 and 10 (293)
12 9 or 11 (310)
13 8 and 12 (187)
14 limit 13 to ((english or french) and yr="2003 - 2008") (101)
15 from 14 keep 1 (1)

Database: ERIC <1965 to December 2007>
Search Strategy:
--------------------------------------------------------------------------------
1 (hidden or tacit or unstated or unspoken or informal).mp. [mp=abstract, title, headings word,
identifiers] (13985)
2 curriculum/ (13144)
3 exp teaching methods/ (143265)
4 organizational culture/ (289)
5 socialization/ (7033)
6 attitudes/ or beliefs/ (13586)
7 2 or 3 or 4 or 5 or 6 (173575)
8 1 and 7 (2566)
9 hidden curriculum/ (408)
10 8 or 9 (2841)
11 medical education/ or graduate medical education/ (7798)
12 medical students/ (2410)
13 medical schools/ (2066)
14 11 or 12 or 13 (9257)
15 10 and 14 (16)
16 limit 15 to ((english or french) and yr="2003 - 2006") (6)
17 from 16 keep 1-6 (6)
Database: PsycINFO <2000 to January Week 4 2008>
Search Strategy:

1. (hidden or tacit or unstated or unspoken or informal).mp. [mp=title, abstract, heading word, table of contents, key concepts] (9063)
2. exp medical education/ (4736)
3. exp Medical Students/ (2315)
4. exp CURRICULUM/ (22617)
5. exp SOCIALIZATION/ (2619)
6. exp teaching/ (22415)
7. exp Health Personnel Attitudes/ (5513)
8. exp Organizational Climate/ (2522)
9. 4 or 5 or 6 or 7 or 8 (49161)
10. 1 and 9 (784)
11. hidden curriculum.mp. (64)
12. 10 or 11 (812)
13. 2 or 3 (5675)
14. 12 and 13 (51)
15. limit 14 to ((english or french) and yr="2003 - 2008") (40)
16. from 15 keep 3 (1)
Une analyse environnementale en faveur de l’enseignement au niveau du cursus prégradué des qualités et des habiletés requises pour le développement professionnel continu

Environmental scan in support of the teaching of lifelong learning qualities and abilities in the undergraduate medical curriculum

Résumé

L’expression « apprentissage continu tout au long de la carrière » (« life-long learning ») ou, en français, le « développement professionnel continu » (DPC) signifie « la recherche, l’acquisition, le renouvellement et la mise à jour systématiques des connaissances, habiletés et attitudes requises des médecins pour prendre avantage des avancées biomédicales et techniques prouvées et s’adapter aux changements sociaux et culturels tout en améliorant leur pratique tout au long de leur carrière ». Compte tenu des modifications probables dans leur carrière au cours de leur vie et des changements sociétaux, les médecins se doivent d’acquérir une expertise en DPC. Ainsi, l’enseignement du DPC devrait être au centre des cursus prégradués. Selon la littérature, les qualités et habiletés de base à acquérir durant les études prégraduées afin d’influencer le DPC durant la pratique professionnelle sont : un esprit inquisiteur, l’autodirection et l’apprentissage par les pairs, la compétence informationnelle, la pratique réflexive et un répertoire d’habiletés d’apprentissage. Les domaines de compétence et habiletés requises durant la pratique professionnelle sont : la gestion des apprentissages, la connaissance de sa pratique, les activités d’exploration (« scanning ») des nouveautés, l’apprentissage à partir de questions soulevées lors de la pratique ainsi que l’évaluation et l’amélioration de sa pratique. Pour influencer le développement du DPC, le modèle de rôle auprès des étudiants du personnel professionnel est particulièrement important. Les institutions doivent elles-mêmes réaliser ce changement culturel en faveur du DPC dans leurs attentes, valeurs et façon de valoriser leur personnel académique. L’autodirection sera aidée par l’utilisation du portfolio pourvu que celle-ci soit fortement intégrée au cursus incluant le support de tuteurs. Pour réaliser une auto-évaluation valide (ce en quoi les médecins ne seraient pas très bons) et aider à la réflexion sur la pratique, il est pertinent de donner à l’étudiant ou au professionnel du feed-back ainsi que de lui fournir des critères d’évaluation ou des repères/standards de bonne pratique. L’étudiant en médecine devrait être initié au cours de ses études à toutes les aides à l’auto-évaluation (incluant l’observation via l’enregistrement de vidéos) : il s’agit là de la meilleure base au DPC. Par
ailleurs, la formation médicale doit éviter l’obsession de la couverture complète et viser plutôt l’apprentissage en profondeur des concepts ou processus majeurs, apprentissage qui ainsi pourra être transféré à de nouvelles situations. La simulation et le jeu sont deux outils intéressants de DPC. Pour le DPC, la compétence informationnelle est majeure; les étudiants doivent ainsi acquérir des compétences en utilisation des technologies de l’information et de la communication (TIC) (qui, de fait, selon les recherches, ne seraient pas très bien développées). La compétition interpersonnelle et l’individualiste des étudiants dominent actuellement durant la formation médicale, alors que le contexte de pratique future exigera collaboration et travail interprofessionnel. Il est important de prévoir l’apprentissage de la DPC dans un contexte d’équipe et de collaboration interprofessionnelle.

**Thèmes majeurs identifiés**
Le développement d’une attitude et volonté à l’apprentissage continu (DPC) durant toute la carrière est essentiel et doit débuter dès les études médicales prégraduées.
Un levier majeur pour le développement du DPC est la compétence à l’autodirection, l’auto-évaluation et la pratique réflexive.

**Conclusions et orientations**
Les facultés doivent faire du développement du DPC chez les étudiants un objectif central, ce qui implique d’orienter les programmes en ce sens et de rendre accessibles les ressources nécessaires (climat de questionnement scientifique, bibliothèques, TIC…).
Des recherches doivent être faites sur les facteurs et éléments qui, durant la formation, supportent, favorisent ou font obstacles à l’apprentissage puis à la pratique du DPC chez les praticiens.
Il est important de briser les silos entre les études prégraduées, la résidence et le DPC des praticiens en assurant une continuité et une meilleure intégration/coordination entre ces différentes étapes.

**Meilleures pratiques et innovations**
Une introduction de trois semaines en début de cursus au professionnalisme et à l’éthique incluant l’importance du DPC en médecine.
L’utilisation du portfolio pour la pratique réfléctive et le DP
Environmental scan in support of the teaching of lifelong learning qualities and abilities in the undergraduate medical curriculum

The expression “lifelong learning” (LLL) means “the systematic search for and acquisition, renewal, and updating of physicians’ knowledge, skills, and attitudes in order to benefit from proven biomedical and technical advances and to adapt to social and cultural changes and improve their practice throughout their careers.” The social and career changes that will take place throughout their professional lives make it important for physicians to cultivate LLL. Accordingly, teaching LLL should be at the heart of the undergraduate curriculum. According to the literature, the basic qualities and skills that must be acquired during undergraduate studies in order to foster LLL in professional practice are: an inquisitive spirit, self-direction and peer learning, information literacy, reflective practice, and a repertoire of learning skills. The skill areas and competencies required in professional practice are: learning management, working knowledge, “scanning” new information, learning based on questions raised in practice, and self-evaluation and self-improvement. To influence the development of LLL, it is particularly important for professional staff to serve as role models for students. Institutions must change in order to promote LLL in their expectations, values, and ways of encouraging their academic staff. Self-guidance can be supported by the use of portfolios, provided that this is strongly integrated into the curriculum, including tutor support. To promote self-evaluation (not most physicians’ strong suit) and assist reflection on practice, it is helpful to give students or professionals feedback and evaluation criteria or best practice standards/measures. During their studies, medical students should be introduced to all self-evaluation aids (including observation through video recording), since these are the best support for LLL. In addition, medical training should avoid being obsessed with complete coverage and instead promote in-depth learning of major concepts and processes which can then be transferred to new situations. Simulation and play are two useful tools for LLL. Information literacy is also a major part of LLL: students must acquire skills for using information and communication technologies (ITC) (skills which, according to research, still tend to be poorly developed). Interpersonal and individualistic competition between students still dominates medical training, whereas the future practice environment will require collaboration and interprofessional work. It is important to include LLL training in a context of teamwork and interprofessional collaboration.

Major themes identified
- Developing an LLL attitude and a willingness to practise it throughout the career is essential and must begin during undergraduate medical studies.
- A major factor in the development of LLL is skill in self-direction, self-evaluation, and reflective practice.
Conclusions and orientations

- Medical schools must make developing LLL in their students a central objective, which means orienting programs in this direction and making the necessary resources available (a climate of scientific enquiry, libraries, ICT, etc.).
- Research is needed into the factors and elements in training that support, promote, or impede the development and practice of LLL by practitioners.
- It is important to break down the barriers between undergraduate studies, residency, and LLL in practitioners by ensuring continuity and better integration and coordination between these steps.

Best practices and innovations

- A three-week introduction to professionalism and ethics at the beginning of the curriculum, including the importance of LLL in medicine.
- The use of portfolios for reflective practice and LLL.

Full Text

Introduction

Framing of Issue

In this report we describe the literature that identifies qualities and abilities required of graduates from medical schools to successfully undertake lifelong learning throughout their career. In addition, we report on studies that have successfully integrated lifelong learning behaviors into teaching and evaluating medical students.

By lifelong learning in professional practice (LLL)\(^\text{15}\), we mean the systematic seeking, acquisition, renewal and upgrading of knowledge, skills and attitudes required of physicians to take advantage of proven biomedical and technical advances and adjust to social and cultural changes while continuously improving their practice throughout their career. We use the term practice to embrace all professional activities physicians undertake to ensure the highest quality health care for patients, activities often referred to as clinical, research, educational and administrative components of practice.

The case for integration of LLL components into undergraduate education is based on two realities. First, physicians make career-long changes to their practice. Changes in society demographics, health challenges, biomedical advances and changes in the delivery of care continuously change the practice of medicine. A recent change in care delivery, for instance, is increasing pressures for physicians, nurses and other health professionals to deliver care in multidisciplinary teams and learn from each other in communities of practice (CoPs). Second,

\(^{15}\) We limit our scope to lifelong learning in professional practice, while fully aware that continuing learning is essential for self-fulfillment of the individual in all aspects of life.
learning skills and resources are changing. For instance, we are witnessing a shift in emphasis from provider dominated to learner centered practice-based learning and, simultaneously witnessing a shift in the vision of the physician from that of an autonomous independent learner to one who is ‘connected’ with colleagues and whose continuing learning activities are focused on performance enhancement. With the increasing presence of Generation Y in our undergraduate classes, encouraging collaboration and group learning may be easier than in the past as this generation is heavily reliant on using technologies to share information.

Candy et al make the case that the contribution of LLL to the delivery of high quality and safe health care demands that teaching LLL skills constitute the essential core of the undergraduate curriculum. As a core component, rather than ‘bolted on’ as an extra, these workers provide examples of how lifelong learning behaviours can be a unifying principle for much of the content taught in undergraduate medical education while at the same time providing students with the skills and motivation to continue learning throughout their professional careers.

This environmental scan provides evidence from a variety of sources (e.g. systematic and critical reviews, primary studies, and theoretical models) to facilitate discussion and planning for the integration of lifelong learning skills into the undergraduate medical curriculum. It seeks to find evidence in support of answers to the question: how can the undergraduate medical curriculum assist students to acquire and utilize competencies (knowledge, skills, attitudes and abilities) required for successful lifelong learning?

**Methods**

**Search Process**

Electronic search strategies were developed through an iterative process involving an experienced information specialist and the co-authors and conducted on April 25, 2008. All searches were limited to English-language records published or created within the previous 10 years (≥1998) in the form of a synthesized review (either qualitative or systematic as described within the mandate for this review).

Relevant records were identified through searches of MEDLINE (1998 – April Week 3 2008, Ovid interface) and the Cochrane Library (2008, Issue 2, Wiley interface) using MESH (Medical Subject Headings) and free-text terms including learning (adjacent to life), self-directed, and reflection.

Recognizing the limitations of traditional electronic searches locating all relevant literature within this domain of literature, searches were further supplemented using authors’ files, contacting experts (defined as individuals with established publishing records and well-known leaders/decision-makers within the Discipline) for unpublished or non-indexed literature (e.g. technical reports, white papers, etc.), and scanning reference lists of relevant sources.

One reviewer screened all titles and abstracts resulting from the searches for inclusion. These potentially relevant abstracts were sent to a second reviewer for more granular screening. Inclusion criteria dictated that review articles and reports of individual studies examining evidence pertaining to teaching and learning strategies (e.g. self-directed learning, how physicians learn, self-assessment, reflective practice, and the learning context) within undergraduate and graduate education are included. More specifically, records that examined
practice-based learning methods that promote lifelong learning were included. All records determined to be potentially relevant at title and abstract screening were then retrieved in full-text and examined again through consensus. Disagreements were resolved using other co-authors until consensus was achieved.

**Analysis and synthesis**

Findings are summarized narratively giving more weight to systematic and critical reviews of evidence on effectiveness of intervention, but not excluding traditional, theoretical narrative reviews and reports of individual studies.

We found no inclusive systematic reviews examining the effectiveness or efficacy of education interventions in the undergraduate curriculum. We have chosen to take a broader view of evidence than traditionally accepted. That is, in addition to reports of research studies, we include observational reports of the experiences of teachers and faculty and theoretical literature and reports of studies of what physicians do for continuous practice improvement. The authors note that the main purpose of the environmental scan is to facilitate discussion and planning for the integration of lifelong learning skills into the undergraduate medical curriculum. While studies have shown the impact of undergraduate curricula on some physician behaviors later on in practice such as drug prescribing, we are unable to find equivalent studies that report on the impact lifelong learning skills acquired in medical school might have on physician practices. It is possible to evaluate LLL competencies at graduation, but linking these to performance twenty years in practice is not only difficult but methodologically problematic due to confounding experiences that may influence the deployment of lifelong learning skills later in life.

**Findings**

a) Thirty three from a total of 100 plus publications were selected as relevant for review, including 8 systematic and 12 critical reviews of the literature.

b) Key Issues

The authors approached the environmental scan by identifying five foundational qualities and abilities which the literature recommends should be taught and evaluated in the undergraduate medical curriculum to enable graduates to be successful lifelong learners. These qualities and abilities, shown in Table 1, are the key issues the authors learned from the environmental scan.
Table 1: Foundational qualities & abilities in undergraduate curricula that inspire lifelong learning in professional practice.

1. **An inquiring mind:** a love of learning; a sense of curiosity and question asking; a critical spirit; comprehension monitoring and self-evaluation.

2. **Self-directedness and peer-assisted learning:** the ability and responsibility for evaluating one's own performance; implementing one’s own education; and mentoring of others.

3. **Information literacy:** ability to frame researchable questions; knowledge of major information sources in a field; and locate, evaluate and use information.

4. **Reflective practice:** ability to construct learning from experience. It is, according to Candy et al (1994), “… the single most identifiable feature of the lifelong learner”.

5. **A repertoire of learning skills:** learning how to learn and strategies for learning; knowledge of one's own strengths and weaknesses (critical self-assessment); and an understanding of the differences between surface and deep learning.

Graduates, we contend, continue to build on LLL foundational qualities and abilities during post graduate training and later on in practice. The LLL competencies expected of physicians in practice, clustered in five domains by a Royal College CanMEDS working group, are shown in Table 2.

Table 2: Domains of competencies and abilities required in Professional Practice (unpublished)

1. **Management of Learning:** qualities & abilities needed to create a personal knowledge management system. How to set up a LLL workstation, record learning projects and be informed of proven practice innovations.

2. **Know your practice:** qualities & abilities needed to create a profile of practice and professional responsibilities and implement relevant learning strategies.

3. **Scanning Activities:** qualities & abilities needed to keep up to date with evidence-informed innovations in practice.

4. **Learning from questions in practice:** qualities & abilities needed to reflect on practice and respond to learning needs triggered by practice and educational activities.

5. **Practice assessment and enhancement:** qualities & abilities needed to assess current practice and professional needs, review performance of individual and group practice and integrate and evaluate practice enhancements.

c) Literature in support of foundational qualities & abilities that promote lifelong learning
1. An inquiring mind: a love of learning; a sense of curiosity and question asking; a critical spirit; comprehension monitoring and self-evaluation.

a) Autonomous lifelong learner

Research reviewed by Derrick establishes a definitive understanding of the specific characteristics associated with persistence, resourcefulness and initiative in autonomous learning, coupled with self efficacy beliefs that facilitate learners who can endure and sustain their learning in any setting or medium (3). Studies (mainly from higher education) address the issue of how to foster the desire for sustained and enduring learning. This research is predicated on the belief that autonomous learning behaviors can be identified and quantified through the development of items that assess the relative capacity of intentions to learn [i.e., conation].

Wallach et al describe an innovative three-week course to introduce new medical students to the importance of lifelong learning, ethics and professionalism in medicine (4). Students are introduced to basic physical examination techniques, searching the medical literature and evidence-based medicine, and study and computer skills.

b) Education Climate

Candy et al in an extensive review of undergraduate programs in Australia in search of evidence of learning lifelong learning skills, emphasize that the curriculum must not only provide students with the competencies for lifelong learning but should encourage them to show willingness to execute learning throughout their career (2). Role modeling by staff is particularly important in developing lifelong learners. As these workers state, “It is all very well to stress the value of critical thinking, deep learning, self-assessment and self-directed learning. But it will never be central to their purposes unless there is a cultural shift in what institutions expect, value and reward in their academic staff.” Roff & McAleer report on the development and use of the Dundee Ready Education Environment Measure (DREEM) Inventory, a valid and reliable measure of the educational climate of a school (5). Perhaps one reason, the authors state, why the study of learning environments been of increasing interest in recent years is the growing diversity of the student population.

2. Self-directedness and peer-assisted learning: the ability and responsibility for evaluating ones own performance; implementing one’s own education; and mentoring of others.

a) Self-directed and peer-assisted learning

According to Candy et al, courses that enhance lifelong learning must make use of peer-assisted and self-directed learning (2). These workers indicate that there is evidence to show that there are significant gains in learning outcomes to be derived from increasing learner self-direction. Mann and Gelula summarize the literature on self-directed learning indicating its consistence with a number of perspectives on learning, including social learning, humanist, cognitive and constructive approaches (6). A number of activities can be used to support the self-directed learner, including learning contracts, learning advisers and lateral mentoring (2;7).
b) Portfolios

Driessen and colleagues report on the seemingly effective use of portfolios to stimulate reflection and support self-directed learning in first year medical students (8). Portfolios are used with increasing frequency in undergraduate and postgraduate medical education for a variety of purposes. Carracio and Englander report on the use of portfolios to assess residents (9). The move towards competence-based medical education has created a potential application for portfolios but mixed reports of their success are emerging. Driessen et al conclude “for portfolios to be effective in supporting and assessing competence development, robust integration into the curriculum and tutor support are essential (10).

c) Critical self-assessment

Core activities of lifelong learning are linked to abilities of physicians to assess their own learning needs and choose educational activities that meet these needs. McKinstry et al were unable to find evidence in a (BEME Guide # 10) systematic review to provide a solid evidence base for effectiveness of self-assessment (11). There was evidence that practical skills may be better self-assessed than knowledge and that accuracy of self-assessment may be enhanced by increasing the learner’s awareness of the standard to be achieved. There was some evidence that the accuracy of self-assessment can be enhanced by feedback, particularly video and verbal, and by providing explicit assessment criteria and benchmarking guidance. There was also some evidence that the least competent are also the least able to self-assess accurately.

In an earlier systematic review of the literature, Davis et al found a preponderance of evidence suggesting that physicians have a limited ability to accurately self-assess (12). These workers recommend that processes currently used to undertake professional development and evaluate competence need to focus more on external aids such as practice reviews, chart audits, simulators and multi-source feedback. The medical student should be introduced to these and other aids to self-assessment in medical school (see ‘Assessment’ below). Dornan et al, conclude from a systematic review that early exposure to community settings help students to develop self reflection and appraisal skills amongst other qualities (13).

3. Information literacy: ability to frame researchable questions; knowledge of major information sources in a field; and locate, evaluate and use information.

a) Raising questions in practice

Questions arise when an individual recognizes uncertainty. The ability to recognize uncertainty (self-assess) is fundamental for practice and leads to questions, that depending on context, can be resolved immediately, or recorded and resolved at a later point in time. Ability to self-assess and the formulation of questions themselves (e.g. frequency and/or answerability) are considered as serious barriers to the practice of safe, evidence-based practice (14;15). In their publication, Eva and Regehr recommend an innovative approach to how self-assessment "skills" are conceptualized, taught, and evaluated in medical school and beyond (14).

b) Information literacy skills

Valcke and De Wever report on a series of publications on the role of information and communication technologies (ICT) in medical education (16). Including ICT in the curriculum
provides students with opportunities to get acquainted with technologies they need in their professional lives, which are necessary to keep up with the rapid growth of medical knowledge. A national study in the UK revealed that IT skills of medical students are not well developed. Respondents were in favor of a national IT curriculum with a strong focus on health informatics. Researchers tried to look for explanations for the deficiency in student skills. They point at the critique of IT training level of teaching staff.

Robinson et al report on a literature analysis carried out to provide guidance on the skills and competences needed for library and knowledge staff in NH. (17). A variety of competences are identified, and structured in a model incorporating both training skills and general professional competencies. A 'blended learning' approach, involving e-learning together with other methods, is identified as the most appropriate way for skills to be acquired. It is recommended that a similar course be introduced into the undergraduate curriculum.

c) Evidence-based Practice skills

Two reviews address the teaching and evaluating of evidence-based practice in postgraduate courses (18;19). The aim of the paper by Coomarasamy et al is to systematically review studies that assessed the effectiveness of evidence based practice (EBP) teaching to improve knowledge, skills, attitudes and behavior of postgraduate healthcare workers, and to describe instruments available to evaluate EBP teaching (18). Small improvements in knowledge, skills, attitudes or behavior were noted when measured alone. A large improvement in skills and knowledge in EBP is noted when measured together in a total test score. Very few studies used validated measures tests. The messages in these reviews apply equally to the teaching of evidence-based practice to medical students.

Shaneyfelt et al report on a systematic review of studies involving 104 unique instruments (19). The instruments were most commonly administered to medical students and postgraduate trainees and evaluated EBP skills. Among EBP skills, acquiring evidence and appraising evidence were most commonly evaluated, but newer instruments evaluated asking answerable questions and applying evidence to individual patients. Most behavior instruments measured the performance of EBP steps in practice but newer instruments documented the performance of evidence-based clinical maneuvers or patient-level outcomes. Instruments with reasonable validity are available for evaluating some domains of EBP and may be targeted to different evaluation needs.

4. Reflective practice: ability to construct learning from experience. It is, according to Candy et al, “…. the single most identifiable feature of the lifelong learner” (2).

a) Teaching ability to reflect

A common sense view of reflection is that it is a mental process that is couched in a framework of purpose or outcome that encourages critique and evaluation (20).

Mann et al, systematically reviewing the evidence-based literature, proclaims that evidence supports the belief that professionals reflect in different ways and to different degrees, and that
there may be better learning from those experiences incorporating reflection (21). Research supports the premise that ability to reflect develops over time, with practice, and in the presence of stimuli such as interaction with colleagues. Health professionals perceive their practice behaviors as most closely aligned with the three stages of Schön’s reflective cycle (22). According to Candy, undergraduate courses specifically based on reflective practice are the best possible foundation for lifelong learning (2).

b) Aids to reflection
Moon, in a series of publications describes experiences and reviews literature on the use of learning journals, learning portfolios and diaries to assist self-directed learners to write reflectively (20;23;24). Dornan et al conclude from a systematic review of the outcomes that early exposure to community settings help students to develop self reflection and appraisal skills amongst other qualities (13).

c) Evaluating ability to reflect
Adams et al describe two preliminary case studies, one in a veterinary medical education context and the other within a human medical education framework, as examples of approaches to assessing a student's ability for "reflection" (25). The authors indicate that ongoing scholarly approaches to teaching, learning, and evaluating reflection and self-awareness are needed.

5. A repertoire of learning skills: learn and strategies for learning; learning how to; assessment of one's own strengths, weaknesses and preferred learning style; and an understanding of the differences between surface and deep learning.

a) Learning to learn
Candy et al describe curricula at some universities where lifelong learning skills compete with teaching of content for time and resources (2). “What is most needed is to move away from the obsession with coverage. It is impossible to continue cramming material into four year degree courses without sacrificing something else”. Interviewing students they found that those who focused on deep level outcomes could deduce principles to be applied where necessary and felt much more confident that they would develop into lifelong learners than their counterparts who relied on rote learning to pass examines.

b) Learning to learn programs
Candy et al describe the resources needed to mount learning to learn programs, including the need for learning advisors(2). Such programs overcome cultural and language barriers as well as basic needs of inexperienced learners. There are many different ways in which students can learn to learn and which will enhance their undergraduate experience. One of the most effective involves self observation and assessment of personal learning by using video recordings, observation sheets and computer analysis. These authors noted that students at Monash University, for instance make video recordings of consultations to help them understand why and how they develop communication and interpersonal skills.
c) Deep and surface learning

Marton et al, describes two approaches to learning, namely **surface and deep learning**, which have important effects on outcomes of lifelong learners (26). Learners may adopt a surface approach to memorize and later reproduce information but their ability to apply it in practice is limited. Moon observe that learners who adopt a deep approach to learning use the process of reflection to ‘make sense’ of what they are learning by relating it to their current knowledge and experience and those of their peers (20).

d) Mentoring

Sambunjak et al undertaken a systematic review of the evidence of the relationship between mentorship and career choice, career progression, and scholarly productivity (27). The review of 39 studies reported in 42 articles and revealed an absence of experimental research about mentoring, but it does outline current knowledge about mentorship. The available evidence showed that fewer than 50% of medical students and in some fields fewer than 20% of faculty members had a mentor. There was a perception that women had more difficulty finding mentors than their male colleagues. Mentorship was reported to be an important influence on personal development and productivity, although the available evidence is not strong.

Buddeberg-Fischer and Katja-Daniela, in a systematic review, also describe a few publications on mentoring of medical students and its effect on lifelong learning skills (28). Although there are some encouraging results and presumably the effect of mentoring is to be deemed highly promising, there are practical problems such as the commitment of faculty and time allocation.

e) Use of games and simulations

Rieber provides a brief overview of the history, research, and theory related to play (29). Research from education, psychology, and anthropology suggests that play is a powerful mediator for lifelong learning, and the design of hybrid learning environments is suggested based on the constructivist concept of micro-worlds and supported with games and simulations. Simulations are now in widespread use in medical education. Outcomes research on the use and effectiveness of simulation technology in medical education is scattered, inconsistent, and varies widely in methodological rigor and substantive focus. Issenberg et al reviewed and synthesize existing evidence in educational science that addresses the question, “What are the features and uses of high-fidelity medical simulations that lead to most effective learning?”(30) Relative to lifelong learning skills, these workers report that 51 (47%) of journal articles reported that educational feedback is the most important feature of simulation-based medical education.

f) Effective learning environments

Bransford et al describe four requirements for effective learning environments: **learner-centered** learning (31). That is, taking into consideration the knowledge, skills, attitudes, and beliefs that learners bring to an educational setting. Fostering **deep learning** to promote the understanding and transfer to new situations as well as meta-cognitive skills such as an awareness of when new information makes sense and asking for clarification when it does not - the essence of **knowledge centered** learning. Promoting reflection on subjective and objective assessments of experiences encourages **assessment centered** learning, the third component of effective learning environments.
described by Bransford. Bransford’s fourth component of effective learning environments, namely *community centered* learning is encouraged through peer-assisted programs and the fostering of communities of practice and cooperative learning (32;33).

**g) Assessment**

Ramsden argues that far too many academics regard assessment as something distinct from teaching and learning community (34). This may contribute to the anxiety that performance reviews provoke in physicians, although continuous assessment of individual performance of doctors is crucial for life-long learning and quality of care.

Candy describes the planning of assessment to encourage learning that shows how students can evaluate their own strengths and weaknesses in light of the given task (2). Integrating self-evaluation strategies into each assessment item helps students learn more effectively and efficiently by giving them more control over their learning experiences and outcomes.

Shumway and Harden express the view that assessment is an intrinsic component of outcome-based education, student motivation, and continuous quality improvement (35). Using Miller’s pyramid of learning, these workers examine a variety of learning assessment instruments. The guide provides a short overview of different instruments used in assessment such as written assessments, exams; clinical or practical assessments, observations, portfolios/records of performance, and peer and self-assessment. Examples of each instrument type are provided in the article alongside a description, identification of strengths and weaknesses of each method, impact on learning and the practicality of the method including cost. The authors examine these assessment instruments with regard to their appropriateness as tools to measure different learning outcomes. They describe 12 learning outcomes from these instruments in detail. In conclusion the authors suggest that educators and learners move to more quantitative assessment methods such as triangulation and knowledge application.

**h) Practice and performance assessment**

Should medical students be taught Quality Improvement or should this be left to residency education? In a systematic review of 39 studies, Boonyasai et al. could only find one study from an undergraduate medical curriculum (36).

**i) Inter-professional education and cooperative or collaboration in learning**

By inter-professional learning (IPL) we mean learning arising from interaction between members (or students) of two or more professions. The definition comes from the work of Hammick et al who carried out a systematic review and showed that IPE is generally well received, enabling knowledge and skills necessary for collaborative working to be learnt (37). It is less able to positively influence attitudes towards others in the service delivery team. Staff development is a key influence on the effectiveness of IPE and education that reflects the authenticity of practice is more effective.

The literature on cooperative or collaborative learning is more convincing. Findings reported by Johnson et al from a meta-analysis of more than 100 studies in general education indicate strong evidence for the superiority of cooperative learning in promoting achievement and productivity (38). Cooperative learning is the instructional use of small groups in which students work
together to maximize their own and each other's learning. In a more recent publication, Johnson and Johnson define cooperative learning and differentiate it from pseudo groups and traditional classroom learning groups (33). Currently, interpersonal competition and individualistic work are commonly found in undergraduate programs, yet these studies suggest that future medical students will have experienced cooperative learning in high school.

4. Implications

a) Significance of findings for future medical education

The most insightful literature on acquisition of lifelong learning skills in undergraduate studies and how they can be explicitly taught and evaluated was found in a report by Candy et al (2). Although not a recent report, the recommendations by these authors are as relevant today as when they were published in 1994. Just as we find it is not necessarily the adoption of the latest innovations but attention to well-established practices that lead to improved health care practices, so to in medical education. It is attention to specific goals and objectives and providing leadership that is likely to result in the acquisition of lifelong learning skills in medical school. Candy et al draw the following conclusions from their findings:

- Access to, and critical use of information and communication technologies is vital for the enhancement of lifelong learning skills.
- Teaching methods that encourage graduates to become lifelong learners: make use of self-directed and peer-assisted learning and problem-based learning; promote critical self-assessment and reflective practice; and offer students and open learning and alternative modes of delivery.
- Assessment of student needs should be viewed as an opportunity ‘to teach’ as well as to ‘test’ and should increase dependence on self- and peer assessment such as that encountered in practice.
- The enhancement and facilitation of learning should be viewed as the central purpose of the university and student support services such as library, learning centers and computer-assisted education centers should be regarded as full partners in the educational process.
- The aim of the curriculum is to develop the capacity as well as provide graduates with enabling competencies for lifelong learning. The most vital determinant is the climate of intellectual inquiry in the institution and the single most important factor is the lively curiosity of the teachers, passion for their subject and a predisposition towards being continuing lifelong learners themselves.
- There must be congruence between institutional rhetoric and the reality and this applies not only to student experiences but also to the valuing and rewarding of academic staff for their attempts to emphasize and develop lifelong learning competence (2).

b) Future challenges

- Although there is some evidence that emphasizing life-long learning skills at the undergraduate level influences the quality of the practitioner or their approaches to learning...
in practice, the evidence is quite scant (39). This will be a barrier for curriculum planners to move forward with extensive curriculum reform that emphasizes life-long learning skills because many will question the need to do this. Are medical schools prepared to invest in this kind of reform? When new medical schools are created in Canada, can we encourage the incorporation of a life-long learning curriculum that is contiguous between undergraduate, postgraduate and professional practice?

- Despite the challenges in examining the relationship between learning about learning as an undergraduate and its relationship with learning in practice, we need to begin to systematically create a research agenda that examines the linkages between learning about learning as an undergraduate and its relative impact on learning in practice and practitioner competencies. There is also a dearth of educational theory that is informing this research agenda; this needs to be addressed.

- Currently undergraduate, postgraduate and continuing education curriculum planners are siloed internally in most medical schools. These educators do not routinely sit down to discuss or plan the medical education curriculum across the lifespan. It seems clear that new organizational structures for curriculum planning will be necessary to map out a developmental approach to the learning methods that will foster life-long learning for medical students, residents and practitioners.

Annotated Bibliography


   The most insightful report on the need for acquisition of lifelong learning skills in undergraduate studies and how they can be explicitly taught and evaluated was found in a report by Candy et al on a study commissioned by the Higher Education Council of Australia. This is a thorough qualitative study to “identify where and in what ways the content, structure, teaching modes and assessment procedures of undergraduate degrees, and the activities of student support services, are designed to lead to the formation of attributes which both enable and encourage graduates to become lifelong learners”. The recommendations are based on analysis of interviews with staff and administrators and detailed reviews of undergraduate programs in a wide range of disciplines, including undergraduate medical programs. This report offers specific recommendations to institutions committed to the development of lifelong learning skills in its graduates.


   This is a review article that references studies from higher education reviewed that address the issue of how to foster the desire for sustained and enduring learning in (higher education) students. Derrick uses the literature to establish a definitive understanding of the specific characteristics associated with persistence, resourcefulness and initiative in autonomous learning, coupled with self efficacy beliefs that facilitate learners who can endure and sustain
their learning in any setting or medium. Derrick makes the case that autonomous learning behaviors can be identified and quantified through the development of items that assess the relative capacity of intentions to learn.

   The authors report on an innovative three-week course to introduce new medical students to the importance of lifelong learning, ethics and professionalism in medicine. Students are introduced to basic physical examination techniques, searching the medical literature and evidence-based medicine, and study and computer skills.

   In a descriptive article, the authors describe the elements of educational climate and report on the development and application of the Dundee Ready Education Environment Measure (DREEM) Inventory, a valid and reliable measure of the educational climate of a medical school.

   In a review chapter in this text, Mann and Gelula summarize the literature on self-directed learning, indicating its consistence with a number of perspectives on learning, including social learning, humanist, cognitive and constructive approaches.

   This is a report on a practical interactive workshop to teach the skills of lateral mentoring.

   In this review article, Driessen and colleagues report on the seemingly effective use of portfolios to stimulate reflection and support self-directed learning in first year medical students.

   The authors searched the literature and reviewed most articles relating to portfolio assessment in medicine. In addition, they reviewed articles that addressed standard tools currently in use for resident performance assessment. From lessons learned through this review, the authors developed a Web-based evaluation portfolio for residency training.
In this review article, Driessen et al (2003) conclude “for portfolios to be effective in supporting and assessing competence development, robust integration into the curriculum and tutor support are essential”.

10. McKinstry B, et al. A systematic review of the literature on the effectiveness of self-assessment in clinical education. BEME Guide No 10. Available from http://www.bemecollaboration.org/beme/pages/reviews/mckinstry.html These authors were unable to find evidence in a systematic review of the literature between 1990 and 2005 to support effectiveness of self-assessment. There was evidence that practical skills may be better self-assessed than knowledge and that accuracy of self-assessment may be enhanced by increasing the learner’s awareness of the standard to be achieved. There was some evidence that the accuracy of self-assessment can be enhanced by feedback, particularly video and verbal, and by providing explicit assessment criteria and benchmarking guidance. There was also some evidence that the least competent are also the least able to self-assess accurately.

In a systematic review of the literature, Davis et al found a preponderance of evidence suggesting that physicians have a limited ability to accurately self-assess. The processes currently used to undertake professional development and evaluate competence need to focus more on external aids such as practice reviews, chart audits, simulators and multi-source feedback.


This paper reports a study that examines the validity of a new conceptualization of self-assessment in practice and evaluates a series of measures for capturing self-assessment ability as defined by this new conceptualization. Using a computer-delivered free-response test, the authors generated three measures intended to capture situational awareness: The results provide evidence in favor of a new framework that should reorient the way in which self-assessment "skills" are conceptualized, taught, and evaluated in medical school and beyond.
14. Ely JW, Osheroff JA, Chambliss ML, Ebell MH, Rosenbaum ME. Answering physicians' clinical questions: obstacles and potential solutions. J Am Med Inform Assoc. 2005 Mar-Apr; 12(2):217-24. This paper describes a study in which questions raised by physicians in practice were qualitatively analysed. It concludes that physicians do not seek answers to many of their questions, often suspecting a lack of usable information. When they do seek answers, they often cannot find the information they need. Clinical resource developers could use the recommendations made by practicing physicians to provide resources that are more useful for answering clinical questions.

15. Valcke M, Bram De Wever. Information and communication technologies in higher education: evidence-based practices in medical education. Med Teach. 2006;28(1): 40–48. In this review article, the authors report on a series of publications on the role of information and communication technologies (ICT) in medical education. Including ICT in the curriculum provides students with opportunities to get acquainted with technologies they need in their professional lives, which are necessary to keep up with the rapid growth of medical knowledge. A national study in the UK, referenced in this paper revealed that IT skills of medical students are not well developed. Respondents were in favor of a national IT curriculum with a strong focus on health informatics. Researchers tried to look for explanations for the deficiency in student skills. They point at the critique of IT training level of teaching staff.

16. Robinson L, Hilger-Ellis J, Osborne L, Rowlands J, Smith JM, Weist A, Whetherly J, et al. Healthcare librarians and learner support: a review of competences and methods. [Review] [42 refs] Health Information & Libraries Journal. 2005 Dec;22 Suppl 2:42-50.. The authors report on a literature analysis carried out to provide guidance on the skills and competences needed for library and knowledge staff in NHS. A variety of competences are identified and structured in a model incorporating both training skills and general professional competencies. A 'blended learning' approach, involving e-learning together with other methods, is identified as the most appropriate way for skills to be acquired. It is recommended that a similar course be introduced into the undergraduate curriculum.

17. Coomarasamy A, Khan KS. What is the evidence that postgraduate teaching in evidence based medicine changes anything? A systematic review. BMJ. 2004, 329:1017. The authors systematically review studies that assessed the effectiveness of evidence based practice (EBP) teaching to improve knowledge, skills, attitudes and behavior of postgraduate healthcare workers, and to describe instruments available to evaluate EBP teaching. Small improvements in knowledge, skills, attitudes or behavior are noted when measured alone. A large improvement in skills and knowledge in EBP is noted when measured together in a total test score. Very few studies used validated measures tests.

18. Shaneyfelt T, Baum KD, Bell D, Feldstein D, Houston TK, Kaatz S, Whelan C, Green M: Instruments for evaluating education in evidence-based practice: a systematic review. JAMA. 2006; 296: 1116-1127. These authors reviewed reports representing 104 unique instruments. The instruments were most commonly administered to medical students and postgraduate trainees and evaluated EBP skills. Among EBP skills, acquiring evidence and appraising evidence were most
commonly evaluated, but newer instruments evaluated asking answerable questions and applying evidence to individual patients. Most behavior instruments measured the performance of EBP steps in practice but newer instruments documented the performance of evidence-based clinical maneuvers or patient-level outcomes. Instruments with reasonable validity are available for evaluating some domains of EBP and may be targeted to different evaluation needs.


This is a thoroughly referenced text on the topic of reflection as it relates to learning and professional development. Moon provides the theory as well as practical applications for teaching and learning. The text does not focus on undergraduate curricula, but is equally applicable to this level of medical education.


These authors systematically reviewed the literature between 1995 – 2005, and selected 29 studies. They found evidence to support the belief that professionals reflect in different ways and to different degrees, and that there may be better learning from those experiences incorporating reflection. Research supports the premise that ability to reflect develops over time, with practice, and in the presence of stimuli such as interaction with colleagues.


This is the introduction chapters in a much cited text that provides a useful description of how professionals reflect on practice. There are no reports of studies to test hypotheses.


This well referenced textbook provides a practical guide to understanding and using reflective and experiential learning.


This texts looks at the role of journals in promoting learning and how they may be used in academic and personal development. It contains a comprehensive bibliography.


Adams et al describe two preliminary case studies, one in a veterinary medical education context and the other within a human medical education framework, as examples of approaches to assessing a student's ability for "reflection." The authors indicate that ongoing scholarly approaches to teaching, learning, and evaluating reflection and self-awareness are needed.

This textbook describes two approaches to learning, namely surface and deep learning, which have important effects on outcomes of lifelong learners. Learners may adopt a surface approach to memorize and later reproduce information but their ability to apply it in practice is limited. In contrast, learners who adopt a deep approach to learning use the process of reflection to ‘make sense’ of what they are learning by relating it to their current knowledge and experience and those of their peers.

To the authors’ knowledge, this is the first systematic review of the evidence of the relationship between mentorship and career choice, career progression, and scholarly productivity. The review of 39 studies reported in 42 articles revealed an absence of experimental research about mentoring, but it does outline current knowledge about mentorship. The available evidence showed that fewer than 50% of medical students and in some fields fewer than 20% of faculty members had a mentor. There was a perception that women had more difficulty finding mentors than their colleagues who were men. Mentorship was reported to be an important influence on personal development, career guidance, career choice, and productivity, although the available evidence is not strong.

In a systematic review, these authors also describe a few publications on mentoring of medical students and its effect on lifelong learning skills. Although there are some encouraging results and presumably the effect of mentoring is to be deemed highly promising, there are practical problems such as the commitment of faculty and time allocation.

Rieber provides a brief overview of the history, research, and theory related to play. Research from education, psychology, and anthropology suggests that play is a powerful mediator for lifelong learning, and the design of hybrid learning environments is suggested based on the constructivist concept of micro-worlds and supported with games and simulations.

In a BEME systematic review, Issenberg et al reviewed and synthesize existing evidence in educational science that addresses the question, “What are the features and uses of high-fidelity medical simulations that lead to most effective learning?” Relative to lifelong learning skills, these workers report that 51 (47%) of journal articles reported that educational feedback is the most important feature of simulation-based medical education.

This is a summary of a lengthy report that covers a large field of research into How People Learn. It focuses on the findings and messages that are relevant to classroom practice. The authors describe four requirements for effective learning environments: learner-centered learning. That is, taking into consideration the knowledge, skills, attitudes, and beliefs that learners bring to an educational setting. Fostering deep learning to promote the understanding and transfer to new situations as well as meta-cognitive skills such as an awareness of when new information makes sense and asking for clarification when it does not - the essence of knowledge centered learning. Promoting reflection on subjective and objective assessments of experiences encourages assessment centered learning, the third component of effective learning environments described by Bransford. Bransford’s fourth component of effective learning environments, namely community centered learning is encouraged through peer-assisted programs and the fostering of communities of practice and cooperative learning.


This text reports on the behaviors and activities of a group of workers with a shared practice that provides support for a theory of informal social learning.


The authors review the literature and also provide practical definitions: They differentiate cooperative learning groups from pseudo groups and traditional classroom learning groups. There are three types of cooperative learning: formal cooperative learning, informal cooperative learning, and cooperative base groups. The basic elements that make cooperation work are positive interdependence, individual accountability, promoting interaction, appropriate use of social skills, and periodic processing of how to improve the effectiveness of the group.


Ramsden argues that far too many academics regard assessment as something distinct from teaching and learning community. This may contribute to the anxiety that performance reviews provoke in physicians, although continuous assessment of individual performance of doctors is crucial for life-long learning and quality of care.


In a review paper the authors express the view that assessment is an intrinsic component of outcome based education, student motivation, and continuous quality improvement. Using Miller’s pyramid of learning, these workers examine a variety of learning assessment instruments. The guide provides a short overview of different instruments used in assessment such as written assessments, exams; clinical or practical assessments, observations,
portfolios/records of performance, and peer and self-assessment. Examples of each instrument type are provided in the article alongside a description, identification of strengths and weaknesses of each method, impact on learning and the practicality of the method including cost. The authors examine these assessment instruments with regard to their appropriateness as tools to measure different learning outcomes. They describe 12 learning outcomes from these instruments. In conclusion the authors suggest that educators and learners move to more quantitative assessment methods such as triangulation and knowledge application.


The authors perform a systematic review of the effectiveness of published QI curricula for clinicians and to determine whether teaching methods influence the effectiveness of such curricula. Most published QI curricula apply sound adult learning principles and demonstrate improvement in learners’ knowledge or confidence to perform QI. In a systematic review of 39 studies, Boonyasai et al could only find one study from an undergraduate medical curriculum.


By inter-professional learning (IPL) these authors mean learning arising from interaction between members (or students) of two or more professions. They carried out a systematic review of 21 studies between 1981 and 2005 and showed that IPE is generally well received, enabling knowledge and skills necessary for collaborative working to be learnt. It is less able to positively influence attitudes towards others in the service delivery team. Staff development is a key influence on the effectiveness of IPE and education that reflects the authenticity of practice is more effective.


The findings reported by Johnson et al as long ago as 1981 from a meta-analysis of >100 studies in general education indicate strong evidence for the superiority of cooperative learning in promoting achievement and productivity. Cooperative learning is the instructional use of small groups in which students work together to maximize their own and each other's learning.

This is a study comparing the outcomes of a community oriented problem based learning curriculum at Sherbrooke University compared to three traditional medical schools in Quebec. Using provincial health database for the first 4-7 years of practice, the problem based graduates showed a statistically significant improvement in mammography screening rates, more attention to continuity of care and differences in disease specific prescribing rates compared to graduates of traditional medical schools. Preventative care, continuity of care and indicators of diagnostic performance in practice may be positively affected by emphasis on a community oriented problem based learning curriculum during medical school.

References


Robertson, David, PhD

*Literature Review: Patient Centredness as a theme in medical education*

**Summary**

Fifty years of criticism about the public’s dissatisfaction with the human, social and psychological factors in medical education and practice has galvanized reforms to focus on patient centredness. Often ill defined and viewed as a health care buzz word, patient centredness incorporates five elements. (i) patients’ values and priorities; (ii) patients’ experiences, (iii) patients’ social circumstances, (iv) communication and the doctor-patient relationship and (v) integration of the above elements with biomedical education and practice.

