HEALTHCARE

POLICY

Politiques de Santé

Health Services, Management and Policy Research
Services de santé, gestion et recherche de politique

Volume 5 • Number 1

Data Matters • Discussion and Debate • Research Papers
Knowledge Translation, Linkage and Exchange

A LONGWOODS PUBLICATION Fonds WWW.HEALTHCAREPOLICY.NET

HEALTHCARE QUARTERLY: Best practices, policy and innovations in the administration of healthcare. For administrators, academics, insurers, suppliers and policy leaders. *Edited by* Dr. Peggy Leatt, University of North Carolina, Chapel Hill. ✦ CANADIAN JOURNAL OF NURSING LEADERSHIP: Covering politics, policy, theory and innovations that contribute to leadership in nursing administration, practice, teaching and research. Peer reviewed. *Edited by* Dr. Dorothy Pringle, University of Toronto, Toronto. ✦ HEALTHCARE PAPERS: Review of new models in healthcare. Bridging the gap between the world of academia and the world of healthcare management and policy. Authors explore the potential of new ideas. *Edited by* Dr. Peggy Leatt, University of North Carolina, Chapel Hill. ✦ HEALTHCARE POLICY: Healthcare policy research and translation. Peer reviewed. For health system managers, practitioners, politicians and their administrators, and educators and academics. Authors come from a broad range of disciplines including social sciences, humanities, ethics, law, management sciences and knowledge translation. *Edited by* Dr. Jennifer Zelmer, Adjunct Faculty, University of Victoria, Victoria. ✦ ELECTRONIC HEALTHCARE: Best practices, policy and innovations exploring e-models, e-practices and e-products for e-health. For administrators, academics, insurers, suppliers and policy pundits. *Edited by* Dr. Michael Guerriere, University of Toronto, Toronto and Denis Protti, University of Victoria, Victoria. ✦ LAW & GOVERNANCE: Within the framework of the law and the role of governance providing policies, programs, practices and opinions for the providers, administrators and insurers of healthcare services. *Editorial Chair,* Dr. Kevin Smith, McMaster University, Hamilton. ✦ HRRESOURCES: Cases, commentary and policy reviews for healthcare clinicians, human resources managers and the policy leaders, insurers, academics, administrators, boards and advisors of all healthcare organizations. *Editorial Chair,* Dr. Louise Lemieux-Charles, University of Toronto, Toronto. ✦ JOURNAL OF WORLD HEALTH & POPULATION: Best practices, policy and innovations in the administration of healthcare in developing communities and countries. For administrators, academics, researchers and policy leaders. Includes peer reviewed research papers. *Edited by* Dr. John Paul, University of North Carolina, Chapel Hill. ✦ LONGWOODS.COM: Enabling excellence in healthcare. Providing electronic access to news, information, career opportunities, conference schedules, research, case studies, policy reviews and commentary that cover politics, policy, theory, best practices and innovations in healthcare.

HEALTHCARE
POLICY
Politiques de Santé

Health Services, Management and Policy Research
Services de santé, gestion et recherche de politique

VOLUME 5 NUMBER 1 • AUGUST 2009

Healthcare Policy/Politiques de Santé seeks to bridge the worlds of research and decision-making by presenting research, analysis and information that speak to both audiences. Accordingly, our manuscript review and editorial processes include researchers and decision-makers.

We publish original scholarly and research papers that support health policy development and decision-making in spheres ranging from governance, organization and service delivery to financing, funding and resource allocation. The journal welcomes submissions from researchers across a broad spectrum of disciplines in health sciences, social sciences, management and the humanities and from interdisciplinary research teams. We encourage submissions from decision-makers or researcher–decision-maker collaborations that address knowledge application and exchange.

While *Healthcare Policy/Politiques de Santé* encourages submissions that are theoretically grounded and methodologically innovative, we emphasize applied research rather than theoretical work and methods development. The journal maintains a distinctly Canadian flavour by focusing on Canadian health services and policy issues. We also publish research and analysis involving international comparisons or set in other jurisdictions that are relevant to the Canadian context.

—

Healthcare Policy/Politiques de Santé cherche à rapprocher le monde de la recherche et celui des décideurs en présentant des travaux de recherche, des analyses et des renseignements qui s'adressent aux deux auditoires. Ainsi donc, nos processus rédactionnel et d'examen des manuscrits font intervenir à la fois des chercheurs et des décideurs.

Nous publions des articles savants et des rapports de recherche qui appuient l'élaboration de politiques et le processus décisionnel dans le domaine de la santé et qui abordent des aspects aussi variés que la gouvernance, l'organisation et la prestation des services, le financement et la répartition des ressources. La revue accueille favorablement les articles rédigés par des chercheurs provenant d'un large éventail de disciplines dans les sciences de la santé, les sciences sociales et la gestion, et par des équipes de recherche interdisciplinaires. Nous invitons également les décideurs ou les membres d'équipes formées de chercheurs et de décideurs à nous envoyer des articles qui traitent de l'échange et de l'application des connaissances.