The literature identifies a number of major constraints in creating and implementing an authentic patient centred curriculum. Students are aware of the issue of patient needs, but it is often not emphasized as a curriculum focus. Both in education and in practice time constraints, financial incentives, competing priorities often leads to the view that patient centredness is a naive idea. Also related skills and knowledge are perceived as soft, unscientific and diverse and thus best left to individual doctor’s common sense.

The literature indicates that experiential learning coupled with theoretical concepts enhances patient-centredness. Individual feedback and oral standardized clinical evaluations were found to be more relevant to this subject matter and that role models were important regarding patient centred skills.

**Major Themes:**
A curriculum emphasis on patient satisfaction is central to a patient centred orientation. Medical schools should address factors that inhibit patient centred practice and provide more exciting teaching and evaluation of patient-centred skills. Medical schools should also reinforce patient centred values throughout the curriculum and ensure that experiential opportunities are provided. Exams should be designed to be relevant to patient centred learning approaches and objectives.

**Best Practices and Innovations:**
Education of future physicians regarding patient centredness should incorporate the 5 elements of patient centred medicine into the curriculum, emphasize experiential learning, appropriate examinations and opportunities for students to emulate role models.
Introduction
Since the 1950s, critics have expressed growing dissatisfaction with medical practice and medical education. They have charged that medicine is paternalistic and biologically reductionistic, and that doctors have largely turned their backs on patients as people with characteristics such as values, wishes and particular social and psychological circumstances. Many critics have asserted that this disregard for the patient as a person undermines effective health care. Over the past four decades, the critics’ voices have become louder and have found resonance with the public and governments, so that, particularly during the last twenty years, many medical schools in North America and Europe have attempted to respond with curricular reforms that emphasize ethical, psychological and social aspects of health and illness. Often, these reforms have proceeded under the banner of ‘patient-centred’ medicine.

‘Patient-centred’, however, is also a contemporary health care buzzwords, often ill-defined. It has been used in earnest defences of patient rights, enjoinders to doctors to express compassion for those they tend, and the marketing of private hospitals. ‘Patient-centred’ has also been said to be empty, even offensive, rhetoric: what, if not patient-centred, has medicine always been, after all?

It is important, therefore, to define patient-centred medicine. For the purposes of this review, it is an approach to practice that attends to the following five elements:

1. Patients’ values and priorities;
2. Patients’ psychological experience;
3. Patients’ social circumstances;
4. Communication and the doctor-patient relationship; and
5. Integration of the above elements with biomedicine.

Methods
A growing body exists of both theoretical work and survey research on patient-centred medicine and medical education. A literature review was conducted by:

a) Searching Medline with the key words ‘patient-centred’ and ‘medical education’ or ‘medicine’

b) Reviewing bibliographies for studies of patient-centred medicine and medical education, and for quantitative and qualitative research about medical students learning about values and ethics, communication skills, patients’ priorities, and patients’ experiences of illness and health care.
Findings

28 papers, some discursive and some empirical were identified as having primary relevance to patient-centred medical education. Empirical studies were prioritized in the following report on findings.

Main headlines

1. Patient dissatisfaction has been a prime motivator for movements towards patient-centre medicine. Accordingly, one of the most consistent themes running through the literature on patient-centred medicine is that doctors should be concerned with whether patients’ priorities and their psychological needs have been satisfied. Students surveyed, meanwhile, were almost universally aware of the importance of this issue. It is often not, however, highlighted as a curricular focus.

2. The literature on medical education, particularly that which covers the informal curriculum, identifies many obstacles to a patient-centred approach to medical practice. These obstacles include time constraints, financial incentives, economic cutbacks in the health care sector, harsh training conditions, and inadequate links between different institutions involved in caring for a given patient. All of these issues arose in empirical research with students, many of whom worried that patient-centred medicine was a naïve ideal that could not stand up to these countervailing factors.

3. Patient-centred skills and knowledge have long been identified as ‘soft’ and ‘not core’ in empirical studies of medical education. Data also suggest that this may in part be due to a lack of rigour in the presentation of these skills and knowledge in curricula. This lack of rigour appears to have two aspects. First, curricula often do not present research on the effectiveness of attending to non-biomedical aspects of health and illness. Evidence-based medicine is therefore generally not presented as extending beyond biomedicine. Second, as some students have said in empirical studies, standards set regarding non-biomedical skills and knowledge are relatively undemanding compared to those set for biomedical competencies. These two factors would logically tend to lead students to view non-biomedical issues as occupying a second tier of relevance.

4. There is a longstanding controversy over whether values can be taught in a curriculum for adults, such as medical students. Some empirical evidence suggests that emphasis on such themes can help reinforce and nurture pre-existing values, even if it does not instill them de novo.

5. Experiential learning was repeatedly identified in empirical work as being experienced by students as more influential than theoretical learning about patient-centred themes. When theoretical concepts are paired with experiential learning, learning was more effective. This ties in with research citing the importance of the informal curriculum.

6. There is evidence that students were irritated when inappropriate evaluation techniques (notably multiple choice examinations, but also clinically-irrelevant essays) were used to assess
patient-centred competencies. They found individual feedback from teachers and oral standardized clinical evaluations more relevant.

7. Several studies identified relationships with role models as formative with respect to patient-centred skills and identity. Role models were emulated for a host of character traits such as trustworthiness, humility, patience, as well as for skills such as communication strategies and biomedical competence. They could thus influence students to adopt patient-centred approach. Patient-centred role models were sometimes referred to as the ‘new generation’. Negative role models were also cited as influential.

8. Empirical work suggests that students are often perturbed by ethical dilemmas that arise at their level of training—and that these issues are often ignored by the curriculum. Most often, conflicts between educational priorities and the principles of non-maleficence and autonomy.

**Implications**

**Significance of findings for future medical education**

1. Medical schools endorsing patient-centred medicine should consider explicitly addressing patient satisfaction, since it is such an important premise—and potentially one measure of the success—of patient-centred medicine. One of way of doing this would be to focus on helping students, from pre-clerkship onwards, learn skills for coming to a common understanding of goals with a patient, and connecting this exercise to patient satisfaction.

2. Medical schools should explicitly address factors (such as time constraints, financial incentives, economic cutbacks in the health care sector, harsh training conditions, and inadequate links between different institutions involved in caring for a given patient) that can counteract patient-centred medicine. Otherwise, students may view a patient-centred approach as an unrealistic goal for their future practice.

3. More exacting teaching and evaluation of patient-centred skills with meaningful feedback and reference to the ample relevant research literature may be helpful in raising quality and effectiveness of education about patient-centred medicine. Students favour experientially relevant learning experiences over exclusively academic ones. Attending to these issues might help to counteract the view that patient-centred aspects of education are ‘soft’ or ‘not core’.

4. Since many students balk at being taught patient-centred values, but many more endorse the notion that the curriculum can reinforce such values, medical schools should focus not on instilling values de novo but rather on nurturing them by giving students opportunities to develop such values and learn specific skills for attending to patients’ priorities and experiences, reasoning ethically, and communicating with patients.

5. The available evidence demonstrates that these skills and values are learned mostly experientially. Patient-centred education needs to recognize this by using experiential learning to demonstrate the relevance of integrating biomedical and non-biomedical competencies.
6. Multiple choice examination questions should only be used to examine factual material. Experientially relevant evaluation methods, such as personal feedback from supervisors, and oral standardized clinical examinations are viewed by students as more relevant evaluation methods for patient-centred learning objectives.

7. Medical schools should aim to maximize the contact students have with patient-centred role models. These teachers serve as a benchmark against which students can assess clinical supervisors, so that less patient-centred teachers can thus be seen in context.

8. Medical school curricula should address ethical issues relevant at the current level of students, rather than focusing exclusively on issues that may arise once they are senior physicians. This helps to make ethics teaching relevant and practical for students who are already forced to make ethical decisions about, for instance, conflicts between their learning agenda and patients’ autonomy or welfare.

Future challenges

1. The informal curriculum is the most important vehicle for patient-centred competencies, yet it is the hardest aspect of the curriculum to influence through policies or directives. Finding ways to shift the informal curriculum is a key challenge.

2. Identifying patient-centred role models and giving them prominence may be an important way of shifting the culture of the informal curriculum. Researching how best to do this is another challenge.

Annotated Bibliography

1. Becker & Geer (1958) and Becker et al. (1961)
   A cross-sectional participant observation study of American pre-clinical and clinical students, the authors examined medical students’ values over the course of medical school. They found that students’ idealism about helping patients is displaced by the priority of satisfying teachers’ requirements, but that idealism resurfaces once residency positions are secured and students are less dependent on teachers’ approval.

2. Eron (1955 & 1958)
   Attitude-scale surveys of first- and final-year medical students with longitudinal and cross-sectional components. Found that ‘medical students, as they progress through medical school, increase in the verbal expression of the cynical attitudes and conscious symptoms of anxiety and decrease in the expression of humanitarian feeling.’

3. Feudtner et al. (1994)
   This survey used vignettes to evoke ethical issues in medical training, and explore whether medical students undergo erosion of ethical principals during clinical training. According to self-report, most students’ had experienced ‘ethical erosion’.
4. **Fox (1957) and Lief & Fox (1963)**
   This was cross-sectional participant observation work with American pre-clinical and clinical students. It examined students' attitudes towards patients over the course of medical school. The findings suggested that students tend to develop, not cynicism, but ‘detached concern’ about patients over the course of medical school: a compromise balancing emotional detachment thought to be needed for scientific objectivity and a caring demeanour needed to elicit patients’ trust.

5. **Haidet et al. (2002)**
   Survey of American medical students in their first, penultimate, and final years of medical school, to examine whether students develop more patient-centred or doctor-centred values over the course of medical school. They found that students in later years of medical school have attitudes that are more doctor-centred or paternalistic compared to students in earlier years.

6. **Noble et al. (2007)**
   Survey of British medical students using a scale to assess the impact of training in communication skills, ethics and law, and clinical skills. The authors found that the training appeared to enhance students’ confidence in communication with patients, as well as patient-centred values such as respecting patients’ values and their participation in decisions.

7. **Price et al. (1998)**
   This questionnaire survey using vignettes of medical situations solicited Australian medical students’ attitudes regarding several ethical issues. The samples ranged from first- to final-year students. Students in their final year were found to express more concern and sense of responsibility for their own patients, and acceptance of patients regardless of patients’ personal traits. Female students’ attitudes were found to be more consistent with an ethic of care than were those of male students.

   Cross-sectional participant observation study of Canadian first- and final-year medical students, examining students’ values with respect to communication skills, ethics, patients’ own values, and the doctor-patient relationship. The study was carried out in a medical school that had recently reformed its curriculum to endorse ‘patient-centred’ values. First-year students tended to be more cynical about such skills and values than did final-year students.

   Moral reasoning tests were used in this survey of medical students divided into control and experimental groups (1992) and before and after an educational intervention (1998) to see whether formal medical ethics instruction in medical school improves students’ moral reasoning. Students in the experimental group (1992) and after the educational intervention (1998) had more sophisticated moral reasoning skills.
10. **Sinclair S (1997)**
British study by a physician and anthropologist, using participant observation of medical students in the 1990s. Examines the nature of expertise and authority in medical school culture, and explores distinctions between official and unofficial values in that culture. He found that medical training appears to lead students to adopt such attitudes as blaming patients for their illness, viewing patients as bodies ‘stripped of social attributes’ or as ‘machines’, and not respecting patients’ agency.

11. **Tsimtsiou (2007)**
This study compared Greek medical students at the beginning and end of their three-year clinical training. It used questionnaires based on a scale meant to differentiate between patient-centred versus doctor-centred or disease-centred orientations. The authors found that the final-year students were less patient-centred and more authoritarian.

**References**


12- Haidet, P, JE Dains, D Paterniti, L Hechtel, T Chang, E Tseng, J Rogers, John. ‘Medical student attitudes toward the doctor-patient relationship: learning to care’


Brief review of the literature on faculty development

Summary

Faculty development has three main objectives: to increase the ability of faculty members to carry out their academic roles, to improve practice and manage change. Faculty development can involve teaching effectiveness, mentoring, leadership development, career advancement, scholarship development and specific needs-driven topics such as teaching in an interprofessional model and simulation-based teaching. Recent meta-analyses have reviewed the first two of these areas; the remainder are not well-studied for effectiveness or outcomes.

Regarding teaching effectiveness, participants report positive satisfaction and attitudinal change whereas objective testing has revealed increases in factual knowledge. Students have reported improvements in teaching behaviours after interventions. Characteristics associated with good outcomes include the use of a variety of teaching methods, well-designed programs based on educational theory, and the use of experiential learning. Regarding mentorship, outcomes data are lacking but the use of mentoring as a retention strategy has economic and strategic merit. An increase in the number of programs with a scholarship/leadership focus has been seen recently, with marked variation in duration, depth and formality. Many have demonstrated participant satisfaction and self-reported accomplishments in leadership/scholarship and main issues appear to be the infrastructure and personal support to maintain productivity after the formal program is complete. Career development must be provided in the context of an environment that values and facilitates the use of all academic endeavours in advancement decisions (e.g., promotion).

Providing faculty development to those in non-academic centres is an issue of current interest, including the concept of ‘teacher identity’. Perceived benefits of taking on a teaching role include less professional isolation, stress relief, intrinsic satisfaction and access to faculty development. Models vary and none has clearly been identified as preferable. Successful results have been obtained with face-to-face and web-enabled education as well as with a variety of workshop models. There is recognition that specific innovations in education require specific faculty development, including the use of simulation, interprofessional education, demographic changes in the learner body (multicultural populations and generational gaps for example), and distributed teaching systems.

Major Themes:
Successful faculty development initiatives come in multiple formats, tailored to the needs of the audience and topic. Most faculty development programs, other than teaching and scholarship skills programs, have not yet been evaluated for outcomes other than participant satisfaction and perceived behaviour change. Good faculty development is based on sound educational principles, uses multiple teaching techniques, and involves experiential learning. Participants
value faculty development, perceived its benefits, and see it as a value-added aspect of taking on a teaching role, all of which make the recruitment and retention potential of good programs clear. New educational advances require targeted faculty development initiatives.

**Best practices and innovations:**


A program to improve teaching skills among faculty members across professions. Includes a program description and outcomes.


A description of how to improve the definition, support, and success of academic faculty.


A description of outcomes of faculty development initiatives with a summary of best practices for teaching- and scholarship-based faculty development.

**Full Text**

“Academic vitality is dependent upon faculty members' interest and expertise; faculty development has a critical role to play in promoting academic excellence and innovation.” (Wilkerson and Irby 1998)

The goal of faculty development programs is to equip faculty members with the knowledge, skills and attitudes for their academic roles. ¹ Faculty development is also meant to improve practice and manage change ² by enhancing individual strengths and abilities as well as organizational capacities and culture. In a key 1998 paper, Irby and Wilkerson outlined four main areas of faculty development: instructional development, professional/career development, leadership development and organizational development. ³ Several systematic reviews in the past few years have addressed two of these areas, namely teaching skill effectiveness outcomes ⁴ and outcomes of mentoring programs ⁵, ⁶ Limitations of the two reviews on mentoring were that they excluded studies utilizing qualitative methods; therefore additional information from studies using a qualitative paradigm will be cited.

Other areas of faculty development have also been identified and these will be included in this review paper. Therefore, in addition to teaching effectiveness outcomes and outcomes of mentoring programs, the following areas will be reviewed and summarized:
• Faculty development for educational scholarship
• Faculty development for leadership development
• Career development and promotion
• Development of teacher identity
• Distributed faculty development (faculty development for community teachers)

Two relatively new areas for faculty development have emerged in the last few years; faculty development relating to interprofessional education and collaborative care, and faculty development relating to the use of simulation in medical education.

For the purposes of the proposed summary, the aforementioned systematic reviews, additional review papers and other key papers from literature from the past 20 years will be identified.

Teaching Effectiveness

In 2006, a BEME (Best Evidence in Medical Education) review authored by Steinert et al. The reviewed covered 1980-2002, and included three databases (Medline, ERIC and EMBASE) and used the keywords: staff development; in-service training; medical faculty; faculty training/development; continuing medical education. The focus of this review was on literature involving practicing clinicians. The majority of the reports focused on teaching improvement and the interventions included workshops, seminar series, short courses, longitudinal programs and ‘other interventions’.

The BEME review authors concluded that while there were methodological limitations with many of the articles, the literature tends to support that overall satisfaction with faculty development programs was high. Participants reported positive changes in attitudes toward faculty development and teaching, increased knowledge of educational principles and enhanced teaching skills. Where formal tests of knowledge were reported, significant gains were shown. Changes in teaching behavior were consistently reported by participants and were also detected by students. Changes in organizational practice and student learning were not frequently investigated. However, reported changes included greater educational involvement and establishment of networks of teacher/educator colleagues.

Characteristics of effective faculty development programs included the use of experiential learning, well designed interventions following principles of teaching and learning, and the use of a variety of pedagogical methods. Further study on outcomes of faculty development should include a focus on the maintenance of change over time and on studies comparing different faculty development strategies.

Mentoring

The literature on mentoring in medicine, both at the trainee and faculty level has largely focused on descriptions of programs and how they were developed and delivered. Several papers describe initial attempt to evaluate the impact on the programs; mostly using self reported
satisfaction. Two recent meta-analyses have been published, one by Sambunjak and Strauss\textsuperscript{5} and the other by Buddeberg-Fischer and Herta\textsuperscript{6}. The former conducted a systematic review of mentoring programs, and the latter also included programs for students as well as faculty. Both papers found few methodologically sound papers; however a significant limitation to both reviews were that they excluded papers that utilized qualitative methods. This is somewhat counterintuitive to the actual concept of mentoring as a facilitative process, which may be most suited to forms of qualitative inquiry and assessment. Notwithstanding this limitation, no papers studied by these authors addressed outcomes of mentoring, and many were not clear around the goals and expectations of the mentoring programs, which is problematic when attempting to examine outcomes.

While mentoring has traditionally been delivered informally and formally in dyads, in the past 4-5 years there have been more papers published describing peer group mentoring as a complementary format to dyads. These programs are in early stages of delivery, and while these papers do describe goals of the programs, there is still little outcome data. Pololi\textsuperscript{7} who was the first to describe an ‘innovative, peer mentoring model’, describe some interesting findings relating to faculty retention, and suggests that enhanced the likelihood of retaining faculty as a goal of mentoring may provide an economic argument for organizations to better fund, and provide the time for faculty to participate in mentoring programs.

**Leadership development**

The medical education literature has become populated with papers describing various formats for leadership training of physicians. Many of these programs are programs broadly addressing educational scholarship and leadership, and many involve a significant time commitment (typically 1/2 day a week for one or two years)\textsuperscript{8,9} Others are at the Master’s level and require residential learning of one or two-week blocks associated with hours of additional coursework, either web-based or in person. Some organizations have attempted to target leadership training for particular groups of medical educators already involved in some kind of course co-ordination, as a way of assisting them in getting to the “next level” of educational administration. Hill and Stephens\textsuperscript{10} describe such a program aimed at course co-coordinators at the University of Southampton. They offered five sessions over a year, and found that few participants attended all five sessions, and in fact only 32 out of 50 co-coordinators attended at least one session. Participants evaluated the sessions positively, but other than satisfaction measures; no other assessment methods of outcome were used. Leslie and colleagues\textsuperscript{11} attempted to evaluate behavior change in participants from their 3-day leadership training program, and utilized a behavioral change contract. Six months after completion of the program, 87% of participants reported having had fully or partially achieved a leadership related goal. The authors conclude by recommending that further work needs to be done in identifying core competencies, curriculum and evaluation tools for these kinds of programs.

Certainly core competencies as described in the paper by Jackson and Kelley\textsuperscript{12} are important to consider. McDougall and colleagues\textsuperscript{13} describe an extremely comprehensive approach to the development of leadership competencies for physicians. While they included competencies aimed at clinical leaders, a number of the competencies have relevance for
educational leaders. These include the demonstration of: ethical practice, effective communication skills, team-building skills, self-directed learning, culturally competent approaches, administrative and managerial skills.

There is significant overlap in the literature regarding faculty development for leadership and scholarship, as many formal programs identified both of these as key areas of focus for their programs. (see information in following section citing the special issue of Academic Medicine on Scholars/Fellowship programs)

Educational scholarship

Much literature has been written about both the conceptualization of what scholarship in education is, and how best to enhance the capacity for faculty to engage in such scholarship. A recent article by Goldschmidt and colleagues \(^\text{14}\) identified challenges for faculty in participating in educational scholarship. These challenges involved both the provision of protected time, and also a lack of training in the necessary skills required to engage in educational scholarship. These issues were not different between faculty who had received formal training in education, such as Masters degrees, and those who had not. They propose some methods by which to address these challenges.

The past decade has revealed a proliferation of formal programs distinct from Masters programs, which have a focus on faculty development for some of the skills necessary for engaging in educational scholarship. These programs have several different names, including ‘Scholars programs’, ‘Fellowship programs’. Many of these programs were described in a special issue of Academic Medicine (vol 81) in November of 2006 \(^\text{15}\). Initial evaluation of the outcomes of participants of these programs has been positive, with increased productivity with respect to grants and dissemination of educational scholarship.

One of the key questions that are now being posed is: What are the ongoing supports required from the academic systems in which graduates from these and other formal educational training programs are returning to, in order to further promote these positive outcomes? This gets back to the need to study the longer term outcomes of the impact of faculty development programs and interventions to identify both supports and barriers to successful academic careers for teachers and educators.

Career development and promotion

Building on the learning needs of faculty with respect to their participation in educational scholarship, there has been increasing interest in the area of how faculty both achieve and document their productivity with respect to scholarly teaching and scholarship in education. In 2000, Levinson and Rubenstein \(^\text{16}\) wrote a paper outlining how clinician educators could be integrated into academic medical centers. They identified that academic advancement for these faculty was problematic, as promotion criteria did not recognize excellence in clinical care and teaching. They called for fundamental changes in the promotion criteria and processes. They also advocated for the creation of additional infrastructure to foster scholarship in teaching and
education. More recently, in 2006, a Consensus Conference on Educational Scholarship was convened by the AAMC Group on Educational Affairs (GEA) in order to develop a set of guidelines to be used as standards for academic promotion of educators. The categories of educational activity put forth in this paper included: teaching, curriculum, mentoring, educational leadership and administration, and learner assessment. This group published these standards in Medical Education and in this article states that these should be implemented in parallel with an infrastructure to support educators specific to these standards. Faculty development was cited as being key component of this infrastructure.

**Development of teacher identity**

Related to career development of faculty with teaching and education related academic interests, there is a small but growing literature and group of scholars interested in the area of teacher identity. Some of the individuals who have written in this area are Marks, Moreczinski and Starr (who has applied this area to community based teachers in order to understand their motivations, interests and needs relating to their teaching roles). The concept of teacher/educator identity also contributes to the concept of ‘communities of practice’ first coined by Wenger and colleagues and further study into how creating, sustaining and evolving communities of practice in teaching and education can provide longitudinal faculty development to support teaching effectiveness, leadership, scholarship and overall career development for faculty.

**Distributed faculty development (faculty development for community teachers)**

With respect to the expanding role of community-based practitioners as teachers, there is an expanding body of literature, much of which focuses on 2 main areas: recruitment and retention issues (including self-identified motivations and rewards for community-based teachers); and effective methods of delivery of faculty development activities.

Lacroix summarizes the motivations and challenges for community-preceptors. He notes that being able to identify those factors that make people want to teach, and those that are associated with ‘burn-out’ are critical in the recruitment and retention of community preceptors. Among those factors cited as being motivators for taking on a teaching role are: decreased professional isolation, stress reduction, intrinsic satisfaction and access to continuing education (including faculty development). Baldor et al found similar factors when they surveyed primary care physicians about their perceptions and needs in precepting medical students in their offices.

A recent assessment of rural physician faculty development needs conducted with support from Health Canada identified that just under 75% of physicians have not have any prior formal instruction on teaching. Ninety-five percent agreed or strongly agreed with the statement ‘I am interested in teaching’, and they identified several key areas in which they wanted faculty development.

A number of faculty development programs for community-based teachers have been described. These included a range of formats, from intensive group based ‘train-the-trainer’ models to intensive one-on-one ‘academic detailing’ to web-based Materials.
The evaluation of these programs has been quite variable, and most have relied on participants’ self assessment of attainment of attitudes and skills. A few have looked at participants’ use of acquired teaching skills and strategies post faculty development. Bardella et al. 29 compared self reported precepting skills with observations of these skills during a faculty-student-patient encounter. They found that while faculty rated their skills as improved following faculty development, they were not observed very frequently demonstrating these skills. However, there was no baseline assessment of their skills before participating in the faculty development session or sessions. Barratt contacted participants in a 12 hour longitudinal teaching skills program three years after program completion and found that skills learned were still being utilized. 30

Skeff and colleagues administered retrospective pre- and post intervention ratings and found that participants reported increased knowledge, attitudes and teaching skills after the 1-2 day teaching improvement interventions. 31

Faculty development programs using web-based formats and materials have been less successful. Langlois found that faculty in the community were not yet web enabled and preferred face-to-face faculty development delivered in the environment where they teach. 22 Beasley attempted to identify interventions that were most cost effective in encouraging the use of an internet based faculty development curriculum for community-based faculty. 28 While the most effective way to encourage faculty to go to the website included demonstrating the website at a semi-annual meeting and by e-mail, few faculty actually applied for CE credits for completing the modules.

Additional areas for faculty development

There are several emerging areas in Medical Education where there is little existing literature, however need to be considered in future planning strategies for faculty development programs.

‘Simulation’ represents a spectrum of modalities, spanning ‘low tech’ standardized patients to the ‘ultra-high tech’ computerized mannequins and ‘virtual’ learning models. The use of these various simulation modalities requires knowledge about the technical aspects of the specific simulation modality, in addition to the pedagogical methods required to support student learning. Thus the successful integration of simulation into health professional education necessitates that teachers and educators acquire the knowledge and skills required to support optimal learning outcomes.

The imperative to address the educational aspects of the use of simulation has been identified in some of the literature on simulation. 32,33 These educational aspects include: 1) understanding where simulation can be utilized in existing curricula, and 2) assisting teachers in identifying and developing skills to facilitate learning (e.g. orientation, feedback, and debriefing). The local experience is that most simulation programs provide little to no teacher training in association with the simulation resources. Therefore there is an identified need for faculty development for both well-established simulation programs, and for those centers that have recently started to develop simulated-based resources.
Little is known about the effectiveness of the existing few training programs in North America, as there has been nothing published in the health professional education literature specific to the needs of teachers and educators relating to simulation and how these needs can be most effectively addressed.

Interprofessional Education

An interprofessional education curriculum has increasingly been incorporated into Canadian medical schools in the past five years. Similarly there has been a Canada-wide interest in enhancing the capacity of health professionals to practice effective collaborative patient care. Steinert has described how a systematic approach to faculty development for IPE can address the individual faculty’s and the institution’s needs for teaching in this new interprofessional environment. There has been little systematic review of the outcomes of these faculty development interventions to date.

Summary

The future holds many changes for medical education. The changing roles of faculty, the changing nature of teaching, learning and scholarship, and the evolving needs of the organization are all drivers for what faculty development needs to look like. (Silver I, Leslie K, OMEN rounds November 2006)

Changing faculty roles includes an increasing number of community based teachers, faculty with identified educator roles, and those whose academic focus is on educational scholarship and research. There is an increasing focus on the needs for leadership development and succession planning for medical education leaders.

Characteristics of the student body include the growing proportion of internationally trained health professionals, the shifts in values that come with each new generation, and learners who may be geographically distant from their teachers.

The nature of teaching, learning and scholarship has broadened to encompass interprofessional learning and collaboration, the ‘non-expert’ CANMEDs roles, technology assisted learning, distributed medical education and the globalization of medical education.

Medical schools and the universities and teaching institutions with which they are affiliated continue to have front-line teaching needs, in addition to the need to promote and retain faculty and to support faculty and organizational vitality.

Faculty development supports every aspect of this landscape of medical education, and needs to be responsive to changing needs of the medical culture. As the field evolves, teaching and learning methods and formats, strategies for summative and formative evaluation, and the related needs of teachers and educators will continue to be the linchpins of the system, and will require ongoing and growing support through structured, comprehensive and effective faculty development. Movement towards the development of accreditation standards for faculty
development offices and centers could provide a common understanding of what medical schools need to provide in order to address the needs of their faculty members.

“Comprehensive faculty development empowers faculty members to excel and to create vibrant academic communities”
*(Wilkerson and Irby 1998)*

Annotated Bibliography

**Key faculty development articles**

   This is a seminal article in the fac dev literature and outlines the theories associated with faculty development.

   This is the Best Evidence in Medical Education Systematic Review conducted on the faculty development literature up to 2002.

   This article builds on the content and ideas of Irby and Wilkerson’s 1998 article

**Mentoring**

4. **Bland CJ, Schmitz CC, Stritter FT, Henry RC, Aluise JJ. Successful faculty in academic medicine: essential skills and how to acquire them. New York: Springer-Verlag; 1990.**
   This book outlines core ‘academic’ skills and is an oft quoted resource. A number of the articles on mentoring refer to Bland’s Professional Academic Skills as key skills that faculty need to acquire for academic success.

   Systematic review on mentoring programs for trainees and faculty. Identifies that most programs aim to provide career development and support, however few programs describe outcomes. Clarity of goals and measurement of outcomes of mentoring are recommended for future scholarship in this area.
This study was one of the first to evaluate the outcomes of a formal mentoring program for faculty and used Carole Blands ‘Professional Academic Skills’ in this evaluation.

This is one of the first papers describing formal peer mentoring groups and outlines the potential advantages over the more traditional dyadic format of mentoring.

A systematic review of the mentoring program literature. Excluded qualitative studies therefore not a comprehensive review of all of the mentoring literature. However, suggests some key areas for future research on mentoring.

Provides an overview of some of the key issues relating to community based teachers.

This article explores the concept of teaching identity in community teachers.


Leadership

Prominent author in the scholarship/leadership training field. Addresses key issues relating to faculty development in this area.

Describes the development and implementation of a leadership program aimed at ‘middle’ manager/leaders in medical education
Addresses the need to train educational leaders

Scholarship

Very thoughtful paper that identifies the supports required by faculty in order to be more involved and successful in educational scholarship

Describes a program to support faculty development in leadership

Description and outcomes of a teaching scholars faculty development program

Career Development and Promotion

Outlines the issues of how clinician-educators have difficulty meeting current requirements for promotion. Suggests strategies to address these issues.

Key paper on areas in which promotion and tenure standards need to be modified in order to support academic progress of teachers and educators

Teaching identity and communities of practice

Both above articles focus on faculty development outcomes that involve building and supporting networks of teachers and educators

This author coined the term ‘communities of practice’; this book introduces and describes what communities of practice are, and the role they play in learning and socialization
Simulation


Systematic review of the simulation literature. Identifies needs for teachers and educators involved in the use of simulation for teaching and learning.


Interprofessional Education


Review of a variety of approaches to enhancing interprofessional education using a variety of faculty development formats and strategies.

Key findings of review papers in Faculty Development

Teaching Effectiveness

Faculty development programs

- are highly rated by participants
- can increase knowledge about teaching
- can change teaching behavior that can be detected by students
- can stimulate greater educational involvement
- can establish networks of teacher/educator colleagues


Mentoring

Mentoring programs:

- have not been systematically evaluated
- their evaluation has not included qualitative methods
- many programs do not clarify their goals and expected outcomes

Sambunjak D, Straus SE, Marusic A.  Mentoring in Academic Medicine- A Systematic Review. JAMA. 2006; 296(9): 1103-1115

Innovative faculty development programs

1. **Steinert Y, Walsh A A** Faculty Development Program for Teachers of International Medical Graduates (IMGs). Association of Faculties of Medicine of Canada (AFMC) 2006 [http://www.afmc.ca/img/default_en.htm](http://www.afmc.ca/img/default_en.htm)
   This program is available both in hard copy and is also completely downloadable from the AFMC website. It includes a variety of learning materials, has guides for how to use the materials, and also allows for faculty developers to add their own slides, or modify the materials to suit their own learning environments and learners. It is an immensely valuable resource and addresses the faculty development needs of teachers, given the increasing proportion of internationally trained health care professionals entering the Canadian medical system.

   This article outlines an innovative approach to the provision of mentoring for faculty. It has now been modified and replicated by a number of individuals. Peer group mentoring offers a number of advantages as compared to the more traditional dyadic format of mentoring, and the author speaks specifically to the issue of the importance of value systems, in addition to the institutional supports required to support the development and sustenance of mentoring initiatives. This format could be applied at the undergraduate and postgraduate levels in addition to faculty.

   This is an exemplary model of faculty development for faculty development of the teaching skills of community based preceptors.

4. **Skeff K** Evaluation of a Medical Faculty Development Program
   Skeff introduces the pre-post post model for evaluation of the outcomes of the faculty development outcomes. He also describes his intensive, month-long facilitator training program that includes didactic sessions, readings, group discussion, role playing exercises, videotape review of practice teaching, guest lectures, and home-site program implementation sessions. Since 1986, 298 medical faculties from 133 institutions have been trained as seminar facilitators.

   This model of a Teaching Scholars program has been modified and is also being offered in a number of other universities. McGill’s program is the focus of this article, however several other programs are also described in this special edition of Academic Medicine that focused on Scholar’s programs. Other Scholar’s programs in Canada include the program offered at the Centre for Faculty Development in Toronto. These programs provide faculty development in educational leadership, scholarship and in teaching excellence.
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Maîtriser le flux d'information médicale : un important défi pour le médecin

Résumé

Dans une société où l’accès à l’information médicale occupe une place de plus en plus importante, l’intégration de la recherche et de la maîtrise de l’information dans le cursus médical devient nécessaire. En raison de la qualité incertaine et de la quantité croissante de l’information disponible, en particulier par le biais de l’Internet, les médecins, que ce soit dans le cadre de leurs études, leurs recherches ou leurs pratiques médicales, doivent être en mesure de trouver, d’évaluer et de comprendre l’information pertinente afin de l’utiliser efficacement dans leur pratique professionnelle. Ils doivent donc développer leurs compétences informationnelles, définies comme « l’ensemble des aptitudes permettant aux individus de déterminer les moments où ils ont un besoin d’information, de trouver, d’évaluer et d’utiliser cette information ».

Selon la littérature, les futurs médecins sont confrontés à plusieurs défis : les difficultés rencontrées pour rechercher de l’information, les évolutions de la pratique médicale vers la médecine fondée sur les preuves, le changement de comportement des patients qui s’informent d’avantage sur leur maladie ainsi que la place de l’autoformation qui s’exprime par un besoin du praticien d’actualiser ses connaissances et de suivre l’évolution des savoirs dans son domaine médical. Les futurs médecins peuvent répondre à ces enjeux au travers une formation à la maîtrise de l’information intégrée complètement dans le cursus médical.

Thèmes majeurs identifiés

- Les défis informationnels à relever du futur médecin tels que les difficultés rencontrées à la recherche d’information, l’évolution de la pratique médicale vers la médecine fondée sur les données probantes (EBM : Evidence-based medicine), le changement de comportements informationnels des patients et, l’actualisation des connaissances et du savoir par l’autoformation.
- L’importance d’un programme en maîtrise de l’information dynamique, s’adaptant régulièrement au cursus médical et aux enjeux des technologies de l’information et de la communication.

Conclusions et orientations

- L’intégration complète de la maîtrise de l’information à la formation académique et ce, tout au long des études médicales sous forme de modules obligatoires répartis sur plusieurs années.
- La collaboration étroite des spécialistes de l’information avec les professeurs, les administrateurs et les centres de développement professionnel continu.
- La présence des bibliothécaires dans les comités de programme de formation médicale afin d’adapter leurs modules au contexte éducationnel de la médecine.
La société actuelle dite « société de l’information » est marquée par l’évolution rapide des technologies de l’information et de la communication (TIC) et par l’abondance des sources d’informations. En raison de la qualité incertaine et de la quantité croissante de l’information disponible, les médecins, que ce soit dans le cadre de leurs études, leurs recherches ou leurs pratiques médicales, doivent être en mesure de trouver, d’évaluer et de comprendre l’information pertinente pour leur pratique professionnelle. Ils doivent donc développer leurs compétences informationnelles définies comme « l’ensemble des aptitudes permettant aux individus de déterminer les moments où ils ont un besoin d’information, de trouver, d’évaluer et d’utiliser cette information » [1].

Les facultés de médecine peuvent contribuer à l’amélioration de la santé des Canadiens en formant les professionnels à la « maîtrise de l’information » en santé (Health information literacy) 16. Cette revue de la littérature présente les constats et enjeux de la maîtrise de l’information dans la pratique médicale ainsi que l’importance de développer les compétences informationnelles dans les formations en santé.

Méthodologie


Constats et enjeux de la pratique informationnelle en médecine

Recherche d’information et difficultés rencontrées par les médecins

Les praticiens souhaitent obtenir la bonne information au bon endroit et au bon moment afin de prendre, souvent sous pression ou dans l’urgence, la décision clinique la plus appropriée. Selon Mc Conaghy [2], les médecins recherchent l’information d’une part pour trouver les réponses aux questions spécifiques des patients afin de comprendre et résoudre leurs problèmes et, d’autre part, pour être à jour concernant l’information clinique qui relève de leur pratique. Ceci, dans le but de prendre la meilleure décision médicale et de fournir aux patients la meilleure qualité de soins possible.

16 La traduction française du concept « Information literacy » est encore fluctuante [chap. 1 Barthen et al.], par commodité, nous employerons ici le terme « maîtrise de l’information » (Office québécois de la langue française).
Aujourd’hui, les médecins accèdent à l’information médicale principalement par l’Internet [3]. Ce média permet de trouver rapidement l’information voulue, en laissant cependant planer des questions sur l’authenticité, la validité et la fiabilité de l’information [4].

Les médecins, qui recherchent de l’information sur Internet, sont confrontés à une abondante quantité d’informations sur un sujet donné et à des difficultés pour naviguer et retrouver de l’information spécifique dont ils ont besoin [5]. Ces difficultés s’expliquent, en partie, par le manque de temps et leurs faibles compétences techniques et informationnelles pour trouver l’information [6].

Évolution de la pratique médicale vers la médecine fondée sur les données probantes (EBM : Evidence-based medicine)

La pratique médicale est en évolution : les professionnels de la santé sont de plus en plus incités à se baser, lorsque possible, sur des faits démontrés, les meilleures preuves disponibles et des résultats probants pour les soins donnés à leurs patients. Selon Sackett [7], la médecine fondée sur les données probantes se définit comme :

« Evidence based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients ».

La médecine fondée sur les preuves nécessite une démarche processuelle qui débute par la transformation d’un besoin d’information concernant un patient donné en une question claire suivant les critères PICO (Populations-Intervention-Comparison-Outcome) [8 réf. citée 4]. Cette démarche repose donc sur la recherche efficace de données et d’articles pertinents afin d’en évaluer de manière critique la fiabilité et l’intérêt des résultats. Les médecins sont donc amenés à améliorer leurs techniques et compétences en matière de recherche, d’évaluation et d’utilisation de l’information pour résoudre les problèmes liés aux soins du patient [8-10].

Des ressources spécialisées en médecine fondée sur les preuves classées par niveaux d’évidence ont été développées pour les cliniciens, chercheurs et étudiants en médecine [11], comme la Cochrane Database of Systematic Reviews [12], Database of Abstracts of Reviews of Effectiveness [13]… Ces bases de données permettent d’obtenir des données spécifiques et des articles de qualité, pertinents des points de vue clinique et méthodologique sans avoir à faire un tri parmi des centaines d’articles. Par exemple, l’application UpToDate® serait une des ressources « prédigérées » d’evidence-based la plus citée par les cliniciens pour sa rapidité et sa facilité, mais qui ne serait pas assez utilisée dans la pratique [14-15].

Selon une étude de Ramos et coll. [16], les résidents en médecine de famille consultent rarement les sources d’information de médecine fondée sur les preuves pour répondre aux questions cliniques en raison principalement de la contrainte de temps. Le plus souvent, ils utilisent dans l’immédiat le réseau professionnel et les programmes d’ordinateur de poche (PDA) pour accéder à l’information clinique [15].
Les formations données en médecine factuelle sont souvent centrées sur l’évaluation critique de la littérature, mais ne sont pas suffisantes. Elles doivent prendre en compte également les aspects de recherche et d’utilisation de l’information dans le cadre de la pratique clinique centrée sur le patient [2]. Slawson et Shaughnessy [8] ajoutent même qu’il y’a :

« a need to teach the applied science of information management along with or perhaps even instead of, teaching the basic science of EBM ». 

Évolution du comportement des patients

Les patients sont désormais mieux informés sur leurs maladies par la vulgarisation du savoir scientifique et médicale via l’Internet et leurs réseaux sociaux [17]. Ces nouveaux comportements sociologiques changent la relation traditionnelle du médecin et du patient. En effet, beaucoup de patients veulent s’impliquer d’avantage dans la gestion de leur santé et prendre part aux décisions touchant les investigations et les traitements [17 : réf. citée 1]. Le fait que les patients soient mieux informés (Internet-informed patient) et puissent participer plus activement aux prises de décision les concernant devrait permettre une amélioration de la qualité des soins et de la satisfaction ressentie [17 : réf. citée 8].

Ce changement de comportement des patients conduit à remettre en question certaines pratiques médicales. C’est un argument de plus en faveur d’une formation aux compétences informationnelles [17].

Importance de l’autoformation

L’autoformation occupe une place importante dans la pratique des médecins en raison du savoir qui évolue constamment. Les médecins ont besoin d’actualiser leurs connaissances et de suivre l’évolution des savoirs dans leur domaine médical. Par ailleurs, l’arrivée d’Internet a incité des changements dans la pratique d’autoformation : les médecins doivent être capables d’adapter leur manière d’apprendre à l’évolution des canaux de transmission de l’information médicale [18].

Maîtrise de l’information dans la formation médicale

Définition des compétences informationnelles

Savoir accéder aux ressources en ligne et posséder une grande compétence informationnelle doivent aussi faire parties des objectifs de la formation initiale des médecins [17 : réf citées : 1,23,30].
L'ACRL (Association of Colleges and Research Libraries) a défini en 2000 un standard de compétences informationnelles pour les études supérieures, incluant des indicateurs de performance et les résultats attendus [19]. « Un individu possédant les compétences informationnelles est en mesure :

- de reconnaître et de déterminer la nature et l’étendue de l’information disponible;
- d’accéder de façon efficace et efficiente à l’information pertinente;
- de faire une évaluation critique de l’information et de ses sources;
- d’intégrer l’information dans son réseau de connaissances;
- d’utiliser l’information efficacement pour atteindre un objectif spécifique;
- de comprendre les enjeux économiques, légaux et sociaux et de respecter les exigences éthiques et légales entourant l’utilisation de l’information. »

La maîtrise de l’information est fréquemment confondue avec les compétences techniques en informatique. Avec le changement de pratique, les jeunes générations acquièrent les compétences techniques nécessaires pour obtenir rapidement des résultats, mais manquent de regards critiques et de facultés d’analyse et de synthèse [20]. La formation aux compétences informationnelles doit englober la capacité d’évaluation critique de l’information tout en développant, du même coup, les compétences technologiques nécessaires [19].

Les compétences informationnelles dans la formation médicale

Des expériences américaines et canadiennes font état d’une implantation de la formation à la maîtrise de l’information dans les cursus médicaux [21-24]. Elles se présentent sous différentes formes :

- des sessions de présentation et d’introduction comme des visites de la bibliothèque et des formations à l’usage de ses ressources (catalogues, bases de données Medline, Embase…);
- des sessions optionnelles de formation et des ateliers facultatifs où les étudiants peuvent s’inscrire auprès des bibliothèques tout au long de l’année.
- des ateliers de formation continue pour la recherche d’information et certains accrédités comme l’enseignement à la médecine fondée sur les preuves [5, 25, 26];
- des modules obligatoires intégrés dans les formations pré-médicales, pré-graduées et post-graduées :

  - L’Université Queen’s de Kingston a mis en place en 2004, pour les deuxième années, un module obligatoire de huit semaines d’initiation à la recherche incluant la recherche de la littérature et son évaluation critique dans le but de réaliser un rapport de recherche sur un des thèmes médicaux [23].

  - L’Université de Montréal a intégré une formation en maîtrise de l’ordinateur et de l’information au premier cycle des études médicales qui s’est poursuivi ensuite à l’externat. Les notions acquises pendant ces formations ont été introduites dans les cours et stages précliniques où les étudiants devaient
réaliser des travaux obligatoires. Aujourd’hui, l’Université de Montréal offre encore des formations documentaires pour chaque cycle médical en médecine [21].

Des études ont démontré l’impact et l’efficacité des formations visant la maîtrise de l’information par le professionnel de la santé tant en termes de compétences que de soins donnés aux patients [27-28]. Lorsque ces formations sont intégrées aux activités d’apprentissage comme des projets de recherche en médecine, les étudiants en perçoivent les bénéfices, notamment la capacité acquise de recherche dans les bases de données et d’évaluation critique de la littérature, même ceux qui ne souhaitent pas poursuivre leurs carrières dans la recherche médicale [22-23]. Elles permettent également à l’étudiant de réfléchir sur ses préférences et futurs choix de spécialités médicales pour les études post-graduées [23]. Une étude de Dorsch [29] sur la médecine fondée sur les preuves montre que l’étudiant utilise d’avantage la littérature pour répondre aux questions cliniques et prendre des décisions médicales pour leurs patients. Il constate aussi une amélioration dans la reformulation des besoins en une question ainsi que dans la stratégie de recherche de la littérature.

Ces différents exemples de formation mettent en valeur l’importance d’un programme en maîtrise de l’information dynamique, s’adaptant régulièrement au cursus médical et aux enjeux des technologies de l’information [17, 30]. Slawson et son équipe [31] ont créé un centre de leadership de maîtrise de l’information (Département de médecine de famille à l’Université de Virginie) et développé des modules de formation en maîtrise de l’information centrée sur le patient, adaptés pour différents niveaux [8].