Bien que *Healthcare Policy/Politiques de Santé* encourage l'envoi d'articles ayant un solide fondement théorique et innovateurs sur le plan méthodologique, nous privilégions la recherche appliquée plutôt que les travaux théoriques et l'élaboration de méthodes. La revue veut maintenir une saveur distinctement canadienne en mettant l'accent sur les questions liées aux services et aux politiques de santé au Canada. Nous publions aussi des travaux de recherche et des analyses présentant des comparaisons internationales qui sont pertinentes pour le contexte canadien.

CONTENTS

Editorial

The Undisciplined Economist

Dialogue

Discussion and Debate

Knowledge Translation, Linkage and Exchange

Research Papers

Online Exclusives

Dialogue

Research Papers

Exclusivités en ligne

Dialogue

Rapports de recherche

HEALTHCARE
POLICY
Politiques de Santé

HOW TO REACH THE EDITORS AND PUBLISHER
Telephone: 416-864-9667 Fax: 416-368-4443

ADDRESSES
All mail should go to: Longwoods Publishing Corporation, 260 Adelaide Street East, No. 8, Toronto, Ontario M5A 1N1, Canada.

For deliveries to our studio: 54 Berkeley St., Suite 305, Toronto, Ontario M5A 2W4, Canada.

SUBSCRIPTIONS
Individual subscription rates for one year are [C] $105 for online only and [C] $155 for print + online. For individual subscriptions contact Barbara Marshall at telephone 416-864-9667, ext. 100 or by e-mail at bmarshall@longwoods.com.

Institutional subscription rates are [C] $460 for online only and [C] $562 for print + online. For institutional subscriptions, please contact Susan Hale at telephone 416-864-9667, ext. 104 or by e-mail at shale@longwoods.com.

Subscriptions must be paid in advance. An additional 5% Goods and Services Tax (GST) is payable on all Canadian transactions. Rates outside of Canada are in US dollars. Our GST number is R138513668.

SUBSCRIBE ONLINE
Go to www.healthcarepolicy.net and click on "Subscribe now."

REPRINTS/SINGLE ISSUES
Single issues are available at $30. Includes shipping and handling. Reprints can be ordered in lots of 100 or more. For reprint information call Barbara Marshall at 416-864-9667 or fax 416-368-4443 or e-mail to bmarshall@longwoods.com.

Return undeliverable Canadian addresses to: Circulation Department, Longwoods Publishing Corporation, 260 Adelaide Street East, No. 8, Toronto, Ontario M5A 1N1, Canada.

EDITORIAL
To submit material or talk to our editors please contact Ania Bogacka at 416-864-9667, ext. 108 or by e-mail at abogacka@longwoods.com. Author guidelines are available online at http://www.longwoods.com/pages.php?pageid=39&cat=247

ADVERTISING
For advertising rates and inquiries, please contact Susan Hale at 416-864-9667, ext. 104 or by e-mail at shale@longwoods.com.

PUBLISHING
To discuss supplements or other publishing issues contact Anton Hart at 416-864-9667, ext. 109 or by e-mail at ahart@longwoods.com.

Healthcare Policy/Politiques de Santé is published four times per year by Longwoods Publishing Corp., 260 Adelaide St. East, No. 8, Toronto, ON M5A 1N1, Canada. The journal is published with support from the Canadian Institutes of Health Research's Institute of Health Services and Policy Research. Manuscripts are reviewed by the editors and a panel of peers appointed by the editors. Information contained in this publication has been compiled from sources believed to be reliable. While every effort has been made to ensure accuracy and completeness, these are not guaranteed. The views and opinions expressed are those of the individual contributors and do not necessarily represent an official opinion of *Healthcare Policy* or Longwoods Publishing Corporation. Readers are urged to consult their professional advisers prior to acting on the basis of material in this journal.

Healthcare Policy/Politiques de Santé is indexed in the following: PubMed Central, CINAHL, CSA (Cambridge), Ulrich's, Index Copernicus and Scopus.

No liability for this journal's content shall be incurred by Longwoods Publishing Corporation, the editors, the editorial advisory board or any contributors. ISSN No. 1715-6572

Publications Mail Agreement No. 40069375
Printed by Harmony Printing

EDITORIAL

Why Tolstoy Doesn't Fit Healthcare

"Happy families are all alike; every unhappy family is unhappy in its own way," according to Leo Tolstoy. In healthcare, the opposite seems to me to be true. Go to a health policy meeting in Sydney, Singapore, Saskatoon or Seattle and you will hear talk of population aging, tight finances, recruitment problems and many other shared challenges.

The silences interest me as much, maybe more. Why are there some places where you get puzzled looks when you mention problems with access to primary care or adoption of e-health? Why are there others where you don't hear about wait times in emergency departments? And what are the secrets of those places that are able to recruit and retain all the nurses that they wish to hire?

I have happened upon several of those intriguing silences since moving to Denmark. When I moved, I expected – even looked forward to – a certain degree of culture shock. The rhythms of Copenhagen and of Danish life would be different. I would make new friends and, hopefully, learn a new language. There would be new tastes to explore and familiar comforts that I would miss. More than a year later, I have experienced all these changes and many more.

It also feels different to be a patient here. On my first full day in Denmark, I went with Louise, my relocation agent, on a bureaucratic odyssey. We set out to register me with the authorities, get a bank account and a tax card, and fill in all those other forms that a move to the other side of the world requires. This process included applying for the magic yellow card that is the key to your life in Denmark, from taking out library books to accessing healthcare. When you sign up, you can roster with a primary care practice. Surprise #1: The local Kommune office has an up-to-date list of doctors accepting new patients, and there are lots of physicians on the list. On the day that I wrote this editorial, for example, 64% of family physicians in the capital region were accepting new patients (sundhed.dk 2009). And you don't have to call or wheedle to be accepted; you just tell the clerk at the Kommune which practice you would like to join (or later, change online if you would like to switch).

Since I spoke about three words of Danish at the time, Louise riffled through the list and picked a practice for me. How did she choose? The first criterion she cited was predictable: convenience. The practice she recommended is a block and a half from my apartment. But the second was unexpected. In addition to address, phone number, public transit directions and wheelchair access information, the government's list of

doctors tells you whether you can book appointments, renew prescriptions and have e-consults online. My new practice ticked all three boxes, a plus from Louise's point of view. Surprise #2: Patients are choosing where they will seek care based on the extent of adoption of e-health technologies.

And that brings me to surprise #3. I didn't realize how pervasive e-health truly is in primary care until I booked my first appointment. The booking process is online. I could take a leisurely look at the options on a Sunday afternoon and choose a time that suited my schedule. Two days later, when the time came for my appointment (or, technically, 20 minutes after that – some things seem universal), I entered the exam room. Shortly after saying hello, my GP apologized for the fact that his electronic health record, which was visible to both doctor and patient, had an old user interface and promised that an upgrade was planned soon. Clearly, he felt that reassuring a new patient of this upcoming change was important at the outset. The statistics confirm that my experience was not an anomaly. In 2007, 98% of primary care physicians in Denmark had computers in consultation rooms, 97% used e-prescribing, 96% used e-lab results and 74% exchanged information electronically with other providers (Dobrev et al. 2008).

From options for after-hours care to the ways that healthy choices are considered in urban design, I could cite many more experiences that have opened my eyes since moving to Denmark. Why is it sometimes difficult to translate these types of experiences across oceans? It's not as simple as money. Denmark spends less per capita on healthcare than Canada (OECD 2008a). It's not technology. Overall levels of technology adoption seem relatively similar. For example, about two-thirds of households have broadband Internet access in both countries (OECD 2008b). Neither is it purely geography. Yes, Canada's land mass is much bigger than Denmark's. But the Greater Toronto Area, where I lived before I moved, has about the same population, covers a smaller geographic area and has more doctors per capita than Denmark (CIHI and Statistics Canada 2008; OECD 2008a). Which has caused me to wonder – why is my "Danish experience" not more common?

That's exactly the type of question that we hope *Healthcare Policy/Politiques de Santé* will provoke. Whether the papers feature research or commentary from down the hall or across the world, we hope that they will cause you to think about opportunities for improving health and healthcare in your community. We encourage you to submit papers to share the knowledge and perspectives that you have gained with others for consideration in future issues of the journal. We particularly welcome innovative manuscripts that profile new knowledge from research studies that will inform health policy and management decisions, focused analyses of health administrative or survey data that shed light on significant health services and policy issues, insightful essays and commentaries for the Discussion and Debate section, and brief reports of health technology assessments and policy analyses.

P.S.: Lest the description above make you jealous and motivate you to consider immigrating, Copenhagen is particularly lovely in the spring and summer. That said, I could as easily turn the tables and talk about intriguing "silences" in Canada that would be of interest here. That's what makes comparative health policy so interesting and potentially productive. And possibly also comparative immigration policy – but that's another story.

REFERENCES

Canadian Institute for Health Information (CIHI) and Statistics Canada. 2008. *Health Indicators.* Ottawa: Authors. Retrieved June 2, 2009. <http://www.cihi.ca/indicators>.

Dobrev, A., M. Haesner, T. Hüsing, W.B. Korte and I. Meyer. 2008 (April). *Benchmarking ICT Use among General Practitioners in Europe: Final Report*. Bonn: European Commission Information Society and Media Directorate General. Retrieved June 2, 2009. <http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/gp_survey_final_report.pdf>.

Organisation for Economic Co-operation and Development (OECD). 2008a. *OECD Health Data 2008: Statistics and Indicators for 30 Countries.* Version 12/10/2008. Paris: Author.