Les problèmes posés par ces formations ne sont donc pas de savoir s’il faut intégrer la maîtrise de l’information dans le cursus, plusieurs études ont déjà démontré son intérêt [32-33], mais à quel moment elles doivent être proposées avec un consensus sur les objectifs visés et les moyens utilisés [34].

**En conclusion: les implications**

- La formation à la maîtrise de l’information doit être intégrée complètement à la formation académique et ce, tout au long des études médicales (de pré-gradué à post-gradué) sous forme de modules obligatoires répartis sur plusieurs années. Chacun des modules s’adapte au cursus médical en s’intégrant dans un cours où chaque étudiant a l’obligation d’exécuter des travaux impliquant la recherche d’informations, travaux qui seront notés. La formation pourrait être donnée en présentiel ou sous forme de formation en ligne à l’initiative des comités de programme et des responsables de cours. Ces formations doivent être réalisées essentiellement à partir de cas pratiques (recherche médicale, approche par résolutions de problèmes, médecine fondée sur les preuves) afin de motiver les étudiants en leur faisant vivre l’utilité concrète de la maîtrise de l’information.
Pour intégrer le développement des compétences informationnelles dans les cursus médicaux, des efforts sont nécessaires de la part des établissements d’enseignement et des protagonistes suivants : centres de développement professionnel continu, professeurs, bibliothécaires et administrateurs, acteurs centraux de l’intégration de la maîtrise de l’information. Les spécialistes de l’information doivent donc participer à la réalisation de cette intégration en étant présents dans les comités de programme de formation médicale afin d’adapter leurs modules au contexte éducationnel de la médecine.

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CLUSTER 5: Contemporary Content Topics / Thèmes contemporains
Beaulieu, Marie-Dominique, MD, CCFP, MSc, FCFP

Compétences de base sur la collaboration intra professionnelle (ou intra professionalisme) pour les études pré-graduées en médecine

Résumé

Pour un système de santé plus efficient et efficace, une meilleure intégration entre les soins et services spécialisés et les services de première ligne sont cruciaux. Des consultations inappropriées et une mauvaise communication existent entre les milieux spécialisés et les milieux de première ligne, mais aussi entre les médecins spécialistes « généraux » et les spécialistes « surspécialisées ». Il y a peu de littérature sur l’enseignement de la collaboration entre les médecins et, de plus, les articles portent sur la formation durant la résidence. Les problèmes soulevés au sujet de la collaboration entre les médecins sont, principalement, la pertinence des consultations, la définition des responsabilités réciproques, la méconnaissance et les préjugés envers les autres médecins non de sa propre discipline. Les compétences et déterminants pour la collaboration intraprofessionnelle sont les mêmes que pour la collaboration interprofessionnelle. Le système d’éducation est un des principaux déterminants de la collaboration professionnelle. Il y a controverse à savoir s’il faut attendre ou non que l’identité professionnelle soit développée avant de débuter cet apprentissage. Par contre, plusieurs éléments (connaissances, habiletés, attitudes) nécessaires à la collaboration (références/soins partagés…) peuvent être expérimentés et appris durant la formation prégraduée.

Thèmes majeurs identifiés

Il existe entre les médecins un problème de collaboration intraprofessionnelle. Les éléments nécessaires à cette collaboration peuvent être acquis dès la formation prégraduée.

Conclusions et orientations

Il faut créer un environnement supportant les principes de la collaboration intraprofessionnelle via, entre autres, une exposition balancée entre généralistes et spécialistes et une politique claire « antistéréotype » des facultés de médecine.
Il faut viser une maîtrise de certains concepts et habiletés de collaboration avant la fin du prégradué : impacts de ses propres préjugés, attitude professionnelle avec les autres médecins, responsabilités et complémentarités des uns et des autres dans le soin aux patients, facteurs organisationnels qui facilitent ou font obstacles à la collaboration intraprofessionnelle, indication de références et impacts de celles-ci sur l’expérience de soin du patient…).

Meilleures pratiques et innovations : Pas de suggestion spécifique.
Pertinence de la question pour la formation médicale

Dans tous les pays industrialisés, des réformes sont mises en œuvre pour favoriser un meilleur accès à des soins de qualité, fournis de manière plus continue et plus efficiente. Une meilleure intégration des soins entre les services spécialisés et les services de première ligne et l’utilisation plus judicieuse des ressources humaines sont deux facteurs cruciaux pour y parvenir (1;2). Jusqu’à maintenant l’attention s’est surtout portée sur la collaboration entre les professionnels de disciplines différentes. Pourtant, des changements importants sont en cours à l’intérieur de la profession médicale. Les médecins spécialistes devraient délaisser le suivi de patients ne nécessitant pas leur niveau d’expertise pour assumer plus qu’ils ne le font présentement, un rôle de consultant. Des patients autrefois suivis dans des milieux sur-spécialisés recevront de plus en plus leurs soins dans la communauté. Le concept de soins partagés développé en santé mentale est en train de s’étendre au suivi de clientèles souffrant de maladies chroniques (3).

De façon générale, on s’est beaucoup moins intéressé à la collaboration entre les membres de la même profession. La collaboration entre médecins semble tenue pour acquise. Des données empiriques confirment pourtant que la fragmentation des soins entre la première et la deuxième ligne compromet non seulement l’efficience du système de santé mais aussi la qualité des soins et la sécurité des patients (4-6). Des consultations inappropriées et une mauvaise communication entre les milieux spécialisés et les milieux de première ligne contribuent de façon importante à cette situation (4;7). Bien que le problème soit ressenti de façon plus aiguë entre les médecins spécialistes et les médecins de famille, les mêmes problèmes ont aussi été identifiés entre les médecins spécialistes « généraux » et les spécialistes sur-spécialisés (8). Il y aurait à la fois un problème de compétences (comment interagir efficacement) et un problème d’attitudes. La collaboration intra-professionnelle est reconnue comme une priorité non seulement au Canada (9), mais aussi en Europe (10).

Description de la stratégie de recherche

Le but de cette recension de la littérature est de préciser quelles sont les compétences que les médecins doivent maîtriser relativement à la collaboration intra-professionnelle et quelles stratégies éducatives relativement à l’acquisition de ces compétences doivent être intégrées au curriculum de formation des études pré-graduées. Nous avons effectué une recherche sur PubMed entre les années 2000 et 2007 avec les mots clé suivants : TEACHING, PROFESSIONAL COLLABORATION, REFERRAL, CONSULATIONS, SHARED CARE. Nous n’avons pas considéré la littérature sur le professionnalisme car l’enseignement de cette compétence fait l’objet d’un chapitre spécifique. Cette stratégie de recherche ne nous a permis d’identifier que six articles portant sur l’enseignement de la collaboration entre médecins (11-16). Tous ces articles, sauf un (11), portaient sur des activités d’apprentissage de la consultation (référence et réponse à une consultation) pendant la résidence. Pour élargir la réflexion, nous avons considéré la synthèse de la littérature sur l’enseignement de la collaboration inter-professionnelle produite par une équipe Canadienne de chercheurs et de pédagogues (17) et
les résultats d’une recherche menée en 2004 auprès d’un échantillon de résidents et enseignants de quatre faculté de médecine du Canada sur le thème de la collaboration intra professionnelle (18). De plus, la littérature sur la sociologie des professions a été revue, en particulier les travaux fondateurs de Freidson (19) et la théorie systémique d’Abbott (20) sur le système professionnel. Enfin, sans procéder à une révision systématique de la littérature sur le processus de consultation entre médecins, nous avons considéré certaines recensions et métanalyses sur le sujet (3;7;21).

Principaux résultats

**Quelles sont les compétences de la collaboration intra professionnelle?**

Mis à part le processus de référence et de consultation, la littérature en éducation médicale n’est pas très explicite sur la question de l’apprentissage de la collaboration entre médecins. De plus, cette littérature concerne presqu’exclusivement la formation post graduée. Dans une enquête réalisée auprès de quatre programmes de résidence des 16 facultés de médecine Canadiennes, Beaulieu et collaborateurs ont observé que les objectifs de formation relatifs à la collaboration intra professionnelle sont très généraux et que très peu de concepts novateurs concernant la compétence de la collaboration intra professionnelle s’y retrouvent (18). Le document de prise de position conjointe du Collège des médecins de famille du Canada et du Collège royal des médecins et chirurgiens du Canada est un des rares documents explicite à ce sujet (9).

En ce qui concerne le processus de consultation et de soins partagés entre médecins, les problèmes suivants sont ceux qui sont rapportés le plus souvent dans la littérature (3;7;9;18) :

- La pertinence des consultations (des demandes et des réponses)
- La définition claire des responsabilités du médecin consultant et du médecin traitant.
- La méconnaissance de ce que fait l’autre; de son expertise; de ses conditions de pratique, méconnaissance qui peut entraîner un manque de confiance dans la capacité du médecin traitant d’appliquer les recommandations.
- Les préjugés et les stéréotypes sur les différentes spécialités : ex : « les psychiatres choisissent leurs cas »; « les médecins de famille veulent nous refiler les clients difficiles ».

De façon générale, on peut dire que les déterminants et les compétences de la pratique de collaboration sont les mêmes, qu’il s’agisse de collaboration inter ou intra professionnelle (22;23) (Tableau 1).
La fragmentation des soins, l’éloignement des médecins de famille de l’hôpital et le repli des médecins spécialistes à l’hôpital, sont autant de facteurs qui ont contribué à la méconnaissance croissante des conditions d’exercice des uns et des autres et à des différences dans les valeurs et les styles de travail (18;24).

4.2 Quel est le moment optimal pour introduire l’apprentissage de la collaboration professionnelle?

La sociologie des professions nous apprend que le système d’éducation est un des principaux déterminants de la collaboration professionnelle. C’est pendant leur formation que l’identité professionnelle se façonne et que les professionnels ont leurs premières expériences de collaboration (19;20;23).

Ceci dit, il y a beaucoup de débats sur le moment optimal pour introduire l’apprentissage de la collaboration dans les curricula de formation. Certains sont de l’avis que cet apprentissage doit débuter très tôt pendant les études pré graduées alors que d’autres pensent qu’il faut attendre que l’identité professionnelle se soit développé et que les participants se sentent en maitrise de certaines compétences propres à leur discipline (25). Ces arguments sont toujours appliqués à l’apprentissage de la collaboration inter professionnelle.

En médecine, tous les étudiants sont exposés à la même formation pendant les années pré graduées. Ils ne sont jamais mis en situation d’interagir entre eux ou avec d’autres médecins dans une position d’experts- comme ils le seront du moment qu’ils débuteront leur formation spécialisée. Il apparaît prématuré d’aborder l’enseignement des compétences spécifiques au processus de référence/consultation et de soins partagés comme on le fait au moment de la résidence. Les étudiants en médecine sont cependant exposés aux différentes réalités du système de soins et sont en mesure d’apprécier plusieurs des enjeux reliés à la coordination des soins et à l’utilisation judicieuse des ressources. Ils vivent des situations d’apprentissage qui les exposeront
à des modèles de rôle et d’organisation des services plus ou moins propice à la collaboration intra professionnelle et qui favorisent le développement d’attitudes stéréotypées envers les différents spécialités médicales (9;18). Il faut aussi reconnaître que plusieurs débutent leurs études de médecine avec des intentions de carrière définies (26).

Même si on ne dispose pas de données probantes sur le moment optimal pour introduire la formation à la collaboration intra professionnelle, on est justifié de penser que la formation pré graduée doit permettre d’acquérir certaines connaissances, habiletés et attitudes de bases spécifiques à cette compétence. Certains ont suggéré l’utilisation de l’approche par problèmes comme moyen d’améliorer la compréhension sur la collégialité professionnelle (11).

Recommandations pour l’enseignement de la collaboration intra professionnelle dans le cadre de la formation pré graduée en médecine

5.1 Créer un environnement qui supporte les principes de la collaboration intra professionnelle
Comme on l’a vu, la formation pré graduée peut contribuer à renforcer les stéréotypes dans les rôles de médecins de famille et des autres spécialistes. Aussi, on préconise que les facultés de médecine prennent des dispositions pour favoriser une exposition équilibrée à des professeurs généralistes et spécialistes et surtout qu’elles établissent une politique claire à l’effet que les attitudes qui encouragent le stéréotypage des rôles professionnels de façon négative ne soient pas tolérées (9).

5.2 Concepts et habiletés reliés à la compétence de collaboration intra professionnelle qui seraient à maîtriser à la fin des études pré graduées.
Encore une fois, nous réitérons qu’on ne dispose pas de données probantes pour appuyer les recommandations concernant la formation à la compétence de collaboration intra professionnelle au niveau des études médicales pré graduées. Cependant, les différentes situations d’apprentissage auxquelles les étudiants sont exposés permettraient d’aborder les concepts et habiletés suivantes considérées comme préalable à la maîtrise des compétences plus complexes qu’ils auront à acquérir lorsqu’ils arriveront au niveau post gradué de formation :

a. Reconnaître l’impact de ses propres croyances et préjugés à propos des différentes spécialités médicales
b. Démontrer une attitude professionnelle à l’égard des médecins avec qui ils interagissent
c. Évaluer l’indication et le niveau d’urgence des références/consultations
d. Identifier les aspects de l’organisation des services qui peuvent faciliter ou compromettre le processus de référence/consultation
e. Décrire les rôles et responsabilités des tous les médecins impliqués dans les soins d’un patient et comprendre comment ils se complètent
f. Reconnaître l’impact de la référence/consultation sur l’expérience de soins du patient
Bibliographie Annotée


Ce document propose un survol des différents enjeux reliés au développement d’une pratique de collaboration efficace entre médecins et énonce une série de recommandations qui concernent la formation.


Ce document rapporte les résultats d’une étude réalisée auprès de près de 100 résidents et formateurs en médecine familiale, médecine interne, psychiatrie et radiologie dans quatre facultés de médecine Canadiennes. L’objectif de cette étude était d’explorer qu’elles sont les expériences de collaboration intra professionnelle auxquelles les résidents sont exposés en cours de formation et leurs représentations de leurs rôles professionnels respectifs.


Bien que cette recension des écrits porte sur la collaboration inter professionnelle, cet article propose un survol complet des différents types de déterminants de la collaboration professionnelle. Ces déterminants sont classifiés selon 3 catégories : les déterminants systémiques, organisationnels et interpersonnels. Cette grille d’analyse est utile pour réfléchir à la collaboration entre médecins.


Un article qui porte sur l’enseignement de la collaboration interprofessionnelle mais qui propose un cadre d’analyse applicable à l’enseignement de la collaboration intra professionnelle.
Références


Stewart, Ronald, OC, ONS, BA, BSc, MD, DSc

*Literature Review: The medical humanities in Canada*

**Summary**

Defining the terms “Humanities” and “Medical Humanities” has been a great challenge to those within medical education. Crucial as we medical educators believe the Humanities to be in the education of the modern physician, we quite frequently feel, in the environment of a medical school, as the proverbial ‘square peg in a round hole,’ not quite fitting in, but yet surviving on the support and encouragement of many of our Deans and colleagues. This paper serves to provide a closer examination of the state of medical humanities within the Canadian context of medical education but also to recognize the role medical humanities play within the system.

**Major Themes:**
Stewart identifies and describes eight themes or issues, which then are examined more closely to determine a set of implications for the future direction of medical education throughout Canada. The eight themes or issues were derived after closer scrutiny and analysis of over thirty (30) articles from the literature review and include: 1) The difficulty of definitions; 2) Varied governance; 3) Varied content; 4) Role analysis; 5) Evidence-based?; 6) Intersection with bioethics; 7) Developing Alliances; and 8) Personality Dependent.

**Conclusions and Directions:**
Stewart notes that the implications of the review are clear, but that in order to be successfully addressed there needs to be a commitment to weave a thread of ‘humanities’ and all that implies throughout the cloth of physician education. This also includes the need to utilize national guidelines and specific evaluation tools during accreditation to bring great credibility, funding and organizational support to these programs.

**Best Practices and Innovations:**


This paper is the only survey of the state of medical humanities in Canadian (Anglophone) medical schools located in the scan. What they call the “anarchic approach” to ‘teaching’ humanities is in sharp contrast to the standards and methods of teaching the basic and clinical scientists and the authors argue for at least an attempt to reach a national consensus on content, governance, methods and the design of programs.
Introduction

Defining “Humanities,” as one of our Faculty members once said, is like defining a sunset. Challenging, to say the least. Recently, as with any medical schools facing accreditation, we thought long and hard about how we could best express the goals, or better perhaps, aspirations, of each of our programs. We in the Humanities section of the School chose to describe ourselves as “doing,” rather than just “being” and succinctly described what we felt was our chief “mission”: Exploring the human face of Medicine.

It was a deliberate and carefully crafted “motto.” One could say that it is both understated—“exploring” rather than anything more definitive—and yet it is also rather lofty; after all, a “face” is a pretty important part of the anatomy. But how physicians “appear” to patients and the public, and how we can, in turn, express ourselves (what is more expressive than the face), are evoked by suggesting that, in a very real way, the “Humanities” is “the face” of Medicine. This is not to suggest that only the Arts and Humanities represent what is “human” about medicine. The philosophy and even theory lying at the root of a Humanities Program must be that the Humanities, “learning or literature concerned with human culture,” must be woven throughout medical education and, one might add, must play a major role in the life and work of the modern practitioner of the Art called Medicine.

For the purposes of this brief review of the current medical literature and opinions expressed therein the greatest challenge was how even to define the subject of the review- The
Humanities. Add to this that we use the term “Medical Humanities” and the task can appear, at the onset, immobilizing.

The value of this review is less the literature culled from electronic and other sources and more the forcing of a realisation of the broad and scattered nature of whatever we define the medical humanities as being. Crucial as we medical educators believe the Humanities to be in the education of the modern physician, we quite frequently feel, in the environment of a medical school, as the proverbial ‘square peg in a round hole,’ not quite fitting in, but yet surviving on the support and encouragement of many of our Deans and colleagues. These believe, as an increasingly large community of medical scientists and clinicians believes, that weaving elements of the arts and humanities throughout the warp and woof of medical education impacts, and perhaps significantly, the quality of the grist of the mills we call medical schools.

One cannot escape, even in this brief introduction, the creeping uncertainty introduced by words “believe,” “think,” or “feel.” It became quickly evident in performing this review that “we” just didn’t fit well into the review! The plea in the instructions for conducting this review to “give priority to empirical and evidence-based papers...” fell on eager but inadequate ears. Quite simply, with the exception of some literature documenting salutary effects of singing and music on physiological and immunological parameters, there are few credible references even remotely applicable to “evident-based” medicine in the field of humanities education. Even then evidence of the benefits of students participation in arts and humanities exercises or developing a ‘knowledge base’ in the fields of history, philosophy, anthropology, music, and such is often indirect and implies that aspects of humanities is more of an “instrument” of education rather than an important, if not crucial, element of the knowledge and wisdom required of modern physicians. In this age in which the robots are already upon us, surely the need is now greater for a closer examination of the state of medical humanities within the Canadian context of medical education, and at the very least, this brief review should be one step in that direction.

Methods

The guidelines proposed by the Review Template were followed as closely as possible to the assigned task: “... to conduct an ‘environmental scan’ of the practice and knowledge of medical education in Canada, [in respect to] the Medical Humanities and Social Sciences.”

The format of this focus (Medical Humanities/Social Sciences) was designed to be a structured review of the literature, a targeted brief survey of programs within Faculties of Medicine in Canada and a narrative outlining key findings and common themes as outlined in the template that had been provided.

To best benefit medical educators, and in keeping with the mandate, most of this “scan” was a summary of the findings and implications for medical education and those involved in it. Our approach has been to draw on any previous surveys of Canadian Faculties of Medicine. In addition, we strove to interpret, and not merely catalogue, the diversity surrounding the philosophy, structure, content and other essential elements of the Humanities and Social Science offerings related to medical school curricula.
Employing both electronic and hand searches from sources recognised internationally as repositories of significant developments in the field of the arts, social sciences, humanities and medical education, we performed a preliminary scan which suggested that we should structure our analysis and data collection around the following general guidelines and themes, derived from literature review and surveys of programs:

1. The **philosophy and definitions** upon which these programs are based;
2. The **structure** of the program within the hierarchy of the Faculty of Medicine—program? department? division?
3. The **faculty members** involved in programs, their backgrounds, time commitment, etc.; this included the employment of a permanent “Director or faculty member responsible for Humanities” and the title of same;
4. The “approved” **place, within the curriculum**, of Humanities and Social Sciences initiatives;
5. **Community contacts/alliances** of such programs;
6. Evidence of **interprofessional initiatives** and partnerships within the university with other faculties, programs and Schools.

Electronic and manual searches were conducted using the above themes as guides to the analysis and synthesis of papers included in this review. Key words used included: humanities, medical humanities, social sciences, humanism, humanitarian, arts, ethics, bioethics, medical education, faculties of medicine, medical curriculum, etc. Although most attention was given to papers of Canadian origin, several foreign publications were included when cited consistently by Canadian authors or when a foreign source appeared to be the origin of overall philosophical or educational theory guiding a particular program in Canada. [Note: Although the template for this environmental scan requests giving “priority to empirical and evidence-based papers” these criteria for inclusion, if strictly applied, would result in a very short review indeed. No papers (as far back as 1975) were uncovered that could be in any way described as “empirical” or “evidence-based” as these terms might be rigidly and rightly applied. In fact, only one paper was reviewed that attempted to give an overview of the state of the medical humanities in Anglophone Canadian schools.]

As a supplement to the literature search and review, we had intended to conduct an informal survey of programs across the country, using the criteria outlined above as a guide to document common themes. However, in attempting a general survey by e-mail and telephone of programs in Anglophone medical schools across Canada, it quickly became evident that even the “definition” of what constituted *The Humanities* was as varied as were the ways in which the arts, humanities and social sciences were incorporated, if at all, into the medical school curriculum. Although useful to confirm our own impressions and those already reported in the literature, a reliable and statistically credible survey worthy of this review was not possible under the time constraints of this review.

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17 We attempted to identify surveys done within the last five to ten years. The purpose of our targeted survey of other programs was to understand the current common practices and formats to “deliver” programs within or without the official medical curriculum. Our intent was not to solicit opinions as to the how, why or content of programs.
Findings: Key Themes

Overview

The literature review, both electronic and manual, was restricted to the last 10 years, with most papers appearing in the last five. Although most of the top specialty journals were identified as having sections or occasional papers related to Humanities, the social sciences or the arts, reviews of content or description of programs or curricula with a “humanities” content were found mostly in the journals *Academic Medicine, Medical Humanities, Journal of Medical Humanities and Journal of Medical Education*. The exception to this is articles related to bioethics. Although this is not unexpected, the lack of peer-reviewed articles in specialty journals other than those related to medical education should be noted.

Over thirty (30) articles specific to the Humanities and medical school curricula and retrieved from the key words noted (see page 3) were chosen for closer scrutiny and analysis. Although the emphasis in the search was on reports from Canadian schools, articles were analysed as well from the United States, Sweden, Argentina, the UK, Australia and New Zealand. Despite this ‘international’ diversity, it should be stated that similar themes arose from these descriptive and ‘opinion’ papers without regard to national origin. The comments which follow are inclusive of themes arising not only from the Canadian sources but also from foreign reports.

As has already been suggested, there were no papers which could be considered ‘evidence-based’ or ‘empirical.’ Most papers were theoretical or descriptive, only one (1) dealt specifically with the Canadian scene and comparing the content, structure and governance of programs in the Medical Humanities in this country.

Issue 1...The difficulty of definitions

*Headline Description:* Clearly this review encountered substantial difficulty with the variety in what actually constituted *Medical Humanities*. In a “first-pass” electronic survey, hundreds of articles were encountered if one included the terms “humanities,” “medical humanities,” “humanism,” “humanitarian,” “arts,” “social sciences,” “ethics” (alone) or “bioethics,” and, more specifically, “philosophy,” “anthropology,” “history of medicine,” and such. Not only were these terms sometimes used interchangeable with “humanities” but there was a very broad and inclusive interpretation by some programs as to what was included in “humanities” program. It is interesting to note as well that “bioethics” or “ethics” appeared to be considered separate from the structure of ‘humanities’ programs in medical schools (see below), even though most would agree that ‘bioethics’ was part of a “humanities” approach to modern medicine. There appears to be no national consensus as to what, in the context of medical education, constitutes the “medical humanities.”

Issue 2...Varied governance

*Headline Description:* Descriptive papers from Canadian schools, and those from foreign sources, reveal a variety of governance structures ranging from occasional events to institutes. None appeared to be autonomous departments but at least one had ‘division’ status and several had “program” status. In the three major papers describing programs in Canadian medical
schools (Memorial, Manitoba and Dalhousie) one was a division shared with “community health” (Memorial), one was associated with Community Health as a horizontal element in the required pre-clerkship curriculum (Manitoba) and one (Dalhousie) was a program under the Division of Medical Education. All three had directors in charge of the programs.

**Issue 3...Varied Content**

*Headline description:* Reflecting the varied content of humanities programs is the broad range of terms included within any given article, report or website. Analysis of eight major papers indicate that most programs include an element of the history of medicine and almost always have events or initiatives related to narrative medicine. The latter may be broadly defined, as in the case of Dalhousie, to include story-telling, film, mass media, blogging, literature (e.g. book clubs, writing awards and special projects in writing) and even photojournalism. Prominent in this broad list was a sense of social “connection” within the community: charity fund-raisers, special events and projects with disabled people or children and special-needs groups, and in one case (Dalhousie) a vigorous music program was used to include families and community groups in the life of the medical school. In some programs, ethics is an essential part of “humanities” and is the only required part of the curriculum. In most medical schools it is separate and can be either an institute, a free-standing department, or a division. In overview, it would appear that the only consistent finding in an analysis of articles descriptive of humanities programs is the inconsistency of terms and content.

**Issue 4...Role analysis**

*Headline Description:* Most papers analysed referred, in one context or another, to the position occupied by the “humanities program” or the role of a given program in the “mission” of the medical school. Woven throughout the discussion in most of these discursive reports was an attempt to examine both the content of the program and the goals as well. With the exception of the cross-Canada survey done of Anglophone medical schools by Kidd and Connor of Memorial (1) a discussion of the overall role from a national perspective of a humanities program was missing from the papers studied.

**Issue 5...Evidence-based?**

*Headline Description:* Most papers reviewed emphasized the unique nature of the Humanities in relation to modern medical education and comment in some depth on inability of ‘non-metrical” initiatives to “fit” within the trends of evidence-based medicine. This unique nature was proposed as being one of the reasons for the “neglect” in medical school curricula, of humanities and the social sciences. None is readily ‘measured’ and criteria for evaluation are elusive. The question that persists within almost any discussion or review of Humanities Programs is “so what?” Do Humanities Programs in medical schools really make any difference in the quality of the grist coming out of the mill? The direct question asked by the title of one paper, “Can poetry make better doctors...” (7) may not even be the right one to ask. But there may well be an implicit belief that since we cannot measure the effect of humanities education on the *quality* of the physician product, surely such programs are less than essential to the education of that same physician product. The trend of such thinking would require us to demonstrate that the reduction in the *time* and the change in the *method* of anatomy teaching, for example, have made for a better “physician product.”
**Issue 6...Intersection with bioethics**

*Headline Description:* A provocative paper sounding a cautionary note regarding the direction in which the “teaching” of Humanities within medical education may be going was uncovered in the British literature (5). This paper roundly condemns the “industrialization” of bioethics and the “creation of specialists” in what the author considers elements that should pervade the work of all health care professions. He cautions that medical humanities must never be allowed to become the ‘private domain’ of only a few and that it should be part and parcel of all teaching and clinical programs within medical schools and, indeed, the practice of medicine. There is reference in two or three of the thirty papers to the intersection of the humanities programs as they exist in current medical education with bioethics. These references did not suggest, however, that one was wholly separate from the other. With national regulatory bodies requiring programs in bioethics, and with Canada Chairs sprinkled throughout the country in the field, it is understandable that bioethics is highly visible when compared to other programs in the humanities.

**Issue 7...Developing Alliances**

*Headline Description:* It is clear, even after only a superficial perusal of these papers, that most humanities programs or initiatives rely heavily on collaboration and alliances within and without Faculties of Medicine. In fact, several papers suggest that the Humanities Program is a major bridge to communities- whether medical specialties or community institutions or agencies. At least one (3) describes programs shared with academic departments, as well as governmental and charitable bodies.

**Issue 8...Personality Dependent**

*Headline Description:* A recurrent theme which appears to reflect the thinking at this and other institutions according to our informal survey and bolstered by the Memorial survey and review paper (1) is the influence of, if not dependency, of Humanities programs on the commitment, dedication and, indeed, passion, of the Director or faculty person in charge. There is an implication in this belief that the character of the programs and initiatives therefore may depend very much on the personality and personal commitment of those leading them.

**Implications**

These eight themes or issues could carry significant implications for the future direction of medical education throughout the country. Drawing on each of those issues, the following comments could reasonably be made:

**Implications: Issue 1-The difficulty of defining “Humanities” and “Humanities Programs”**

From this review, and from surveys and what is known about programs across the country, it can be said that programs vary in terminology, breadth and content, and the elective nature of most within the curriculum reflects this diversity. Without a national consensus, the question should be asked- as it has in several papers- as to whether this is a good thing or a bad thing. In planning for the future of medical education, it is most likely a “bad” thing, in that one can hardly plan for anything one cannot define. The question must then arise as to whether national bodies must
make decisions as to whether “The Humanities”- however it is defined in any regulation- should be made a compulsory element within the undergraduate and graduate curriculum, and whether the need for a good “dose” of Humanities is implicit in the philosophy of the CanMEDS and whether they might be used as an instrument of reaching the goals set by, to cite but one example, the Royal College.

Implications: Issue 2- Varied Governance/Structures
The wide disparity among initiatives in the Medical Humanities across the county has been recognised for some time. This is not to suggest that there is NO exposure to the arts and humanities if a school does not have a structured program that is well-defined, given a budget and has a recognised Director. But the organisation of these programs is so diverse, so indistinct in some schools, that surely that carries a message that “Humanities” may be “nice add-ons” but are not essential to the formation of the modern physician. The message to students is clear in those instances.

Implications: Issue 3: Variety of content of programs
Again, referring back to how the ‘Humanities’ is defined, one can hardly expect a consistent content to a program if it is not clearly defined what that program encompasses. At one school (Dalhousie) some rather arbitrary decisions had to be made in order to determine budgetary allotment to various initiatives. Formal programs in the Medical Humanities fall under five “units” or sections: history of medicine, narrative medicine [includes story-telling, film, media (including television, podcasting and radio), literature (including writing, book clubs, etc.)], music, spirituality and visual art (including painting, photography and sculpting). No structure, however rigid, should suggest that there is no place for spontaneity and “grassroots” initiatives in the humanities. But “educational anarchy” is as inappropriate in the medical education for humanities as it would be for anatomy or a clinical specialty.

Implications: Issue 4: Role and Relations of Programs within Medical Schools
Without an underlying philosophy of an inclusive Humanities Program that is woven throughout the curriculum of the modern medical school there is little hope that Humanities initiatives will lift themselves out of a type of museum of the curiosities. Several medical schools are well beyond this stage, having decided that an exposure in undergraduate (at least) medical education to medical history, narrative medicine, literature, perhaps music and the arts is an essential element in the education of the modern physician. Deciding on the “why” it is essential leads inevitably to a discussion of the trend of evidence-based medicine and the place of something so vague and “un-measurable” as the Humanities, by their very nature, are. [see also below, “Evidence-based Medicine]. The clear implication to the need for defining a role and reason for Humanities within the medical school is that someone will actually do this; that is, will set guidelines with some element of measurement to require formal programs for undergraduate accreditation or specialty training.

Implications: Issue 5- Evidence-based Medicine
With the trend toward evidence-based medicine becoming the standard applied in many clinical programs and the emphasis on this principle in undergraduate and postgraduate training, it is little wonder programs that are, by their very nature, not ‘measurable’ suffer in reputation and value. Some of the aspects of Humanities programs are at least “test-able” (e.g. history of
medicine) and perhaps this is one reason why such programs are present in greater number than other aspects of the broad range of humanities initiatives and experiences.

**Implications: Issue 6- Intersection with Bioethics**
The paper criticising bioethics for becoming “industrialized” and painting itself into an academic corner struck a warning note and suggested, in a sense, that bioethics should not be “specialized” and “taught and practiced” by only qualified (usually PhD) “ ethicists.” It is implied by several papers that ethics should be included in a Humanities curriculum, and in at least one school a proposal has been suggested to create a “Department of Humanities and Social Medicine” within which ethics would reside.

**Implications: Issue #7 Developing Alliances**
The broad nature of the Humanities would argue for the creation of alliances and collaborative programs in order to tap into the rich resources of non-medical Faculties and staff. In doing so, at least at Dalhousie, a Humanities Program has the potential for leading the creation of interprofessional education that could set the pace, and the example, for other areas of teaching. The implication for medical education is that, using the Humanities as a template, true interprofessional education could be facilitated by joint programs beginning with the Humanities.

**Implications: Issue #8: Personality Dependent**
It might be suggested that any program/initiative is dependent upon strong leadership within the Faculty. But because of the loose interpretation of what actually constitutes ‘the Humanities,’ each program would have, most likely, marks of the creator of that program or keeper of its flame. It is, however, incumbent upon the responsible Faculty members to ensure that the programs and projects under their directorships be well prepared for any change in leadership.

**Summary of Implications and Future Challenges**
The implications of the finding in this literature review are clear, but require a commitment on the part of national bodies concerned with medical education in Canada to weave a thread of ‘humanities’ and all that implies throughout the cloth of physician education. Without this commitment, programs will continue to be ill-defined, under-funded, haphazard, and lacking in defined goals and objectives. Without national guidelines and specific evaluation tools applied during the accreditation process humanities programs will remain in the murky shadows of educational credibility and in the anteroom of the house of medicine.

The future challenges for credible programs will include funding and defined budget support, including the establishment of chairs in humanities at medical faculties either privately funded or from government coffers. In addition, humanities programs must strive to bridge any gap that may exist between the medical school and the clinic. A network of faculty members in a medical school can form the basis for doing this, with cross appointments from clinical and basic science specialty areas to divisions of medical education, as one example. One major challenge will be to consider the role and structure of bioethics programs, whether they are structurally departments or divisions, in any realignment of the arts and humanities initiatives within the governance and structure of the medical school and its curriculum.
Annotated Bibliography

Key papers and reference materials most relevant to this discussion and review of the humanities in medical education in Canada:

This paper is the only survey of the state of medical humanities in Canadian (Anglophone) medical schools located in the scan. The survey was conducted by telephone and one face-to-face interview. What they call the “anarchic approach” to ‘teaching’ humanities is in sharp contrast to the standards and methods of teaching the basic and clinical scientists and the authors argue for at least an attempt to reach a national consensus on content, governance, methods and the design of programs.

A paper documenting the history, evolution and current status of the first program in Humanities with required components in the undergraduate curriculum. It is the only paper reviewed that gives financial information, including where funds originate to support the initiatives. Although described by the authors as a “successful program,” the criteria for this designation are not outlined.

This paper is a description of one of the earliest organised and funded programs in the country and describes a broad program which has been woven into the teaching and life of that school. Phase I of the program is described as offering the same electives and research opportunities available to students in the basic and clinical sciences. Phase II, towards the end of the period ending in 2003, was to incorporate humanities education within the structure of a problem-based learning curriculum format. Phase III, the development of a graduate program, was predicted to teach methods of incorporating the humanities into current medical school curricula and the clinical environment.

This paper serves as a warning to medical educators; ‘don’t go the way of bioethics.’ That is what this author advises we do NOT do: to fall into the pits of “routinisation, exclusivism, narrowing, specialisation, and professionalisation.” His belief that medical humanities is rooted in imaginative inquiry seeks to equate it with the foundation of the basic and clinical sciences. He does not, however argue for “anarchism” and a “structureless” format.

A companion piece to the above paper by S. Pattison. But supportive of the general cautions, with some reservations.
An elegant argument for the important of the arts and humanities to be woven into the medical curriculum, not as an ‘instrument’ for teaching but inherent in the fibre of the cloth. He argues, and convincingly even, that the approaches and methods of the disciplines represented under the term ‘humanities’ are “intrinsic to society’s understanding of medicine.”

References
Population health: A collective challenge for Canadian medical schools

Summary

The term population health describes the outcome of the health of populations as a group, an outcome that is measured by indicators. This includes social and environmental factors and is therefore linked to CanMEDs competencies such as Advocacy. The importance of medical education being oriented to meet the needs of the population has been discussed since the 1980s, and many recent accreditation ‘hot topics’ are related to population health. An understanding of population health will also be necessary to function in potential future physician payment models such as ‘pay-for-performance’ and other needs-based payment systems.

Major Themes Identified

The authors identified the following five challenges facing population health:

- Lack of infrastructure at each school (both in terms of teachers and in terms of infrastructure for community, non-hospital placements)
- Poor profile among students (including a de-valuing of public/population health by other clinicians)
- Agreement on main curriculum elements and dedicated time to teach it (despite the MCC’s approval of uniform objectives)
- Relation of population health to clinical prevention (and if these subjects are complementary or separate in their contents and in their ideal places in the curriculum)
- Link to post-graduate training (with respect both to national objectives and to actual teaching as being carried out in residency programs)

Best Practices & Innovations:

In the United States:

- The AAMC and the CDC are developing demonstration projects in an attempt to create models of best curricular practice.
In Canada:
- The AFMC’s Public Health Task Group have instigated multiple innovations in this area:
- Acceptance of common objectives by the MCC
- Overcoming the isolation of individual teachers (e.g. the Public Health Information Network (PHEN))
- Creation of an inventory of shared teaching resources (funded by PHEN)
- Links beyond undergraduate medicine (organized by PHEN and facilitated by the inclusion of public health concepts within RCPSC competencies and CFPC principles)

Note: A separate, more in-depth paper on best practices has been commissioned by the AFMC Public Health Task Group.

Full Text

Background
The terms “public health”, “population health”, and “publicly funded health care” are often confused by the public and the medical community at large. The organization and source of funding for health services is important but it is not part of this review. Rather, the term “public health” refers to “the combination of sciences, skills and attitudes that are directed to the maintenance and improvement of the health of a population or populations through collective or social actions”1. In contrast, population health refers to the outcome of the health of populations as a group and is measured by indicators 2. Many public health experts have debated the differences between these two definitions but at the level of undergraduate education, this differentiation is relatively unimportant. The common feature is that the topic includes looking at health and its determinants at a population level in addition to an individual level.

The study of a population’s health must include the social and physical environmental factors that determine it. Famous studies and reports, such as the Black Report, 3 have clearly shown a link between health and the social environment. Natural disasters that disrupt established infrastructure and the experience of some developing countries remind us that the major changes in health are due to the changes in the determinants of health operating on a population level; the provision of safe water and effective sewage treatment being the classic example. Recent work linking the importance of income 3,4, control over one’s environment 5, and social support 6 have emphasized the role of these other determinants of health. Many of these are reflected in the Advocacy and other competencies defined in the CanMEDS objectives7.

The importance of orienting the medical education system to meeting the needs of the population dates back to the 1980s and the Edinburgh Declaration 8. Most recently, the “Toward Unity for Health” movement at the World Health Organization (WHO) 9 has re-iterated this principle and it has been taken up in Canada, specifically by the AFMC, under the banner of social accountability 10. In Canada, the outbreak of SARS in 2003 led to an evaluation of the public health system by Naylor 11, Walker 12, and Campbell 13. All three reports called for an increased emphasis on public health training and teaching at all levels. In the US, the Institute of Medicine
(IOM)\textsuperscript{14} has released a document on the need and methods to improve training of public health physicians. The emergence of new non-communicable threats to the population’s health, such as obesity\textsuperscript{15}, and infectious ones such as extensively resistant Tuberculosis (XDR-TB)\textsuperscript{16} will require the combination of individual and population-wide approaches to health promotion and protection.

In terms of accreditation standards, many of the “hot topics” in the LCME list\textsuperscript{17} are related to population health. Population-based medicine itself is specifically identified as a topic on this list. The American Association of Medical Colleges (AAMC) also identified educational objectives for population health that were published in 1999\textsuperscript{18}. New objectives for the prevention and treatment of obesity were released by the AAMC in 2007 following the recognition of its implications on population health\textsuperscript{19}.

Finally, as the health care systems continue to change and seek maximum efficiency, most provinces have moved to the regionalized provision of services based on need\textsuperscript{20}. In addition, physician payment systems are moving away from fee-for-service towards capitation and other alternative models of payment. These two administrative practices will require all physicians to understand the concepts and applications of population health as it is applied to needs-based planning and needs-based payment systems, including “pay-for-performance” indicators.

**Search strategy and resources accessed**

As one consequence of its social accountability initiative, the Association of Faculties of Medicine of Canada (AFMC) created a Public Health Task Group in 2003. Since then the AFMC Task Group and the related AFMC Public Health Education Network (PHEN) have been working to create common objectives and collect information on the current practices in terms of public health education. The reports by the AFMC Public Health Task Group\textsuperscript{21,1} formed the base of the search. The AFMC Public Health Task Group conducted a survey of the 17 Canadian medical schools in 2006 and it also identified an important article by Hau and Tyler\textsuperscript{22}. The above sources were supplemented by a MEDLINE search using the key search terms of “Public Health”, “Education, Medical” (focus on undergraduate medical education), and “Primary Prevention”. Searches for review articles were done as well as primary studies. Finally, the websites of the WHO, Pan-American Health Organization (PAHO), and Institute of Medicine (IOM) were scanned for additional resources.

**Key Findings**

As per the template provided, this section is divided into three main areas: best practices, areas of innovation and key challenges.

- **Best practices.**

  The survey of the 17 medical schools in Canada\textsuperscript{1} revealed that there was no one set of best practices in public health education. In fact there was tremendous variation. Overall, there were four main approaches. These main models were: having public health agenda incorporated into problem-based learning (PBL) cases, use of a separate longitudinal course, and having public health as a component of the “return to basics” seminars given at the end of medical school in order to help students pass the MCCQE.
The final model is a combination of the above, depending on the time available to teach the subject. Most of the articles in the published literature were descriptive in nature and give very weak evidence of effectiveness. The AFMC Task Group has recently issued a contract to have a stronger literature review to document the likely best practices and best methods of evaluating the outcomes of these educational efforts.

In the United Stated, the Centre for Disease Control has partnered with the AAMC to create eleven demonstration projects using the curriculum framework released in 2003. These projects are trying to create the “best practice” models.

As mentioned, a paper on best practices has been commissioned by the AFMC Public Health Task Group and it is anticipated that, through the PHEN, comparative studies across Canadian schools can be created in the future. This will add to the evidence base for enhancing the educational programs. Such studies will take time and money to conduct properly.

Innovations

The AFMC Public Health Task Group has been responsible for some major innovations in this area. They will be listed below.

1. **Acceptance of common objectives by the Medical Council of Canada (MCC)**. When the MCC changed its objectives to focus on clinical presentations of cases, the population approach to medicine was considerably reduced. The Task Group created a set of ideal educational objectives for population health that were later refined by the lead instructors for public health in all 17 medical schools. A common set of objectives was created and has recently been accepted by the MCC. In addition, all medical schools have accepted these objectives and will teach towards them.

2. **Methods of overcoming isolation of individual teachers**. Public health teachers in Canadian medical schools generally feel isolated from their medical colleagues and the public health teachers at other schools. Through a successful grant application to the Public Health Agency of Canada (PHAC), the Public Health Education Network (PHEN) was created. This network has been meeting for one year now and has successfully started to create mutual support for group members.

3. **Creation of an inventory of shared teaching resources**. The PHEN has funded the creation of an inventory of educational activities and resources used for public health education in the medical schools across Canada. The underlying assumption is that no one school has the resources to develop their own complete set of resources and that we should work collaboratively and share resources. There is a rough plan for the joint creation of a common “public health primer” or textbook for students. This text could be posted on the internet as a common resource.

4. **Links to beyond undergraduate medicine**. The PHEN plans to start working in the area of faculty development and linkages to the post-graduate medical education. The PHEN and AFMC Public Health Task Group recognizes the lack of faculty and faculty expertise and the need to provide faculty development in population health to all existing teachers. The group also sees the need to link the teaching in undergraduate medicine to post-graduate training. This should be facilitated by including public health concepts in the Advocate, Collaborator, Communicator, and Manager role of the CanMEDS objectives.
as well as in the physician as a “resource to the community” in the four principles of the College of Family Physicians of Canada.

Challenges

There are many challenges being faced by educators of public health in medical schools. The main six are listed below.

a) **Lack of infrastructure at each school.** Many of the teachers of public health are either non-specialists in the area or are doing the teaching on a part-time basis in addition to their regular job. While such persons are enthusiastic, they believe that they are not given sufficient support or allowed sufficient time to provide a high quality educational experience. Many of the curriculum elements for public health require placements outside of the normal teaching environments (hospitals). Hence a separate and complementary infrastructure needs to be established in order to facilitate community placements and projects.

b) **Poor profile among students.** The study by Hau and Tyler documented the lack of student interest and poor profile of public/population health. These findings do run somewhat contrary to many of the evaluations done locally at many medical schools. Part of this is related to the lack of time and integrated curriculum but many of these also speak to a fundamental de-valuing of the curriculum material by clinical colleagues. Public Health Student Interest Groups are being created but more work is needed to create a more positive image among students; the exposure of students to trained public health professionals within an educational experience in the field should help.

c) **Agreement on main curriculum elements and dedicated time to teach it.** While the educational objectives for population health have now been approved by the MCC and by individual schools, the creation of a uniform and integrated curriculum is difficult to do. There is considerable pressure on curriculum time: many schools reported pressures to include materials that are marginally related to the population health curriculum within the time already allotted. The PHEN believes that dedicated time is required to provide a clear and concise curriculum to the medical students, particularly when these concepts can be integrated with material learned in other courses.

d) **Relation to clinical prevention.** There is considerable debate in the literature, particularly from the United States, over the relative emphasis and balance in the curriculum on clinical prevention versus population health. The AAMC Medical Schools Objectives Program Population Health Objectives (released in 1998) called for an increased focus on population health. In 2000, Pomrehn et al from the Association of Teachers of Preventive Medicine released a report listing competencies in the 4 main areas of clinical prevention, quantitative skills, health services organization, and community aspects of medical practice. In 2004, an inter-disciplinary committee linked to the Healthy People 2010 project, created a list of 19 domains in 4 major areas: evidence based practice, clinical screening services – health promotion, health systems and policy, and community aspects of practice. In Canada, the AFMC PHEN agreed on the population health MCC objectives for population health but individual members have yet to agree.
fully on the relative emphasis on clinical prevention since many of these topics are
covered in other areas of the curriculum such as Family Medicine, Pediatrics, etc.

e) Link to post-graduate training. With respect to postgraduate training, the exact matching
of the population health objectives to the CanMEDS roles needs to be completed as does
the inclusion of population health concepts into family medicine and other residency
training programs.