Organisation for Economic Co-operation and Development (OECD). 2008b. "OECD Key ICT Indicators: Households with Broadband Internet Access, 2000–2007, Percentage of All Households." Paris: Author. Retrieved June 2, 2009. <http://www.oecd.org/dataoecd/23/34/41625794.xls>.

sundhed.dk. 2009. Vejviser. Retrieved June 2, 2009. <http://www.sundhed.dk>.

JENNIFER ZELMER, BSC, MA, PHD
Editor-in-chief

Tolstoï ne convient pas pour les services de santé

Selon Léon Tolstoï, « Les familles heureuses se ressemblent toutes; les familles malheureuses sont malheureuses chacune à sa façon. » Dans les services de santé, il me semble bien que ça soit le contraire. Si vous allez à une rencontre

sur les politiques de santé à Sydney, à Singapour, à Saskatoon ou à Seattle, vous entendrez parler du vieillissement de la population, des finances serrées, des problèmes de recrutement et de bien d'autres défis communs.

Les silences m'intéressent tout autant, peut-être même plus. Pourquoi à certains endroits on vous regarde avec consternation quand vous parlez de problèmes d'accès aux soins primaires ou de mise en place de la cybersanté? Pourquoi à d'autres endroits on ne mentionne même pas les temps d'attente dans les services des urgences? Et quel est le secret de ces établissements qui arrivent à attirer et à retenir toutes les infirmières qu'ils désirent recruter?

J'ai été témoin de plusieurs de ces curieux silences depuis mon installation au Danemark. En arrivant ici, je m'attendais à un certain degré de choc culturel. Les rythmes de la vie à Copenhague et au Danemark seraient sans doute différents. Je me ferais de nouveaux amis et, avec un peu de chance, j'apprendrais une nouvelle langue. Il y aurait de nouveaux goûts à découvrir, mais je sentirais aussi une certaine nostalgie pour les lieux qui me sont familiers. Un an plus tard, je considère avoir fait l'expérience de tous ces changements et bien plus.

Être un patient ici est également une expérience différente. Lors de ma première journée au Danemark, j'ai parcouru avec Louise, mon agente de réinstallation, une odyssée bureaucratique. Je me suis inscrite auprès des autorités, j'ai ouvert un compte en banque, obtenu une carte de crédit et rempli tous les formulaires nécessaires pour mon installation dans ce coin du monde. Le processus comprenait également la demande de la fameuse carte jaune, qui est la clé de la vie au Danemark, que ce soit pour emprunter des livres à la bibliothèque ou pour obtenir des services de santé. Au moment de l'inscription, il est possible de choisir sa clinique de soins primaires. Première surprise : le bureau de la Kommune présente une liste à jour des médecins qui acceptent de nouveaux patients et la liste contient beaucoup de noms. Au moment d'écrire ces lignes, par exemple, 64 pour cent des médecins de famille de la région de la capitale acceptent de nouveaux patients (sundhed.dk 2009). Et il n'est pas nécessaire de téléphoner ou d'implorer pour être accepté : il suffit d'indiquer au préposé de la Kommune le nom de la clinique qui vous intéresse (éventuellement, vous pouvez changer de clinique par Internet si vous le souhaitez).

Puisque je ne parlais alors que trois mots de danois, Louise a consulté la liste et a choisi à ma place. Comment a-t-elle fait son choix? Le premier critère qu'elle a employé est, bien sûr, la commodité. La clinique recommandée se trouvait à deux coins de rue de chez moi. Le second critère, cependant, était inattendu. En plus des adresses, téléphones et accès pour fauteuils roulants, la liste gouvernementale précise si vous pouvez utiliser Internet pour prendre rendez-vous, renouveler les prescriptions ou obtenir une consultation en ligne. Ces trois cases étaient cochées pour ma clinique, ce que Louise considérait comme un atout. Deuxième surprise : les patients choisissent leur clinique en fonction du degré de cybersanté qu'elles offrent.

Cela me conduit à la troisième surprise. Avant de prendre mon premier rendez-vous, je ne m'étais pas rendue compte à quel point la cybersanté était présente dans l'organisation des services primaires. La prise de rendez-vous se fait en ligne. Je pouvais facilement voir les disponibilités du dimanche après-midi et choisir une heure en fonction de mon agenda. Deux jours plus tard, à l'heure du rendez-vous (techniquement 20 minutes plus tard – certaines choses semblent universelles), j'entrais dans le cabinet de consultation. Après m'avoir saluée, le médecin s'est excusé du fait que l'interface de son système pour le dossier de santé électronique (visible tant pour le médecin que pour le patient) n'était pas actualisée, et il m'a promis qu'une mise à jour était prévue dans peu de temps. Il était clair que le fait de rassurer d'entrée de jeu la nouvelle patiente au sujet de cette mise à jour était un élément important pour lui. Les statistiques montrent que mon expérience n'est pas unique. En 2007, 98 pour cent des médecins de première ligne avaient un ordinateur dans leur cabinet, 97 pour cent d'entre eux utilisaient l'ordonnance électronique, 96 pour cent employaient les résultats de laboratoire électroniques et 74 pour cent échangeaient en ligne des renseignements avec d'autres fournisseurs de services (Dobrev et al. 2008).