Annotated Bibliography

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<tr>
<th>Article</th>
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<td>This paper was created by the AFMC Public Health Task Group and lays out the basic rationale for why public health needs to be taught well in medical schools. It also lays out a vision of how public health can be taught in an integrated fashion across the curriculum and through engagement with the community.</td>
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<td>This paper provides an excellent background on the public health system, the lack of infrastructure and the challenges faced by public health. It makes recommendations about increasing the emphasis on training in public health, not only for public health practitioners but for non-public health practitioners as well.</td>
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**Chronic care education for medical students in the clinics and in the community**

**Summary**

The high prevalence of chronic illness and its major impact on health care delivery in Canada and internationally are projected to increase rapidly over the coming years, prompting calls for significant health care reforms. While there are evidence-based management guidelines for most specific chronic diseases (albeit not for the more common patient scenario of having multiple chronic diseases with conflicting management guidelines), there is as yet no consensus on the appropriate model(s) of care within which to enact these guidelines and therefore within/for which medical students should be trained.

**Major Themes Identified**

Excellent chronic disease management and chronic disease-related medical education revolve around the establishment of new models of primary care delivery.

The models that best treat our patients with chronic disease will ultimately be those that best educate our trainees about chronic disease.

Excellent ambulatory care education requires:

- Continuity (of clinical supervision, but also of patient care)
- Identification of effective clinical teachers (university- and community-based)
- Development of educational models and curricula that develop positive attitudes towards patients with chronic diseases and their care (with attention to multiple structural and educational issues)
- Use of effective ambulatory teaching strategies (during and before/after clinics)
Conclusions & Directions

Comprehensive programs for managing patients with chronic illnesses should be established within community-based primary care practice; the training of medical students in the ambulatory management of chronic illness should shift to the community, ideally within continuity clinics or rotations and in collaboration with regional networks linking to teaching hospitals for support and specialty access. Teaching hospitals, in turn, should integrate existing services and support systems within their outpatient departments. In order to take on additional educational responsibilities, primary care physicians must be provided with sufficient resources, including remuneration, for the added demands on their time, as well as with faculty development and curricular and administrative support.

Best Practices & Innovations

Based on the best available medical education literature, clinical training for medical students in this area should take the form of continuity clinics or rotations (whether or not within integrated longitudinal clerkship models), wherein students have an opportunity to participate directly in patient care activities as part of an interprofessional team over an extended period of time.

Full Text

Key findings/recommendations

Introduction

• The Canadian Health Care System is facing a crisis due to the increasing prevalence of chronic illness, particularly patients with multiple chronic conditions.

• New models for managing patients with chronic illness in the community are needed urgently to respond effectively to this crisis.

• All medical students, as future physicians, should receive training and experience in the ongoing management of patients with chronic illnesses, as part of this response

Best Practices in Chronic Medical Disease Management

• Patient care and related medical education should be based on the best available evidence.
• Evidence based clinical practice guidelines are available for the major chronic illnesses seen within the Canadian Health Care System, but may not be as effective in patients with multiple chronic conditions.

• Effective models for managing patients with multiple chronic illnesses and related medical education, still need to be developed and validated in practice settings.

**Teaching and Learning in the Ambulatory Care Setting**

• Programs for medical students to learn about chronic disease management, should involve a continuity ambulatory experience, where students can develop ongoing relationships not only with patients, but also with supervising faculty working as part of an interprofessional team.

• Effective clinical preceptors serving as teachers and role models, are essential for success.

• Careful planning is required for the proposed learning experience, including the development of educational goals and objectives, selecting appropriate ambulatory care models and locations, and insuring sufficient logistic support is provided to maintain both the quality of patient care and medical education.

• Strategies designed specifically for ambulatory education, including teaching and evaluation methods as well as faculty development, should be incorporated into the planning process.

**Role of the Teaching Hospital**

• Since their inception, clinics based in teaching hospitals have played a central role in educating medical students.

• In response to demands from the health care system, clinics based in teaching hospitals have become increasingly specialized over the years.

• Developing new programs for managing patients with chronic illnesses and related educational activities would require major restructuring of existing services and resources in most teaching hospitals.

• As an alternative, teaching hospitals should establish formal networks with community based programs for managing chronic illness.

• Community based rotations focusing on the optimal management of chronic illnesses therefore, need to be developed to meet educational as well as patient care needs.
Teaching the Management of Chronic Illness in Primary Care Models in the Community

- Primary care physicians in the community provide the majority of care for patients with complex chronic illness

- Optimal chronic disease management requires an integrated, comprehensive and longitudinal approach, focusing on the patient and family within his/her community

- Interprofessional teams and inter-professional collaboration are gaining recognition as key strategies to meet the complex needs of these patients

- Effective education for medical students in the management of patients with multiple chronic illnesses will require early and ongoing exposure to primary care models in the community, to balance current clinical teaching based predominantly on inpatient experiences.

- Sufficient administrative support and resources will be needed for this initiative to succeed

Chronic Care Education for Medical Students in the Clinics and in the Community

Introduction

The World Health Organization (WHO) defines chronic conditions as health care problems requiring ongoing management for decades(1). Due to a combination of more effective treatments for acute illnesses, changing lifestyles, and aging populations, the prevalence of chronic illness has been increasing dramatically in recent decades, in both developing and developed countries. The WHO now projects that chronic illness will be the leading cause of disability worldwide by 2020, and the most costly problem facing healthcare systems, currently designed primarily for managing acute medical problems (1).

Based on extensive surveys and data from Statistics Canada, the Health Council of Canada estimates that more than 9 million Canadians currently are affected by at least one common high impact chronic disease, resulting not only in significant mortality and morbidity, but also placing enormous strains on the health care system. Seven high impact chronic illnesses (2) account for over half of all visits to family physicians and specialists in Canada, over 60% of visits with community nurses, and over 70% of nights spent in hospital (3-5), an impact that will increase as the population ages. Many of these chronic conditions in turn are related to avoidable risk factors (1).
In response, health care organizations around the world are calling for major reforms in the approach to chronic illness. While specific proposed strategies vary, almost all organizations emphasize a number of common basic recommendations including (6-14):

- Care should be based on the best available evidence, to promote optimal outcomes (1,3,6-9,12-17)
- Greater emphasis is needed on primary care including prevention, and empowering patients as active participants in self-directed care (1,3-17)
- Interprofessional health care teams are gaining recognition as a key strategy to achieve these goals (1,3-17)
- Effective management of chronic illness requires community based comprehensive care, focusing primarily on the needs of the patients, rather than on specific diseases or disease processes (1,3-17)
- Adequate support systems, including information systems, are essential to support appropriate and effective patient care programs (1,3, 6-17).

Within Canada, both the federal and provincial governments have recognized the need for urgent and extensive primary health care reforms as a key strategy for responding to these growing health care demands (15-17). In response, new primary care models currently are emerging across Canada, varying significantly in structure, size, scope and models of care (18-23). For these reforms to be implemented successfully however, Canadian medical schools must also insure that future physicians are prepared to function in this new environment. To date no rigorous controlled trials assessing the effectiveness of these new models of care have been carried out in this country. Similarly, little objective research has been published on the best ways to educate medical students in this new and evolving venue. This report looks at a number of challenges that must be overcome, to achieve the goal of providing medical students with appropriate education in the management of patients with chronic illness, specifically:

1) Developing chronic care guidelines and curricula based on the best available evidence.
2) Identifying effective teaching strategies for this new environment
3) The potential role of clinics based in teaching hospitals
4) Developing community based models for chronic care and education
Best Practices in Chronic Medical Disease Management

Educating medical students about the ambulatory management of patients with chronic medical conditions should be based on exposure to best practices. In both Canada and the United States, patients with one or more chronic illnesses consume the majority of primary care services, demands that are increasing rapidly, particularly due to growing numbers of elderly patients with multiple chronic illnesses (24, 25)

In response to this challenge, Ostbye and colleagues (26) developed a method to identify which chronic illness should be prioritized. They identified 10 conditions making up the majority of primary care visits in the US, based on the following selected criteria:

- Most common presenting conditions in the primary care setting, with the highest mortality and morbidity
- Conditions routinely managed by primary care physicians (rather than diagnoses likes cancer, pediatric diabetes, etc. where care is supervised predominantly by specialists)
- Diagnoses with available national statistics.
- Conditions with published clinical guidelines.

Using these criteria, they identified 10 chronic illnesses having the greatest impact on primary healthcare services in the US. With the exception of cancer, this list covers all 7 high impact chronic conditions identified by the Health Council of Canada, using surveys in this country, and data from Statistics Canada, as summarized in Table 1.

Table 1: Common Serious Chronic Illnesses in Primary Care

<table>
<thead>
<tr>
<th>Ostbye et al. USA (26)</th>
<th>Health Council of Canada (3)</th>
</tr>
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<tbody>
<tr>
<td>Hyperlipidemia</td>
<td>Hypertension</td>
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<td>Hypertension</td>
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<tr>
<td>Asthma</td>
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<td>Diabetes</td>
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<td>Depression</td>
<td>Mood Disorder</td>
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<td>COPD</td>
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<td>CAD</td>
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<td>Arthritis</td>
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<tr>
<td>Anxiety</td>
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<tr>
<td>Osteoporosis</td>
<td>Cancer</td>
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</table>

While an extensive review of each of these conditions is outside the scope of this paper, comprehensive evidence supported clinical practice guidelines are already available for the
diagnosis and treatment of all of these diagnoses, including guidelines available on the Canadian Medical Association Journal website (27).

However, a number of critical issues surrounding clinical practice guidelines still need to be resolved. Both practitioners and educators need criteria for determining the best clinical guidelines among multiple available alternatives. Mechanisms are also needed to insure that clinical guidelines are revised and updated, as his new evidence becomes available. Most importantly, current guidelines focus on single conditions or disease processes only. Canadian data on primary care practices show that patients aged 18-44 require ongoing treatment for an average 2.8 chronic conditions, with the average increasing to 6.5 conditions for patients aged 65 and older (24). Existing clinical guidelines designed for single conditions only, frequently make recommendations that are incompatible or contradictory, for individuals with multiple diagnoses (28). Since each patient experiences a unique constellation of problems as well as personal preferences, optimal care needs to be individualized, and coordinated by a single primary care provider such as a family physician, through a sustained ongoing relationship with the patient (12, 29-31)

Not surprisingly, innovative new programs for managing patients with multiple chronic illness developed primarily in the United States, have not relied simply on evidence based guidelines, but on a fundamental reorganization of primary care services (6-17). Although these programs vary in structure, organization and scope, common features of all these models include community based patient focused care, coordination of services by a single primary care provider, interprofessional teams to facilitate access and integration, greater emphasis on prevention and patient empowerment, and the availability of effective support systems including scheduling systems and integrated medical records. Preliminary research suggests that these new models of care in turn can improve both the process and outcomes of care including improved control of chronic illnesses, reduced rates of hospitalization, fewer emergency department visits and lower costs (8). Best practices in chronic disease management, both for patient care and for medical education therefore should involve the establishment of new models of primary care delivery, not just evidence based guidelines and a new curriculum.

Teaching and Learning in the Ambulatory Care Setting: Relevance to Chronic Care

Providing medical students with more effective clinical training in the management of chronic disease, like the care itself, may require a significantly different approach from traditional ambulatory care teaching, but much can still be learned from the medical education literature on this topic. A comprehensive review of the recent medical and health professions, education, literature, was carried out using MEDLINE, EMBASE, CINAHL, and SOCIAL SCIENCE CITATION INDEX (SSCI) databases from 1990 to March 2008. Over 430 publications covering a wide range of topics were identified and reviewed by a single author. Relatively few controlled trials on ambulatory care teaching were identified, and no controlled studies were found focusing specifically on teaching chronic disease management to medical students in the ambulatory care setting. (See Appendix I). However, a number of important themes, concepts and requirements needed for planning effective ambulatory care teaching appeared recurrently in the literature, including:
Continuity

Lack of continuity of patient care in a system designed primarily to manage acute medical problems, has been recognized as a major contributing factor to the poor outcomes seen in the management of patients with chronic illness, particularly in patients with multiple chronic conditions. Improving continuity of care, in turn, is one of the foundations of primary care reform in Canada, as well as a key feature in successful new programs for managing chronic illness.

Hirsh and others (32-34) have also stressed the need for continuity, to improve the clinical training for medical students. Based on the principles of modern learning theory, they emphasized that clinical training is most effective when the medical students are directly involved in the care of patients, including participating in initial assessments and diagnosis, as well as having an opportunity to observe the clinical course of the patient and the chronic disease processes over time. Continuity of curriculum, with progressive increases in the amount and complexity of knowledge, skills and clinical tasks expected from students as they master fundamentals, also promotes optimal learning. Finally, the authors (32) stressed the need for continuity of supervision, with ongoing interactions over time between students, clinical preceptors and other healthcare professionals involved in shared clinical responsibilities, to further enhance educational and professional development.

To incorporate these educational principles, the most effective approaches to teaching medical students about the management of chronic illness should involve early and ongoing participation in effective, multidisciplinary healthcare programs.

Identifying Effective Clinical Teachers

Accumulated descriptive evidence suggests that the quality and performance of clinical teachers is essential for creating effective ambulatory educational experiences for both medical students and residents. In the 1970s through a review of the literature and student surveys, David Irby identified a number of qualities that characterize effective clinical teachers in the ambulatory setting (35). These qualities included enthusiasm, organization of presentations, and skill in interacting with learners. Through a subsequent factor analysis of the survey results, he identified clinical competence and skill in providing clinical supervision as additional important attributes. In a follow-up review of additional studies in the 1990s, Irby confirmed his earlier findings, and showed that the characteristics of the most effective teachers on inpatients wards mirrored the same qualities seen in the clinics (36, 37). In both venues, the best clinical teachers functioned as positive role models, were dynamic, and supportive of both patient care and the
learning process. At least one survey of medical students showed that community based clinical teachers received higher ratings in these areas, than university based faculty (38).

Later more focused research on effective clinical teachers in the ambulatory setting identified that a deep approach to learning, where trainees are encouraged to pursue self directed learning with a sense of choice and independence, was highly valued by both students and residents (39). Again using surveys, other authors identified interest in teaching, accessibility to learners, respect for the opinions of the trainees, and the provision of effective feedback, as the qualities identified by both medical students and residents for effective teachers (40-43). A more detailed examination of 94 teaching behaviors based on a survey of medical students by Kernan and colleagues (44) also identified the importance of “priming” discussions away from the patients, about diagnosis and management, as a key trait of effective clinical teaching. The delegation of responsibility for case discussions, interpretation of laboratory investigations, and the provision of immediate feedback were also identified. More recent studies on continuity clinics in internal medicine residency training programs, again have shown that the performance of the clinical preceptor as a role model, was critical to both effective teaching and learner satisfaction (45, 46).

In summary, ongoing research appears to confirm and consolidate the earlier work of Irby and others in identifying all the qualities of effective clinical teachers. Ongoing studies using teacher encounter cards at the point of teaching, show great promise as quality assurance tools for assessing the educational performance of teachers in the clinics (47). Providing a medical students with effective teaching on the management of chronic illness in the ambulatory care setting, will depend to a large degree on the recruitment of effective clinical preceptors, based on these well defined criteria. As outlined above, some research to date suggests that community based clinicians potentially can perform this role at least as well as university based clinical faculty (38).

Educational Models/Curriculum

The educational literature examining ambulatory care teaching models and curricula for medical students similarly is descriptive only, focusing primarily on the development of basic clinical skills including communication, interviewing and physical examination. Any proposed educational rotation for medical students about the ambulatory management of chronic illness, must include the development of positive attitudes towards patients with chronic diseases and their care. A recent BEME review indicated that early and ongoing exposure of medical students to model primary care practices in the community positively influenced their decisions to consider careers in this field (48), an observation that has been confirmed in a more recent study (49). Dent has proposed the creation of dedicated ambulatory care teaching centers, using clinical volunteers and standardized patients, as a strategy to ensure that students receive a positive educational experience, while learning to appreciate the nature of ambulatory care and the unique knowledge and skills need to manage patients in this venue (50, 51). However, other research examining longitudinal clinic experiences has shown that students perceive that learning is more meaningful and effective when they participate directly in the care of patients with significant conditions (52). Multiple studies on short term or block rotations providing medical
students with an intense exposure to a single specialty area, often a single chronic disease, have shown that student performance on specific related knowledge and skill tests improved significantly, and students satisfaction with the rotations was high (53-57). However, the impact of these rotations on student attitudes towards chronic care, longitudinal learning, or the importance of continuity remains unclear.

At the time of this review, no formal programs for training medical students in the management of patients with chronic illness have been described or evaluated in the medical education literature. Despite the introduction of a number of innovative chronic care models in the United States, clerkship directors in that country still appear uncertain about the best way to address this need (58, 59). Traditionally, clinical training for medical students (clinical clerkships) has been structured as block rotations, preventing a longitudinal exposure to patients with chronic conditions. Articles focusing on longitudinal primary care rotations suggest that students can acquire a better understanding of patient interactions, chronic diseases, and the value of continuity of care through these types of rotations (60). However, the students involved in these studies generally were self selected, comparison groups usually were not included, and the data was mainly self-reported. One cohort study found that students in a longitudinal primary care clerkship track, achieved lower scores on USMLE Part I exams than colleagues completing traditional clerkship rotations, but similar scores for USMLE Part II exams, and performed better on a generalist OSCE Exam (61). A recent article examining a continuity clinic for medical residents, revealed that establishing close affiliations with community based patient organizations, increased emphasis on patient support and self-management, and the use of evidence based guidelines, successfully reduced emergency room utilization and the cost of care for patients with asthma (62). However, the study did not examine the care of patients with multiple chronic illnesses, or the impact of the additional complexity resulting from co-morbid conditions.

Although providing few specific solutions, the medical education literature has identified a number of critical issues that must be considered in planning an education experience for medical students in the ambulatory management of chronic illness including:

- Clinic location, organization, access to specialty consultations, facilities, and services. (37, 39, 43, 51, 63-66)
- Provision of adequate space for teaching as well as patient care. (38, 39, 43, 64)
- Teacher-learner interactions and the number and mix of trainees (37, 64)
- The impact of medical education on clinical efficiency, on clerical and allied healthcare professionals, and on the cost of services. (51, 67, 68)
- Maintaining quality of care (including patient satisfaction with services) (69, 70)
- Providing clinical preceptors with adequate support, faculty development, effective feedback and recognition. (43, 47, 71-75)
Effective Techniques for Teaching and Learning:

Numerous publications have appeared in the medical education literature focusing on unique teaching techniques and expertise, for enhancing learning in the ambulatory care setting. Again however, most are descriptive and qualitative, with little experimental evidence for the effectiveness of the described techniques. Specific strategies identified in the literature include:

- General tips and methods for approaching medical education in the ambulatory care setting. (43, 65, 76-83)
- The importance of clearly defined educational objectives designated responsibilities, and the orientation of students to the clinic. (84, 85)
- Priming and reflection. (70, 86)
- Micro teaching techniques: the one-minute preceptor, SNAPPS, and others. (87-91)
- The use of focused clinical scripts. (92)
- The role of scheduled teaching sessions, ambulatory morning report, post clinic seminars. (93, 94)
- The potential role of new technologies. (95)

Ambulatory care teaching also requires new methods for evaluating learners and clinical preceptors, as well as the educational experience as a whole. To help ensure the success of any proposed new educational program, sponsoring faculties must ensure that support is in place for faculty development, ongoing feedback, and recognition for the contributions of the preceptors, with an adequate administrative infrastructure to sustain these activities.

Implications and Conclusions about Teaching and Learning:

As elaborated above, there is substantial accumulated literature on ambulatory care teaching and learning. Careful understanding of this work is important for creating new models to provide medical students with the most effective educational experiences in the management of chronic disease. A significant proportion of this literature is derived from post-graduate training experiences, and therefore must be extrapolated cautiously to undergraduate medical learners. While much of the literature is descriptive, is limited in design, controls or concrete outcomes, several themes emerge convincingly. Evidence from a variety of sources strongly supports the observation that the success of ambulatory medical education programs is determined largely by the performance of the teachers and preceptors. Characteristics associated with instructor effectiveness have emerged from a wide range of student opinion surveys and faculty self-reflections.

A variety of structures and venues for ambulatory care teaching have been described, as well as a large number of teaching techniques and learning resources. In many cases the evaluation of their effectiveness has been limited to participant satisfaction, rather than “hard” educational outcomes. Determining the best structural model for teaching medical students about chronic disease management is also limited due to the lack of studies directly comparing alternative approaches. At the same time however, growing interest has been developing since the 1990’s in the establishment of integrated longitudinal clinical clerkships (84, 96, 97). Integrated clerkship
models are congruent not only with public policy statements on health care and medical education reform (96, 97), but also allow medical students to learn about the management of patients with multiple chronic illnesses, with a focus on longitudinal learning experiences, a generalist approach, and educational continuity. The models that best treat our patients with chronic disease will ultimately be those that best educate our trainees about chronic disease.

Potential Role Clinics Based in Teaching hospitals

Clinics based in teaching hospitals originally were established to provide health care services for the poor. Hospitals provided the space and support staff while physicians donated their time and skills (98, 99). Since the time of Osler and Flexner, they have also played a central role in providing clinical training and experience for medical students and residents (100, 101). As a result, the clinics have continued to grow and develop despite the introduction of universal health care insurance in this country. With a substantial infrastructure already in place, developing comprehensive programs for patients with multiple chronic illnesses in existing ambulatory care departments initially would appear to be a logical solution for responding to evolving new patient care and educational demands. However, the current structure and organization of ambulatory care clinics in most teaching hospitals, ongoing demands for specialized services, and the demonstrated advantages of basing chronic care services in the community, all tend to make this option both less feasible and less desirable.

Ongoing changes to the Canadian health care system over the years have continued to modify profoundly the role and operation of hospital based clinics, particularly clinics based in teaching hospitals. With the rapid growth of medical knowledge and technology since WW II, physicians increasingly have found they must specialize in order to maintain high levels of expertise in more focused areas of medicine. This trend to specialization has been most pronounced in academic settings, stimulated further by the availability of funding for research and related academic activities, often linked directly to specific disease processes or specialty fields (102, 103). At the same time increasingly specialized practitioners have become more reliant on new forms of medical technology and related support systems, to diagnose and treat patients under their care, including patients with chronic illnesses. With ready access to sophisticated, often extremely costly equipment, support services and personnel feasible only in large organizations like tertiary care referral centers, highly specialized physicians often find they must practice in teaching hospitals, in order to provide the kinds of patient care services they have been trained to provide (104-106).

In the 1980’s and 1990’s, dramatic reductions in inpatient beds created new demands on hospital based outpatient clinics, as an alternative mechanism for providing access to highly specialized services, expertise, equipment and personnel, without requiring patients to be admitted. As part of this trend, hospital based outpatient clinics faced growing pressures to expand not only clinical services, but also related teaching and research activities, as patient care shifted progressively from the wards to the clinics. In 1969, the task Force Report on the Cost of Health care Services in Canada predicted that the hospital of the future would be an ambulatory care facility with inpatient beds attached (107). Based on patient encounters rather than space or operating budgets, this prediction is already true for most Canadian teaching hospitals.
The current structure and organization of outpatient clinics in most Canadian teaching hospitals reflected this historical evolution. Clinics generally are organized according to clinical departments or programs, rather than as a single entity. Physicians working in the clinics are responsible primarily to their clinical department heads for the health care services and teaching they provide, as well as related research activities. Nurses, other professional and clerical staff working within the same areas, usually report to the hospital administration, which employs them. At the same time, clinics frequently include professional or clerical staff recruited and funded through research grants, demonstration projects, by clinical practice plans, or even by individual clinicians, again with different position descriptions and reporting structures. As a result, outpatient departments in teaching hospitals frequently lack a single administrative structure, with authority and responsibility for coordinating health care services. The lack of an integrated administrative structure in turn limits the capacity of most outpatient departments to plan and implement integrated support systems and services needed for optimal efficiency, including integrated medical records, scheduling systems, or mechanisms for re-allocating limited resources to respond to changing health care needs in the community (108, 109).

Within this environment, attempts to introduce new programs to provide comprehensive care for patients with multiple chronic illnesses, will present a number of major challenges. First the new programs will require substantial space, equipment and support staff, either through the acquisition of new resources, through reallocation, or both. Surveys of primary care physicians in the community consistently identify problems with accessing specialty consultations and services as a major deficiency in the Canadian health care system (110). At the same time, pressure on inpatient beds has never been greater. Teaching hospitals therefore would have to respond to conflicting priorities in attempting to maintain or expand existing services and related academic activities, while trying to accommodate new chronic care initiatives. Second, best evidence to date indicates that effective programs for managing patients with chronic illness should be structured around the patient population at risk, rather than focusing on specific clinical conditions or specialty areas, as occurs currently in most existing clinics in teaching hospitals. In turn, teaching hospitals would need to consider establishing at least two distinctly different management structures for their ambulatory programs, or dramatically reorganizing existing services. Finally, even if all of these requirements can be met, available health services research suggests that the care of patients with chronic illness optimally should be based in the community, where primary care physicians currently provide the majority of services.

As an alternative proposal:

- Comprehensive programs for managing patients with chronic illnesses should be established within community based primary care practices, as part of ongoing primary health care reforms
- The training of medical students in the ambulatory management of chronic illness should shift to these model programs in the community.
- Based on the best available medical education literature, the clinical training for medical students should take the form of continuity clinics or rotations, where students have an opportunity to participate directly in patient care activities as part of an interprofessional team, over an extended period of time.
As part of this initiative, teaching hospitals should establish collaborative networks with regional primary care practices, to facilitate access to specialty services, provide educational and administrative support if needed, and in turn help improve patient care outcomes (11-113).

At the same time, teaching hospitals should begin to look at integrating existing services and support systems within their outpatient departments, including medical records and scheduling systems, to facilitate access to specialty referral services for primary care physicians in the community, as well as to eliminate redundancy and improve efficiency.

**Chronic Medical Care and Teaching in the Community**

Primary care physicians in the community currently provide the majority of ongoing care for patients with chronic illnesses, a role expected to increase in the future in response to the growing prevalence of chronic disease in the population, and growing pressures on inpatient facilities and Emergency Departments to discharge patients back to the community as quickly as possible. Despite this trend, most Canadian medical students still receive the bulk of their clinical training in hospital settings. Within the inpatient environment, patient care generally is highly specialized, focused on the management of acute illnesses, or increasingly on the management of acute exacerbations or complications of chronic conditions. Care is episodic emphasizing the diagnosis and treatment of disease processes, rather than on the patient as a whole. As services have become increasingly specialized, communication among health care professionals within the hospital often is limited. More importantly, communication between health care professionals in the hospitals and in the community may be delayed or incomplete (114-119). Students receiving the bulk of their clinical training in hospital settings therefore may not receive adequate exposure to a number of important elements of chronic disease care. These elements include: overall care planning and monitoring, alternative approaches to patient care, and many non-acute conditions that are managed primarily in the community (120, 121).

Effective management of chronic illnesses requires a fundamentally different approach. For optimal results, care must be focused on the patient with the disease, rather than simply on the disease process per se. Patient focused care takes into consideration the physical, psychological, social, and environmental factors that impact chronic ill-health (120, 121). The physician and patient need to negotiate reasonable treatment goals and monitoring plans tailored to the patient. This requires specific counseling skills in patient-centred care using a biopsychosocial approach and often involving liaising with other health professionals. Students need to develop listening skills to appreciate the individual patient’s perceptions of his or her illnesses and treatment and learn facilitation skills to assist the patient to achieve the goals of care. Learning these skills is not possible with episodic care teaching; students need exposure to patients over time (122).

As an increasing proportion of the population is faced with multiple chronic illnesses, students must also acquire knowledge and understanding about complex co-morbidity, to be able to manage these patients effectively. Tomorrow’s physicians need sufficient longitudinal educational experiences to appreciate fully the growing impact of chronic illness on the health
care system, and the urgent need to respond in a patient-centred manner. While multiple guidelines have been developed for single disease entities, these guidelines may conflict with each other and with the patient’s goals of care. Such guidelines can be used as information tools to assist care providers, but not as recipes for care. (123)

Primary care reforms initiated by governments across the country are intended to address challenges in human health care resource by funding interdisciplinary health care teams for primary care. Our challenge is now to understand how to utilize these teams of professionals most effectively, through interprofessional collaboration. It is anticipated that these teams will be particularly beneficial in managing patients with complex chronic diseases and in supporting their families. The skills required to work on such teams need to be taught and modeled effectively for our students, throughout their academic training.

Educators have raised concerns that traditional curricula, based predominantly on acute diseases, creates the impression that medicine is an applied basic science, providing evidence based solutions to medical problems that can be resolved. Future physicians educated primarily in this environment may not receive the training and experience needed to cope effectively with the ambiguities and uncertainties of managing patients with chronic illnesses. Generally, the goals of treatment in complex chronic disease care are to promote the quality of life, independence and optimal function in the community, allowing patients to age at home as long as possible. This represents a significant shift from the usual cure-based approach, presenting a challenge for both physicians and students who have been trained to concentrate primarily on disease cure.

For optimal results, management of chronic diseases also requires greater emphasis on prevention, and the involvement of patients as part of the health care management team, sharing responsibility as well as authority, for their ongoing care (124). The development of effective doctor-patient relationships, based on repetitive interactions with patients over time, is another cornerstone in the management of chronic illness, needed to facilitate the implementation of comprehensive management strategies (125). In selected conditions, continuity of care has also been shown to reduce both emergency room utilization and hospitalization (126). Models of continuity based on single physicians in solo practice however, are not sustainable. Medical students need to become familiar with a variety of methods to promote continuity ranging from medical informatics and the creation of shared practice models, to learning how to “pick up” the management of patients with chronic illness at any point in the course of care, while sustaining established patient centered treatment goals.(127)

Beyond the central role of continuity, there is growing evidence that multidisciplinary teamwork and collaboration may improve significantly the management of patients with chronic illness, including the quality of care and provider satisfaction (128-132). Traditionally, interprofessional teamwork has received a little attention in Canadian medical schools (121). As a result, healthcare professionals frequently have limited knowledge about the scope of practice, expertise and competencies of other disciplines (130). While there is still no definitive evidence showing that interprofessional educational initiatives improve collaborative care or patient outcomes (131-134), there is a growing consensus that students should be exposed to teamwork
in actual practice settings to acquire the interpersonal skills they need to become effective team members (120, 135).

The approaches needed for the optimal management of patients with chronic illnesses outlined above, including a patient centered focus, comprehensiveness, emphasis on prevention, patient empowerment, continuity, and the introduction of interprofessional teams are all central values to primary care and primary care reform. As a result, serious consideration should be given to shifting a substantial proportion of the clinical training for Canada’s future physicians to practice settings in the community, which model these attributes. (136) To implement this transformation successfully however, a number of potential barriers must be recognized and addressed:

• Primary care physicians in the community already are experiencing heavy workloads, expected to increase progressively in the future. In order to take on additional educational responsibilities, they must be provided with sufficient resources, including remuneration, for the added demands on their time.
• Faculties of Medicine will need to support the physicians in the community by developing well defined educational goals, curricula, teaching and evaluation tools, as well as insuring that physicians in the community have access to faculty development, and sufficient administrative support
• Methods need to be developed and implemented to insure that students in different practice settings receive comparable educational and clinical experiences.
• Mechanisms need to be developed and implemented to provide feedback and recognition to community based physicians about their teaching performance
• As outlined above, no formal objective evaluations have been carried out to date to assess the new practice models being developed through primary care reforms across the country. Similarly, no rigorous studies were identified in the medical literature evaluating the effectiveness of community based ambulatory care rotations for training medical students about chronic illness. Any proposals for curriculum changes therefore should include both formal evaluations of the impact of new models of care on chronic illness, and on related medical education initiatives.

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Chronic Medical Care and Teaching in the Community


Appendix I

A comprehensive review of the recent medical and health professions, education, literature, was carried out using MEDLINE, EMBASE, CINAHL, and SOCIAL SCIENCE CITATION INDEX (SSCI) databases from 1990 to March 2008. Over 430 publications covering a wide range of topics were identified and reviewed by a single author. Relatively few controlled trials on ambulatory care teaching were identified, and no controlled studies were found focusing specifically on teaching chronic disease management to medical students in the ambulatory care setting.

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2. Assessing quality and costs of education in the ambulatory setting: A review of the literature. Bowen JL, Irby DM. Acad Med 2002. 77: 621-80. An exceedingly thorough review of two themes in ambulatory care education that were particularly pertinent with the advent of the new millennium and remain vital to this day. However, this analysis delves well beyond the narrow view of quality and examines this parameter in the context of the learning environment, instructional methods, curriculum, evaluation methods, educational outcomes, and the satisfaction of teachers, learners, and patients.


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En l’absence de panacée universelle : Répertoire des relations médecin-patient

Résumé

Les relations médecin-patient sont au cœur de la pratique et ont fait l’objet de recherches scientifiques rigoureuses au cours des 50 dernières années. Depuis quelques années, le modèle centré sur le patient semble s’imposer dans les ouvrages portant sur la communication médecin-patient et est devenu la norme acceptée. Ainsi, il est nécessaire de spécifier les manières de traduire le modèle centré sur le patient en une communication réceptive adaptée aux conditions spécifiques des différents contextes dans lesquels les médecins de famille pratiquent.

Thèmes principaux

Lussier et Richard définissent une relation comme un modèle récurrent de communication qui existe entre deux personnes, qui nécessite une confiance mutuelle, l’acceptation de l’autre et la reconnaissance de la capacité d’influence liée à la compétence spécifique. Ils suggèrent quatre types de relations dans lesquels les patients et les médecins peuvent s’engager et dans lesquels le rôle du médecin varie: expert en charge, expert-guide, partenaire ou facilitateur. Ces quatre types sont brièvement décrits dans la revue de littérature.

Conclusions et orientations

Les auteurs identifient un ensemble de conditions cliniques qui militent en faveur d’une modulation de la relation médecin-patient plutôt que d’une relation unique, théoriquement ou idéologiquement convenable à toutes les situations. Ils affirment que l’on doit reconnaître qu’il est utile pour le médecin de maîtriser un répertoire de relations différentes. De leur point de vue, toutes les relations proposées doivent être fondées sur une attitude du médecin respectueuse des personnes, de leur autonomie, de leur droit à la confidentialité et son comportement doit être guidé par une intention bienveillante à l’égard de son patient.

Meilleures pratiques et innovations

Aucune
L’importance des aspects relationnels dans l’exercice de la médecine est reconnue de tous depuis l’antiquité. Les relations médecin-patient sont au cœur de la pratique et ont fait l’objet de recherches scientifiques rigoureuses au cours des 40 dernières années.

Plusieurs modèles de relations médecin-patient ont été décrits au cours de ces années: biomédical, biopsychosocial, centré sur le patient, centré sur la relation, négocié, consommaturiste et systémique. Par ailleurs, depuis quelques années, le modèle centré sur le patient semble s’imposer dans les ouvrages portant sur la communication médecin-patient, dans les domaines de l’éducation et de la recherche. Il est maintenant reconnu par les ordres de médecins au Canada comme la norme acceptée. Il semble y avoir eu un certain parallélisme entre l’élaboration du concept centré sur le patient et de celui de la discipline de la médecine familiale contemporaine. Ce changement de paradigme a certainement joué un rôle dans la caractérisation de la médecine familiale par rapport aux autres spécialités médicales et chirurgicales.

Si le modèle centré sur le patient est maintenant accepté dans une large mesure, il reste nécessaire de spécifier comment le traduire en une communication réceptive dans les divers contextes de pratique des médecins de famille. Kiesler et Auerbach indiquent la nécessité d’examiner plus en profondeur l’influence sur la communication de différents facteurs contextuels, comme les caractéristiques démographiques du patient, la gravité de la maladie, la nature spécifique de la maladie et le genre de décision médicale prise. Nous sommes d’avis que les médecins devraient acquérir la maîtrise de nombreux styles de relations et apprendre à ajuster leurs styles de communication en fonction du contexte dans lequel les soins sont donnés.

Définition

Une relation désigne le modèle récurrent de communication qui existe entre 2 personnes. La communication et la relation sont réciproquement la source et le résultat de l’autre. La relation médecin-patient constitue une forme particulière de relation interpersonnelle; c’est une relation de «service» dans laquelle les deux interlocuteurs jouent des rôles prédéterminés et les normes de comportement s’appliquant au médecin sont clairement définies par un code de déontologie. La relation médecin-patient exige une confiance mutuelle, l’acceptation de l’autre et la reconnaissance de la capacité d’influence liée à la compétence spécifique. Ajoutons que le médecin doit adopter en toutes circonstances une attitude respectueuse de la personne, de son autonomie et de son droit à la confidentialité, et que son comportement doit être guidé par une intention bienveillante à l’égard de son patient.

La recherche contemporaine s’est surtout penchée sur les caractéristiques personnelles du patient, comme ses préférences en matière d’information ou sa participation aux décisions, sa capacité physique et mentale de poser les gestes nécessaires pour exécuter le traitement, sa connaissance de la maladie et de son traitement, et sa motivation à prendre en main le contrôle de son traitement. Or, la relation médecin-patient, tout comme les autres relations interpersonnelles, ne
peut se soustraire au contexte spécifique de la rencontre et elle doit donc s’adapter en conséquence. Le contexte est multidimensionnel.

La relation médecin-patient est déterminée par les caractéristiques du problème en cause, comme le genre de maladie et sa gravité. Elle est aussi définie par le contexte où se développe la relation (hospitalisation, rendez-vous en cabinet, salle d’urgence, domicile, etc.). Enfin, elle est aussi caractérisée par ses interlocuteurs.

Nous croyons qu’il faut réintroduire le contexte pour compléter le tableau des relations possibles, et c’est pourquoi nous préconisons un répertoire de relations médecin-patient. L’approche d’une «panacée universelle» ne permet pas d’optimiser le jumelage entre médecins et patients. En privilégiant un modèle unique, comme celui centré sur le patient, on risquerait de priver les médecins de la palette des outils relationnels et communicationnels requis pour s’adapter aux différentes situations qu’ils rencontrent.

Nous reconnaissons qu’il existe un corpus significatif de recherches indiquant que la relation centrée sur le patient est associée à des meilleurs résultats de soins. Nous notons cependant que la majorité de ces études sont de nature associative (corrélationnelle) et qu’elles ont été menées, le plus souvent, dans un contexte de consultation en cabinet auprès de patients dont l’état de santé était considéré généralement stable. Pour les autres situations cliniques, on ne peut rien affirmer avec certitude.

**Analyse du problème**

La Figure 1 représente graphiquement les transformations possibles des relations médecin-patient selon un axe de contrôle décisionnel (prise en charge/autonomie). Cet axe est lui-même défini en fonction de 2 caractéristiques des problèmes de santé présentés: la nature du problème (aiguë par rapport à chronique) et son degré de gravité (grave par rapport à bénin). Cette figure permet de regrouper des catégories générales de problèmes et les contextes de soins dans lesquels ils sont les plus susceptibles d’être abordés. Il faut cependant reconnaître que les caractéristiques du problème seules ne déterminent pas complètement la relation qui se développera entre médecin et patient. Elle dépendra aussi des caractéristiques de la personne qui consulte et du contexte de la consultation. Nous n’incluons pas ces trois aspects dans la Figure 1, mais nous avons inséré un symbole de courbe normale à chaque relation dominante en guise de rappel de cette variation.
Nous suggérons, en fonction de la nature du problème et de son degré de gravité, 4 types de relations dans lesquelles le médecin et le patient peuvent s’engager, et dans lesquelles le rôle du médecin varie: expert en charge, expert-guide, partenaire ou facilitateur.

**Expert en charge**

Lorsque la situation est aiguë et grave, on peut penser à une relation dans laquelle le médecin prendra unilatéralement des décisions et fera au nom du patient un certain nombre d’actions dans le but explicite de le soigner. Le médecin joue alors le rôle d’«expert en charge». Cette relation s’engage généralement avec un patient dont la condition médicale est instable et exige des soins immédiats (infarctus aigu du myocarde, polytraumatisme en choc, angine instable, diabète décompensé, MPOC décompensée, sepsis, etc.). Dans ces situations critiques, les décisions sont prises par le médecin au mieux de son expertise médicale. Les aspects psychosociaux et les croyances du patient passent souvent au second plan, si présents. L’expression du «caring» se fait essentiellement par la mobilisation des ressources médicales pour traiter la personne\(^\text{22–24}\). Son expression verbale est succincte et peut être se limiter à des énoncés brefs tels que «On prend soin de vous».

**Expert-guide**

Par ailleurs, lorsqu’on se déplace sur les axes dans la Figure 1 vers les problèmes ou plus bénins ou chroniques, comme les situations subaiguës courantes qui ne sont pas trop graves (infections...
aiguës, lacérations, traumatismes mineurs, etc.), le médecin offre au patient son opinion professionnelle en rapport avec le diagnostic, le conseille et lui suggère des traitements. Le médecin adopte alors le rôle d’«expert-guide».

Le médecin a comme objectif d’informer le patient, de lui prescrire un traitement et de le convaincre de sa pertinence. Dans cette situation, il est possible d’évaluer les aspects psychosociaux et les croyances du patient, et d’en tenir compte. Il y a définitivement plus de place pour la collaboration du patient. L’expression du «caring» se fait par la recherche de renseignements sur la condition du patient et par la réponse à son besoin «d’être écouté».

**Partenaires**

Dans les cas de maladies plus chroniques, qu’elles soient bénignes (colon irritable, arthrose, reflux gastroœsophagien, etc.) ou plus graves (diabète, maladie pulmonaire obstructive chronique, insuffisance rénale, maladie coronarienne, ostéoporose, etc.), le médecin peut chercher à établir une relation de partenariat. Il adopte alors le rôle du médecin «partenaire». Dans ces circonstances, les connaissances du patient par rapport à son problème de santé se développent, et il devient ainsi un interlocuteur plus averti pour discuter de différentes options de traitement. Il peut alors s’établir un véritable partenariat. Le médecin a pour objectif de motiver le patient et de lui donner l’information dont il a besoin afin d’actualiser le traitement convenu.

Les aspects psychosociaux et les croyances du patient sont pris en compte dans l’évaluation de la condition du patient, qui peut participer aux décisions concernant le traitement. L’expression du «caring» se fait par l’empathie et l’accueil du point de vue du patient. Son expression verbale peut être élaborée, marquée par la présence de dialogues et par la coopération dans l’élaboration de solutions mutuellement acceptables. Cette relation correspond de plus près à la définition qu’on donne à l’approche centrée sur le patient.

**Facilitateur**

Enfin, dans le cas d’une maladie chronique bien contrôlée, le médecin se retrouve souvent en présence de patients ayant développé une bonne connaissance de la maladie, une capacité de se «surveiller» de façon autonome et de poser les gestes nécessaires afin d’ajuster leur traitement. Dans ces situations, les patients peuvent se présenter avec des demandes précises. L’action est déjà engagée par le patient au moment de la consultation, et l’objectif du médecin est de compléter si nécessaire l’information du patient et de l’aider à actualiser le traitement. Le médecin et le patient peuvent alors s’engager dans une relation dans laquelle le médecin agit comme facilitateur des soins et motivateur. Les aspects psychosociaux et les croyances du patient sont affirmés par ce dernier et ils jouent un rôle dans ses demandes au médecin. L’expression du «caring» se fait par la sollicitation et l’écoute du point de vue du patient. L’entrevue est marquée par la présence de dialogues, souvent initiés par le patient, par l’évaluation attentive par le médecin des solutions proposées et de suggestions pour faciliter leur implantation.
Conclusion

Nous avons cerné un ensemble de conditions cliniques qui militent en faveur d’une modulation de la relation médecin-patient plutôt que d’une relation unique, théoriquement ou idéologiquement convenable à toutes les situations. Nous devons reconnaître l’utilité pour les médecins de maîtriser un répertoire de relations. De notre point de vue, toutes les relations proposées doivent se fonder sur une attitude de respect de la personne, de son autonomie et de son droit à la confidentialité, et sur un comportement guidé par la bienveillance. Ces caractéristiques constituent la pierre angulaire de l’approche centrée sur le patient et en ce sens, nous devrions toujours être «centrés sur le patient». Par ailleurs, nous sommes convaincus qu’il est devenu nécessaire de préciser davantage ces caractéristiques fondamentales de la relation médecin-patient. Cette définition plus précise aiderait les médecins à s’adapter aux exigences des divers contextes dans lesquels ils sont maintenant appelés à exercer leur profession.

Pour poursuivre une discussion constructive sur les relations médecin-patient, nous proposons de discuter d’un répertoire de relations plutôt que d’insister sur un seul type de relation dans toutes les situations cliniques. Il y a des risques associés à l’affirmation qu’un seul type de relation médecin-patient est acceptable; lorsque les médecins trouveront que cette relation en particulier ne s’applique pas à leur pratique clinique au quotidien, ils la rejetteront pour revenir aux modèles plus paternalistes et d’experts en charge, même dans les situations où ces modèles ne conviennent clairement pas.

Nous vous avons proposé ici un cadre général d’interprétation de la variation des relations entre médecin et patient à prendre en compte dans diverses circonstances. Il ressemble beaucoup au cadre de leadership situationnel présenté par Hersey et Blanchard27, décrivant les styles de leadership suivants: direction, encadrement, soutien, délégation. Aucun d’entre eux n’est considéré comme optimal ou souhaitable en soi. Il faut être flexible et s’adapter à chaque situation particulière. Nous partageons ce point de vue.

Nous avons essayé de délimiter les conditions dans lesquelles se développent les relations médecin-patient. C’est pourquoi nous avons traité la relation qui évolue non pas d’un point de vue idéologique ou moral, mais plutôt selon une perspective fondée sur la pratique, selon laquelle aucun modèle unique ne pourrait convenir à toutes les circonstances. C’est un premier pas pour contrer la simplification excessive de la relation médecin-patient.

Références


19. Maguire P, Pitceathly C. Key communication skills and how to acquire them. *BMJ* 2002;325(7366):697–700. [Free Full Text]


Because one shoe doesn’t fit all: A repertoire of doctor-patient relationships

Summary

The doctor-patient relationship is at the heart of the practice of medicine and it has become an object of rigorous scientific inquiry in the last fifty years. In the past few years, there has been a greater focus on the patient-centered model within the literature on doctor-patient communication, and this has now become the accepted norm. Thus there is a need to specify how the patient-centred model of care translates into responsive communication tailored to the specific requirements of the diverse contexts in which family physicians practice.

Major Themes:
Lussier and Richard define relationship as a recurrent pattern of communication that exists between two people, that requires mutual trust, acceptance of one another and recognition of the ability to influence due to specific expertise. They suggest that four types of relationships in which patients and physicians may engage in and in which the physician’s role varies exists: 1) expert in charge; 2) expert-guide; 3) partner; and 4) facilitator. These four types are briefly described within the review paper.

Conclusions and Directions:
The authors identify a set of clinical conditions that argue in favour of a variety of doctor-patient relationships, rather than a unique type of relationship that is theoretically or ideologically suitable to all situations. They argue that we must recognize the usefulness for the physician of mastering a repertoire of different relationships. From their standpoint, all of the proposed relationships must be based on an attitude of respect for individuals, their autonomy, their right to confidentiality, and on behaviour guided by concern.

Best Practices and Innovations:
None
Introduction

The importance of interpersonal aspects of the practice of medicine has been universally recognized since ancient times. The doctor-patient relationship is at the heart of the practice of medicine, and it has been an object of rigorous scientific inquiry for the past 40 years.

Several models for doctor-patient relationships have been described over the years: biomedical, biopsychosocial, patient-centred, relationship-centred, negotiated, consumerist, and systemic. In recent years, however, the patient-centred model has dominated the literature on doctor-patient communication in the education and research domains. It is now endorsed by governing bodies of physicians in Canada as the accepted norm. There seems to have been a certain parallelism between the development of the concept of patient-centredness and of the discipline of contemporary family medicine. This paradigmatic shift was certainly instrumental in distinguishing family medicine from other medical and surgical specialties.

If patient-centredness is now widely accepted, there remains the necessity to specify how the patient-centred model of care translates into responsive communication that is required for the diverse contexts in which family physicians practise. Kiesler and Auerbach indicate the necessity to further examine the influence of various contextual factors on communication, such as patient demographic characteristics, severity of the disease, the specific illness, and the type of medical decision being made. We propose that physicians should master numerous styles of relationships and learn to adjust their styles of communication for the context in which care is provided.

Coming to terms

A relationship is defined as a recurrent pattern of communication that exists between 2 people. Communication and relationships are each the source and the result of the other. The doctor-patient relationship constitutes a particular kind of interpersonal relationship; it is a "service" relationship, in which both parties have predetermined roles and the standards of behaviour for the physician are clearly defined by a code of ethics. The doctor-patient relationship requires mutual trust, acceptance of each other, and recognition of the ability to influence because of expertise. The physician’s behaviour must be guided by his or her concern for the patient at all times. Physicians must always adopt an attitude of respect for individuals, their autonomy, and their right to confidentiality.

Contemporary research has focused mainly on personal characteristics of patients, such as their preference for information provision or participation in decision making, their physical and mental ability to take the necessary steps to implement treatment, their understanding of their illnesses and the treatments, and their motivation to self-manage. But, like other interpersonal relationships, the doctor-patient relationship cannot be removed from the larger context in which
the encounter occurs, and therefore it must be adjusted accordingly. Context is multidimensional.\textsuperscript{15}

The doctor-patient relationship is determined by the characteristics of the problem at hand, such as the type of illness and its severity. The relationship is also defined by the physical place where the relationship develops (the hospital ward, office, emergency room, home, etc). Lastly, it is defined by the interlocutors.

We believe that context must be reintroduced to complete the map of possible relationships, which is why we are calling for a repertoire of doctor-patient relationships. The "one shoe fits all" approach does not allow optimal matching of physicians and patients.\textsuperscript{14} Favouring a single model such as the patient-centred model could prevent physicians from mastering relationship and communication skills that enable them to adjust to various situations.

We certainly recognize that there is a substantial body of research indicating that patient-centred relationships are associated with better outcomes\textsuperscript{16–21}, however, most of these were associative (not causal) studies, and were conducted largely in the context of office consultations with patients with relatively stable medical conditions instead of normal health. Nothing can be stated with certainty about other clinical situations.

Looking at the problem

\textbf{Figure 1} is a graphic representation of the possible transformations in the doctor-patient relationship along a decisional control continuum (taking charge or collaboration), suggesting different relationships defined by 2 characteristics of the patient problem: the nature of the problem (acute vs chronic) and its degree of severity (serious vs minor). This graph allows us to group together problems with similar characteristics and to indicate the care contexts in which the problems are most likely to be encountered. It should be noted, however, that the relationship that develops between the patient and the physician is not determined only by the characteristics of the problem; the setting and personal characteristics also contribute to defining the relationship. We have not included these aspects in Figure 1, but we have inserted a normal curve symbol at each dominant relationship as a reminder of this variation.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure1.png}
\caption{The possible transformations in the doctor-patient relationship Type of relationship is determined by problem and health care context.*}
\end{figure}

\begin{itemize}
\item ASHD—arteriosclerotic heart disease, COPD—chronic obstructive pulmonary disease, DM—diabetes mellitus, GERD—gastroesophageal reflux disease, IBS—irritable bowel syndrome, MI—myocardial infarction, OA—osteoarthritis, RI—renal insufficiency, URTI—upper respiratory tract infection.
\end{itemize}

*To check what type of relationship corresponds to a patient problem defined in terms of both the acute-chronic
and minor-serious dimensions, one must project a perpendicular line on the collaboration continuum diagonal. For example, in the case of a URTI, the proposed relationship corresponds to the expert-guide type; whereas in the case of stable GERD, the relationship is more of the facilitator type.

†Normal curve symbol represents possible variations in relationships resulting from setting and personal characteristics.

Based on the nature of the problem and the degree of severity, we suggest the following 4 types of relationships in which patients and physicians can engage and in which physicians’ roles vary: expert-in-charge, expert-guide, partner, and facilitator.

**Expert-in-charge**

In acute, serious circumstances, a physician is expected to make decisions unilaterally and carry out a certain number of actions on the patient’s behalf, the goal being to address the immediate threat to that person’s life. In such cases, the physician plays the role of an "expert-in-charge." This relationship generally involves patients whose medical conditions are unstable and require immediate treatment (acute myocardial infarction, multiple trauma with shock, unstable angina, decompensated diabetes, decompensated chronic obstructive pulmonary disease, sepsis, etc). Physicians use their medical expertise to make decisions in these critical situations. Psychosocial aspects of care and patient beliefs often become secondary considerations, if they are considered at all. Caring is demonstrated by mobilizing medical resources to treat the individual.22–24 Verbally, it is expressed succinctly and is limited to brief statements, such as "We’re going to take care of you."

**Expert-guide**

Moving along the axes in Figure 1 toward either more minor or chronic problems, which include common subacute situations that are not very serious (acute infections, lacerations, minor trauma, etc), the physician provides the patient with a professional opinion with regard to the diagnosis and offers advice and treatment suggestions. The physician adopts the role of "expert-guide."

The physician’s goal is to inform the patient, prescribe treatment, and convince the patient of the treatment’s relevance. In this situation, it is possible to assess and take into account the psychosocial aspects of care and the patient’s beliefs. There is definitely more room for patient collaboration. Caring is demonstrated by obtaining information about the condition and meeting the patient’s need to feel heard.

**Partner**

With more chronic illnesses, regardless of being minor (irritable bowel syndrome, osteoarthritis, gastroesophageal reflux, etc) or more serious (diabetes, chronic obstructive pulmonary disease,
renal insufficiency, heart disease, osteoporosis, etc), the physician might seek to build a relationship in which a partnership is established, adopting the role of "partner." In these circumstances, the patient’s knowledge of the health problem develops progressively, and the patient becomes more competent to discuss various alternative treatments. The result is a true partnership. The physician’s objective is to motivate the patient and provide the necessary information, which enables the patient to carry out the agreed-upon treatment.

The psychosocial aspects of care and the patient’s beliefs are considered in the assessment of the condition, and the patient can participate in decisions regarding treatment. Caring is demonstrated through empathy and by welcoming the patient’s point of view. The verbal expression of caring can be quite developed and is characterized by more dialogue, which involves collaboration to determine acceptable solutions. This relationship most closely corresponds to what is considered a patient-centred approach.

Facilitator

Lastly, in the case of chronic illnesses that are well controlled, the physician often has to deal with patients who have developed good understanding of their diseases and the ability to monitor themselves independently, taking the necessary steps to adjust their treatments. In these situations, patients might have specific requests. Action has already been initiated by the patient at the time of the consultation, and the physician’s objective is to complete the patient’s information, if necessary, and help implement treatment. The patient and physician enter a relationship in which the physician acts as a health care facilitator and motivator. The psychosocial aspects and the patient’s beliefs are affirmed by the patient and play a role in requests to the physician. Caring is demonstrated by inviting and listening to the patient’s point of view. The encounter is characterized by dialogue, often initiated by the patient, by the physician’s careful assessment of the solutions proposed, and by suggestions to facilitate treatment implementation.

Conclusion

We have identified a set of clinical conditions that argue in favour of a variety of doctor-patient relationships rather than one type of relationship that is theoretically or ideologically suited to all situations. We must recognize that it is useful for physicians to master a repertoire of relationships. From our standpoint, all of the proposed relationships must be based on an attitude of respect for individuals, their autonomy, their right to confidentiality, and on behaviour guided by concern; these characteristics are the core of patient-centredness and, in this sense, patient-centredness remains fundamental in practice. However, we firmly believe that it has become necessary to further specify these fundamental characteristics of the doctor-patient relationship, as it would help physicians adapt to the demands of the various contexts in which they are now called upon to exercise their profession.

In order to continue a constructive discussion on doctor-patient relationships, we suggest moving toward a discussion about a repertoire of relationships rather than insisting physicians apply only one type of relationship to all clinical circumstances. There is risk associated with claiming that only one type of doctor-patient relationship is acceptable: when physicians find that that
particular relationship is not applicable to their everyday clinical practice, they will reject it and revert to more paternalistic and expert-in-charge models, even in situations in which these models are clearly inappropriate.

We have provided a framework for various doctor-patient relationships for you to consider in differing circumstances. This framework is very similar to the situational leadership framework introduced by Hersey and Blanchard, who described the following styles of leadership: directing, coaching, supporting, and delegating; of these, none is considered optimal or desired. Flexibility and adaptation to a specific situation are required. We share this point of view.

We have tried to delineate the conditions under which doctor-patient relationships develop; thus, we have treated the relationship that develops not from an ideological or moral standpoint but from a practice-based perspective in which no unique model could possibly fit all circumstances. This is the first step in countering the oversimplification of the physician-patient relationship.

References


19. Maguire P, Pitceathly C. Key communication skills and how to acquire them. *BMJ* 2002;325(7366):697–700. [Free Full Text]


Quality of care & patient safety

Summary

Brief Summary:
While there has been increasing interest in exploring quality improvement as it pertains to the health care systems, it has been recognized that to do so requires active engagement and participation of clinicians. Thus programs at the undergraduate and graduate levels have begun to develop and implement curricula on healthcare quality and patient safety. A total of 42 studies were eligible for the review, which included 21 studies that provided only a description of the curriculum.

Conclusions and Directions:
Quality of care and patient safety are emerging fields that are gaining widespread acceptance. The authors recommend the following:
Training in QI and patient safety should be introduced during medical school, ideally at the clinical clerkship stage and then continued through residency.
QI and patient safety concepts should be taught using a combination of didactic sessions and experiential learning.
Successful implementation of QI and patient safety curricula requires provision of protected time for learners to complete projects, sufficient faculty expertise and time to supervise the projects, and institutional support from a “safety culture” point of view.
Future efforts should focus not only on improving attitudes and knowledge, but more importantly, affecting learner behaviour, impacting organizational practice and enhancing patient outcomes.

Best Practices and Innovations:

Wong RY, Kassen BO, Hollohan K, Hatala R, Roberts M. A new interactive forum to promote awareness and skills in quality improvement among internal medicine residents: a descriptive report. Canadian Journal of General Internal Medicine. 2

Introduction

The US Institute of Medicine’s reports *To Err is Human: Building a Safer Health Care System* and *Crossing the Quality Chasm* highlighted the growing concerns over a broken health care system that fails to deliver proven elements of care and often exposes patients to serious, avoidable injuries (1, 2). These reports and various national studies since then have generated widespread and sustained interest in the safety and quality of healthcare (3-6).

Prominent journals regularly publish research articles, as well as review articles and commentaries on issues related to health care quality (7-9). A number of widely discussed issues in health care quality and safety have explicitly involved issues related to medical education, such as duty hour reductions (10-13).

Given the widespread recognition that achieving significant improvements in quality requires active engagement and participation of clinicians (14), undergraduate and graduate medical educational programs have begun to introduce concepts related to healthcare quality and patient safety into curricula of varying intensities. We therefore reviewed the literature regarding the introduction of concepts in quality improvement (QI) to medical students or post-graduate trainees. We characterized the type of quality improvement content included in educational interventions or curricula for students and trainees, as well as highlighted any evidence that could guide recommendations for the stage of training when exposure to QI concepts should occur and the optimal format such exposure should take. We also identified opportunities for future research to advance education related to QI.

Methods

Definitions

We used the following general definitions of quality, quality improvement, and patient safety:

- **Healthcare quality**: degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (2).
- **Quality improvement**: reducing discrepancies between processes or outcomes of care observed in routine practice, and those achievable on the basis of current professional knowledge (15).
- **Patient safety**: “the reduction and mitigation of unsafe acts within the health-care system” (16).

We supplemented these general definitions with specific interventions and topics widely recognized as falling within the domains of quality improvement (e.g., continuous quality improvement, the Plan-Do-Study-Act model, audit and feedback, process mapping and change management) and patient safety (e.g., ‘systems thinking’, root cause analysis, human factors
engineering, incident reporting, coping with errors, promoting a ‘culture of safety’, and error disclosure).

Our review omitted the following topics because other chapters in this report already covered them: critical appraisal, evidence-based practice, individual learning, intra/interprofessional collaboration, knowledge translation, simulation, system design, and technical competencies. There is a growing literature on the relationship between unprofessional behaviours exhibited by trainees and future problems requiring disciplinary action \(^{(17, 18)}\). While this topic may be of interest to educators in general, we considered this area out of scope for our review.

**Inclusion Criteria**

We included any article that described a curriculum or intervention that did one of the following:

i) explicitly identified the goal of the intervention as the exposure of students or residents to concepts in QI or patient safety;

ii) identified goals that met broad, widely accepted definitions for quality/safety

iii) included specific interventions or topics as widely recognized as part of QI/safety
(e.g., course focused on plan-do-study-act type strategy for QI)

**Literature Search**

One author (B.W.) and a health sciences librarian (H.L.) independently searched electronic literature databases, including MEDLINE, Excerpta Medica Database (EMBASE) and HealthSTAR. The search strategies combined Medical Subject Headings and text words related to QI (e.g., health care quality, patient safety, and medical error) with those related to undergraduate and graduate medical education (e.g., education, medical, graduate; education, medical undergraduate; search strategy available on request from the authors). We also hand searched bibliographies of all included articles and relevant review articles. We restricted our search to English-language articles published between January 1, 2000 and February 6, 2008. We chose January 2000 as the cut-off of the search period in order to capture articles describing educational efforts that arose as part of the current focus on safety and quality, which is widely regarded as beginning with the release of the first IOM report on healthcare quality \(^{(1)}\).

Included studies described and/or evaluated a curriculum or an educational intervention that explicitly exposed medical students or residents to concepts in QI or patient safety. Studies were excluded if they (1) targeted practicing clinicians (e.g., if the intervention targeted all clinicians, some of whom happened to be trainees) or (2) if they were QI interventions that simply happened to be delivered in training settings (e.g., a computer reminder to improve care for patients with diabetes that happened to be carried out in a teaching hospital clinic staffed by residents).
Assessment of study eligibility and quality assessment

Two investigators screened citations (B.W. and K.S) and abstracted the included articles (B.W. and E.E.) using a structured data entry form adapted from the Best Evidence Medical Education (BEME) review protocol (19). Extracted information assessed the educational descriptors (curriculum, learning, physical setting), expected learning outcomes of the intervention or approach, the learning impact, the target population, evaluation methods, and completeness of follow-up. Reviewers resolved disagreements by consensus.

Data synthesis

We classified and analyzed outcomes using Kirkpatrick’s model of educational outcomes (20).

Level 1: Learners’ reaction (to the educational experience)
Level 2: Learning (which refers to changes in attitudes (2A), knowledge and skills (2B));
Level 3: Behaviour (which refers to changes in practice and the application of learning to practice);
Level 4: Results (refers to change in organizational practice (4A) and benefits to patients (4B)).

We also classified the strength of the findings as described by BEME (19) (1 = no clear conclusions can be drawn, not significant; 2 = results ambiguous, but there appears to be a trend; 3 = conclusions can probably be based on the results; 4 = results are clear and very likely to be true; 5 = results are unequivocal). This determination was based on the presence or absence of methodological concerns that undermine conclusions, sample size and the number of study sites (see Appendix).

Abstract Search

We searched the abstracts from two large medical education conferences (Research in Medical Education (RIME), Association for Medical Education in Europe (AAME) annual meetings) and the Canadian national patient safety conference (the so-called ‘Halifax Conference’) for the past five years. We summarized central themes from the abstracts, but the paucity of descriptive detail did not permit rigorous data abstraction.

Findings

Characteristics of Eligible Studies

Of 3939 citations identified by the electronic search, 33 studies met eligibility criteria. We identified 9 additional eligible studies by hand search. (Figure 1). This total of 42 studies eligible for our review included 21 studies that provided a curricular description along with some form of evaluation (21-41) and 21 studies that provided only a description of the curriculum (42-63) (Table 1). The vast majority (90%) of reports came from US training programs, with the others including 2 (5%) from Canada (44, 62) and 1 (2%) from the UK (37). The target learners included
medical students in 14 studies (33%) (27-30, 33, 34, 36, 37, 46, 52, 55, 56, 60, 61), residents in 25 (60%) (21-26, 31, 35, 38-41, 43, 44, 47-51, 53, 54, 57-59, 62), and students and residents in 3 (7%) (32, 42, 45). Most of the studies that targeted residents were enrolled in Internal Medicine (14 (56%)) (21, 25, 31, 32, 38-41, 44, 48, 49, 58, 62) and Family Medicine (8 (32%)) (23, 24, 26, 39, 47, 49, 54, 59) programs.

Table 2 summarizes the curricular content of the studies. The educational curricula took place predominantly in the classroom for pre-clinical medical students, whereas the curricula for clinical clerks and postgraduate trainees were more often delivered in clinical settings (e.g., ambulatory clinics and teaching hospitals). The studies taught a number of quality (64% of studies) (22, 23, 25, 26, 28, 30, 31, 34-36, 39-41, 44, 46, 47, 49, 51, 52, 54-56, 58-62) and patient safety (64% of studies) (21, 23, 24, 27, 29-34, 37-45, 48-50, 53, 56, 57, 59, 60) topics. The most common topics included continuous quality improvement (23 (55%)), systems thinking (19 (45%)) and root cause analysis (14 (33%)). Most studies combined didactic and experiential learning, whereas case discussions and web-based learning was less frequently used.

Table 3 shows the outcomes, designs, main results and the strength of the findings of the 21 studies that evaluated curricular impact. Educational interventions targeting medical students focused on learner attitudes and knowledge (27-30, 32-34, 36, 37), with a lesser emphasis on behaviour change (29, 33, 37). Only one study resulted in a change in organizational practice (46). This is in contrast to interventions targeting post-graduate trainees, where (9 (69%)) resulted in changes to organizational practice (21-23, 31, 35, 38-41). Two studies resulted in improved patient outcomes (28, 31). These curricular impacts are described in greater detail below. The majority of studies used a before-after design (11 (52%)) (21-25, 29, 33, 34, 37, 39). Fifteen (71%) studies used a prospective design and 4 (19%) studies had a contemporaneous control. Two (5%) of the studies used a randomized controlled research design (32, 36).

Features of Curricula for Medical Students

Six studies targeted pre-clinical medical students (28, 32, 33, 36, 52, 61) and 11 studies targeted clinical clerks (27, 29, 30, 34, 37, 42, 45, 46, 55, 56, 60). Some curricula were integrated into one course or rotation, while others were delivered as stand-alone sessions. Most of the interventions were brief (less than 10 contact hours), and took place over a single or a small number of encounters. Most curricula were presented in the classroom or ambulatory care setting. Most employed a mixture of didactic lectures and experiential learning to teach the materials. Five studies involved medical students in QI projects (28, 46, 55, 60, 61).

Features of Curricula for Residents

QI and patient safety educational interventions targeting residents were similarly brief in terms of contact hours (~10 contact hours), however they often took place over a larger number of encounters (i.e., 2 to 5). Approximately half of the studies incorporated their curriculum into existing core rotations, while the remaining studies offered their curricula as special sessions or elective rotations. All the educational interventions were implemented in clinical settings (predominantly ambulatory care and academic teaching hospital). The design and organization of the curricula was similar to those targeting medical students in that most studies combined
didactic lectures with experiential learning. Twelve studies (46%) involved participation in a QI project

**Learning Outcomes of QI Curricula (Tables 3 and 4)**

**Level 1: Reaction to Curriculum**

Satisfaction was usually measured on a Likert scale, of 5 points, or a comparable categorical scale, from poor to excellent. The majority of learners were generally satisfied with the QI curricula, and consistently rated the curricula as relevant, and useful (23, 27-30, 32, 33, 35, 37, 39, 40). Only one study conducted in first year medical students (36) reported dissatisfaction with the QI curriculum, resulting in early termination of the study. The learners felt that the sessions were too long and did not integrate well into the existing course.

**Level 2A: Learning (Attitude)**

Learner attitude towards quality improvement and patient safety was generally positive at baseline measurement, and remained unchanged after the educational intervention. Therefore, most interventions had minimal impact on the attitudes of the learners. No study reported a worsening in attitude as a result of their intervention. The majority of learners felt that quality improvement and patient safety are important topics, and that gaining knowledge and experience in these areas would help their future practice.

**Level 2B: Learning (Knowledge)**

The impact on learner knowledge was measured with tests or quizzes designed by the individual study teams or established assessment tools such as the Quality Improvement Knowledge Assessment Tool (QIKAT) (64). In general, the educational interventions had a positive impact on learner knowledge. In all 6 studies that quantitatively measured knowledge, there was statistically significant improvement (25, 30, 32, 35, 36, 39). All studies reporting self-assessed knowledge found that the learners rated their knowledge highly and improved from baseline (21, 22, 26-29, 33, 34, 37, 38, 40, 41).

**Level 3: Behaviour**

The impact of educational interventions on behaviour was generally assessed through learner self-assessment. The educational interventions had a modest impact on learner behaviour change as it related to incorporating QI or patient safety methods into their future practice. One study showed that while students were likely to disclose an error to a peer (71%), fewer had done so to a faculty member (46%) and only 7% had formally reported an error to a patient safety net (33), and a second study reported that 7% of learners reported having disclosed a medical error to a patient (29). Three additional studies found that there was no change in self-reported behaviours as compared to baseline (24, 37, 40). The final study assessed implementation of systems changes by the learners during the curriculum 6 months after the end of the curriculum. They found that 67% of system changes had either been partially or fully implemented (31).
Level 4A: Results (Change in Organizational Practice)

Since a number of studies involved system or chart audit, modified morbidity and mortality conferences or participation in a QI project, many of these educational interventions led to changes in organizational practice \(^{(21-23,28,31,35,38-41)}\). While all of these studies report successful implementation of changes in organizational practice, few actually demonstrate that these changes led to positive outcomes (i.e., one study implemented process changes that resulted in a 62% reduction of chest pain patients with class III indication on telemetry) \(^{(40)}\).

Level 4B: Results (Benefits to Patients)

Two studies demonstrated benefits to patients. The first study involved 13 internal medicine residents who participated in a QI curriculum that required them to perform chart audits on patients with diabetes and reflect on solutions to identified deficiencies and problems \(^{(31)}\). The quality of diabetic care of these residents was improved compared to a control group of peers (i.e., improved HbA1c, increased monofilament testing). The second study involved 77 second year medical students who also participated in a QI curriculum that required them to perform chart audits on patients with diabetes \(^{(28)}\). There was a reduction in HbA1c levels from 7.7% before the implementation of the QI curriculum to 7.2% post-implementation.

Strength of Findings (Table 3)

Most studies were single-centered (18 (86%) and had modest sample sizes (n = 4 to 640, median 44). In addition, many studies had methodological concerns that undermined the results (e.g., 8 (38%) studies had response rates of less than 75%, and 5 (23%) of the studies had no control group). These limitations diminish the overall strength of the findings.

Factors that influence the successful implementation of QI curricula (Table 5)

A number of factors common to many of the studies influenced the success of the implementation of QI curricula (Table 5). These included a number of learner factors (level of clinical experience, competing educational demands), teacher factors (need for faculty development in QI, faculty support, local champions), curricular factors (combining didactic and experiential learning, timing of the intervention, time commitment required), and institutional factors (institutional culture with respect to quality and safety, financial and personnel resources). These have been summarized in Table 5 with illustrative quotations from the studies.

Central Themes from Abstract Review

The RIME abstracts are indexed in MEDLINE, and provided sufficient information to be included in the main section of our literature review. Two eligible abstracts were identified between January 2000 and February 2008 \(^{(25,54)}\).

Review of conference proceedings from AMEE and the Halifax Conference identified an additional 17 curricula (12 undergraduate and 5 postgraduate), but the published abstracts did not
include sufficient detail to permit inclusion. None of the abstracts indicated that an evaluation of the curricula had been performed.

**Implications**

Our recommendations are based primarily on the results of the 21 studies that included a description and evaluation of the QI curricula. The key recommendations have been summarized in Table 6.

**When should we teach QI?**

Our literature review found that QI and patient safety curricula were well accepted by medical students, and were able to improve knowledge. We believe that QI and patient safety concepts can be taught effectively during medical school. There is a suggestion that the pre-clinical stage may be too early to introduce QI curricula. Two (28, 36) of the three studies that targeted pre-clinical learners reported significant dissatisfaction with key elements of the QI curricula. This may reflect the fact that clinical experience is an important prerequisite for appreciating the importance and relevance of QI concepts. Therefore, it would seem that QI curricula are most successfully introduced during the clinical clerkship.

There is no question that we should teach QI to postgraduate trainees. QI and patient safety curricula were well accepted by residents, effectively improved knowledge, and were responsible for organizational practice changes aimed at improving local healthcare quality. There is a demonstrable knowledge gap in important QI concepts among postgraduate trainees, even at institutions that have generated ground breaking research in patient safety and QI and include well-known leaders in these areas among their faculty(65). Therefore, introducing QI curricula at the postgraduate level serves to reinforce concepts taught during medical school.

**How should we teach QI?**

The evidence supports combining didactic lectures with experiential learning to teach QI and patient safety concepts to medical students. Examples of experiential learning would include the use of chart and systems audits (28, 30, 31, 38, 41, 46, 54, 59), participation in “patient safety” morbidity and mortality rounds (21, 41-43, 48, 50, 57), and direct resident involvement in clinical quality improvement efforts (i.e., via a QI project) (22, 23, 25, 26, 28, 35, 39, 40, 46, 47, 51, 53, 55, 58, 60-62).

Teaching QI should mirror teaching strategies used in other areas of medical education. For example, if trainees gain clinical skills through the act of caring for patients, it would follow naturally that learning about QI should involve active participation in improvement efforts that address system deficiencies. There is limited evidence to support the educational merit of involving medical students in practical QI efforts, so further study is needed to address this issue. Already, there are several other studies describing QI curricula that involve students in QI projects, suggesting that this may be feasible (55, 61). In terms of educational impact, these interventions should not be limited to changing attitudes and building knowledge. Changing learner behaviour and achieving actual improvement in organizational quality of care and patient outcomes should garner equal attention.
Factors that influence the success of QI curricula

There are a number of factors identified by these studies that increase the likelihood of the successful implementation of a QI curriculum. Addressing time pressures and competing demands that already exist in the current medical education system is important. This is particularly relevant for those interventions that involved QI projects. Many of these projects were not completed due to time constraints, limiting the effectiveness of the curriculum. Some studies overcame this by scheduling their interventions during lighter rotations or research years, when residents are less likely to be overburdened by other clinical responsibilities (22).

Finding the necessary resources to support these curricula is equally important. For example, studies that make use of chart audits to teach QI concepts required administrative personnel time to flag and retrieve these charts. One study involving QI projects described a project that was halted because there were insufficient funds to purchase a necessary piece of equipment (22). Many of the QI projects required ongoing measurement of clinical outcomes to assess whether improvement was occurring. An information system that provides easily accessible clinical data to support QI initiatives might address some of these resource issues. These examples highlight the need for financial, technological, and personnel resources to support these educational efforts.

Equal emphasis needs to be placed on training the trainers. Many of the studies relied on a small number of faculty members with a personal interest in QI or patient safety to deliver the curriculum. There is a lack of everyday attending physicians that have the knowledge and experience to teach QI concepts. Therefore, significant faculty development is needed. Finally, a number of studies emphasized the importance of a local “safety culture”. This implicit support from the healthcare institution as well as the educational program is crucial to the success of any QI educational effort.

Limitations of existing QI education literature

The literature examining the effectiveness of educational interventions in quality improvement and patient safety is limited. Our literature search of the past five years yielded 42 studies, 21 of which did not include an evaluation of the curriculum. The studies varied significantly from the point of view of target audience, curricular design and content, and learning outcomes. Therefore, identifying key unifying themes is challenging. Also, given that most studies were small, single centered, and had methodological concerns that undermined the results, the strength of the findings limits their generalizability.

Another limitation is the lack of evidence from Canadian training programs. Given the differences between the Canadian and American healthcare and education systems, the external validity of these results may be weakened. Despite this, we still believe that the findings can inform the future of QI and patient safety teaching in Canadian medical schools to a certain extent. For example, evidence regarding teaching methods remain relevant, even if the content of the curricula might vary to reflect differences in health care systems.
Future directions

More evidence is needed to inform the implementation of future curricular changes. The majority of studies targeted Internal Medicine and Family Medicine trainees, but a number of important disciplines, such as psychiatry and pediatrics were underrepresented. This is particularly important, since these underrepresented specialties have demonstrated significant knowledge gaps with respect to QI and patient safety (66). Also, future research efforts need to focus on important clinical outcomes, such as improvement to healthcare quality and patient care.

There are a number of institutions that have started to incorporate QI education in their training programs, yet their efforts have garnered minimal attention in the published literature. For example, at our home institution (Sunnybrook Health Sciences Centre, University of Toronto), there are patient safety rounds held monthly for one hour attended by medical students, residents, pharmacy students, pharmacists and attending staff, where issues such as error reporting and medication reconciliation have been discussed. Patient safety morbidity and mortality rounds take place weekly on the General Medical Service, and a patient safety elective was available for residents to take part in a QI project. None of these efforts were studied for effectiveness, nor are they widely publicized outside our institution. Other institutions, like the University of Ottawa (67) and the University of British Columbia (62) have also started to teach QI to their medical students and residents. A centralized repository that catalogues various QI and patient safety curricula would allow teaching institutions to compare and potentially combine efforts.

Conclusions

Quality of care and patient safety are emerging fields that are gaining widespread acceptance. The everyday physician will be expected to have a working knowledge of QI concepts and to be able to apply them to improve their personal and institutional practice. We recommend that this training be introduced during medical school, ideally at the clinical clerkship stage, and then continued through residency. We recommend that QI concepts should be taught using a combination of didactic sessions and experiential learning. Finally, we recommend that the planning of future QI curricula take into account the external factors that influence that successful integration into the current educational program.
Annotated Bibliography

1. *To Err Is Human: Building a Safer Health System*
   This Institute of Medicine (IOM) report highlighted growing concerns about medical errors and their consequences. One of the main conclusions that the majority of medical errors are caused by faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent them. The report also outlines a four-tiered strategy for improvement: 1) establish a national focus to enhance the knowledge base about safety; 2) identify and learn from errors by developing a nationwide public mandatory reporting system; 3) raise performance standards through actions of oversight organizations, professional groups and group purchasers of healthcare; and 4) implement safety systems to ensure safe practices at the delivery level. The release of this report is considered to be one of the key driving forces behind the patient safety and quality movement in the United States, leading to a number of important changes at the government, regulatory and institutional level.

2. *Crossing the Quality Chasm: A New Health System for the 21st Century*
   The IOM’s follow-up report to *To Err is Human* focuses more broadly on how the health system can be reinvented to foster innovation and improve the delivery of care. The report lists six aims for improvement. A healthcare system that is 1) safe, 2) effective, 3) patient-centered, 4) timely, 5) efficient, and 6) equitable would be far better at meeting patient needs. The report also highlights four fundamental changes to the healthcare delivery environment: 1) applying evidence to health care delivery; 2) using information technology; 3) aligning payment policies with quality improvement; and 4) preparing the workforce. By analyzing health care organizations as complex systems, this report documents the causes of the quality chasm, identifies current practices that impede care, and explores how systems approaches can be used to implement change.

3. *Contemporary Issues in Medicine: Quality of Care*
   Washington, DC: Association of American Medical Colleges; 2001
   The Association of American Medical Colleges (AAMC) established an expert panel as part of the Medical School Objectives Project (MSOP) to consider the issue of QI education within the context of undergraduate medical education. This report summarizes the main findings of this panel, and concludes that the ultimate goal is that “all medical school graduates have a working knowledge of how quality is a factor, overt or covert, in every clinical decision, and every system and process in which a physician will be involved”. The report also outlines learning objectives, educational strategies, and factors that promote successful integration of QI curricula.

4. *Effectiveness of Teaching Quality Improvement to Clinicians: A Systematic Review*
   A recent systematic review of the effectiveness of teaching QI to clinicians included 39 articles, 9 of which targeted undergraduate and postgraduate medical trainees (eight of the nine included studies met eligibility criteria for our review). The findings suggest that QI curricula are effective in improving learner knowledge and confidence in applying QI principles, but have
questionable impact on clinical outcomes. The review also emphasizes the importance of incorporating experiential learning methods when designing QI curricula. While the results of this systematic review help to inform the development of QI curricula for trainees, the inclusion of established clinicians also extends their findings to inform future faculty development efforts that are key to the widespread implementation of QI curricula.

5. A Framework for Teaching Medical Students and Residents about Practice-based Learning and Improvement, Synthesized from a Literature Review
The authors set out to review the literature to develop a framework for teaching medical students and residents about practice-based learning and improvement (PBLI). This was in response to the need to identify effective teaching strategies that address two specific Accreditation Council for Graduate Medical Education’s (ACGME) competencies (practice-based learning and improvement and systems-based care). This article synthesized the available literature between 1996 and 2001 (27 articles), and reported expert panel consensus recommendations that incorporated results from the literature search. These recommendations presented a continuum of acquiring and applying knowledge and skill in PBLI from entering medical school to completing residency, and emphasized the importance of experiential learning. They also included educational objectives for each level of training and examples of how those objectives could be integrated into an existing curriculum. This article is frequently cited as a robust framework upon which to base the design of QI curricula.

6. Agency for Healthcare Research and Quality (ARHQ) website (www.ahrq.gov)
The AHRQ is the lead Federal agency for research on health care quality, costs, outcomes and patient safety in the United States. Their central website has a dedicated section to quality improvement and patient safety (www.ahrq.gov/qual). Two resources within this section are particularly relevant to education. The first is PSNet (Patient Safety Network – www.psnet.ahrq.gov), a website that serves as a type of ‘journal watch’ and clearinghouse for resources in patient safety, with weekly annotations of new articles, conferences, educational opportunities and links to useful resources. The second is web M&M (http://webmm.ahrq.gov), a website that has an educational focus and presents three case based discussions of quality and safety issues each month. Each site is widely used (40,000 visits per month).

7. Canadian Patient Safety Institute (CPSI) website (www.patientsafetyinstitute.ca)
The Canadian Patient Safety Institute (CPSI) was established in 2003 as an independent not-for-profit corporation, operating collaboratively with health professionals and organizations, regulatory bodies and governments to build and advance a safer healthcare system for Canadians. Their main website contains a number of learning resources, and highlights quality and safety issues that are unique to the Canadian system of healthcare delivery.
**General Appendix**

*Strength of Findings*

The following scoring system was used to assign a score for each study:

1: methodologic concerns that undermine conclusions; single site; sample less than 100
2: methodologic concerns that undermine conclusions, single site, sample 100 or more
3: no methodologic concerns; single site or multiple site; sample less than 100
4: no methodologic concerns; single site; sample greater than 100
5: no methodologic concerns; multiple site; sample greater than 100
Table 1: Studies Describing QI Curricula (N = 42)

<table>
<thead>
<tr>
<th>Source</th>
<th>Setting</th>
<th>Learners</th>
<th>Intervention</th>
<th>Teaching Methods</th>
<th>QI Domains Taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerfoot, 2007 (32)</td>
<td>Seven US residencies (1 Emergency medicine, 1 Internal medicine, 2 OBGYN, 3 Surgery) and 2 medical schools</td>
<td>315 residents (PGY-1 to PGY-5) and 325 2nd and 3rd year medical students</td>
<td>Three web-based learning modules (each taking ~ 30 minutes to complete)</td>
<td>Interactive web-based modules using audio and video clips, multiple choice questions, animations</td>
<td>Patient safety overview, error prevention, systems theory</td>
</tr>
<tr>
<td>Cosby, 2003 (42)</td>
<td>Not stated – curriculum description</td>
<td>Emergency Medicine residents and students</td>
<td>Patient safety curriculum (topic outlines and suggested teaching methods described)</td>
<td>Didactic sessions, small group discussion, use of video, case discussion, modified M&amp;M rounds, learning exercises</td>
<td>Medical error, safety culture, models of error, cognitive error, systems thinking, coping with error</td>
</tr>
<tr>
<td>Gosbee, 2002 (45)</td>
<td>12 US VA facilities</td>
<td>Residents (Internal Medicine, Pediatrics, Anesthesia, Family Medicine, Surgery) and students</td>
<td>Five separate modules (topic outlines and suggested teaching methods described)</td>
<td>Didactic and small group sessions</td>
<td>Patient safety overview, safety culture, human factors, root cause analysis, patient safety interventions</td>
</tr>
<tr>
<td>Ogrinc, 2007 (36)</td>
<td>Single US medical school</td>
<td>39 1st year medical students (41 additional first year medical students assigned to late-intervention group acted as the control group)</td>
<td>Incorporation of a longitudinal PBLI module into an existing 1st year medical school course (four 10-minute overview sessions)</td>
<td>Small group didactic lectures, practical application of PBLI methods to improve personal skills</td>
<td>Knowledge and skills for improving systems, PDSA cycle, assessment of system performance, how to make changes to a system</td>
</tr>
<tr>
<td>Patey, 2007 (37)</td>
<td>Single UK medical school</td>
<td>110 final year medical students</td>
<td>Two sessions 3 days apart (total 5 hours)</td>
<td>Large group lectures, small group discussions, student presentation, audio-video case discussions, role playing</td>
<td>Understanding medical errors, factors influencing adverse events, skills required to deal with error, reporting errors, focusing on cause rather than culprit</td>
</tr>
<tr>
<td>Moskowitz, 2007 (34)</td>
<td>Single US medical school</td>
<td>229 third year medical students</td>
<td>One-day interclerkship program</td>
<td>Plenary sessions, small-group workshops, role playing</td>
<td>Patient safety overview, patient safety improvement tools, discussing/reporting medical errors, clinical</td>
</tr>
<tr>
<td>Study</td>
<td>Year</td>
<td>Setting</td>
<td>Participants</td>
<td>Curriculum</td>
<td>Teaching Methods</td>
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<tr>
<td>Varkey, 2007</td>
<td>60</td>
<td>Single US medical school</td>
<td>Medical students from all four years (42 third year medical students included in evaluation of knowledge, total number not specified)</td>
<td>Four year longitudinal curriculum integrated into existing curriculum</td>
<td>Didactic lectures, small group sessions, panel discussions, simulation, online modules, case discussions, QI project</td>
</tr>
<tr>
<td>Madigosky, 2006</td>
<td>33</td>
<td>Single US medical school</td>
<td>92 second year medical students</td>
<td>Integrated curriculum into existing pre-clerkship course (10.5 contact hours)</td>
<td>Lectures, panel discussions, demonstrations, role playing, learning exercises</td>
</tr>
<tr>
<td>Halbach, 2005</td>
<td>29</td>
<td>Single US medical school</td>
<td>572 third year medical students over 3 years</td>
<td>Four-hour curriculum during Family Medicine clerkship rotation</td>
<td>Lecture, small group discussion, readings, videotaped simulation with standardized patient</td>
</tr>
<tr>
<td>Fulton, 2004</td>
<td>27</td>
<td>Single US medical school</td>
<td>4 third year medical students (plus 20 educators)</td>
<td>One-time QI curriculum (contact hours not stated)</td>
<td>Group discussion of cases highlighting systems problems</td>
</tr>
<tr>
<td>Rivo, 2004</td>
<td>56</td>
<td>Four US medical schools</td>
<td>Third and fourth year medical students (actual number not specified)</td>
<td>Part of multifaceted integrated clerkship curriculum (4-hour workshop on “medical mistakes”)</td>
<td>Didactic lectures, small group discussions</td>
</tr>
<tr>
<td>Gould, 2004</td>
<td>46</td>
<td>11 US medical schools</td>
<td>Medical students from all 4 years (actual number not specified)</td>
<td>Multiple interventions of varying intensity integrated into existing curriculum</td>
<td>Didactic lectures, small group discussions, learning exercises, chart audit, web module, QI project</td>
</tr>
<tr>
<td>O'Connell, 2004</td>
<td>52</td>
<td>Single US medical school</td>
<td>Second year medical students</td>
<td>One day curriculum during spring of second year</td>
<td>Didactic lectures, learning exercises</td>
</tr>
<tr>
<td>Gould, 2002</td>
<td>28</td>
<td>Single US medical school</td>
<td>77 second year medical students (plus 893 charts)</td>
<td>QI curriculum integrated into weekly ambulatory block (total time not stated)</td>
<td>Didactic, small group discussion, QI project, chart audit</td>
</tr>
<tr>
<td>Henley, 2002</td>
<td>20</td>
<td>Single US medical school</td>
<td>30 third year medical students</td>
<td>Weekly QI curriculum (45–60 minutes per</td>
<td>Didactic, video, chart audits</td>
</tr>
<tr>
<td>Study</td>
<td>Institution</td>
<td>Level</td>
<td>Year</td>
<td>Duration</td>
<td>Content Highlights</td>
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<tr>
<td>Paulman, 2002</td>
<td>Single US medical school</td>
<td>120 “junior” medical students</td>
<td>QI learning project integrated in rural rotation</td>
<td>Learning exercise (identify problem, collect data to define problem, design intervention)</td>
<td>CQI process</td>
</tr>
<tr>
<td>Weeks, 2000</td>
<td>Single US medical school</td>
<td>First and second year medical school</td>
<td>Integrated QI curriculum (7 months)</td>
<td>Didactic lectures, learning exercises, involvement in QI project</td>
<td>CQI, systems theory, process mapping</td>
</tr>
<tr>
<td>Postgraduate Learners (n=25)</td>
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</tr>
<tr>
<td>Wong, 2008</td>
<td>Single Canadian residency program (Internal Medicine)</td>
<td>31 PGY1 residents</td>
<td>Longitudinal QI curriculum (2x 3.5 hour sessions, plus team based QI project – 1h per week protected time x 10 months)</td>
<td>Didactic lectures, involvement in QI project</td>
<td>QI theory (PDSA), model of improvement, process mapping, CQI process</td>
</tr>
<tr>
<td>Canal, 2007</td>
<td>Single US residency program (Department of Surgery)</td>
<td>15 PGY-3 surgical residents</td>
<td>Six week curriculum during research year (PGY-3)</td>
<td>Didactic lectures, design and implementation of an improvement project</td>
<td>PDSA cycle within the Model for Improvement</td>
</tr>
<tr>
<td>Bechtold, 2007</td>
<td>Single US residency program (Department of Internal Medicine)</td>
<td>90 Internal medicine residents and fellows</td>
<td>Monthly 1-hour long revised patient safety morbidity and mortality conference</td>
<td>Large group discussion of cases that highlight important healthcare system safety issues</td>
<td>Systems thinking, factors influencing adverse events, modified root cause analysis process</td>
</tr>
<tr>
<td>Halverson, 2007</td>
<td>Single US residency program (Family medicine residency clinic)</td>
<td>Family medicine residents (actual number not reported)</td>
<td>Involvement in program-led QI initiative (monthly 1-hour meetings, plus completion of tasks between meetings)</td>
<td>Experiential involvement in a QI initiative</td>
<td>Rapid cycle change model for improvement</td>
</tr>
<tr>
<td>Varkey, 2006</td>
<td>Single US academic medical centre</td>
<td>5 residents (2 Preventive medicine, 1 Internal medicine, 2 Family medicine)</td>
<td>Four-week curriculum (actual time commitment not specified)</td>
<td>Didactic lectures, small group discussions and exercises, case-based learning, QI project</td>
<td>QI and patient safety overview, process mapping and root cause analysis, PDSA, medical error reporting</td>
</tr>
<tr>
<td>Ladden, 2006</td>
<td>12 US teaching hospitals</td>
<td>Residents from various disciplines (Anesthesia,</td>
<td>Four-module online learning course</td>
<td>Web-facilitated, self-directed and action</td>
<td>Systems thinking, PDSA cycle, root cause</td>
</tr>
<tr>
<td>Authors</td>
<td>Single US residency program (Department)</td>
<td>Residents (actual number not reported)</td>
<td>Methods</td>
<td>Topics</td>
<td>Education and Training</td>
</tr>
<tr>
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<td>------------------------</td>
</tr>
<tr>
<td>Kravet, 2006 (48)</td>
<td>Internal Medicine (Department of Medicine)</td>
<td>Internal Medicine residents</td>
<td>Morbidity and mortality conference held 4 to 6 times per year</td>
<td>Discussion of cases as they relate to ACGME core competencies</td>
<td>Systems thinking, root cause analysis</td>
</tr>
<tr>
<td>Panek, 2006 (53, 55)</td>
<td>Radiology (Radiotherapy)</td>
<td>Radiology residents</td>
<td>Involvement in an interdepartmental QI initiative (4 month period)</td>
<td>Discussion of systems problems contributing to wait times for radiology (monthly)</td>
<td>Systems thinking, root cause analysis</td>
</tr>
<tr>
<td>Tomolo, 2005 (38)</td>
<td>Internal Medicine (Internal Medicine program)</td>
<td>45 Internal Medicine residents (PGY1 18%, PGY2 40%, PGY3 35%, PGY4 7%)</td>
<td>Two 1-hour sessions, and the use of an “Outcomes Card” (residents complete these cards to capture cases which highlight important patient safety issues)</td>
<td>Didactic lectures, experiential activities</td>
<td>Patient safety overview, systems thinking, safety culture, human factors engineering</td>
</tr>
<tr>
<td>Coyle, 2005 (24)</td>
<td>Family Medicine (Department of Family medicine)</td>
<td>30 Family medicine residents (10 from each year)</td>
<td>Six 1-hour conferences</td>
<td>Didactic lectures, case discussions (small and large group)</td>
<td>Patient safety overview, causes of errors, error reporting, root cause analysis</td>
</tr>
<tr>
<td>Holmboe, 2005 (31)</td>
<td>Internal Medicine (Department of Internal Medicine)</td>
<td>13 PGY-2 Internal medicine residents</td>
<td>Weekly half-day sessions for 4 weeks (quality of care rotation) + longitudinal chart audit</td>
<td>Self reading, learning exercises, small group discussions (to discuss strategies to improve care), chart audit</td>
<td>Patient safety overview (excerpts from IOM reports), self-audit</td>
</tr>
<tr>
<td>Singh, 2005 (59)</td>
<td>Family Medicine (Department of Family Medicine)</td>
<td>46 Family medicine residents (70% overall participation, PGY1 80%, PGY3 60%)</td>
<td>Four-hour workshop presented during residency programme orientation series, plus 3 1-hour sessions</td>
<td>Didactic lectures, active learning, experiential activities (i.e., chart audits)</td>
<td>Patient safety overview, strategies for safety improvement, culture of safety, behavioural skills for patient safety, medication safety, systems thinking, audit</td>
</tr>
<tr>
<td>Reference</td>
<td>Type of Program</td>
<td>Residents</td>
<td>Curriculum and Activities</td>
<td>Key Methods/Topics</td>
<td></td>
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</tr>
<tr>
<td>Rosenfeld, 2005 (57)</td>
<td>Single US residency program (Department of Surgery)</td>
<td>Surgical residents (actual number not reported)</td>
<td>Weekly morbidity and mortality conference</td>
<td>Large group discussion of cases as they relate to the ACGME core competencies, practice-based improvement exercise</td>
<td>Systems-based practice, root cause analysis, practice-based improvement</td>
</tr>
<tr>
<td>Ogrinc, 2004 (35)</td>
<td>Two US residency programs (Internal Medicine, and Combined Internal Medicine programs)</td>
<td>11 residents (3 PGY-2, 7 PGY-3, 1 PGY-4) (22 residents matched by specialty and year of training served as controls)</td>
<td>Longitudinal PBLI elective (at least 4 weeks, 4-8 hours per week – time logs indicated mean time ~120 hours)</td>
<td>Didactic lectures and experiential learning (resident improvement project)</td>
<td>Foundations of PBLI, PDSA cycle, process and systems change</td>
</tr>
<tr>
<td>Weingart, 2004 (40)</td>
<td>Single US residency program (Department of General Medicine)</td>
<td>19 Internal medicine residents</td>
<td>Quality improvement elective during ambulatory block (20 hours per week for 3 weeks)</td>
<td>Didactic lectures and experiential learning (resident improvement project, QI exercises)</td>
<td>QI and patient safety overview, rapid cycle improvement, root cause analysis</td>
</tr>
<tr>
<td>Ziegelstein, 2004 (41)</td>
<td>Single US residency program (Internal medicine program)</td>
<td>44 Internal medicine residents (trainee level not specified)</td>
<td>Multifaceted intervention (weekly morbidity and mortality conference, improvement exercises during ambulatory block and continuity clinic)</td>
<td>Large group discussion at M&amp;M rounds – discussion of cases with focus on systems-practice issues; chart audits</td>
<td>Audit and feedback, systems thinking</td>
</tr>
<tr>
<td>Djuricich, 2004 (25)</td>
<td>Single US residency program (Internal medicine and pediatrics programs)</td>
<td>PGY-3 Internal medicine and PGY-2 Pediatric residents (44 residents total, split not specified)</td>
<td>Three hour curriculum during ambulatory block</td>
<td>Didactic lectures, design of QI project (although actual project not carried through)</td>
<td>QI overview, PDSA and model for improvement</td>
</tr>
<tr>
<td>McCafferty, 2004 (50)</td>
<td>Single US residency program (Department of Surgery)</td>
<td>Surgical residents</td>
<td>Modified morbidity and mortality conference (addition of near miss case)</td>
<td>Large group discussion of issues focusing on systems problem</td>
<td>Systems thinking, medical error</td>
</tr>
<tr>
<td>Coleman, 2003 (23)</td>
<td>Single US residency program (Family Medicine)</td>
<td>24 Family Medicine residents (PGY1-3)</td>
<td>Longitudinal QI project (6 months) – with hourly sessions, project time not stated</td>
<td>Didactic sessions, QI project</td>
<td>PDSA, root cause analysis, audit-feedback, implementing change</td>
</tr>
<tr>
<td>Frey, 2003 (26)</td>
<td>Single US residency program (Family Medicine Residents)</td>
<td>12 PGY3 Family Medicine Residents (6)</td>
<td>Longitudinal team CQI project</td>
<td>Didactic seminars, CQI project (practice)</td>
<td>CQI process, audit and feedback</td>
</tr>
<tr>
<td>Study</td>
<td>Setting</td>
<td>Residents</td>
<td>Methodology</td>
<td>Guideline Implementation</td>
<td></td>
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<tr>
<td>---------------</td>
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<td></td>
</tr>
<tr>
<td>Paukert, 2003</td>
<td>Single US residency program (FM)</td>
<td>26 FM</td>
<td>Self directed chart audits on Friday afternoons</td>
<td>Chart audit</td>
<td></td>
</tr>
<tr>
<td>Mohr, 2003</td>
<td>Single US residency program (PC)</td>
<td>8 residents</td>
<td>Participation in a year-long QI program</td>
<td>Didactic lectures, learning exercises, participation in a QI project</td>
<td></td>
</tr>
<tr>
<td>Esselman, 2002</td>
<td>Single rehabilitation centre</td>
<td>Physiatry</td>
<td>Monthly rehabilitation morbidity and mortality conference</td>
<td>Discussion of cases that highlight important rehabilitation quality and safety issues</td>
<td></td>
</tr>
<tr>
<td>Farquhar, 2001</td>
<td>Single Canadian residency (IM)</td>
<td>IM residents</td>
<td>Quality of Care curriculum (1/2 day seminars and monthly noon hour sessions)</td>
<td>Didactic sessions, case discussions to highlight process of care</td>
<td></td>
</tr>
<tr>
<td>Schillinger, 2000</td>
<td>Single US residency (IM)</td>
<td>IM residents</td>
<td>QI project and seminar series</td>
<td>Didactic lectures, learning exercise, participation in a QI project</td>
<td></td>
</tr>
</tbody>
</table>