Je pourrais évoquer plusieurs autres expériences qui m'ont ouvert les yeux depuis mon arrivée au Danemark, par exemple les diverses options pour obtenir des soins après les heures normales de travail ou encore comment la planification urbaine tient compte des choix santé. Pourquoi donc ces initiatives ne traversent-elles pas l'océan? Ce n'est pas simplement une question d'argent. Les dépenses en santé par personne sont moins grandes au Danemark qu'au Canada (OCDE 2008a). Ce n'est pas non plus une question de technologie. Le niveau général d'adoption des technologies est relativement le même dans les deux pays. Par exemple, environ deux tiers des foyers ont un accès Internet à haut débit (OCDE 2008b). Ce n'est pas non plus une question de géographie. Le Canada est en effet plus grand que le Danemark; cependant, par rapport au Danemark, la région du Grand Toronto – où j'habitais avant mon déménagement – couvre un territoire plus petit, présente plus de médecins par personne et contient environ la même population (ICIS et Statistique Canada 2008; OCDE 2008a). Ce qui me porte à me demander pourquoi mon « expérience danoise » n'est pas plus répandue.

Voilà exactement le genre de questions que nous espérons susciter avec *Politiques de santé/Healthcare Policy*. Qu'ils présentent des recherches ou relatent des faits d'ici ou d'ailleurs, nous souhaitons que les articles provoquent une réflexion qui vise l'amélioration de la santé et des services dans les communautés. Nous vous invitons donc à proposer vos articles pour d'éventuels numéros de la revue, afin de partager avec les autres vos connaissances et vos points de vue. Nous invitons tout particulièrement des manuscrits novateurs qui présentent de nouvelles connaissances à partir d'études de recherche qui informent sur les politiques de santé et la gestion du système de soins de santé, des analyses centrées sur des données administratives de santé ou d'enquêtes

qui éclaircissent les questions cruciales liées aux services de santé et les politiques, des comptes rendus et des commentaires pénétrants pour la section « Discussions et débats » et de courts résumés d'évaluations des technologies de la santé ou d'analyses de politiques.

P.S. : De crainte que la description ci-dessus ne vous rende jaloux et vous pousse à penser à l'immigration, sachez que Copenhague est une ville particulièrement charmante au printemps et en été. Cela dit, je pourrais facilement parler des curieux « silences » du Canada qui intéresseraient à leur tour les Danois. C'est ce qui rend la politique de santé comparative si captivante et si pleine de potentiel. C'est sans doute aussi le cas de l'immigration comparative, mais il s'agit là d'une autre histoire.

RÉFÉRENCES

Institut canadien d'information sur la santé (ICIS) et Statistique Canada. 2008. *Indicateurs de santé.* Ottawa: auteurs. Consulté le 2 juin 2009. <http://www.cihi.ca/indicateurs>.

Dobrev, A., M. Haesner, T. Hüsing, W.B. Korte et I. Meyer. 2008 (April). *Benchmarking ICT Use among General Practitioners in Europe: Final Report.* Bonn: European Commission Information Society and Media Directorate General. Consulté le 2 juin 2009. <http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/gp_survey_final_report.pdf>.

Organisation de coopération et de développement économiques (OCDE). 2008a. *Éco-Santé OCDE 2008 : Statistiques et Indicateurs pour 30 pays.* Version 12/10/2008. Paris: auteur.

Organisation de coopération et de développement économiques (OCDE). 2008b. "OECD Key ICT Indicators: Households with Broadband Internet Access, 2000–2007, Percentage of All Households." Paris: auteur. Consulté le 2 juin 2009. <http://www.oecd.org/dataoecd/23/34/41625794.xls>.

sundhed.dk. 2009. Vejviser. Consulté le 2 juin 2009. <http://www.sundhed.dk>.

JENNIFER ZELMER, BSC, MA, PHD
Rédactrice en chef

The Iron Chancellor and the Fabian

Le chancelier de fer et le fabianiste

by ROBERT G. EVANS

Abstract

Adam Wagstaff (2009) reports on a statistical comparison of social health insurance (SHI) versus tax financed (TF) health systems within the OECD. On average, SHI financing is more expensive than TF and yields no better health outcomes. It lowers overall labour force participation and reduces the share of the formal sector. Why, then, is interest in SHI increasing in developing countries?

Consider the historical origins for SHI and TF. Bismarck (SHI) was a Prussian aristocrat; Beveridge (TF) was a socialist. TF is inherently egalitarian; SHI adapts readily to the preservation of inequality and privilege in both financing and access to care. This may be the real attraction of SHI in countries with highly unequal income distributions.