Paukert, 2003 (54)
Mohr, 2003 (51)
Esselman, 2002 (43)
Farquhar, 2001 (44)
Schillinger, 2000 (38)
Table 2: Characteristics of QI Curricula

<table>
<thead>
<tr>
<th>Educational Setting, n (%)</th>
<th>Preclinical (n=6)</th>
<th>Clinical (n=11)</th>
<th>Postgraduate* (n=25)</th>
<th>Total (n=42)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom / Non-clinical setting</td>
<td>3 (50)</td>
<td>4 (36)</td>
<td>2 (8)</td>
<td>8 (19)</td>
</tr>
<tr>
<td>Ambulatory care</td>
<td>3 (50)</td>
<td>2 (18)</td>
<td>13 (52)</td>
<td>18 (43)</td>
</tr>
<tr>
<td>Inpatient hospital</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>7 (28)</td>
<td>7 (17)</td>
</tr>
<tr>
<td>Mixed clinical setting</td>
<td>0 (0)</td>
<td>3 (27)</td>
<td>2 (8)</td>
<td>5 (12)</td>
</tr>
<tr>
<td>Distance learning</td>
<td>0 (0)</td>
<td>2 (18)</td>
<td>1 (4)</td>
<td>3 (7)</td>
</tr>
<tr>
<td>Not stated</td>
<td>0 (0)</td>
<td>1 (9)</td>
<td>2 (8)</td>
<td>4 (10)</td>
</tr>
<tr>
<td>Teaching Format, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Didactic lectures</td>
<td>6 (100)</td>
<td>8 (73)</td>
<td>15 (60)</td>
<td>29 (69)</td>
</tr>
<tr>
<td>Small group discussion</td>
<td>5 (83)</td>
<td>7 (64)</td>
<td>4 (16)</td>
<td>16 (38)</td>
</tr>
<tr>
<td>Case discussion</td>
<td>1 (17)</td>
<td>2 (18)</td>
<td>9 (36)</td>
<td>12 (29)</td>
</tr>
<tr>
<td>Experiential learning</td>
<td>5 (83)</td>
<td>3 (27)</td>
<td>17 (65)</td>
<td>25 (60)</td>
</tr>
<tr>
<td>Web-based module</td>
<td>1 (17)</td>
<td>2 (18)</td>
<td>1 (4)</td>
<td>4 (10)</td>
</tr>
<tr>
<td>Educational Content, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality topics</td>
<td>5 (83)</td>
<td>5 (45)</td>
<td>18 (72)</td>
<td>27 (64)</td>
</tr>
<tr>
<td>Quality of care in general</td>
<td>1 (17)</td>
<td>2 (18)</td>
<td>4 (16)</td>
<td>7 (17)</td>
</tr>
<tr>
<td>Continuous quality improvement (e.g., PDSA)</td>
<td>5 (83)</td>
<td>4 (36)</td>
<td>15 (60)</td>
<td>23 (55)</td>
</tr>
<tr>
<td>Audit and feedback</td>
<td>1 (17)</td>
<td>3 (27)</td>
<td>6 (24)</td>
<td>10 (24)</td>
</tr>
<tr>
<td>Process mapping</td>
<td>1 (17)</td>
<td>0 (0)</td>
<td>4 (16)</td>
<td>5 (12)</td>
</tr>
<tr>
<td>Change management</td>
<td>1 (17)</td>
<td>2 (18)</td>
<td>2 (8)</td>
<td>5 (12)</td>
</tr>
<tr>
<td>Patient safety topics</td>
<td>3 (50)</td>
<td>9 (82)</td>
<td>14 (56)</td>
<td>27 (64)</td>
</tr>
<tr>
<td>Patient safety in general</td>
<td>2 (33)</td>
<td>4 (36)</td>
<td>6 (24)</td>
<td>12 (29)</td>
</tr>
<tr>
<td>Systems thinking</td>
<td>3 (50)</td>
<td>5 (45)</td>
<td>11 (44)</td>
<td>19 (45)</td>
</tr>
<tr>
<td>Root cause analysis</td>
<td>2 (33)</td>
<td>1 (9)</td>
<td>11 (44)</td>
<td>14 (33)</td>
</tr>
<tr>
<td>Human factors</td>
<td>0 (0)</td>
<td>2 (18)</td>
<td>1 (4)</td>
<td>3 (7)</td>
</tr>
<tr>
<td>Error / incident reporting</td>
<td>2 (33)</td>
<td>6 (55)</td>
<td>2 (8)</td>
<td>10 (24)</td>
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<tr>
<td>Dealing with errors</td>
<td>0 (0)</td>
<td>1 (9)</td>
<td>0 (0)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Safety culture (i.e., avoiding blame / shame)</td>
<td>0 (0)</td>
<td>3 (27)</td>
<td>2 (8)</td>
<td>5 (12)</td>
</tr>
<tr>
<td>Disclosure of error</td>
<td>2 (33)</td>
<td>1 (9)</td>
<td>0 (0)</td>
<td>3 (7)</td>
</tr>
</tbody>
</table>

* Studies that included both undergraduate and postgraduate learners were classified by the lowest level
### Table 3: Study Outcomes

<table>
<thead>
<tr>
<th>Study</th>
<th>Learning Outcomes</th>
<th>Study Design</th>
<th>Main Findings</th>
<th>Strength of Findings*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POSTGRADUATE AND UNDERGRADUATE (n=1)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kerfoot, 2007 (32)</td>
<td>Satisfaction Knowledge</td>
<td>Prospective randomized cross-over study</td>
<td>High satisfaction rating (4 out of 5) Increase in MCQ test scores compared to baseline (16% increase from baseline of 58%) Knowledge sustained over 4 weeks (1% decay in MCQ test scores)</td>
<td>Level 5 No methodological concerns (80% response rate), multi-centered, large sample size</td>
</tr>
<tr>
<td><strong>UNDERGRADUATE (n=8)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ogrinc, 2007 (36)</td>
<td>Satisfaction Attitudes Knowledge</td>
<td>Prospective clustered randomized two-group trial (early vs late intervention groups)</td>
<td>Low satisfaction rating (30 – 40 out of 100) Increase in QIKAT knowledge scores in intervention group (8.5 → 9.3) versus decrease in QIKAT scores in control group (8.3 → 7.9); p&lt;0.05</td>
<td>Level 2 No methodological concerns (response rate 83 – 100%), single-centered, small sample size</td>
</tr>
<tr>
<td>Patey, 2007 (37)</td>
<td>Satisfaction Attitudes Knowledge Behaviour</td>
<td>Prospective before and after study</td>
<td>High satisfaction rating (4 – 5 out of 5) Improvement in some self-assessed attitudes and knowledge Majority planned to report medical errors that they make (51 out of 70, 73%)</td>
<td>Level 1 Methodological concerns (response rate 29% at 1-year), single-centered</td>
</tr>
<tr>
<td>Moskowitz, 2007 (34)</td>
<td>Attitudes Knowledge</td>
<td>Prospective before and after study</td>
<td>Improvement in self-reported attitudes and knowledge on 14 of 21 questionnaire items</td>
<td>Level 2 Methodological concerns (post-test response rate 54%), single-centered</td>
</tr>
<tr>
<td>Madigosky, 2006 (33)</td>
<td>Satisfaction Attitudes Knowledge Behaviour</td>
<td>Prospective before and after study</td>
<td>High satisfaction rating (72 – 82 out of 100) Multidirectional changes in self-reported attitudes and knowledge questionnaire items Low impact on behaviour – 7% reported an error through a formal process</td>
<td>Level 1 Methodological concerns (response rate 55%), single-centered, small sample size</td>
</tr>
<tr>
<td>Halbach, 2005 (29)</td>
<td>Satisfaction Attitudes Knowledge</td>
<td>Prospective before and after study</td>
<td>High satisfaction rating (82 – 94 out of 100) High self-reported ratings of attitudes and knowledge regarding error disclosure</td>
<td>Level 3 Some methodological concerns (response rate 54%) but sound</td>
</tr>
<tr>
<td>Study</td>
<td>Learning Outcomes</td>
<td>Study Design</td>
<td>Main Findings</td>
<td>Strength of Findings*</td>
</tr>
<tr>
<td>-----------------------</td>
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<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td></td>
<td>Behaviour</td>
<td>study design, single centered, large sample size</td>
<td>21 of 307 (7%) reported having disclosed a medical error to a patient</td>
<td></td>
</tr>
<tr>
<td>Fulton, 2004 (27)</td>
<td>Satisfaction</td>
<td>Non-comparative observational study</td>
<td>High satisfaction rating (4.5 – 4.6 out of 5) Self-reported agreement (4.5 – 5 out of 5) with statements that reporting errors are important, and knowing how to report errors</td>
<td>Level 1 Methodological concerns (non-comparative design), single-centered, small sample size</td>
</tr>
<tr>
<td>Gould, 2002 (28)</td>
<td>Satisfaction</td>
<td>Prospective before and after study</td>
<td>General dissatisfaction with chart-audit learning experience (16% positive rating) Overall improvement in 27 of 40 survey items measuring self-reported attitudes and knowledge towards CQI Increased rates of foot (51 \rightarrow 70%) and eye (27 \rightarrow 38%) exams on pre-post chart audits HbA1c mean value decreased from 7.7% \rightarrow 7.2% on pre-post chart audits</td>
<td>Level 1 Methodological concerns (response rate 69%), single-centered, small sample size</td>
</tr>
<tr>
<td>Henley, 2002 (30)</td>
<td>Satisfaction</td>
<td>Non-comparative observational study</td>
<td>Moderate satisfaction (50 – 60% of students felt teaching was useful) Scored 84% on a 6-item end-of-rotation quiz on QI concepts</td>
<td>Level 1 Methodological concerns (non-comparative design), single-centered, small sample size</td>
</tr>
<tr>
<td>POSTGRADUATE (n=12)</td>
<td>Attitudes</td>
<td>Prospective before and after study</td>
<td>Increase in self-reported attitude (3.7 \rightarrow 4.4 out of 5) and knowledge (1.9 \rightarrow 4.6 out of 5) scores Several QI projects implemented to reduce surgical consultation wait-times (no outcomes reported)</td>
<td>Level 2 No methodological concerns, single-centered, small sample size</td>
</tr>
<tr>
<td>Canal, 2007 (22)</td>
<td>Knowledge</td>
<td>Prospective before and after study</td>
<td>No significant change in 14 of 20 survey items related to attitude and knowledge 59% of recommendations for improvement that were identified from M&amp;M rounds were implemented at 1-year</td>
<td>Level 1 Methodological concerns (post-test response rate 52%), single-centered, small samples size</td>
</tr>
<tr>
<td>Bechtold, 2007 (21)</td>
<td>Organizational practice change</td>
<td>Prospective before and after study</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Learning Outcomes</td>
<td>Study Design</td>
<td>Main Findings</td>
<td>Strength of Findings*</td>
</tr>
<tr>
<td>-----------------------</td>
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<td>-------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Varkey, 2006 (39)</td>
<td>Satisfaction Knowledge Organizational practice change</td>
<td>Prospective before and after study</td>
<td>High satisfaction rating (4.1 out of 5) Increase in QIKAT knowledge scores from 2.3 → 3.4 after intervention Improvement in medication reconciliation – increased completeness of dictated medication lists from 38 → 75%</td>
<td>Level 1 No significant methodological concerns, but single-centered, very small sample size</td>
</tr>
<tr>
<td>Tomolo, 2005 (38)</td>
<td>Attitudes Knowledge Organizational practice change</td>
<td>Non-comparative observational study</td>
<td>High satisfaction rating (12.3 out of 15) High self-assessment scores for knowledge (48 out of 60) Several organizational practice changes implemented (no outcomes measured)</td>
<td>Level 1 Methodological concerns (57% response rate, non-comparative design), single-centered, small sample size</td>
</tr>
<tr>
<td>Coyle, 2005 (24)</td>
<td>Attitudes Behaviour</td>
<td>Prospective before and after study</td>
<td>No change in mean attitude and behaviour scores (medical event reporting) before and 6-months after education program</td>
<td>Level 1 Methodological concerns (level of significance of results not reported), single-centered, small sample size</td>
</tr>
<tr>
<td>Holmboe, 2005 (31)</td>
<td>Attitudes Behaviour Organizational practice change Patient benefits</td>
<td>Prospective, non-randomized, controlled study</td>
<td>8 of 12 (67%) systems-based changes recommended by residents were carried through at 6 months Increased rate of monofilament testing (Δ13% vs Δ1%) and ordering of baseline EKG (Δ17% vs Δ10%)</td>
<td>Level 3 No methodological concerns (92% response rate), measured clinically important outcomes for patients, single-centered, small sample size</td>
</tr>
<tr>
<td>Ogrinc, 2004 (35)</td>
<td>Satisfaction Attitudes Knowledge Organizational practice change</td>
<td>Prospective non-randomized, controlled study</td>
<td>High satisfaction rating (4.4 – 4.7 out of 5) Increase in QIKAT knowledge scores from 9.2 → 11.4 compared to 8.2 → 8.7 in control group Several organizational practice changes implemented (no outcomes measured)</td>
<td>Level 4 No methodological concerns (100% response rate), multi-centered, small sample size</td>
</tr>
<tr>
<td>Weingart, 2004 (40)</td>
<td>Satisfaction Attitudes</td>
<td>Non-comparative observational study</td>
<td>High satisfaction rating (71 to 87% rating) Positive responder ratings for self-assessed</td>
<td>Level 1 Methodological concerns (non-</td>
</tr>
<tr>
<td>Study</td>
<td>Learning Outcomes</td>
<td>Study Design</td>
<td>Main Findings</td>
<td>Strength of Findings*</td>
</tr>
<tr>
<td>---------------</td>
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<td>-------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td></td>
<td>Knowledge Behaviour</td>
<td></td>
<td>attitudes, knowledge, 56% reported a change in behaviour</td>
<td>comparative study)</td>
</tr>
<tr>
<td></td>
<td>Organizational practice change</td>
<td></td>
<td>Several organizational practice changes with positive outcomes (i.e., 62% decrease in inappropriate use of telemetry for chest pain patients)</td>
<td>single-centered, small sample size</td>
</tr>
<tr>
<td>Ziegelstein, 2004 (41)</td>
<td>Attitudes Knowledge</td>
<td>Retrospective pre-post observational study</td>
<td>High satisfaction rating (76 – 92% rating) Improved self-rated scores for knowledge and attitude (1.6 → 2.5 out of 5) Organizational practice change implemented to improve mammography rates (no outcomes reported)</td>
<td>Level 1 Methodological concerns (66-70% response rate), single-centered, small sample size</td>
</tr>
<tr>
<td>Djurich, 2004 (25)</td>
<td>Attitudes Knowledge</td>
<td>Prospective before and after study</td>
<td>Increase in score on 5-item quiz from 48% → 89% on pre-post testing of CQI knowledge</td>
<td>Level 3 No methodological concerns (95% response rate), single-centered (but included 2 different groups of residents), small sample size</td>
</tr>
<tr>
<td>Coleman, 2003 (23)</td>
<td>Satisfaction Attitudes</td>
<td>Prospective before and after study for clinical impact (non-comparative observational study for satisfaction)</td>
<td>Moderate satisfaction scores (60 – 70% rating) for rating of value of intervention Organizational practice changes resulted from 3 QI projects (increased completion of patient data summary sheets from 14% → 40%; increased screening of diabetic patients for microalbuminuria from 5% → 29%; increased medication list completion from 10% → 44%)</td>
<td>Level 2 No methodological concerns (response rate 79%), measured clinically important outcomes for change in organizational practice, single centered, small sample size</td>
</tr>
<tr>
<td>Frey, 2003 (26)</td>
<td>Attitudes Knowledge</td>
<td>Non-comparative observational study</td>
<td>High overall confidence in knowledge and attitudes (3.5 – 4.1 out of 5)</td>
<td>Level 2 No methodological concerns (100% response rate), single-centered, small sample size</td>
</tr>
</tbody>
</table>
Table 4: Learning Outcomes by Trainee Level

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
<th>Undergraduate (n=9)*</th>
<th>Postgraduate (n=13)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner satisfaction</td>
<td>8 (88)</td>
<td>5 (38)</td>
</tr>
<tr>
<td>Attitudes</td>
<td>8 (88)</td>
<td>11 (85)</td>
</tr>
<tr>
<td>Knowledge</td>
<td>9 (100)</td>
<td>10 (77)</td>
</tr>
<tr>
<td>Behaviour</td>
<td>3 (33)</td>
<td>3 (23)</td>
</tr>
<tr>
<td>Change in organizational practice</td>
<td>1 (11)</td>
<td>9 (69)</td>
</tr>
<tr>
<td>Patient benefits</td>
<td>1 (11)</td>
<td>1 (8)</td>
</tr>
</tbody>
</table>

* Total n=22 because 1 study included both medical students and residents
<table>
<thead>
<tr>
<th>Factors</th>
<th>Studies that identified that factor, n (%)</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learner Factors</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Having adequate clinical experience to place quality and safety into proper context | 2 (9)                                      | “Third year students are so inexperienced with the multitude of stimuli in the clinical setting that they simply do not yet have the ability to fully…distinguish errors from other activity.” – Moskowitz et al 2007  
“Students were asked to analyze clinical processes in their preceptors’ offices and then suggest changes. That program was a mismatch of student skills and preceptor expectations and was not continued beyond the 1-year pilot” – Ogrinc et al 2007 |
| Competing educational demands of medical students and residents | 3 (14)                                     | “A program must successfully compete with other new technologies, diseases, and treatments, all of which may seem more exciting and pertinent to the developing physician.” – Gould et al 2002  
“Despite a lack of familiarity with QI principles, residents were reluctant to ‘sacrifice’ valuable curricular sessions to learn to use QI tools.” – Coleman et al 2003 |
<p>| <strong>Educator Factors</strong>                             |                                           |                                                                                                                                         |
| Providing faculty development for teachers of QI curriculum | 7 (33)                                     | “A critical component of this effort is a faculty development initiative that will enhance the ability of teacher-clinicians in general and hospital medicine to teach residents about quality and safety in health care.” – Weingart et al 2004 |
| Involvement of faculty role models committed to patient | 4 (19)                                     | “An additional factor in the success of our curriculum was the participation of a stable cadre of committed faculty…such faculty role models discuss not only the |</p>
<table>
<thead>
<tr>
<th>Safety</th>
<th>Knowledge and skills required for safe practice, but also demonstrate the attitudes required.” – Halbach et al 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involvement of faculty role models committed to patient safety</td>
<td>“An additional factor in the success of our curriculum was the participation of a stable cadre of committed faculty…such faculty role models discuss not only the knowledge and skills required for safe practice, but also demonstrate the attitudes required.” – Halbach et al 2005</td>
</tr>
<tr>
<td>Faculty recognition and support</td>
<td>“An internal grant process helped to focus and support faculty efforts.” – Weingart et al 2004</td>
</tr>
<tr>
<td><strong>Curriculum Factors</strong></td>
<td></td>
</tr>
<tr>
<td>Providing adequate time to carry out curriculum (especially those involving experiential learning)</td>
<td>“The greatest challenge was to identify meaningful projects that could be completed within 3 weeks.” – Weingart et al 2004</td>
</tr>
<tr>
<td></td>
<td>“The time-limited nature of the elective limited the resident’s ability to make and follow changes.” – Ogrinc et al 2004</td>
</tr>
<tr>
<td>Scheduling of curriculum to optimize likelihood of completing QI projects</td>
<td>“Many PGY3 residents wished to implement their projects but could not do so because they needed additional time to complete the projects, yet were near graduation…the curriculum was therefore moved to the PGY2 year.” – Djuricich et al 2004</td>
</tr>
<tr>
<td></td>
<td>“We believe that providing this curriculum during the research year, when clinical demands are not competing, is more likely to produce projects that could come to fruition.” – Canal et al 2007</td>
</tr>
<tr>
<td>Integration into existing curriculum longitudinally and stand-alone experiences have both been found to be effective</td>
<td>“The longitudinal nature of the curriculum helps to ensure its’ sustainability.” – Holmboe et al 2005</td>
</tr>
<tr>
<td></td>
<td>“Although some may argue that this issue [medical errors] needs to be integrated throughout the medical school curriculum, evidence indicates that curricular change has little impact on students’ perceptions unless there is a concentrated time devoted to unique topics.” – Moskowitz et al 2007</td>
</tr>
<tr>
<td>Training in QI and patient safety should be introduced during medical school, ideally at the clinical clerkship stage and then continued through residency</td>
<td></td>
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<tr>
<td>---</td>
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<tr>
<td>QI and patient safety concepts should be taught using a combination of didactic sessions and experiential learning</td>
<td></td>
</tr>
<tr>
<td>Successful implementation of QI and patient safety curricula requires provision of protected time for learners to complete projects, sufficient faculty expertise and time to supervise the projects, and institutional support from a “safety culture” point of view</td>
<td></td>
</tr>
<tr>
<td>Future efforts should focus not only on improving attitudes and knowledge, but more importantly, affecting learner behaviour, impacting organizational practice and enhancing patient outcomes</td>
<td></td>
</tr>
</tbody>
</table>
Figure 1:

3939 Potentially relevant citations identified in literature search
   398 in MEDLINE
   327 in HealthSTAR
   3214 in EMBASE

3836 Citations excluded
   Not relevant
   Duplicates

103 Abstracts retrieved for evaluation

70 Citations excluded
   14 Does not teach quality improvement
   48 Not a curriculum
   6 Learners not medical students or residents
   1 Simulation training
   1 Study unavailable

33 Studies retained

16 Study identified by hand search

7 Citations excluded
   3 Does not teach quality improvement
   2 Not a curriculum
   1 Learners not medical students or residents
   1 Simulation training

42 Studies included in review

21 Curriculum description AND evaluation

21 Curriculum description ONLY
References

19. BEME Collaboration: Starting a Review.


63. Wong RY, Kassen BO, Hollohan K, Hatala R, Roberts M. A new interactive forum to promote awareness and skills in quality improvement among internal medicine residents: a descriptive report. Canadian Journal of General Internal Medicine. 2
McNaughton, Nancy, MEd, PhD
Knickle, Kerry, LLM (ADR)

Conflict resolution and negotiation teaching in medical education

Summary

Brief Summary:
Conflict reaches beyond the familiar perceptions of traditional practice requirements. Conflict within health care teams has a negative impact on patient care. At the heart of conflict resolution is the reciprocal communication between disputants and its effect upon and between the sender and receiver. How one chooses to approach or avoid conflict in the work environment is inextricably linked to ones past experience, confidence and competence in resolving conflict, and the perceived risk associated with addressing disputes in the workplace.

Major Themes:
There is a paucity of literature specific to areas of tensions and disputes within health professional education. Even within the existing literature on health professional education, the boundaries of the conflict resolution field are not clearly articulated, resulting in “conflict skills” teaching being absorbed into the general communication skills training literature and appearing loosely identified within inter professional, teamwork and medical error disclosure literature.

McNaughton and Knickle identify a few articles that do address conflict within health care explore broadly the cultural implications of conflict within health professions but note that they do not provide a clear framework within which to address the practical issues related to teaching conflict resolution skills to medical students. Conflict resolution is coming to be recognized as a discreet skill set within communication teaching. There is also a greater recognition that collegial tensions in health care relate to unacceptable medical error rates.

Conclusions and Directions:
The review by McNaughton and Knickle suggests that an egregious gap in medical education training exists at all levels and that there is an explicit need for a practical curriculum organized around the communication required for conflict resolution and negotiation. Despite the growing interest in this area, the authors have identified that there is virtually no literature related to practical teaching and education of conflict resolution skills and strategies in Canadian health care.

Three recommendations emerged from this review. First, conflict resolution teaching needs to be introduced in the early years of training and embedded in the increasingly interprofessional and team based approach to learning within the health professions. Second, faculty needs opportunities to develop specific facilitation and communication skills in order to undertake such
teaching. Third, further research is necessary in order to extend our understanding about the impact of conflict on interprofessional relationships and ultimately patient care. Additionally we need to explore the impact of conflict resolution teaching on competence as part of early professional skills development.

**Best Practices and Innovations:**


The authors designed and developed an educational initiative in collegial conflict for residents and faculty that has been delivered locally and internationally since 2005. In 2005 the authors also collaborated on the development and delivery of an undergraduate educational event at the University of Toronto called “Conflict in Professional Life.”

**Full Text**

**Introduction**

Conflict reaches beyond the familiar perceptions of traditional practice requirements. Conflict within health care teams has a negative impact on patient care(1). Additionally, conflict is not solely confined to the client, patient, or student, where there may be a greater degree of safety and comfort associated with the process of facilitating the disputes and conflicts between others. In fact there may be more at stake when considering conflict with professional peers and within teams. At the heart of conflict resolution is the reciprocal communication between disputants and its effect upon and between the sender and receiver.

It seems ironic that healthcare practitioners and educators who teach and model sophisticated communication skills with their patients, clients and students are themselves not always comfortable applying these skills in managing conflict with each other. Without training and ground rules in place, the conflicts that arise between colleagues can become increasingly problematic. Conflicts are a significant source of distress, consume considerable time and resources and may lead to lasting difficulties for everyone. How one chooses to approach or avoid conflict in the work environment is inextricably linked to ones past experience, confidence and competence in resolving conflict, and the perceived risk associated with addressing disputes in the workplace.

**Search**

A search of OVID Medline, ERIC and Scholars Portal was conducted using keywords conflict resolution and health care professions. Seventy six entries were found in Scholars Portal with no references to conflict resolution education for health care professions. Search terms conflict resolution, medical education, negotiation resulted in no results in Ovid Medline.
Similarly, the keywords \textit{conflict, medical education, negotiation, teaching} resulted in no findings in; Ovid Healthstar 1966 to November 2007, Cumulative Index to Nursing & Allied Health Literature (CINAHL) 1982 -2008, and Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations February 21, 2008. Keywords \textit{conflict resolution, teaching, medical education} and \textit{negotiation} resulted in no search results in ERIC.

\textbf{Review of the Literature}

There is a paucity of literature specific to outlining communication skills and techniques in the area of tensions and disputes within health professional education. The lion’s share of the conflict resolution research and literature related to health care has been generated by U.S. dispute resolution professionals working at the edges of the health care field within legal contexts (2-8) rather than within the health care professions. Anderson and D’Antonio, mediators and professors of law in the United States (2, 3), conducted a series of studies from outside the healthcare field in order to learn about physician related conflict in health care. Their contributions are significant for uncovering practicing clinicians’ perceptions of conflict and a corresponding need for specific training opportunities within health professional education. In interviews with a diverse group of health professionals the authors found that “The health care experts believed that conflict resolution skills should be taught during a doctor’s initial training” (pg.17). More than thirty physicians from this study also suggested, to the authors’ surprise, that eighty per cent of physician conflict is unrelated to patient care, and that the greatest percentage of that non patient conflict occurred between doctor and doctor (pg. 16).

The boundaries of the conflict resolution field are not clearly articulated within health professional education. This has resulted in “conflict skills ” teaching being absorbed into the general communication skills training literature and appearing loosely identified within inter professional, (9) teamwork (10) and medical error disclosure literature (11). For example in an article by Volpp (12) looking at residents’ suggestions for reducing error in teaching hospitals, the absence of a forum for frank discussion or even anonymous reporting of errors found that silence prevailed and errors tended to be concealed. The study showed that only fifty-four percent of house officers had told their attending physician about the most serious errors they had committed in the previous year. Of the twenty-two errors reported in the study, thirty-one percent had resulted in death. The tacit message underlying such a study is that silence in these circumstances is directly related to the lack of communication which is indirectly due to lack of skill or knowledge about addressing issues of conflict with colleagues and superiors.

The few articles that do address conflict within health care (1-4, 6, 8-16) explore broadly the cultural implications of conflict within health professions or look specifically at one context such as nursing homes, without providing a framework within which to address the practical issues related to teaching conflict resolution skills to medical students.

As professionals, we place great emphasis on the quality and integrity of service we provide our students, clients and patients. There are countless multi-disciplinary faculty development and continuing education programs designed to promote improved service and forge more effective relationships. The predominant discussions in the conflict literature devoted to organizational disputes are more weighted toward the involvement of outside third party interveners who consult, mediate and problem solve, (17, 18) or inside ‘peacemakers’ who provide an important integrative function (5).
Kolb writes eloquently about the powerful role and skills of the peacemaker working within an organization. Implicit in her discussion, but absent from the entire subject index is any reference to ‘communication’ or to the salience of communication skills and abilities of individuals who are able to help ameliorate functional issues and professional relationships (5).

The absence of focus on or details about communication techniques, although surprising, is true for many seminal books and articles addressing learning and change processes (19–24) and dispute resolution issues and concerns (25, 26). Successful conflict resolution outcomes are essentially shaped by the responsive communication skills and abilities of trained and experienced individuals who have reflected on and honed these essential tools. Can practitioners learn to incorporate and equip themselves with effective communication practices in order to independently manage their own conflicts without a third party intervention? Related to the question of teaching and learning conflict management communication strategies, is a concern about how these might be measured within the health professional curriculum (27, 28). Conflict resolution is coming to be recognized as a discreet skill set within communication teaching. Despite the large evaluation literature within health professional education, existing measures related to communication skills across all levels of training are not always reflective of challenges specific to conflict. Although communication skills are recognized as essential for conflict resolution the current literature does not suggest an effective operational methodology for teaching or evaluating them.

The CanMEDS Competency framework (28) outlines the professional core competency expectations for physicians. These are defined as: Medical Expert, Communicator, Collaborator, Manager, Scholar, Professional, and Health Advocate. There is an exhaustive list of required actions and skills itemized under the communicator classification such as “elicit patients’ beliefs, concerns and expectations about their medical illness” (pg.13). The non-clinical skill categories are defined as process (i.e. culturally sensitive and ethically correct and respectful manner with the patient, family members and third parties) and perceptual skills (i.e., problem-solving, ethical attitudes, emotions, preconceived assumptions and prejudices and respectful collegial relations with interprofessional colleagues) (pg.15).

This complex mélange of competencies suggests a reasonably high degree of personal and professional self-awareness and an investment in promoting effective interaction with others. The challenge for many practitioners is how to access and incorporate these competencies into an already demanding clinical practice with their clients, students or patients. Many of the role expectations are routinely perceived or presumed to be part of the professional practitioners’ toolbox of skills.

Today, workers at all levels are called upon to think differently and more deeply about themselves, their work, and their relationship to the organization (29).

The American Association of Critical Care Nurses in partnership with consulting organization Vital Smarts (1) conducted and outlined study results related to collegial tensions in health care related to unacceptable medical error rates. Their findings identified seven crucial categories of concern that were deemed essential but often not addressed between colleagues. Incompetence, poor teamwork and disrespect dominated the list that also included broken rules, mistakes, lack of support, and micro-management as the most significant and challenging issues to raise and address with a colleague (pgs.4-6).
No examples of effective modeling were outlined, but notable recommendations included; “Participants need to be able to understand the concepts and master the behaviours” and that “generic communication training will not suffice”...and also “training activities need to include emotionally compelling experiences that cause participants to examine themselves and recognize the need to change…” (pg. 15). Additionally they found that “…the content of the training must relate directly to risky situations [that] people need to confront…”(pg. 15). Health care practitioners assume and hold high communication competency expectations as prerequisites of their professions, often without supportive educational frameworks and training models to ensure or improve these skills and abilities.

Conclusions

Our search suggests an egregious gap in medical education training at all levels and an explicit need for a practical curriculum organized around the communication required for conflict resolution and negotiation. Despite the growing interest in this area there is virtually no literature related to practical teaching and education of conflict resolution skills and strategies in Canadian health care.

In response to this gap in health professional education the authors designed and developed an educational initiative in collegial conflict for residents and faculty that has been delivered locally and internationally since 2005. The module provides a facilitated hands-on opportunity for the professional practitioner to enhance their conflict resolution and communication skills (30). Evaluation of the results and impact of the interactive workshops suggest that live simulation as is an effective forum for teaching conflict resolution skills due to the opportunities it provides for participants to try out new behaviours in challenging circumstances.

In 2005 the authors also collaborated on the development and delivery of an undergraduate educational event at the University of Toronto called “Conflict in Professional Life.” Originally designed as an experiential professionalism exercise for third year medicine students at the University of Toronto, the positive feedback from faculty and students inspired its incorporation with nursing and social work students for an innovative inter-professional event that is now embedded in the curriculum. The focus on the development of communication skills related to collegial conflict continues to develop and grow within the inter-professional community.

Recommendations

Our review suggests that teaching conflict resolution skills within the health professions entails a particular application of many tenets of communication training while introducing new elements from the professions outside medicine such as law and mediation. Experience indicates that even the skilled practitioner is hungry for hands on communication practice and the opportunity to learn skills and techniques designed to approach, address and disarm or resolve conflict.

Three recommendations emerge from our review. First, conflict resolution teaching needs to be introduced in the early years of training and embedded in the increasingly interprofessional
and team based approach to learning within the health professions. Second, faculty needs opportunities to develop specific facilitation and communication skills in order to undertake such teaching. Third, further research is necessary in order to extend our understanding about the impact of conflict on interprofessional relationships and ultimately patient care. Additionally we need to explore the impact of conflict resolution teaching on competence as part of early professional skills development.

Conflict resolution literature and theory suggests that professional standards of practice and conduct across disciplines are based on core competency expectations and assumptions about practitioners’ fluency in communication skills. With few exceptions, the majority of literature alludes to the communicative skills and abilities of the professional mediator, for example, but provides little guidance for the application and operational aspects of specific communication skills and techniques (5).

Annotated Bibliography


Both authors are trained mediators and teachers of mediation in the United States whose research grew out of interest in the relationship between alternative dispute resolution (ADR) as a professional field and health care. They initially investigated the differences in opinion between health care providers and ADR professionals by reviewing both the ADR and health care conflict literature and found very little data related specifically to conflict resolution training or the sources and amount of conflict experienced by physicians. In order to understand physician related conflict more fully they designed a series of interview studies comparing the views of health care experts and ADR professionals. They found that ADR professionals have a very different conception of both the amount and sources of conflict in health care than the health care professionals themselves. Briefly, doctors believed that conflict with other doctors was much more prevalent than with patients or administration while the ADR professionals thought that the patient doctor relationship would be the greatest source of conflict. When asked about the amount of conflict experienced by physicians over the course of a day the ADR professionals believed that about 25% of a doctor’s day deals with conflict while the health care experts perceived that 50% of a doctor’s day is spent in conflict or immanent potential conflict situations. The authors found that although there were significant differences between the two groups surveyed, similarities also emerged in important areas. Both groups agreed that listening, communication skills and empathy were important skills to develop. Most importantly both groups believed that training physicians to deal with relational aspects of conflict could eliminate 50% of conflict in health care.


Written by two health care professionals working in the Alternative Dispute Resolution (ADR) field this article addresses itself to identifying the barriers to healthcare professionals’
willingness to use third party mediation for disputes. The authors suggest that health care professionals face more conflict of greater complexity than other professionals and outline four barriers to addressing conflict within the health care ranks.

- The existence of widely divergent “cultures” and value-systems between plaintiffs and defendants in the typical healthcare dispute. The authors argue that healthcare conflict mediation, at least for disputes between physicians and their patients, is akin to cross-cultural mediation.
- The existence, in healthcare institutions, of complex adaptive systems. The authors suggest that medicine represents a complex adaptive system and that recent trends in medicine – including the adoption of patient safety programs to reduce errors, team building, – have, if anything, intensified the complexity.
- Issues of inequalities and imbalances of power; which the authors point out are endemic in health care relationships.
- The lack of education about the availability and benefits of mediation; The authors suggest that many, perhaps even most, healthcare professionals are uninformed, or worse, misinformed about mediation, and that education is therefore critical for acceptance for non-adversarial dispute management.


The authors are a professor and general practice physician at University of Sydney, Australia and an educational consultant. The article outlines a case study and series of exercises to assist individuals and groups of doctors in training to recognize and manage situations involving conflict. The case study is used to introduce a conflict involving different locations and positions of interest. The authors then walk the reader through four phases in which “thoughts and emotions interact with actions” suggesting a helpful conceptual model for analyzing the problem. They go on to outline common sources of conflict for physicians and a model for handling conflict delineated in a table: The authors suggest that the four main ways we deal with conflict are avoidance, accommodation, competition and collaboration. The case study is used to explore the implications of each of these approaches. The authors conclude with some negotiation strategies that they suggest will help minimize the destructive effects of conflict and maximize constructive outcomes. It is a very useful guide for thinking about conflict in professional settings in which power and often structural barriers play a part. Although the authors acknowledge that some conflicts cannot be resolved by a personal approach due to structural factors they suggest that when conflict is involved a doctor should be able to assess the situation and employ skills and processes that move the dynamic towards a positive outcome for them and others involved.

The co-authors are business strategists and CEOs, cofounders and key stakeholders in VitalSmarts, a corporate training company specializing in organizational performance and leadership. The American Association of Critical-Care Nurses (AACN) commissioned VitalSmarts to conduct a study exploring the experience of health care personnel around communication difficulties that contribute to medical error. The found that the seven most crucial areas of concern included broken rules, mistakes, lack of support, incompetence, poor teamwork, disrespect, and micromanagement. This study builds on findings that indicate that an excess of 60 per cent of medication errors are the result of mistakes in and difficulties with interpersonal communication. Seventeen hundred respondents (including nurses, physicians, clinical care staff and administrators) were polled across thirteen urban, suburban and rural hospitals across the US. The authors report that one in five physicians described seeing harm come to patients as a direct result of these crucial areas of concern. The overarching dilemma is outlined as the difficulty in raising and addressing these concerns with peers and coworkers across disciplines including physicians. Obstacles to approaching and raising concerns are discussed and recommendations for improving conversations between coworkers are made to establish baselines and target goals. Modeling and relevant, experiential training that encourages self reflection, motivation for change and specific skill building training is encouraged for sustained and visible improvement. This is an important study with powerful implications for improved patient safety outcomes, health professional satisfaction and for the role that effective communication techniques play in resolving workplace tensions and conflict.


The authors are both educators at the University of Toronto with the Standardized Patient Program, and have expertise in communication skills training and conflict resolution. The article describes an experiential educational workshop, focused on collegial conflict resolution which has been designed and delivered for multi-disciplinary health professionals. This workshop highlights attribution theory as the working theoretical frame and uses a collegial conflict simulation as the key methodology for practical learning. Participants are guided through a didactic and interactive process designed to narrow the gap between theory and practice, allowing for a deeper understanding of attribution theory and its impact on collegial disputes. The simulation exercises allow participants to identify, practice and apply specific communication skills and strategies as they approach and address the conflict at the core of the exchange. Fields of delivery include health care and law, specifically, radiation oncology, neonatology, respiratory therapy, palliative care, mediation and negotiation and interprofessional faculty development. Participants have reported not only an increased understanding of the common characteristics of conflict stemming from the dispositional assignments of others, but that taking an active role in the simulation process has enhanced their communication skills in approaching and addressing collegial conflict. Through facilitated exercises and small group discussion participants are able to reflect on how their attributional responses inform collegial tensions and conflict. This article emphasizes the potential for simulated learning and communication pedagogy in the effective delivery of conflict resolution teaching in health.
References


Attention to the quality of life while dying allows physicians and other health care providers to provide comfort and care to their patients. A number of programs have improved the education of physicians and other health professionals with respect to end-of-life care. These programs include the End-of-Life Palliative Education Resource Center (EPERC) and Educating Future Physicians in Palliative and End-of-Life Care (EFPPEC).

**Major Themes Identified:**
The authors identified three main themes:
Staffing: there is a limited number of dedicated and experienced palliative care teachers (which can be mitigated by professional development and through the use of alternative educators via interprofessional education)
Curriculum Structure: Canadian consensus competencies exist in this area but integrating the resulting curriculum document into existing undergraduate curricula raises the usual challenging issues of where it should be located and what else it can displace
Student & Staff Attitudes: Caring for the dying is a duty of social accountability but there is still more emphasis on curing than on caring, and the teaching hospitals in particular have few clinical role models of physicians who practice end-of-life care.

**Best Practices & Innovations:**
*The Integrative Approach* as practiced by the Division of Palliative Medicine at Queen’s University
*Interprofessional Education* as conducted at McMaster University and the University of Ottawa
*Support for Educators* as provided by the EPERC Fast Facts program (see [http://www.eperc.mcw.edu/](http://www.eperc.mcw.edu/))
*A Dedicated Short Rotation* as organized by the San Diego Hospice
Frame the issue and its relevance: Death is inevitable. Suffering is not. With our increase in population and concomitant increase in the prevalence of life-threatening illness attention to the quality of life while dying presents physicians and other health care providers with the opportunity to return to our roots, providing comfort and care to our patients/clients. Thanks to End-of-life Palliative Education Resource Center (EPERC) and Educating Future Physicians in Palliative and End-of-life Care (EFPPEC) programs, to mention but a few, significant advances have been made in North America in educating physicians and other professionals about palliative and end-of-life care.

Description of methodology (see Appendix for search strategy and summary results):
Using standard search terms the Medline and ERIC were searched for articles dealing with palliative care and undergraduate medical education.

Summary of key findings

Key challenges:

Key challenges include staffing, curriculum structure and student and staff attitudes.

The number of dedicated and experienced palliative care teachers is limited as this is a new specialty area. Their ability to meet the need for Palliative and End-of-Life Care (PEOLC) education for the number of existing and future learners is constrained. In response, this role falls to the generic teacher, who is routinely tasked with teaching multiple subjects but only now receives support for continuing professional development. Developments in Interprofessional Education (IPE) may allow for alternative educators to provide similar content, palliative care being a frequent focus for interprofessional education.

Curriculum structure and content exist, achieved through a Canadian consensus fostered by the EFPPEC project. The consensus competencies for undergraduate medical students were developed from the work of the Education Work Group of the Canadian Strategy on Palliative and End of Life Care. These competencies include: address and manage pain and symptoms, address psychosocial and spiritual needs, address end-of-life decision-making and planning using basic bioethical and legal framework, communicate effectively with patients, families, and other caregivers, collaborate as a member of an interdisciplinary team, and attend to suffering. A curriculum document was produced by EFPPEC, through collaboration between the Ontario Palliative Undergraduate Network (OPUN) and the Réseau Universitaire Québécois en Soins Palliatifs (RUQSP), detailing enabling competencies, whether these needed to be taught pre-clerkship or in clerkship and which of the competencies could be taught as interprofessional programs. This document has national consensus and has formed the basis for curriculum revisions in a number of Canadian and international medical schools.

Proposing addition or change to undergraduate curriculum content raises issues of judgment about the value of the element to be displaced with resultant conflict. The need for both pre-
clerkship teaching and clerkship clinical teaching and experiences also is challenging. The key to success will be to integrate PEOLC teaching into existing structures and curriculum. While the teaching of ethics, communications skills and some symptoms already exists many curricula are deficient in the teaching about dying and death, including psychosocial issues and suffering at the end of life.

Disagreements exist about the proper location in the curriculum for this content area. A great amount of teaching presently occurs within teaching hospitals, whose patient population does not reflect processes more commonly seen in patients in the community. The dearth of clinical role models in teaching hospitals who practice quality end of life care and the constant pressure to discharge patients to the community may minimize the attention paid to this subject by teachers and learners.

Clinician teacher attitudes affect all areas of teaching and learning. From a societal standpoint, quality end of life care is increasingly seen as desirable, yet from the standpoint of faculty and curriculum planning acceptance of this duty of social accountability is only now receiving increasing attention. There is still much emphasis on diagnosis, procedures and cure without adequate attention to holistic care and the setting of goals of care.

Finally, any undergraduate teaching leading to certain competencies in PEOLC must be maintained and built upon by the further development of these competencies in postgraduate education. The College of Family Physicians of Canada (CFPC) has accepted those competencies in its programs but the Royal College of Physicians and Surgeons of Canada (RCPSC) continues to work on integrating these competencies into its core programs.

**Best practices and Areas of innovation**

*Integrative approach*
Example: Drs. Cory Schroder and Joshua Shadd, Queens University

The Division of Palliative Medicine, Queen’s University as one example, has taken an integrative approach to the teaching of palliative care. This approach has been replicated elsewhere, but is perhaps best exemplified by the poster presentation at the EFPPEC meeting, November 2007, where the approach was summarized. The authors found relevant curriculum time, offering to support current educational objectives through provision of staff, and, in return, obtained access to students in order to act as role models and to integrate the provision of didactic and experiential content about palliative and end-of-life care into the curriculum.

*Interprofessional education*
Example: Drs. Denise Marshall, McMaster University and Pippa Hall, University of Ottawa

Interprofessional Education has been the centre point of efforts at McMaster University and University of Ottawa to “stretch” physician faculty in order to provide education. Poster presentations at AFMC in May of 2008 and EFPPPEC in November of 2007 demonstrated the effect of interprofessional education in providing both knowledge, skills, and promoting attitudes to deal with palliative and end-of-life situations. This approach has been tried on a larger scale at the University of Toronto, led by Dr. Judith Watt-Watson.
Support the educators
Example: EPERC Fast Facts
Support to Educators

The University of Wisconsin, through its EPERC project, has been providing short summaries of available literature in approaches in dealing with multiple symptoms related to palliative and end-of-life care. Clinician-educators’ time is always at a premium, and finding educational resources for students is not always easy. The provision and maintenance of EPERC’s “Fast Facts”, which is now being transferred to the Journal of the American Association of Hospice and Palliative Medicine, is designed to fill this gap, and has done so with considerable success.

Dedicated rotation
Example: Dr. Charles von Gunten, San Diego Hospice

In 2004 Porter-Williamson and colleagues from San Diego presented an overview of a dedicated, one week, structured rotation for third year medical students to deal with palliative and end-of-life care. Using instruments dealing with competence, concern, knowledge and attitude, they were able to show conclusive differences in the first three, but no changes in attitudes using their approach. This is being further developed through the collaboration between San Diego and Wisconsin. (see below)

Annotated bibliography

EPERC
Web:  http://www.eperc.mcw.edu/ (Last accessed 2008-5-27)
This website provides a variety of educational tools dealing with palliative and end-of-life care. The famous “fast facts” are located here. These are freely available to educators not to provide to students and are updated on a regular basis.

Medical School - Palliative Care Education Project
Web:  http://www.eperc.mcw.edu/MS-PCE/HOME.htm (Last accessed 2008-5-27)
This site provides detailed competencies and objectives, as well as evaluation tools, for use with medical students, in learning about palliative and end-of-life care.

Review of Canadian medical school practices

This article, the forerunner of EFPPEC, provides a clear overview of the situation in 2001 with regards to undergraduate medical education in Canada.
This project, Educating Future Physicians about Palliative and End-of-Life Care, has created competencies and objectives for undergraduate medical education for Canada. It has also developed an interprofessional education program, described issues of distributed learning, and acted as a focus for the implementation and evaluation of education about palliative and end-of-life care in Canada.

This is an internationally available website dedicated to discussions about therapeutics in palliative and end-of-life care. Its archived discussion provide a wealth of real-world narrative for practitioners in dealing with complex situations in palliative and end-of-life care.

The clinical information section of this website provides an accessible source of information about standardized approaches to management of common symptoms in palliative and end-of-life care, as well as some common assessment tools and clinical practice guidelines.

References


APPENDIX 1: Search strategy and resources accessed

Medline
Keywords:
1. Education, Medical /explode
2. Education, Undergraduate /explode
3. Education, Postgraduate /explode
4. 1 or 2 or 3
5. Palliative Care
6. Hospice Care
7. Terminal Care
8. 5 or 6 or 7
9. 4 and 8

435 References obtained

ERIC
Keywords:
1. Medical students
2. Graduate medical education
3. Medical education
4. Professional education
5. 1 or 2 or 3 or 4 or 5
6. Death education
7. Terminal illness
8. Hospices (Terminal care)
9. 6 or 7 or 8
10. Publication type: Journal articles
11. Publication type: Dissertations Theses Doctoral Dissertations
12. Publication type: Dissertations Theses Masters Theses
13. Publication type: Dissertations Theses Practicum Papers
14. Publication type: ERIC digests
15. Publication type: ERIC publications
16. Publication type: Guides classroom teacher
17. Publication type: Reports evaluative
18. Publication type: Reports research
19. Publication type: Speeches meeting papers
20. 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19
21. 5 and 9 and 20

298 References obtained
Recent developments in bioethics and decision-making in Canadian medical education: From awareness to competencies

Summary

Brief Summary:
Professional ethics has long been a concern of medical education, whether taught implicitly or explicitly, whether modeled on exhortation to good behaviour, inculcation of awareness, enforcement of ethical codes, or development of competency in applying tools of ethical and social analysis. The last decade of bioethics educational research in Canada has addressed the effects of the informal or hidden curriculum and the policy environment of academic medicine; research on the formal curriculum itself in undergraduate medical education is scarce, while residency programs have been active in documenting program development. Reid also provides a brief snapshot of the current state of bioethics in the Canadian medical education system, by describing generally how existing programs are structured and integrated within the faculty of medicine.

Major Themes:
Reid identifies three emerging theme from this review.
Professionalism. Bioethics education has traditionally emphasized cognitive achievement; professionalism may be considered, in part, the attitudinal and behavioral aspects of bioethics in medical practice and their integration with communication skills.
Culture. There is urgent concern that future developments take into account Canada’s multicultural context.
Competencies. Decisions about appropriate curricular content must address desired competencies while also reflecting the evolving conceptual framework of the field; in ethics, as in clinical medicine generally, learning must be practical without communicating “cookbook solutions” that are detrimental to life-long learning

Conclusions and Directions:
Practicing physicians assume considerable responsibility for leadership in decision-making under challenging conditions, working increasingly in team environments, and experiencing both growing public expectations of accountability and increasing diversity in the public they serve. Competence to assume such responsibilities requires achievement to the highest levels of Bloom’s taxonomy (the evaluative). Learning objectives in bioethics in Canada, as reported by Baylis and Downie in 1991, remain at the level of familiarity, recognition and awareness—the lowest stage in Bloom’s taxonomy of cognitive learning objectives. Bioethics educators, like all medical educators, face the challenge of defining an appropriate balance of conceptual and
practical learning in order to prepare physicians to apply practical tools for effective action, and to reflect critically on those tools and engage with them academically as lifelong learners.

**Best Practices and Innovations:** None

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**Framing issue and relevance**

Professional ethics has long been a concern of medical education, whether taught implicitly or explicitly, whether modeled on exhortation to good behaviour, inculcation of awareness, enforcement of ethical codes, or development of competency in applying tools of ethical and social analysis. With advances in biotechnology and increasing public scrutiny of medicine in the 1960s and 1970s, bioethics emerged as a multidisciplinary academic field, involving medicine, philosophy, health law, health policy, anthropology, sociology and the medical humanities. Diverse disciplines now contribute to bioethics education in the medical context. The last decade of bioethics educational research in Canada has addressed the effects of the informal or hidden curriculum and the policy environment of academic medicine; research on the formal curriculum itself in undergraduate medical education is scarce, while residency programs have been active in documenting program development. The emphasis of accreditation bodies on professionalism and Canada’s cultural diversity will shape future directions. New competency-based approaches, in the form of the Royal College of Physicians and Surgeons of Canada’s *CanMEDS Physician Competency Framework* and the College of Family Physicians of Canada’s *Four Principles of Family Medicine*, set the stage for ethics educators to address persistent questions about appropriate standards and outcome measures for bioethics.

**Summary of key findings – best practices, innovation, key challenges**

**Current Canadian practices**

Bioethics education in Canadian medical schools has been integrated into the undergraduate curriculum in a variety of ways: with clinical skills (U of Calgary, McGill), the medical humanities (Western Ontario, Manitoba), community health (UBC), or distributed in a variety of units in both the horizontal and vertical curricula (University of Toronto, Dalhousie University). Organizationally, one faculty of medicine contains an academic Department of Bioethics (Dalhousie University), while other schools may call on an affiliated bioethics center or unit (such as Toronto’s Joint Centre for Bioethics or McGill’s Biomedical Ethics Unit), a bioethics office, a hospital-based clinical ethicist, and/or a single clinician with part-time appointment dedicated to leading the ethics curriculum. The most recent formal survey (Baylis and Downie in 1991) uncovered a wide range of hours devoted to ethics and a tendency to place ethics in isolated units rather than in an integrated or a longitudinal process spanning the undergraduate years.
In postgraduate education, the RCPSC and the CFPC instituted ethics requirements in 1995, and have offered support in the form of model curricula.\textsuperscript{6,7} Levin and colleagues surveyed implementation across programs at a given institution (Toronto), where each program is required to specify an ethics education coordinator and a single physician-bioethicist faculty member provides centralized curricular support.\textsuperscript{8} The survey found a high level of commitment to ethics teaching among chief residents and clinical faculty, although few hours are formally committed and there is little awareness that these hours do not match the range of issues to be covered. Blackmer surveyed physical medicine and rehabilitation residency programs across the country, and found that all of the 90\% who responded include ethics teaching; slightly fewer hours on average were devoted than across the faculty at Toronto; ethicists, physiatrists and other physicians taught, and the authors argue (though not based on their data) that teaching by physiatrist is preferable.\textsuperscript{9} This study found little agreement on relevant topics, with the highest agreement being research ethics and end-of-life issues, although the latter is not an obvious first choice for physical medicine and rehabilitation.\textsuperscript{9}

**Curriculum**

In other countries, accreditation requirements have led to the development of undergraduate consensus curricula. The UK core curriculum emphasizes developing the ability of physicians to participate in ongoing social debates around bioethics.\textsuperscript{10,11} The UK has achieved a high level of adherence to core content, with 90-100\% of schools covering each identified topic, though not always optimally.\textsuperscript{12} The Association of Teachers of Ethics and Law in Australia and New Zealand Medical Schools applied pedagogical theory to its consensus statement—going beyond listing topics, it distinguishes knowledge, skills and attitudes to be achieved by education in ethics and law, highlights the importance of teaching foundations, and discusses matching teaching activities and assessments appropriately to the given objectives.\textsuperscript{13}

Core curricula have not been defined in North America. The Medical Schools Objectives Project of the Association of American Medical Colleges defined a set of ethics learning objectives, heavily weighted towards attitudinal outcomes.\textsuperscript{14} Canada has no such common curriculum or aspirational statement. At the risk of “teaching to the exam,” Canadian educators may refer to the exam objectives set by the licensing body, the Medical Council of Canada’s *Considerations of the Legal, Ethical, and Organizational Aspects of the Practice of Medicine*, or CLEO—with its recent revision, now *Considerations for cultural-communication, legal, ethical, and organizational aspects of the practice of medicine*, or C\textsuperscript{2}LEO.\textsuperscript{15} Canadian bioethics textbooks offer curricular support (Hébert’s *Doing Right*\textsuperscript{16} (new edition forthcoming) and Baylis and colleagues’ *Health Care Ethics in Canada*\textsuperscript{17}); the influential *CMAJ* series “Bioethics for Clinicians” plays a strong role in shaping learning expectations for students.\textsuperscript{18}

The curricula provided by the CFPC and the RCPSC have complementary strengths and lacunae. At the postgraduate level, the CFPC’s curriculum incorporates a decision-making procedure and offers a range of challenging cases covering nineteen topics.\textsuperscript{7} The decision-making framework, provided by Eugene Bereza and adapted from Howard Brody,\textsuperscript{19} constitutes a theoretical framework; individual units lack defined learning objectives and detailed probing questions that might assist learners in learning to distinguish better and worse application of the decision procedure. Model curricula available from the RCPSC since 1997 for Surgery,
Medicine, Psychiatry, and Obstetrics and Gynaecology take a similar case-based approach; these curricula lack theoretical or decision-making frameworks, but offer learning objectives and probing questions for each module. (Revisions of the RCPSC curricula by the Bioethics Education Project are soon to be released.) Jonsen and colleagues' framework for ethical decision-making has been advocated by some in postgraduate education. The framework recommends assessing four domains in order to reach a reasoned decision (medical factors, preferences, quality of life, contextual factors). Bereza and the CFPC Ethics Committee point out that this framework offers no specifically ethical guidance.

PedEthNet, a cross-disciplinary project involving pediatric physicians, ethicists, lawyers, and nurses, produced The Good Pediatrician, a substantial textbook offering an integrated package of theoretical ethics and policy, educational theory, and topic-based chapters tailored for pediatrics programs.

Research

Canadian research on bioethics in undergraduate medical education has not focused on the formal ethics curriculum. This contrasts with the work of Goldie and colleagues, including Canadian researcher Lisa Schwartz, in the UK. We have instead probed the effects of the informal and hidden curriculum on ethical commitment. Beaudoin documented medical students’ perception that faculty fall short in demonstrating “humanistic” values. Hicks and colleagues used qualitative methods to classify ethical dilemmas that students encounter in training: clashing goals of education and patient care (e.g. pelvic exams on unconscious patients who have not consented), responsibilities beyond their abilities, and participation in substandard care.

Patenaude and colleagues have documented changes in medical students’ moral reasoning during the course of undergraduate medical education. Within Colby and Kohlberg’s framework, patterns of change suggest a worrying shift from concern for law and ethics to a concern for getting along in the local environment and securing personal needs. Hébert and colleagues administered the “Problem Identification Test” to first through fourth year medical students at the University of Toronto, and demonstrated an increase in the first year of medical education but subsequent declines in sensitivity to ethical dimensions of given vignettes in following years.

Early research in ethics education in Canada tested the ability of OSCEs to capture reliably, and in a practical number of iterations, the desired outcomes for bioethics education; outcomes were negative. At the postgraduate level, ITERs have not yet been assessed for suitability for capturing ethics learning outcomes.

In Canadian postgraduate medical education research, we have seen documentation of program development. Resident-focused needs assessment, taken before and after rotation to an ICU, called for active, experiential learning (though measures were self-reported confidence and desirability). Pauls and Akroyd-Stolarz approached a needs assessment by surveying residents and the physicians and nurses with whom they work. Interesting differences emerged: residents, but not physicians or nurses, rated substitute decision-making as a highly important learning need, while nurses, but not residents or physicians, rated quality of relationships with colleagues.
and patients as a highly important learning need. Malhotra and Ottaway surveyed Gastroenterology trainees and faculty from across the country, to find a general consensus on topics to be covered, with residents ranking transplantation, care of pregnant women, and involvement of children in decision-making higher, while faculty ranked conflict of interest topics, genetics, and endoscopic training higher.

In graduate medical education, Robb and colleagues tested innovative learning activities (standardized patient scenarios) in postgraduate surgical training. Outcomes, however, favored traditional tutorials. Trainees were tested on cognitive goals; given that role-playing is suited to learning interpersonal process skills (for instance, communication skills), an outcome favoring traditional tutorials may not be surprising. The results of this study speak to the importance of distinguishing appropriate learning objectives and designing educational activities, assessments, student evaluations, and program outcome measures to match them.

Ethics and the learning environment: seeking consistency

An appropriate learning environment for nurturing ethical commitment involves policy issues for academic medical centers. Two areas in which the Canadian literature has addressed policy as a facet of medical education are resident-industry relations and standards for trainees involved in clinical care.

McCormick and colleagues compared two groups of internal medicine trainees at McMaster, one before and one after implementation of a policy restricting interactions with pharmaceutical company representatives, with internal medicine residents at the University of Toronto, which had no such restrictive policy; a modest improvement in skepticism towards industry-supplied information and a voluntary reduction of contact with pharmaceutical company representatives was observed for McMaster students enrolled after the policy change. This study is remarkable for documenting long-term behavioral and attitudinal impact for a given intervention. It is not known how widely such policies have been adopted. Chakrabarti and colleagues surveyed Canadian psychiatry programs to discover that programs are concerned about pharmaceutical industry influence on trainees, but lack guidelines; McGill’s psychiatry program has documented its process of policy development for conflict of interest guidelines for residents. Some programs continue to address the issue at the level of education.

Consistency of policy, ethics, and learning activities is also important for trainee involvement in care. The research of University of Toronto students led the Society of Obstetricians and Gynecologists of Canada to define standards for acceptable trainee practice of pelvic exams, since adopted in a modified form by the University of Toronto. Challenges around appropriate trainee involvement and the question of standards have been explored in ophthalmology, pediatrics, and surgery.
Emerging themes: professionalism, culture, competencies

Eckles and colleagues, in their survey of the ethics education literature, conclude that much remains to be done at the theoretical and empirical levels—defining goals, and determining appropriate learning activities and outcome measures. Although ethics is a facet of all CanMEDS roles, one role consists principally in ethical competencies: the professional. Bioethics education has traditionally emphasized cognitive achievement; professionalism may be considered, in part, the attitudinal and behavioral aspects of bioethics in medical practice and their integration with communication skills. The rapidly-growing professionalism literature, including the influential work of the Cruesses at McGill and Ginsburg and colleagues in Toronto, and work from the Netherlands on implementation of CanMEDS-based professionalism training, was omitted from the Eckles review; it brings new data and perspectives to bear on the issues they identify. In addition, the MCC’s reconfiguration of CLEO to C2LEO in light of the CanMEDS roles framework goes beyond integrating a competency approach; it expresses an urgent concern that future developments take into account Canada’s multicultural context.

Uncertainty about the “correct” ethical framework, evolving expectations about competencies and levels of attainment, and challenges about appropriate evaluation are related but distinct issues. Bioethics education today faces the task of assimilating the profession’s recent articulation of expected competencies. Decisions about appropriate curricular content must address desired competencies while also reflecting the evolving conceptual framework of the field; in ethics, as in clinical medicine generally, learning must be practical without communicating “cookbook solutions” that are detrimental to life-long learning. In addition, determining the curriculum will involve addressing long-unsettled issues about appropriate learning activities and outcomes, using tools from educational theory to seek “constructive alignment” between curriculum, learning activities, and assessment methods.

The familiar “four principles” of beneficence, non-maleficence, respect for autonomy, and justice have been mainstays in ethics education since the first edition of Beauchamp and Childress’s Principles of Biomedical Ethics in 1979. Critics have claimed this approach is not attentive to moral obligations intrinsic to the patient-doctor relationship, the complexities of narrative, and the role of privilege in structuring medical encounters and the options available within. The moral development literature, in response to similar challenges, has shifted from Kohlberg’s emphasis on principle-based reasoning as the highest stage of moral development to a more broadly-defined and less culturally-specific conception of “post-conventional morality,” with an emphasis for professional education on the importance of midrange principles. As Pullman has argued, complex debates about ethical frameworks cannot realistically be taught within a residency program; the task of ethics educators is to define “enough knowledge” for the time devoted in training and for the demands (in the form of responsibilities) and resources available in practice (in the form of ethics consultations).

Practicing physicians assume considerable responsibility for leadership in decision-making under challenging conditions, working increasingly in team environments, and experiencing both growing public expectations of accountability and increasing diversity in the public they serve. Competence to assume such responsibilities requires achievement to the
highest levels of Bloom’s taxonomy (the evaluative).\textsuperscript{67} Learning objectives in bioethics in Canada, as reported by Baylis and Downie in 1991,\textsuperscript{5} remain at the level of familiarity, recognition and awareness—the lowest stage in Bloom’s taxonomy of cognitive learning objectives. Bioethics educators, like all medical educators, face the challenge of defining an appropriate balance of conceptual and practical learning in order to prepare physicians to apply practical tools for effective action, and to reflect critically on those tools and engage with them academically as lifelong learners.

Appendices

A: Description of search strategy and resources accessed

The PubMed MeSH keyword search took the form: ((Student, Medical) OR (Education, Medical, Undergraduate) OR (Education, Medical, Graduate) OR (Curriculum) OR (Internship and Residency)) AND (Ethics), then filtered for Canada in the keyword, author affiliation, or abstract fields. This search turned up many irrelevant publications; it was also supplemented by the author’s own accumulated bibliography of bioethics education in the medical school context. Perusing the websites of the seventeen English-speaking faculties, schools, or departments of medicine across the country informed observations about the place of bioethics organizationally and in the curriculum. The RCPSC and CFPC websites and the MCC website were consulted for curricular and accreditation documents.

B: Annotated Bibliography of Textbooks

Selected Recent General Bioethics Textbooks


This textbook takes the form, familiar to teachers of philosophy, of selections from the academic literature, supplemented with some policy documents (selections from the Romanow Report) and summaries of Canadian legal cases relevant to health care. Part 1 offers rich theoretical materials, places issues of pluralism and multiculturalism up front, and covers the Canadian healthcare system in more detail than any other available ethics text. Part 2 gives extensive theoretical and contextual detail on consent and capacity. Part 3 covers four issues in depth—research ethics, genetics and reproductive medicine, and end-of-life issues—but, considered as a text for a clinical training, there are significant gaps in topic coverage (ethics of the profession and interprofessional relations, confidentiality, conflict of interest, issues in chronic illness and infectious disease, to name a few). It is most suitable for use in a course led by faculty trained in philosophy, since there is little guidance to the teacher in working with the materials, and little case-based discussion.

Philip Hébert’s pleasantly avuncular and slim textbook fits a good niche for the medical ethics educator: it is approximately the right length for the few hours dedicated to ethics and most Canadian schools, and it integrates practical clinical dilemmas with at least an attempt at offering an ethical framework. Its strength is the practical tips it offers for implementing choices in clinical practice; these are respectful of the need of physicians-in-training for guidance on the interpersonal enactment of ethical commitments, including communication skills—taking the student a step beyond “getting the right answer” to the question of what’s right and wrong. Hébert makes an effort to situate law and ethics in relation to one another; the ethics teacher may feel that the bottom line too frequently gives the guiding voice to law, but perhaps the health law teacher would make the complementary complaint. Some pieces of advice may be debatable (why is it being 4:30 on Friday a good reason to prescribe an antibiotic to a patient who doesn’t need one?). Specific topics of lively debate are not covered (genetics, reproductive ethics); systems-level issues are scarcely addressed.


This text is most likely to see use in the allied health professions, but it is a worthwhile text for the medical educator to consider. Theoretical material is presented in an accessible fashion, together with exercises for personal values reflection, offering some attempt to address desirable attitudinal learning outcomes. The decision-making framework Purtillo presents for “arriving at a caring response” integrates narrative, a useful typology of kinds of ethical dilemmas, and a feedback loop for reflection after implementation of the solution. Clear objectives and differentiated learning activities (beyond: “discuss”) are presented for each chapter. Given its audience, it is strong on exploring issues intrinsic to working in an interprofessional team context. Although American references limit its applicability in Canadian schools, and many issues related to responsibilities particular to physicians in diagnosing and treating and not addressed, there is much we can learn from this text.


This collection will be an excellent resource for the teacher or tutor of clinical ethics in the medical school setting, who needs to understand the issues at a deeper level than the students, but in a manner that is still focused on practical ethics as such. 23 purpose-written chapters present classic debates and the basic terms in which they are conducted; philosophical treatment of the issues is refined but not arcane. As may be expected in a text suitable for a general university medical ethics class, day-to-day clinical issues in the doctor-patient relationship (boundary issues) and in professional self-regulation are under-represented, and while diversity in ability and socioeconomic circumstances is covered, gender and culture receive no treatment.

This textbook is a rich reference book for a wide range of issues in ethics, with 65 chapters. It is entirely case-based and offers no theoretical coverage of the basic concepts in bioethics. It is a revision and expansion—including internationalization of law and policy content—of the popular *CMAJ* “Bioethics for Clinicians” series, preserving the format whereby each topic is begun with one or two cases, discussion is offered from the perspective of ethics, law, policy, and empirical research, and each topic closes with recommendations for action, from the perspective of the imaginary physician who faces the case. While the case-based format is presented as consistent with expectations of the medical trainee, the format will require careful handling in order to create opportunities for active learning that can develop students’ skills in preparation for lifelong learning. The research is done for the student, and the case resolved by the end of each chapter. The particular form of its extensive coverage of religious and cultural beliefs may leave students with a cookie-cutter approach to culture, in which cultural competence is not distinguished appropriately from stereotyping.


In twenty chapters purpose-written for this collection, ethical issues in the primary care setting from the perspective of the working physician are covered with reasonable comprehensiveness. Virtually all authors have an M.D.—often in addition to a PhD or MPH, and like the Hebert text, the process of thinking through to decisions is supplemented by guidance for interpersonal action and communication. This textbook is unusual for maintaining an entirely case-based approach while at the same time, within each case-driven chapter, bringing the student relevant content on background theory and context, mingling ethics, policy, and history, and handling larger social debates with some sophistication. As with many other ethics texts, creating an active learning experience is left up to the instructor. Again, the Canadian bioethics educator could only use this text selectively, the American context of “managed care”. But the text can be seen as offering important lessons for how case-based approaches can extend to depth and integrate theory.

**Selected Postgraduate Level Texts**

To demonstrate that postgraduate medical ethics can be treated as an academic subject, I review here three related textbooks of psychiatric ethics. These textbooks are mutually supportive companion volumes, which, used together, offer ethics educators significant support in delivering ethics education in a psychiatric residency program.


This is the third edition of a classic postgraduate textbook. History and philosophy are addressed up front, along with a head-on approach to one of the most difficult of ethical principles—non-maleficence—with a chapter on “the use and abuse of psychiatry.” Ethicists provide some chapters, but the bulk of the contributions come from psychiatrists. Law, policy and culture are largely drawn from the American context. A
final chapter on teaching ethics in residency includes pragmatic and level-headed advice about the advantages and disadvantages of leaving principles and theory entirely to be discovered in case discussions, and treating them as a separate and foundational topic. As the authors point out, no subject for which expertise matters can be taught without engendering conceptual understanding.

This text offers a unique approach: complex cases are discussed by two ethicists—followed with the appraisal of two or more psychiatrists of the case discussion. The format brings in both physician and ethicist contributions without implying that there is one psychiatrist’s perspective and one ethicist’s perspective. The ethics educator could use entire chapters of the text, or distribute the cases alone, and reserve the discussions by ethicists and psychiatrists to the faculty or resident presenting the case, to alert them to potential perspectives and issues that may—and should—arise in discussion, and to ensure that they can verbalize a deeper understanding of the issues that will enable them to lead an effective tutorial. References to law and policy are British.

This text gathers important articles from the academic literature and serves as another kind of companion volume for the above textbook, Psychiatric Ethics. Easy access to key publications in the literature may be used as background preparation for teachers themselves, or residents taking on responsibility for presenting cases. It can also serve as a source of readings for a “journal club” approach to bioethics, in order to expose trainees to critical reading of the professional ethics literature of their specialty.

References


49. Bernstein M. Surgical teaching: How should neurosurgeons handle the conflict of duty to today’s patients with the duty to tomorrow’s? Br J Neurosurg. 2003;17:121-3.
Reeves, Scott, PhD

*The future of medical education in Canada: Interprofessional Education*

**Summary**

**Brief Summary:**
There have been a number of summary reports of IPE initiatives, including six reviews covering a total of 181 papers spanning the timeframe from 1974 to 2005. Most IPE initiatives involve physicians and nurses, are delivered to post-licensure participants and vary widely in their design and duration with most being between 1 and 5 days. The most common learning method was small and large group lectures and group problem-solving. Most assessment methods involved written reports or presentations. Most studies reported short-term outcomes, related to learner perceived changes in knowledge, skills and attitudes. Few reports of long-term outcomes or patient-related outcomes have been written. In addition, most studies were carried out in the narrow context of a single intervention at a single site and therefore are of limited generalizability. There remains no clearly superior method for delivering or evaluating IPE initiatives.

In spite of these limitations, there is widespread positive attitudinal and self-perceived knowledge and skill changes resulting from IPE interventions. A few studies have reported some positive changes in peer-reported collaborative skills. Fewer still have reported positive changes to organizational practice such as referral practices, or patient outcomes such as infection rates.

**Major Themes:**
IPE has a strong appeal for policy makers and practitioners, but little evidence exists in support of positive terminal outcomes such as patient care practices or patient outcomes. Participants report satisfaction and self-perceived knowledge gain from IPE interventions. There is a need for further research into effective IPE delivery models and evaluation of their longitudinal impact. There is a need for faculty development around IPE concepts and delivery.

**Best practices and innovations:**
Repositories of best practices can be found at:

- [www.cihc.ca](http://www.cihc.ca) (Canadian interprofessional health collaborative)
- [www.caipe.org.uk](http://www.caipe.org.uk) (Centre for the advancement of interprofessional education)
- [www.eipen.org](http://www.eipen.org) (European interprofessional education network)
Introduction
In Canada, interest in interprofessional education (defined as ‘two or more professions learning with, from and about each other to improve collaboration and/or patient care’) (1) has grown significantly in the past five years. At present a range of health professions’ education stakeholders, including professional regulatory bodies, medical educators and medical students are either planning, implementing or participating within a variety of interprofessional education (IPE) activities and programs with a range of other professional groups.

Methods
An electronic search of Medline, Cinahl and ASSIA was undertaken using the key terms ‘interprofessional education’ and ‘systematic review’. In total, six systematic reviews (2-7) were located.

Key Findings
In total, the six reviews (2-7) report on the effects of 181 IPE studies spanning from 1974 to 2005. While the reviews report on studies which differ in their methodological quality and report a range of outcomes associated with IPE (from learner reaction to improvements in the delivery of care), the reviews share a number of common elements. Specifically, all six reviews share a similar definition of IPE, five of the reviews share similar inclusion criteria, and five of the reviews employ a similar approach to recording IPE outcomes in terms of reactions, changes in attitudes/perceptions, acquisition of knowledge/skills, changes to behaviour, changes to organizational practice and impact on care.

The remainder of this section is presented in three parts. The first describes the nature of IPE interventions employed, the section details the quality of studies and the third summarizes reported outcomes relating to the impact of IPE:

IPE interventions
- Although IPE was offered to a range of different combinations of professional groups, medicine and nursing were the core participants. While the duration of IPE programs was varied, ranging from 1-2 hour sessions to programs delivered over a period of months, most programs lasted between one and five days (2-7).
- IPE was most commonly delivered to post-licensure learners in their workplaces, although IPE is increasingly being delivered to pre-licensure learners as a classroom or sometimes as a practice-based activity (2-7).
- While IPE was delivered by a variety of different combinations of interactive learning methods, seminar-based discussions, group problem-solving and/or role play activities were the most common methods employed (2-7).
- In general IPE programs employed formative assessments of learning, typically using assessment techniques in the form of individual written assignments and/or joint presentations (2-7).
Quality

- Across the studies, there was a propensity to report the short-term impacts associated to IPE in relation to learner changes of attitude and knowledge. As a result there is only a limited idea of interprofessional learning/teaching processes and a limited understanding of the longer term impact of IPE (3-7).
- Most IPE studies were undertaken in single site studies, in isolation from other studies, limiting the generalizability of these studies (2-7).
- A number of studies only offered limited or partial descriptions of their IPE programs. Such poor quality information means it is difficult to detect whether reported changes are actually attributable to the program delivered (3-7).

Outcomes

- The vast majority of IPE studies report positive learner-focused outcomes usually linked to reactions, changes of perception/attitudes and/or changes in knowledge/skills. Few studies report outcomes related to individual behaviour, usually reported as practitioners’ working in a more collaborative manner with their colleagues from other professional groups (3-7).
- A growing amount of IPE studies report positive changes to organizational practice resulting from the delivery of IPE. Outcomes used to report this type of outcome usually focus on changes to interprofessional referral practices/working patterns or improved documentation (2-5, 7). A smaller amount of IPE studies report changes to the delivery of care to patients/clients. These studies typically reported changes to clinical outcomes (e.g. infection rates, clinical error rates), patient satisfaction scores and/or length of patient stay (2-5, 7).

Implications

1. The delivery of IPE, particularly at the pre-licensure level, continues to be problematic. A range of financial, organizational and logistical issues often impede the successful (and sustained) implementation of this type of education for providers.
2. The assessment of learning within IPE programs generally continues to employ only formative approaches that capture learning related to changes in knowledge. Further work is needed to develop summative assessment approaches focused on changes to collaborative skills, collaborative behaviours and interprofessional practices.
3. At present, there is limited understanding of the faculty development needs for educators involved in the development and delivery of IPE.
4. There is currently limited knowledge about learning processes which occur within IPE programs, as a result there is uncertainty about which competencies need to be developed to produce competent professional practitioners.
5. The evidence-base describing the effects of IPE does not currently identify particular models upon which educational providers can move forward with any degree of certainty. To build a more secure evidence-base, future research needs to focus on the development of high quality, mixed method, multi-institutional studies.
Annotated Bibliography

   Helpful overview of IPE which explores its historical roots, examines current initiatives/movements and discusses future possibilities.

   A textbook which provides an in-depth account of IPE in relation to the various assumptions and arguments made about this form of education, and judges them in relation to the evidence base for IPE.

   The first of two papers which provides an insight into the key elements of IPE in relation to learners, educators and the differing contexts in which IPE is delivered.

   The second of two papers which explore key factors related to the conceptual base for IPE and its evidence base.

Innovative programs
Three websites contain the key information related to innovations in the area of IPE:
- Canadian Interprofessional Health Collaborative (www.cihc.ca)
- Centre for the Advancement of Interprofessional Education (www.caipe.org.uk)
- European Interprofessional Education Network (www.eipen.org/)

References


Introduction

This review and brief report was undertaken at the request of Dr. Nick Busing, President and CEO of AFMC. The purpose of the review was to examine the information gathered on the project to date and to discern whether the area of primary health care was appropriately represented.

To complete this task, I reviewed Health Canada’s information on primary health care. I also reviewed one of the projects funded under primary health care reform in Nova Scotia, the Building a Better Tomorrow Project, to understand the needs from the practitioners’ and communities’ points of view. Based on the elements and concepts identified, I then reviewed the summaries of the literature reviews as well as the main points of each interview. My comments are based on the above observations.

Definitions employed

Primary health care refers to an approach to health and a spectrum of services beyond the traditional health care system. It includes all services that play a part in health, such as income, housing, education and environment.

Primary care is the element within primary health care that focuses on health care services including health promotion, illness and injury prevention, and the diagnosis and treatment of illness and injury. Primary health care services serve a dual function:

- the direct provision of first contact services (by providers such as family physicians, nurse practitioners, pharmacists, for example)
- coordinating flow to ensure continuity and ease movement across the system.

Health Canada identifies some key elements of primary health care. Although the model and the range and configuration of services may vary from one community to another, these elements include:

- Responsiveness to community needs
- Prevention and treatment of common diseases and injuries
- Referrals to and coordination with other levels of care
- Primary mental health care
- Palliative care
- Health promotion
- Healthy child development
At present, primary care services in Canada are delivered chiefly by family physicians and general medical practitioners who focus on the diagnosis and treatment of illness and injury. Further developments seek to build on this foundation.

According to Health Canada, the key feature of primary health care reform

“…is a shift to teams of providers who are accountable for providing comprehensive services to their clients. There is a growing consensus that family physicians, nurses, and other professionals working as partners will result in better health, improved access to services, more efficient use of resources, and better satisfaction for both patients and providers. Such teams are well positioned to focus on health promotion and improving the management of chronic disease. This team approach, along with telephone advice lines, facilitates access to primary health care services after-hours, reducing the need for costly emergency room visits. Other technologies can support information-sharing among providers so that Canadians need not repeat their health histories or undergo the same tests for every health care professional they see. In these ways, all aspects of personal care are brought together in a coordinated way.”

Although each province is approaching the challenge of primary care differently, Health Canada notes that some common areas of focus have emerged, including:

- the creation of primary health care teams and organizations which are responsible for providing comprehensive services to their clients (including coordination with other levels of care)
- improvements in the management of chronic diseases (which account for a large portion (40-70% according to various estimates) of health care system costs);
- a greater emphasis on health promotion and illness/injury prevention;
- capacity-building in evaluation, so that system performance may be monitored; and

**Concepts Identified as Associated with Primary care**

Based upon the resources, it was possible to create a list of larger categories which could be placed into two larger groups:

I. Knowledge, Understanding and Skills:

- Determining and responding to community needs
- Social accountability
- Social determinants of health
- Team work- understanding and ability to work in teams
- Interprofessional skills
- Interdisciplinarity and Multidisciplinarity
- Population health
- Health promotion and disease and injury prevention
- Health care needs of particular populations, including minorities.
- Working with diversity including cultural understanding and ability
- Understanding the health care system
- Multiple models of care.
- Chronic disease management

- Authentic experience in both institution and community-based settings
- Community-based educational placements and experience
- Community service opportunities
- Longitudinal experiences with patients
- Exposure to populations with chronic disease, and its management
- Team and interprofessional education

Clearly, many or most of the elements identified are important at all levels of care including primary, secondary and tertiary. However, proponents argue and educators would agree, that some of them may be most effectively learned in the community or primary care context. At the very least, these elements need to be identified as part of primary care.

**The Interviews**

A review of the main points of the interviews held with key informants revealed that many of those interviewed emphasized issues related to primary care, although the term “primary care” was not commonly specifically mentioned. Working from the summaries, the following concepts and issues were raised. I have indicated the frequency of their mention, merely as an indicator of the breadth of agreement about the importance of these issues and areas in medical education.

- multidisciplinary teams, interdisciplinarity, team-based education and care (9 interviewees.)
- interprofessional education (4 interviewees).
- social accountability was frequently mentioned as a context or framework for the and elements given above, and within that, the importance of understanding and responding to community needs (5 interviewees),
- social determinants of health (3 interviewees) -- the need to respond to cultural diversity and understanding the needs of special populations.

Interviewees also emphasized the need for community-based education, increased exposure to ambulatory care, longitudinal experiences and the full context of care.

**The Literature Reviews**

The summaries of the literature reviews addressed the following identified concepts:

In the **Curricular component**, reviews addressed community-based learning, conflict resolution, inter- and intra-professional collaboration and population health. The literature raised important
issues about the fundamental devaluing of primary care that is part of the informal and hidden curricula of medical education. Increased exposure to the field was recommended. Management of chronic disease in the ambulatory setting was also highlighted (reviews 2, 3, 4, 8 and 10).

The reviews on Pedagogical issues highlighted interprofessional education and community-based learning (reviews 2 and 4). Faculty development (review 7) highlighted the need for preparation and support of community based preceptors, and the need to prepare preceptors to facilitate learning in teams. It was acknowledged, however, that some of these issues are challenging due to the lack of conclusive evidence about best practices and effective educational models.

The section on Culture highlighted several issues related to primary care including interprofessional education, the culture of medicine, social accountability and the hidden curriculum.

The Human Resources section highlighted social accountability, patient-centeredness and the informal curriculum (reviews 2, 3).

In the section on Higher Order Issues, the importance of knowledge translation and partnerships were articulated (reviews 2, 3).

In reflecting on the reviews, the concepts outlined in the literature highlight clearly the issues in primary health care. However, they also raised areas of uncertainty in terms of educational approaches. Several raise the idea of the hidden curriculum and the messages about primary care that are transmitted about the value of, the knowledge and skills required for, and the importance of primary care.

Summary
There are references to all of the key concepts in both the interview and literature review summaries. Two observations may be of note. First, there does not seem to be an agreed-upon definition or vision of primary health care that is articulated across these two sets of information and individuals. Secondly, in looking more closely, it appears that articulation of the ideas of primary care came primarily from those with generalist or family medicine preparation, those in other health professions, or those from other health related fields or agencies. These two observations may have implications for how the strategies by which incorporation of primary care are accomplished in the medical education curriculum.
Maniate, Jerry, MD, MEd
Maria Athina Matimianakis, MA, MEd, PhD (Candidate)

*Medical Professionalism: Fostering an Ecology of Professionalism*

**Summary**

Professionalism holds for the medical education system, at all stages. A lot of effort is focused on fostering and sustaining the centrality of professionalism in medical practice, and on developing and maintaining appropriate teaching and assessment approaches. Yet, the question still remains, is there a clear understanding and consensus of what medical professionalism is, let alone how to foster and assess this construct amongst members of the profession? This paper explores the construct of medical professionalism including a brief exploration of the sociological political and economic dimensions of professionalism. It considers why studying, promoting, fostering, assessing and projecting professionalism is important for health care providers and considers what threatens medicine’s professional project. The paper concludes by identifying a series of implications for Canada’s UGME system.