Résumé

Adam Wagstaff (2009) fait part d'une comparaison statistique entre, d'une part, le système d'assurance maladie sociale (AMS) et, d'autre part, le système de services de santé financés par les fonds publics (SFP), dans les pays de l'OCDE. En moyenne, le financement de l'AMS est plus coûteux que celui des SFP et ne mène pas à de meilleurs résultats en matière de santé. L'AMS réduit la participation globale de la main-d'œuvre et diminue la part du secteur structuré. Pourquoi, donc, les pays en développement s'y intéressent-ils de plus en plus?

Examinons les modèles historiques de l'AMS et des SFP : Bismarck (AMS) était un aristocrate prussien, Beveridge (SFP) était un socialiste. Les SFP représentent un modèle intrinsèquement égalitaire; l'AMS se prête plus facilement au maintien des inégalités et des privilèges, tant dans le financement que dans l'accès aux services. Cela constitue sans doute le véritable attrait de l'AMS dans les pays où la distribution des revenus est très inégale.

Otto von Bismarck, the architect and first chancellor of the German Empire proclaimed in 1871, was not a closet social democrat. Yet he laid the foundations of the German welfare state, including in 1883 the world's first public health insurance system. This was financed through employer and employee contributions to locally administered agencies contracting with independent providers, though within a framework of tight government regulation. Variants of this "Bismarck model" have subsequently been widely adopted in many countries in the Organisation for Economic Co-operation and Development (OECD), as well as in developing countries and in the formerly Soviet economies of eastern Europe.

Sir William Beveridge, on the other hand, *would* clearly qualify as a social democrat by any definition. The economist from the London School of Economics laid out, in his classic 1942 report, the principles of the alternative "Beveridge model" that Nye Bevan institutionalized in the UK National Health Service.[1] In this framework, both the financing and the provision of health systems are government responsibilities. Care may be delivered directly by governments, or on contract by more or less independent agencies; in either case, financing comes from general public revenue, raised through various forms of taxation rather than through contributions specific to the health insurance system. Again, variants of this model have spread across the world.

Although there are as many variants of these models as there are countries adopting them, and features from one model can be and are inserted into another, yet they remain the two distinct and recognizable alternative frameworks for providing public health insurance. No other fundamentally different models have emerged. Genuinely private health insurance, voluntary and unsubsidized, bought and sold in free markets, cannot cover more than a very small proportion of health expenditures. The reasons were made clear to economists by Akerlof (1970), though advocates of public insurance had understood them decades earlier.[2] The options for financing health systems accordingly boil down to insurance coverage through some variant of the Bismarck or the Beveridge models, under their more modern labels of social health insurance (SHI) or tax finance (TF), or no coverage at all. This being so, the relative merits of these two alternatives become important matters, not only of intellectual debate but of practical health policy.

Which brings us to a recent World Bank paper by Adam Wagstaff (2009). In an earlier paper he noted: "Social health insurance (SHI) is enjoying something of a revival in parts of the developing world" (Wagstaff 2007: 1). There, he discussed in considerable detail the various claims and counter-claims by advocates for SHI and TF systems, with numerous country-specific examples. But in his more recent paper, he observes: "Like many intriguing and important debates, this one is being conducted on a flimsy evidence base" (Wagstaff 2009: 2), and he attempts to strengthen that base.

Wagstaff's 2009 paper is an empirical analysis of pooled data from 29 of the currently 30 members of the OECD over the period 1960–2006.[3] The objective is to look for systematic differences between SHI and TF countries on various measures of health system performance.

The categorization is inevitably problematic in some cases; as he notes, "reforms during the 1990s and 2000s have left the distinction between the two models increasingly blurred" (Wagstaff 2009: 25). Increasing government intervention in SHI financing and administration leads towards a "Bismidgian" system, while contracting with more independent providers looks rather "Bevmarckian." Nevertheless, "[t]he fundamental difference between SHI and tax-financed systems is that SHI systems raise revenues largely from earnings-related contributions levied largely on formal sector workers while tax-financed systems draw their revenues from taxes and nontax government revenues" (Wagstaff 2009: 6).

Of particular interest: during the study period a number of countries switched their dominant financing modes either from SHI to TF, or from TF to SHI. Eleven countries have maintained a SHI system throughout, while six (including Canada) maintained a TF system. Eight countries, however, switched from SHI to TF during the first half of the study period, while four, all formerly Soviet economies, switched from TF to SHI after the collapse of that system.[4] These switches offer the possibility of identifying the effects of SHI or TF financing separately from the characteristics of particular countries.

Wagstaff's outcome measures are chosen from the various claims and criticisms made for and of these two financing alternatives, as well as on the availability of data. He estimates the impact of SHI relative to TF on health system costs, on the health outcomes achieved and on the overall national labour market.

On average, per capita health services costs (adjusted for purchasing power parities) are 3.5% higher in SHI systems. The result is significant at the 1% level: SHI costs more. But does it deliver more? While TF advocates argue that TF systems are better able to contain overall health services costs, SHI advocates often regard this as a weakness, not a strength. Governments are either unwilling or unable to provide adequate funding; TF cost containment is therefore associated with poorer-quality care, insufficient to meet population needs.

To address these issues, Wagstaff (2009) draws on OECD Health Data estimates of

rates of mortality from causes amenable to medical intervention, as well as recently published estimates by Nolte and McKee (2008). The motivation for such analyses is that while there are some causes of death that are simply beyond the reach of modern medical interventions, there are many others that are not. A person suffering from an "amenable" condition should not die from it if high-quality medical care is available. Thus the comparison of national health systems is (slightly) more fine-grained if the outcome measures are those for which medical care could, in principle, make a difference.

Moreover, since the well-known Fundamental Law of Epidemiology is that one out of one dies, comparisons are better made of deaths delayed, or conversely of "premature mortality." That term raises a host of questions – premature by whose standard? The OECD and Nolte and McKee (2008) operationalize it using Potential Years of Life Lost, or PYLLs. These are calculated by selecting a particular age cut-off and defining all deaths before that age as premature. The PYLL associated with each premature death is then the difference between the pre-selected cut-off age, and the actual age at death. Summing these across all deaths in a country over a given period yields the total PYLLs for that country; these can then be categorized by cause of death and identified as "amenable" or otherwise.

Wagstaff compares PYLL rates for nine different causes of death that are identified as amenable to medical intervention in both the OECD tabulations and in Nolte and McKee's (2008) analysis: malignant neoplasms of the colon and rectum (ICD10 C18-21); malignant neoplasm of the breast (females only) (C50); malignant neoplasm of the cervix uteri (females only) (C53); diabetes (E10-4); ischaemic heart disease (ICD10-I20-5); cerebrovascular disease (I60-9); influenza and pneumonia (J10-28); maternal death (O00-99); and perinatal deaths other than stillbirths (P00-96). A simple bivariate comparison of these PYLL rates in SHI countries with those in TF countries showed that rates were higher (worse outcomes) in SHI countries for six of these conditions, and lower in three.

As Wagstaff (2009) emphasizes, however, these comparisons may have little or no meaning because of the host of other factors affecting mortality rates that will vary, probably widely, across countries. More generally, any observed relation between variables A and B may arise because A causes B, or B causes A, or a third factor affects both A and B, or simply by chance. A very substantial part of the paper is devoted to various econometric techniques for testing and controlling for the influence of potential confounders – country- and time-specific effects of excluded variables masquerading as SHI or TF effects – as well as to the possibility of "reverse causality," in which the presence or absence of SHI might be the consequence, not the cause, of country differences in costs, outcomes or both.

These tests and techniques generate a number of results that, though important, are primarily of technical interest. In the end, Wagstaff concludes that after adjusting for potential confounding effects, there is in fact no statistically significant evidence for dif-

ferences in health outcomes between SHI and TF countries within the OECD – with one exception. Breast cancer mortality rates among women are significantly higher in SHI countries, by an estimated 5% to 6%. Wagstaff (2009) describes this finding as "not implausible" in the light of other studies showing that TF systems, because of their focus on the whole population rather than individual enrollees, tend to provide better comprehensive national public health programs in general, and cancer screening in particular.

The key point for Wagstaff, however, is that these data offer no support for any claim that SHI systems yield, on average, better health outcomes in return for their higher costs. It might be noted in passing that the estimated 3.5% extra costs per capita in SHI systems are, like the health outcome estimates, the product of extensive econometric adjustment for excluded factors. A simple comparison of mean costs per capita shows SHI countries to cost, on average, almost twice as much. Nearly all of that difference is estimated to be due to the effects of other factors not explicitly accounted for in the analysis. But when these are all pared away, there remains a (statistically) significant extra cost for SHI systems, with no benefit in terms of health outcomes.

Data on measures of health system utilization, such as hospital admissions or physician visits, were not sufficiently complete or comprehensive to include in the cross-country comparisons. In any case if one found, as one might expect, that higher costs were associated with greater activity levels, this would not seem *a priori* to represent an advantage for SHI in the absence of corresponding improved health outcomes.

It is worth noting that Watson and McGrail (2009; this issue of *Healthcare Policy*), using Nolte and McKee's (2008) data, have shown that while Canada has one of the lowest ratios of physicians to population in the OECD – a fact stressed by those asserting a severe physician shortage – it suffers no disadvantage in PYLL from amenable causes and indeed achieves among the best results in the OECD. This fact has gone unnoticed by the media. There is extensive and powerful evidence that, in the United States at least, higher capacity and activity levels, and higher costs, not only yield no health benefits at the population level but are actually associated with poorer health outcomes.[5]

The relative impact on labour markets of alternative methods of health services finance has received little attention from health economists, but has certainly not escaped the attention of labour economists. Standard economic theory, and indeed common sense, would suggest that linking contributions to employee earnings discourages employment. Further, to the extent that this extra cost can be avoided if workers move into the informal sector, SHI would tend to shift the balance of employment away from the formal sector.