**Major Themes:**
Maniate and Martimianakis argue that upon reviewing the literature it is clearly evident that there is a lack of consensus in understanding what medical professionalism is, thus resulting in a highly variable offering of teaching and assessing mechanisms that are not widely adopted. The authors argue that this is indicative of an implicit belief that it would not be beneficial to create a static definition of professionalism or to adopt one approach to the teaching and assessment of professionalism. They call for working towards a dynamic definition of professionalism that allows for the creation of context specific curricular teaching and assessment around problematic behaviours but also systemic issues affecting patient care. The authors also discuss why addressing medical professionalism issues is important given current trends in society but also considering four key threats to medicine’s professional project: 1) the hidden curriculum; 2) physician well-being; 3) corporatization; and 4) failure to self-regulate.

**Conclusions and Directions:**
Maniate and Martimianakis notes that medical professionalism is a dynamic construct that is determined by the social, cultural and temporal context and thus must be reflective of the broader community. Our understanding of medical professionalism changes as society changes. Thus in order to promote an “ecology of professionalism” within medicine, systemic initiatives that cross-cut the educational continuum must be developed and implemented, requiring: 1) Faculty / Professional Development; 2) Links to Intra-Professionalism / Inter-Professionalism; 3) Governance Review; 4) Physician Well-Being mechanisms. Bringing issues of professionalism to the forefront acknowledges the work that remains to be done in ‘earning’ and sustaining society’s trust that the profession is fulfilling its social contract. Addressing concerns of professionalism thus becomes a way to demonstrate social accountability.
INTRODUCTION

The role of healer in Western medicine derives in many respects from practices traced back to Hellenic Greece. The traditions of Hippocrates and Aesklepius have served to shape an important component of medicine’s self-image and that of society’s impressions of its practitioners (1). For example, the practitioners of Hippocratic medicine were notable for their discipline and rigorous clinical practice, consisting of detailed clinical observation and clear documentation of findings and medicinal methods to assist in communications to other physicians. These are features we still associate today with professional behaviour of health practitioners, especially physicians, however, the use of the term professionalism did not emerge until the practice of medicine became politically, socially and economically organized.

Specifically, the contemporary notion of medical professionalism traces back to the middle ages when the practice of medicine began to take more formal structure, first through professional guilds and later through the incorporation of medical training in universities (2). Formal legislative relationships with the state followed which gave bureaucratic definition to the practice of medicine in the form of a professional body and allowed the profession to secure a monopoly in the division of labour for its services. Despite this organization, physicians and other health practitioners had little impact on the greater society as they tended to serve only a small elite. With the advent of the Industrial Revolution, two significant changes occurred. Firstly, healthcare became a valued “commodity” worth purchasing through the advancement that occurred in knowledge, technologies and clinical practice. Secondly, healthcare became an attainable “commodity” for the population at large in most Western societies given the increasing amounts of available wealth (1). With the parallel development of modern scientific medicine and health care delivery during the past century, the concepts of the physician as a healer and professional became intertwined (2).

The implications of these economic political and social developments for the way medicine has been taught and practiced have been well documented in the sociological and historical literature (3-22). For the purpose of this paper, we will draw on this literature whenever possible but a full review of this huge body of knowledge spanning close to a century is beyond the scope of this paper. We will note, however, that the empirical evidence base this work provides makes it very clear that the notion of professionalism is a socially constructed phenomenon, there is a political and economic function that it plays, and it sustains to a large extent the position physicians currently have in the social and economic strata in Canada.

In the North American context, practicing medicine is often equated with fulfilling a social contract. The healthcare system is built around conceptualizations of the patient – physician relationship and the relationship between the profession and society. Physicians have been entrusted by society with the responsibility for developing competence in a body of specialized
knowledge; to draw on this knowledge to provide altruistic care for patients; to ensure that a
patient’s autonomy is respected; to advocate and promote social justice; to ensure personal
integrity, beneficence and accountability. In return for these significant responsibilities, society
has afforded those within the profession of medicine the privilege of professional autonomy,
self-regulation, and monopoly in health care delivery and a status of respect within their
communities. Cruess argues that there exists a reciprocal set of rights and privileges between the
medical profession and society, and this is “the essence of the social contract, which is based on
professionalism” (1). “Society must trust individual physicians and physicians must believe
society will meet its reasonable expectations” (1). The ultimate goal is that patients receive the
best possible health care.

What is important to note, is that while the ideals the profession has worked towards
fulfilling have remained consistent for several decades, (some will argue, they have remained
static for centuries), the actual meaning this activity holds and the material effects it generates
has changed and evolved just as the context within which medicine is practiced has also evolved.
Thus, the concept of professionalism is an entry point in understanding more broadly the role of
medicine in society and the socio-political and economic implications of health care delivery.

In fact, for many in society, physicians are the embodiment of professionalism. Kennedy
argues that:

…physicians are the role models for other professionals…the ability of professionals to
play their role well, to make sound judgments in their areas of competence, depends in
turn on three factors: the professional must possess specialized knowledge, make critical
commitments, and have a large degree of autonomy in decision making (23).

Professionalism, in other words also has ideological dimensions. Understanding the role
it plays in sustaining contemporary divisions of labour in the healthcare sector is very important,
especially as it might bring in tension the altruistic commitment to providing the ‘best possible’
care for patients. Why should physicians be the role models for all other health care providers?
Is there nothing to learn from the way other health care practitioners approach their practice,
interact with patients, teach or assess professionalism? As health care is increasingly provided in
teams, we need also to reconsider how our longstanding belief that physicians are the
prototypical ‘professionals’ may in fact interfere with our ability to evolve into effective team
practitioners.

Much of the current public and professional debate on medical professionalism is taking
place against a background of change in the delivery of healthcare, medical education, inter-
professional collaboration and increasing involvement of governments and private-sector
industry. Physicians are increasingly expected to demonstrate leadership and become engaged
with these significant discussions that have the opportunity to shape and mold the future of
medical professionalism. “The imperative for medical education, at all stages of a career, is to
highlight, foster and sustain the centrality of professionalism in medical practice, and to develop
and maintain appropriate assessment of it” (24). However, is there a clear understanding and
consensus of what medical professionalism is, let alone how to foster and assess this construct
amongst members of the profession?
In this paper, we will explore the construct of medical professionalism. During our preliminary research, we identified much literature describing how we should teach and evaluate professionalism. However, there was little consensus as to what medical professionalism is, why it is important and what threatens it. We think this is indicative of an implicit belief that it would not be beneficial to create a static definition of professionalism, or to adopt one approach to the teaching and assessment of professionalism. There is a lot to learn from exploring the experiential literature on what works and what does not work in a particular context, bearing in mind of course, that context specific experiences are not readily transferable to other contexts in the same way that conceptual approaches are. For this reason we chose to focus this brief literature review on the contemporary debates related to what constitutes professionalism, given that the way we approach the definition of professionalism has implications for the way we study, teach and evaluate professionalism. We will conclude by identifying a series of implications for Canada’s undergraduate medical education (UGME) system.

WHAT IS MEDICAL PROFESSIONALISM?

The Royal College of Physicians and Surgeons defines medical professionalism as “a set of values, behaviours, and relationships that underpin the trust the public has in doctors” (25). According to this definition, medical professionalism is the basis of medicine’s contract with society. Patients want physicians to embody the qualities and attitudes that medical professional bodies have used to describe the unique role physicians play in society as part of their professionalization project. These qualities and attitudes include altruism, social justice, accountability, excellence, duty, honour and integrity, and respect for others (26, 27).

Hutchinson argues that professionalism also means:

…learning to be a servant as well as a leader …[by] honouring team decisions or a partner’s preferences, learning from failure as well as success, learning to respect and trust authority and structure but also to challenge it when necessary, being compassionate and thorough because somebody needs you…and being conscientious when nobody is watching, and doing the right thing not the easy thing or the profitable thing…A definition of professional ultimately means that we must care. We must care a lot to be good. We must care greatly to be great (26).

Hilton and Southgate in their recent review of professionalism in medical education, outline the historical links of contemporary forms of professionalism, pointing to such figures as Hippocrates, Plato and Aristotle as providing enduring philosophical underpinnings for how a medical practitioner should behave and noting also the influence of 19th century positivism, which became the profession’s dominant philosophical approach for learning and practicing medicine (24).

There have been efforts to create a normative definition of medical professionalism, despite the recognition that “the word professionalism carries with it so many connotations,
complexities, and nuances” (28). As Hutchinson notes, “professionalism is a grand and nebulous topic…we know it when we see it, yet it’s difficult to define precisely” (23).

… if professionalism is to remain integral to medical education and medical practice, and if the current, renewed focus on professionalism is to result in meaningful change that benefits both the profession of medicine and the society it serves, it is necessary to understand clearly what medical professionalism entails (28).

The reality is that most physicians live the values of professionalism every day, but the question remains, how many of us stop to reflect on what professionalism means and why is it becoming increasingly more important for us to do so (29). In fact, as Gerace further notes, “the responsibility for medical professionalism lies with physicians themselves.” The Canadian physician Sir William Osler was known to have lived by three personal ideals that DeRosa highlights in his review: (1) to do each day’s work well and not to be bothered about tomorrow; (2) to live by the Golden Rule (ethics of reciprocity); and (3) to develop and cultivate equanimity (30).

Through an understanding of the nature of a profession and the nature of physicians’ work, Swick proposes that “the concept of medical professionalism must account for the nature of the medical profession and must be grounded in what physicians actually do and how they act, individually and collectively (28). Thus he asserts that medical professionalism comprises a set of behaviours, by which physicians demonstrate that “we are worthy of the trust bestowed upon us by our patients and the public (28). The nine elements that Swick proposes are based upon observable physician behaviours and “represent a spectrum of behaviours that individual physicians should demonstrate if they are to successfully meet their obligations to their patients and to their communities” (28). These behaviours that Swick proposed have been adopted into professionalism projects, such as the Association of American Medical Colleges (AAMC) Medical Schools Objectives Project Writing Group and the American Board of Internal Medicine (ABIM) Project Professionalism (24, 31).

Some have argued that there exists an implicit social contract between society and the medical profession, and thus emphasize the individual responsibilities placed on the physicians and espoused within their views of professionalism (1, 32). In contrast, others have suggested that we must “give equal prominence to the setting, context or system of health in which professionals work” (24). Others, such as Hutchinson, note that professionalism is about articulating our value and about the attitudes, behaviours and qualities that grow out from them (26). While knowledge and technical skills are important, “greatness in practice comes from doing other things that constitute professionalism” (26). With the erosion of trust between the public and the profession there is a growing pressure to create a definition of medical professionalism that is reflective of the needs of society and to ensure that members of the profession, including its trainees embody this definition. Yet as Erasmus wrote, “every definition is dangerous” and as some will argue, focusing on developing an all inclusive definition is problematic because it presumes that one definition can fulfill all of society’s expectations (28). This is particularly important in the Canadian context where the population is very ethnically and culturally diverse.
Kuczewski proposed a definition of medical professionalism in 2001 based upon his view that professionalism is the embodiment of several issues, including: medical etiquette, interpersonal communication; medical ethics; cultural competence and sensitivity; and service to society. He defined medical professionalism as “the norms of the relationships in which physicians engage in the care of patients” (24). Hilton and Southgate in their review note that while this definition by Kuczewski appreciates that the centrality but not necessarily the exclusivity of the relationship that exists between the physicians and the patient, it also appreciates that changing societal norms impact upon that relationship (24).

Wear and Kuczewski in their 2004 article note two observations on the current professionalism discourse. They argue that: 1) the discourse has become saturated with “too many abstractions”; and 2) the discourse minimizes its attention to individual social factors (33). Another aspect that the authors argue has impacted upon this discourse has been the problems that arise with our ability to use our limited language to understand complex, often abstract concepts that have multiple meanings. Abstractions such as altruism and duty need to be understood within a context and thus linked to a broader concept in order for us to consistently attribute meaning to them in our discussions. The authors also note that despite the significant shifts in demographics of medical schools, that is the increasing proportion of females within the profession, why is it that there have been relatively minimal changes to the foundational structure and training process of UGME and PGME, such as long work hours, with little regard for the deleterious impact upon “family life, family structures, and family desires and obligations as influences on how one enacts one’s professional life” (33).

This review by Hilton and Southgate, in addition to exploring the historical roots of modern medical professionalism provides us with a greater appreciation of the lack of consensus in defining the construct of medical professionalism (24). They argue that since medical professionalism “incorporates high-level reflective judgment, phronesis, a lengthy period of experience and maturation is necessary” for the individual to transition from a “proto-professional” stage as a junior trainee to the “professional” stage as an established practicing physician (24). Drawn from the Aristotelian concept of ‘practical wisdom’, phronesis is only achieved after a “prolonged period of learning, instruction and experience”, a period whose duration is variable dependent on the individual’s personal characteristics and the environment that they learn and work in. This description of professionalism draws upon the work of Kohlberg’s theory of moral development and King and Kitchener’s stages of reflective judgment, which are incorporated, to provide descriptors for four distinct levels in the transition from proto-professionalism to professionalism (24). The authors suggest that using this framework, members of the medical profession will be “able to address complex problems with knowledge, competence, judgment and compassion” (24). The approaches evolved would also be contextually situated since they will be anchored on local understandings of what constitutes morally acceptable behaviour. The difficulty here would be to ensure that the health care delivery process is dynamic and guided by commitment to foregrounding culturally sensitive articulations of appropriate behaviour. This is particularly important in multicultural settings and especially with the more global trend of the internationalization of medical curricula.
The above brief exploration of current debates in the literature as to what constitutes professionalism raises some important questions: How does the definition of professionalism change with time? Why are some “definitions” of medical professionalism relegated to the realm of historical documents (34, 35)? Can we, or should we, create a definition of medical professionalism, to describe a construct that is inherently dynamic and subject to the context that it is used? Who is qualified to create this definition and has the definition incorporated the valuable perspectives of all members of the profession or merely those who are in senior positions of responsibility and power? Is the definition developed through a consensus process, or is it imposed as a “royal” edict? Does the definition uniformly apply to all members of the profession, or is it dependent on the context the individual member finds themselves in, for example, surgeon vs. physician, urban vs. rural, academic vs. community, family medicine specialist vs. other specialist?

**WHY IS MEDICAL PROFESSIONALISM IMPORTANT?**

Until the 1990s, while professionalism was often pursued as an ideal, it was not described or defined, let alone formally taught within the curriculum undergraduate or postgraduate medical education system. Cruess describes that through a process of socialization, “professionalism and professional values were shared and passed on” by role modeling (1). That is, senior more respected faculty members would by their actions demonstrate the ideals of professionalism to those junior to them, such as medical students, postgraduate trainees and junior faculty. Thus the informal and hidden curriculum often played a much more critical role to the education of newer members to the profession than the formal curriculum which was virtually non-existent during this time.

Critical to the relationship between society and the medical profession was the level of trust that existed. Prior to the end of World War 2, there was generally a high level of trust on the part of society with both individual physicians and with the medical profession. Physicians and the medical profession were felt to be “predisposed to public service because they were less interested in amassing wealth than in achieving recognition among their colleagues for doing good work” (36). However during the 1960s and 1970s, Cruess argues that with the transformation of medicine into an industry requiring greater proportions of a nation’s wealth, there was growing level of skepticism that started to permeate society (1). Cruess notes that in addition, there was a greater level of diversity within society that contributed to its questioning of traditional values and all sources of authority, including government, religion and the professions such as medicine. Some of the most condemning criticisms of medicine were directed to individual physicians and the profession for pursuing self-interest through their privileged positions at the expense of patient and societal needs, while others focused on the failure of medicine to self-regulate as evidenced by the actions of medical institutions to serve the needs of the profession rather than society (1). Thus with a seemingly increased focus on professional self-interest over altruism, society has sought to re-examine and make the social contract more explicit. A loss of autonomy and respect from the physicians’ perspective with widespread loss of morale in the profession has resulted in the need for physicians to reassert their professionalism in renewed social contract with society (24).
Wynia and colleagues note that the failure to consider the moral foundations of professionalism led to the inappropriate linkage of distinctive characteristics (such as self-regulation) rather than moral premises with the definition of professionalism (36). During this time period, writers such as Freidson noted that “when the leaders of profession invoke ethics and the values of professionalism, [the] critics declare it a self-serving ideology that masks the reality of naked self-interest” (36). As a result of claims that physicians were inappropriately utilizing their trade monopoly, antitrust legislation was used against physicians in the United States during the 1970s and 1980s (36). During the 1990s there was a reaffirmation of the importance of professional self-regulation especially within health care, but as a result of earlier attacks upon professionalism, the term has been left ill-defined and poorly understood by members of the profession, but also inadequately taught and evaluated among its trainees.

**THREATS TO MEDICAL PROFESSIONALISM**

Four paradoxes that were initially described by Le Fanu have been noted by Hilton and Southgate in their review as potent drivers for change and reform in modern medical education and training: 1) disillusioned doctors; 2) worried well; 3) soaring popularity of “alternative” medicine; and 4) the spiraling costs of health care (24). In the face of these four paradoxes, Hilton and Southgate, pose two key questions. “Is there still a role for the physician as a professional, and if so how should we define that professionalism?” (24).

Despite a greater appreciation of the central role that professional knowledge and expertise has been granted within contemporary society, there have been attempts to curtail many of the most distinctive features of the professions even in countries such as the United Kingdom, the United States and Canada. These efforts include curtailing the privileges of self-regulation and self-policing, despite the high level of autonomy and social prestige that the professions have experienced (37). Sullivan states that “the efforts by professional groups to respond to these threats seem to reveal the weakness of appealing to expertise alone as the basis for professional control of medical services” (37). The need for great efficiency, cost effectiveness, personalized care, integration of technology and complex social concerns has shifted the leverage that the profession had with its historical trump card of “expertise”. Sullivan argues that the contract between society and the medical profession has been rewritten. “The result, most evident in the US but not unknown in Canada and Britain, has been to transform the doctor-patient relationship by substituting questions of cost and benefit for traditional relations of care and trust” (37).

**Hidden Curriculum**

Hilton and Southgate note that medical students often enter medical school with a sense of idealism that is often revealed in their interest to care for the needs of individual patient’s and address societal concerns impacting upon the health of the community. Unfortunately, as they point to work done by Hafferty and colleagues, the “hidden curriculum” has predominantly “negative effects upon the development of professionalism in previously committed, idealistic students”, as evidenced through the loss of empathy and humanism through their progression through the medical education system (24). The persistent negative or inhibitory effects of the hidden curriculum serve to counteract attempts that medical school use to instill professionalism in their trainees.
Too often, our students and residents learn unprofessional behaviour from us, their teachers, house officers, attending physicians, and mentors, most often as a result of living under the unbelievable stresses that have been brought about by the changing social contract…We as leaders can’t expect our students to succeed, while we model failure before them…Actions speak louder than words. Professionalism is about walking the talk (33).

New course or programs implemented in isolation are not intellectual magic bullets that will solve imbalance in the medical curriculum, and must be done in conjunction with other mechanisms that address the culture of the profession and the institutions, which expose trainees to the “informal” and “hidden” curriculum.

**Physician Well-Being**

It has been noted that both environmental and personal factors, including physician well-being influence medical professionalism (27). While stress is recognized as a normal component of medical training and practice and may enhance necessary skills in limited amounts, excessive amounts of stress can negatively impact upon physician performance.

West and Shanafelt review the literature and note that physician distress:

…erodes humanistic attitudes and leads to the development of anger, cynicism, and depression. Personal factors such as debt, poor self-care, and maladaptive coping strategies (e.g., substance abuse) and stressful life events such as divorce may also lead to distress. The potential for tension between personal and professional goals and responsibilities also appears to play a fundamental role in the erosion of physician well-being (27).

The connection between physician distress and medical professionalism has become increasingly clear in the past years through the documentation of decline in crucial elements of professionalism such as empathy and humanism. This decline starts in medical school, but continues through the residency-phase into practice, where it has been associated with decreased compassion and empathy (27).

**Corporatization**

The pressure to re-examine medical professionalism within the context of the medical education system has resulted from two major issues. Firstly, individual physicians within the United States have expressed concerns over the corporatization of the health care system as evidenced by managed care. Secondly, professional associations have recognized the potential impact of this corporatization on the individual physicians’ responsibilities to their patients (28). Coupled with concerns of medical educators upon the impact of physicians’ behaviours on the professional development of medical students and residents, there has been a push to renew the profession’s focus upon medical professionalism.

Others have argued that “the practice of medicine is at risk of becoming merely technical, rather than professional, driven in part by external pressures to control costs and in part by technological sophistication that can seduce us into thinking that technology can substitute for judgment in all cases” (23). Kennedy goes on to argue that “the physician-patient encounter is in
danger of becoming more of a transaction than a transformative experience as corporate medicine demands higher productivity and lower costs” (23). While Kennedy is writing from an American perspective, the same threat can exist in a public system such as Canada that is subject to budgetary and infrastructure constraints, mainly from governments.

**Failure to Self-Regulate**

In the United Kingdom, there have been several high profile cases, inquiries and reports over the past number of years, which have highlighted questionable and in some cases poor professional conduct to the determent of patient safety and care. For example, the Shipman Inquiry led by Dame Janet Smith was an independent public inquiry that was held subsequent to the life imprisonment conviction of Dr. Harold Shipman of murdering 15 of his patients while he was a General Practitioner near Manchester (38). The inquiry was tasked to investigate the function of the regulatory bodies and other organizations as well as to provide recommendations on steps to protect patients in the future. This included the threat of the British government to greatly diminish the General Medical Council (GMC) and by extension the medical profession’s, role in regulation (39). These measures were eventually not required, but only because of the significant overhaul of the regulatory structures and mechanisms of the profession that the GMC had undertaken.

Canada has not been immune from such cases, as noted by the example of the Pediatric Cardiac Surgery Inquiry in Winnipeg during 1995 which reviewed the circumstances surrounding the deaths of 12 children over a one year period of time (40). These are just a few of the most recent high profile cases that represent the suspected, yet unreported cases of unprofessional behaviour or poor medical conduct.

With these and other cases in the media, there is growing recognition and pressure from the public and governments to identify the “bad apples” in the profession. The public places its trust in the profession through the medical regulatory authorities to license, register and assure the competence of its practitioners. Thus while a physician may have successfully completed their UGME and PGME over a six to nine year period, they are also expected to remain competent throughout their practice lifetimes. Much of this commitment is due to constant evolution in the practice of medicine through the development of new investigation modalities, management / treatment options but also a rapidly expanding knowledge base such as a greater understanding of disease pathophysiology and molecular biology. As the demonstration of ongoing competence and performance of physicians is a pillar of professional self-regulation in medicine, the public expects its physicians to be committed to participating in lifelong practice reflection and continuing professional development (CPD). Unfortunately, as the UK and Canadian examples have highlighted, there have been situations where the medical profession has “failed spectacularly in its duty to guarantee reasonable standards of practice among its members” (39).

**Summary: Threats**

The foundation of the public’s trust in the medical profession is the confidence that patients have in their physicians to put the patients’ well-being ahead of all other consideration, even the physicians’ (37). Despite the evidence of failures, there remains a social contract between medicine and society, which is based upon mutual trust and reasonable expectations on both sides.
“Because society has chosen to use the concept of the profession as a means of organizing the services of the healer, professionalism has come to serve as the basis of medicine’s social contract... It is incumbent upon the medical profession to understand professionalism and the obligations necessary to sustain it because these serve as the basis for societal expectations” (1).

While members of our society have focused upon corporatization and examples of when the profession has failed to self-regulate as the primary reason for addressing medical professionalism, those within the profession must not forget the significant impact that the hidden curriculum and physician well-being have upon the development of professionalism.

Concluding Remarks

The physician has two responsibilities with regards to medical professionalism. As it pertains to the profession as a whole, the physician plays an invaluable role to define expectations or standards, while at the individual level they uphold those same expectations or standards through their conduct. In addition, the characteristics of medical professionalism are explicit, implicit and evolving. For example, explicit characteristics have included honesty and integrity, while implicit characteristics have included trustworthiness. The physicians’ allegiances to patients and to the health care system they work within are an example of the evolving characteristics that define medical professionalism. Another example of the evolving demonstration and understanding of what medical professionalism is has been evidenced by the shift in “professional” attire that has occurred in the United Kingdom, where the traditional doctor’s white coat and even necktie has been deemed to be an infection control risk by the Department of Health in its implementation of new clothing guidelines (41). Using our popular culture, we can see how there have been shifts in how society views physicians, from the television character of Dr. Marcus Welby of the 1960s and 70s as the gentle altruistic gentleman, to the portrayal of Dr. Gregory House in the beginning of the 21st century as an obnoxious, drug-addicted, yet phenomenal diagnostician. Today’s physician is clearly no longer Dr. Welby, but does Dr. House represent the majority of the profession?

The above short review of the importance of working towards a dynamic definition of professionalism is not intended to detract from the importance of developing a coherent strategy for teaching and assessing professionalism. Rather, it draws attention to the need to study professionalism as part of broader socio-economic phenomena and not in isolation. Normative definitions of professionalism are challenged as taken unproblematically to apply to everyone. Evident also from the above is the added complexity of considering how professionalism is an intersection of power relations. As society becomes more diverse, achieving agreement on what should constitute professional behaviour is made very difficult. At the same time, bringing issues of professionalism to the forefront acknowledges the work that remains to be done in ‘earning’ and sustaining society’s trust that the profession is fulfilling its social contract. Addressing concerns of professionalism becomes a way to demonstrate social accountability.
IMPLICATIONS FOR CANADA’S UGME SYSTEM

- Medical professionalism is not static. It is a construct that is determined by the social, cultural and temporal context and thus must be reflective of the broader community. Our understanding of medical professionalism changes as society changes.

  In order for physician charters, practice guides or codes of conduct to have continued relevance, they must be a reflection of the environment, which is in itself is evolving. Turnbull states that, “while values and principles are not likely to change, the specific duties that flow from the values and principles may change as the environment changes (42).” Thus while medical professionalism is anchored in society, it is a construct that is not static, and in fact does evolve with time as society changes. For example, the understanding of medical professionalism has changed in Canada over time due to, but not limited to: 1) practice changes, as the system of sole practitioners and individual patients to one of multilateral and multifaceted contracts among the public, the profession and governments; 2) cultural changes, as the Canadian population becomes increasingly multicultural; and 3) demographic changes, as younger Canadians demand to be recognized as active collaborative participants in the provision of their own medical care.

  Having said that, consideration needs to be given to whether national codes of conduct should exist at all. There is no disagreement with the general tenets of medical professionalism, but there are concerns being increasingly expressed in the literature and amongst medical educators regarding the professionalism discourse and how it has become “defined, organized, contained, and made seemingly immutable a group of attitudes, values, and behaviours subsumed under the label “professional” or “professionalism” primarily from the perspective of those in academic medicine disciplines (33).

  Wear and Kuczewski argue that by focusing on the discourse instead of the attributes of professionalism we are able to engage in a “more critical examination of what is being said, as well as an examination of the linkages between knowledge, power and institutions…[we are] to ask who decides what questions are relevant to the professional development literature; who is absent from such debates; who gets to decide if, how, and where professionalism is addressed in the undergraduate and graduate curriculum; and who is assessed for evidence of professionalism and who is not” (33).

- Medical professionalism is a dynamic construct and thus should be taught and assessed accordingly.

  With the understanding that professionalism is a dynamic construct that evolves as society changes, we must realize that it cannot be taught and assessed as a static construct and thus we need to move beyond our current pedagogical methodologies. While existing mechanisms may inform students and practitioners as to the concepts and values of professionalism, they may be insufficient to provide the necessary tools to adapt and respond in a changing environment.
There is a need to promote an “ecology of professionalism” within medicine through systemic initiatives that include postgraduate medical education (PGME) and faculty members.

At the start of medical school, most medical students will have the opportunity to participate in a formal ceremony where they are presented to their family, friends and communities as being the next generation of physicians. In addition to the pomp and ceremony, there is often an opportunity for all the members of incoming class to recite the Hippocratic Oath. For many, this may be the first opportunity they may have had to read this document. For most, the next opportunity to read these same words will be at their graduation ceremony at the end of medical school.

For the profession, this should cause us to think about a couple of key questions. First of all, is this sufficient? That is, is this minimal exposure sufficient to inoculate an entire generation of physicians against the culture of medicine that they will be soon exposed to in their training experience. Secondly, is the mere reading and understanding of the Hippocratic Oath equivalent to a more in-depth immersion into the values and principles that form the concept of professionalism?

Perhaps what is required is an approach that inoculates but also repeatedly boosts the exposure of medical students and even faculty to the values and principles that constitute medical professionalism. Through repetition and debate, professionalism becomes engrained into the culture of medicine. In discussions with a group of residents, it was noted that “you never hear about professionalism until an issue arises”, which should cause us much concern.

Hilton and Southgate and others propose the need to ensure that aspects of medical professionalism are repeatedly introduced into not only the UGME educational experience, but also postgraduate medical education (PGME) and continuing professional development (CPD), as a means of counteracting the negative or inhibitory effects of the informal and hidden curriculum on the idealism that is found in medical trainees upon entry into medical school.

The review by Hilton and Southgate highlights the need to closely examine the entire medical system to identify and correct the inhibitory effects that both the “informal” and “hidden” curriculum have been noted to have on the development of professionalism (24). These inhibitory factors, despite the attempts of the medical school to implement often elaborate programs that are to have stimulatory effects on the idealism, often result in the development and fostering of cynicism amongst trainees, especially as they see more senior trainees, such as postgraduate medical education (PGME) residents, and faculty members not “practicing what they preach”.

Faculty / Professional Development:
Thus rather than offering professional development that is haphazard at best and not rooted in a theoretical framework, there is a need to create a program that is implemented clearly throughout the educational system and lifetime of the medical professional. This includes offering instruction to residents and faculty to promote, teach and assess medical
professionalism using methodologies that are appropriate for a construct that is dynamic, constantly evolving and context specific. Teaching and evaluating trainees on medical professionalism must be done in conjunction with cultural / systemic changes, which are supported by the administration / senior faculty members in order to address areas that undermine professionalism.

**Intra-Professionalism / Inter-Professionalism:**
It is also important to ensure that these efforts to promote an “ecology of professionalism” within medicine are done in conjunction with ongoing work that is occurring in the areas of “intra-professionalism” and “inter-professionalism”. Both these areas would likely be positively impacted upon by a similar transformational change within the medical profession culture to address the negative aspects of the hidden curriculum. There is a lot we could learn from other health practitioners about how physicians project their professional identity, how medical professionalism impacts team effectiveness and patient care by implication.

**Governance Review:**
To appropriately address this implication may require a broader governance review of the existing structure and function of medical schools in their delivery of UGME and PGME. The existing structure does not allow for the consistent development and implementation of cross-cutting or longitudinal programs that cross from the UGME phase into PGME phase and even CPD. This fragmentation is accentuated with the superimposed clinical departmental structure that exists in most Canadian academic medical centers and medical schools, which slows the development and implementation of systemic initiatives without extensive and often lengthy discussions and negotiations.

Ludmerer notes that, “by the end of the 1990s, education was by far the most endangered part of the medical school’s traditional mission. Amid the pressures of research, graduate medical education, and the provision of increased patient care, the education of medical students has become merely a passing concern” (33).

Why is the current literature on “medical professionalism” simply focused on the individual, their practices and behaviours and attitudes, while ignoring the critical role that medical schools, academic medical centers (AMCs), healthcare institutions and other organizations play?

- **Efforts to promote professionalism not only must reduce physician distress but also promote well-being.**
  It is important for the medical education system and health care system to identify and implement systemic and / or organizational reforms that address physician distress and promote a true culture of caring and institutional policies are necessary to achieve this goal. There is evidence of unaddressed physician distress contributing to the negative effects of the “hidden” curriculum on the idealism of trainees, thus contributing to the development of cynicism and inhibiting the progression from proto-professionalism to professionalism.
This includes addressing issues of intimidation, harassment and discrimination mistreatment which contributes to increased cynicism in trainees, by ensuring that trainees are empowered to identify areas of un-professionalism and initiate changes to the environment (33). This includes ensuring that each medical school and training location has a clear and effective student-mistreatment policy, and that trainees are well-aware of the mechanism of addressing issues of mistreatment. “Those whose professionalism we are developing must come to believe that they can do something about the environment when it falls short of the standards of professionalism” (33).

- **There is the need for further research:**
  - To explore domains that have not typically been examined, such as sociology, anthropology, ethics, philosophy, history and literature analysis, to expand our understanding of medical professionalism.
  - To understand the relationship between physician well-being and medical professionalism.
    “The professional development discourse requires a pause, a time to take stock of what has been said, who has been speaking, and for whom the discourse is intended. Concurrently it is time to listen for what has not been said, who has not been speaking, and which groups have not been targeted for professional development” (33).

**CONCLUSIONS**

“Medical education is not only about the acquisition of new knowledge and skills; it is also about the acquisition of a new identity in life – an identity as a doctor, a medical professional, with all the rights and responsibilities that that entails” (43).

Despite the recent and growing emphasis on medical professionalism, our ability to influence the development of “appropriate” behaviours associated with professionalism has remained as “one of the most difficult core content areas in medical education” (43). There has been a rapid proliferation of medical professionalism codes, guides and charters written by various medical organizations in the literature, but despite this, no one code, guide or charter has become the standard or consensus document for all medical students, residents or practicing physicians to adhere to (see Appendix B: Annotated Bibliography). We have gone so far as to argue that perhaps that has been a good thing. These documents, as valuable as they are, focus on how one must be professional or ethical, but are weak when it pertains to their practicality and their daily utility for the busy clinician. Unfortunately, these documents when coupled with a lack of success to “identifying the faculty and curriculum to teach such ideas efficiently and effectively, nor to definitive tools and methods to evaluate learner outcomes” has led to confusion and even frustration amongst faculty and students alike (43). Perhaps this should not surprise us, given two important issues. First, medical professionalism is a complex, multifaceted, and ever-changing construct that is context specific. Second, given that medical professionalism is a collection of values, traits or attitudes, is it possible to develop uniform curriculum and evaluation tools to respectively teach and assess all trainees on their level of
“professionalism”? Wagner and colleagues note that even though there is “consensus that medical professionalism should be taught, some educators question whether professionalism can be taught” (43).

As Cruess and Cruess note, “there appears to be a window of opportunity to redefine medicine’s contract with society”, given the publics’ dissatisfaction with the way non-physician managers have managed the Canadian health care system (2). For many, “the demonstration of professionalism has become central to the demonstration of fitness to practice” (24). Perhaps, in light of such statements, there is a need to re-examine national guidelines developed by professional organizations for preparing physicians to practice, such as the Royal College of Physicians and Surgeons of Canada CanMEDS 2005 Framework, which has identified seven roles for the competent specialist in Canada but has centralized the role of medical expert and relegated the role of professional to the periphery, in apparent contradiction to what society expects of its physicians (44).

“The public is asking for a return of medical professionalism, with its core values of scientific expertise and altruism. However, this must be a professionalism that meets contemporary requirements and is understood by both the medical profession and society, because many of society’s expectations depend on medicine meeting the obligations that are drawn from the traditions of the professional” (2).

While there may be reluctance to develop and implement such ideas, it is important for us to note that medical professionalism is not optional, especially in the eyes of our patients. For them, medical professionalism is an essential part of being a doctor regardless of how many challenges face us.

“The formula for a professional life is simple in concept, but difficult in practice. We must first master our field, and then maintain our proficiency through life-long learning and study. We must care for each other and each of our patients as unique human beings. We must go beyond what is simply our duty and we must always put the welfare of our patients above our own….If we can meet their needs, we have succeeded not only as doctors, but as human beings” (30).

David Hutchinson in his 2004 Gold Foundation’s White Coat Ceremony for first-year medical students at the University of Minnesota Medical School, Duluth campus concluded with these words:

“It is a challenge for all of us to become great enough in a professional sense to serve adequately…professionalism both gives me a sense of purpose and contributes to my successes…professionalism helps us retain the sacred in medicine, provides a structure for our art, and helps us maintain the humanistic idealism we bring when we enter medical school.”

Can we define medical professionalism? While many have attempted to do so in order to develop methods of education and assessment, we would argue that doing so is an unachievable task. The 2007 review by Hilton and Southgate and other literature provide us with an
appreciation of the lack of consensus that the medical profession has in understanding the construct of medical professionalism (24). This lack of consensus on the definition of the construct has resulted in the development and attempted implementation of numerous models of education and evaluation of medical professionalism from various perspectives, which are not widely adopted but remain largely as localized programs (24).

“Would we assess medical students’ interviewing skills without instruction in such skills? In fact, why the jump to assessment without first carefully and comprehensively treating professionalism throughout the curriculum, creating a culture from the top down that encourages it, offering instruction to faculty and residents assigned to promote and assess it, and providing multiple opportunities everywhere for students to reflect on it?” (33)

Medical professionalism is a dynamic and contextualized construct, which relies upon social, historical and cultural understanding. “Professional and professionalism have different meanings for people, and in different contexts” (24). We need to understand what medical professionalism means from a variety of perspectives and appreciate its complexity and contextual nature prior to moving into the process of developing and implementing curriculum and assessment mechanisms.

APPENDIX A:
IMPLICATIONS FOR CANADA’S UGME SYSTEM – SUMMARY

- Medical professionalism is not static. It is a construct that is determined by the social, cultural and temporal context and thus must be reflective of the broader community. Our understanding of medical professionalism changes as society changes.
- Medical professionalism is a dynamic construct and thus should be taught and assessed accordingly.
- There is a need to promote an “ecology of professionalism” within medicine through systemic initiatives that include postgraduate medical education (PGME) and faculty members.
  - Faculty / Professional Development
  - Intra-Professionalism / Inter-Professionalism
  - Governance Review
- Efforts to promote professionalism not only must reduce physician distress but also promote well-being.
- There is the need for further research:
  - To explore domains that have not typically been examined, such as sociology, anthropology, ethics, philosophy, history and literature analysis, to expand our understanding of medical professionalism.
  - To understand the relationship between physician well-being and medical professionalism.
APPENDIX B: ANNOTATED BIBLIOGRAPHY

Key Articles:

(1) This article describes the relationship between the medical profession and society as a social contract, with an exploration of the obligations and expectations of both parties. Cruess clearly outlines both society’s expectations of medicine and also medicine’s expectations of society in her 2006 article and argues that this reciprocal set of rights and privileges is “the essence of the social contract, which is based on professionalism”. The basis of this relationship is mutual trust and reasonable expectations of both parties to the contract.

(36) Wynia and colleagues describe the historical shifts that have occurred with the term “professionalism” and how it has been understood by both the medical profession and society. They propose that professionalism is comprised of three core elements: devotion, profession and negotiation.

(28) Swick outlines his argument that there is a need for a normative definition of medical professionalism and sets out this definition in light of the nature of the medical profession and what physicians actually do and how they act, individually and collectively. Medical professionalism comprises a set of behaviours that includes:

1) Physicians subordinate their own interests to the interest of others.
2) Physicians adhere to high ethical and moral standards.
3) Physicians respond to societal needs, and their behaviours reflect a social contract with the communities served.
4) Physicians evince core humanistic values, including honesty and integrity, caring and compassion, altruism and empathy, respect for others, and trustworthiness.
5) Physicians exercise accountability for themselves and for their colleagues.
6) Physicians demonstrate a continuing commitment to excellence.
7) Physicians exhibit a commitment to scholarship and to advancing their field.
8) Physicians deal with high levels of complexity and uncertainty.
9) Physicians reflect upon their actions and decisions.

(33) Wear and Kuczewski argue that by focusing on the discourse instead of the attributes of professionalism we are able to engage in a “more critical examination of what is being said, as well as an examination of the linkages between knowledge, power and institutions”. They pose an important set of questions that medical educators need to wrestle with as we examine the construct of professionalism. We need “to ask who decides what questions are relevant to the professional development literature; who is absent from such debates; who gets to decide if, how, and where professionalism is addressed in the undergraduate and graduate curriculum; and who is assessed for evidence of professionalism and who is not.” This paper explores in more
details: the discourse of professional development; a curricular theory of professional
development; the learning environment for professional development; and the duty of a
profession to advocate for the well-being of society.

(24)
This 2007 review by Hilton and Southgate, in addition to exploring the historical roots of modern
medical professionalism provides us with a greater appreciation of the lack of consensus in
defining the construct of medical professionalism (24). They argue that since medical
professionalism “incorporates high-level reflective judgment, *phronesis*, a lengthy period of
experience and maturation is necessary” for the individual to transition from a “proto-
professional” stage as a junior trainee to the “professional” stage as an established practicing
physician (24). Drawn from the Aristotelian concept of ‘practical wisdom’, phronesis is only
achieved after a “prolonged period of learning, instruction and experience”, a period whose
duration is variable dependent on the individual’s personal characteristics and the environment
that they learn and work in. This description of professionalism draws upon the work of
Kohlberg’s theory of moral development and King and Kitchener’s stages of reflective
judgment, which are incorporated, to provide descriptors for four distinct levels in the transition
from proto-professionalism to professionalism (24). The authors suggest that using this
framework, members of the medical profession will be “able to address complex problems with
knowledge, competence, judgment and compassion” (24).

**Charters, Codes and Guides:**
(31)
In 2002, the American Board of Internal Medicine (ABIM) in conjunction with the European
Federation of Internal Medicine and the American College of Physicians – American Society of
Internal Medicine (ACP-ASIM) has authored a charter that was the culmination of several years
of work on medical professionalism at the three organizations (31). The charter was based upon
the following premise. “Changes in the health care delivery systems in countries throughout the
industrialized world threaten the values of professionalism.” While the charter has provided a
set of three principles and 10 commitments for the profession in a clear and concise manner, they
have fallen short of what is needed in that they are not enabling or as practical as they could be
for the practicing physician.

(45)
The Canadian Medical Association (CMA) *Code of Ethics* was initially developed in 1868 and
has most recently been updated in 2004 (45). The Code, in addition to other CMA policies,
provides physicians with a common ethical framework. In another publication, the CMA
highlighted five major challenges to professionalism, which included: commercialization;
consumerism; bureaucratization; industrialization; and internal challenges, such as the failure to
uphold the ethic of service, clinical autonomy and self-regulation (46). The CMA proposed in
this report that meeting these challenges would require: *policy* (code of ethics, educational
standards, clinical practice guidelines, licensing requirements and discipline), *education* (formal
and informal, for example, role-modeling) and *self-regulation.*
The Royal College of Physicians of London published a report in December 2005 entitled *Doctors in society: medical professionalism in a changing world*. The RCP had initiated a working party to re-examine the issue of medical professionalism, and made recommendations for a new, strengthened form in order to maintain trust and confidence in doctors and their role in the UK healthcare system while ensuring relevancy for the 21st century.

The *CanMEDS 2005 Physician Competency Framework* published by the Royal College of Physicians and Surgeons of Canada (RCPSC) identifies seven roles or competencies that physicians utilize during daily clinical practice (44). The seven identified roles of the CanMEDS framework include: Medical Expert (central role), Communicator, Collaborator, Health Advocate, Manager, Scholar and Professional. These roles have been used by the RCPSC as the foundational components upon which all postgraduate specialist training programs in Canada (except Family Medicine) are based upon. CanMEDS defines the role of Professional as: “physicians [who] are committed to the health and well-being of individuals and society through ethical practice, profession-led regulation, and high personal standards of behaviour”. This definition serves as the basis for the enabling competencies that physicians are expected to demonstrate in their practice.

In 2006, the General Medical Council (GMC) published the *Good Medical Practice* as a means of providing doctors with guidance on the principles and values that good practice is based upon but also as a means of communicating clearly to the public what they could expect from doctors (47). The *Good Medical Practice* outlines its principles in the following main categories: (1) Good clinical care; (2) Maintaining good medical practice; (3) Teaching and training, appraising; (4) Relationships with patients; (5) Working with colleagues; (6) Probity; and (7) Health. The principles collectively describe what the GMC refers to as “medical professionalism in action”, and provides clinicians with practical examples to guide their conduct. It is not a statutory code, thus providing the clinician with the ability to evaluate each patient and clinical scenario independently. The *Good Medical Practice* came into effect in November 2006 in the UK.

The College of Physicians and Surgeons of Ontario (CPSO), through a consultative process, published its Practice Guide on *Medical Professionalism and College Policies* in September 2007 (48). This Guide serves to articulate the key values that underlie the practice of medicine rather than describing specific standards for practice or create legal obligations for the physician. The Guide identifies compassion, service, altruism and trustworthiness as the key values of medicine and serves as the basis of principles, duties and policies of the profession.
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ADDENDUM

Brown, Adrian. The Future of Medical Education in Canada: Community-based Education: Brief Review

Distributed Medical Education Innovation and New Directions: A Focus on Rural Education

During the Environmental Scan Process, it became clear that a topic that had not been given full attention was the issue of rural medicine. While a review paper in this volume entitled, The Future of Medical Education in Canada: Community-based Education: Brief review by Adrian Brown, covered many salient issues in relation to community-based education, it did not focus specifically on rural education. Thus the team asked Dr. James Rourke, to provide additional information to the project on this topic. While there was not time to complete a systematic review, Dr. Rourke kindly provided for us a set of key references and the key implications for medical education that he distills from this growing evidence base.

We express our appreciation for the following contribution.

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Increasing the Number of Rural Physicians References

20. Pong RW and Pitblado JR. Personal communication, 2007, 20 August
Training Health Professionals for Rural Practice References


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16. Rourke, J. “A Rural and Regional Community Multi-Specialty Residency Training Network Developed by the University of Western Ontario” Teaching and Learning in Medicine 2005; 17(4);376
19. Key implications for Medical Education in Canada arising from the literature on Rural Medical Education

Implications for medical education in Canada arising from the literature on rural medical education

1. There continues to be a series of problems related to maldistribution of physicians in Canada with the shortage being mostly in rural areas.
2. Students from a rural background are three to five times more likely to practice in a rural area than their urban counterparts.
3. In Canada about a third of rural doctors have a rural background and another third from midsize communities and another third from large metropolitan centres.
4. Rural located medical education at the undergraduate level has been found to be associated with increased number of doctors in rural practice locations of both rural and urban background students.
5. At the postgraduate level physicians prepared for rural practice are more likely to stay in rural practice.
6. Distributing postgraduate medical education in rural practice is associated with both higher numbers of family physicians and specialists in rural practice.
7. Six months of family medicine training in rural practice appears to be ideal for family physician training for rural practice.

8. It is too early yet to have any significant data on the effect of satellite campuses located in regional urban centres.