Wagstaff (2009) finds quite a strong effect of SHI on labour markets. On average, SHI lowers the overall employment rate among workers aged 15 to 65 by 5% to 6%, and lowers the proportion of those workers who are in the formal sector by 8% to 10%. Both these effects lower the overall productivity of the economy; they represent

additional costs of SHI relative to TF that never turn up explicitly on anyone's budget.

These labour market responses can have significant implications for the extent of coverage achieved by SHI systems, and the associated costs. Whether participation is voluntary or nominally compulsory for workers in the informal sector, *de facto* levels of coverage typically fall very far short of universality. Wagstaff (2009) notes that even in highly developed economies with a long history of SHI – Germany and Japan, for example – universality was an objective in principle but took decades to achieve. "Universality" is difficult or impossible to achieve through a patchwork of SHI plans. Significant portions of the population inevitably fall through the cracks, and the terms of coverage – the costs of enrolment and the quality of care – vary considerably among the different plans. In fact, given the numerous country-specific examples of structured inequalities in coverage and care described in the two Wagstaff papers, it is quite surprising that (almost) no systematic differences emerge in health outcomes, and that the additional costs associated with SHI are not greater.

Given these disadvantages, why would there be a renewal of enthusiasm for SHI finance in various parts of the world? This brings us back to the Iron Chancellor.

Bismarck had a number of reasons for introducing his welfare state legislation. For one thing, "Staatsocialismus" took a powerful issue away from the socialists, who were particularly strong in Germany.[6] And a healthy population provides more productive workers and better soldiers. Further, he may have been genuinely concerned that loyal and responsible workers could be reduced to abject poverty by illness or old age.

"Solidarity" was from the outset a fundamental principle of the German welfare state. It is symbolized in the room reconstructed from that originally built as the administrative courtroom for the social insurance system in 1883. Preserved from the original structure and overlooking the room are four sculpted heads, one at each corner of the ceiling. One is a boy, another a young man, another a mature man and the fourth, an old man. It was hoped that the rulings made in this venue would reflect the fundamental principle of intergenerational social solidarity.[7]

But an egalitarian Bismarck was not. Solidarity across the generations, yes, but within a rigid class structure – the solidarity of an army, with very well-defined ranks and privileges, and a sharp divide between officers and men. The structure of the German health insurance system is well adapted to reflecting and maintaining these class distinctions. As it does today – higher-income citizens can opt out of the general system of *Krankenkassen* and make their own private arrangements – with corresponding access to preferred forms of care.

Beveridge, on the other hand, did have an egalitarian bent, reflected in the system that bears his name. Since everyone pays taxes, everyone is automatically enrolled in TF systems, and contributions are more or less proportionate to income, regardless of how that income is earned. Correspondingly, everyone has in principle access to the same array of publicly provided health services "on equal terms and conditions"

– though in practice there may be extraordinary geographic inequities in provision. Some countries (United Kingdom) permit those willing and able to pay to "go private" and purchase for themselves more timely or perceived higher-quality care;[8] others (Canada) try with varying energy to discourage this. But citizens cannot opt out of paying the taxes that support the public system.

In a classic SHI system, contributions are based on wage and salary income only, and there may, as in Germany, be a ceiling on total contributions. SHI systems are thus typically more regressive in their financing; the better-off contribute a smaller share of their incomes, even if they do not opt out entirely. Where there are a number of different SHI funds, the level of required contributions may vary considerably, depending on the relative health status or the average incomes of fund members. And whatever the public rhetoric of universality, the marginalized members of society (not Bismarck's loyal and responsible workers) are very likely to be left out entirely.

Mature SHI systems have evolved to mitigate these inherent inequities. The French system, for example, has extended the SHI contribution base to include all forms of income, and does not place a ceiling on contributions; the German and Dutch systems have extended general revenue funding (TF) to supplement the SHI funds. But estimates of the progressivity or regressivity of different national systems (Wagstaff et al. 1999, now sadly in need of updating) show marked differences in the extent to which various national systems transfer resources from higher- to lower-income groups. The German financing system, for example, is much more regressive than that of the British – or the French.

In short, relative to TF, SHI financing limits the extent of redistribution down the income spectrum that tends to follow expanded health insurance coverage, while preserving privileged access for the better-off and strategically placed occupational groups. This approach might be extremely attractive to elites in countries with highly unequal income distributions, as in much of South America. Providing care to the whole population at a standard acceptable to, say, the top quartile would involve a very substantial tax burden at the upper end of the income distribution – after all, that's where the money is. The attraction of SHI in developing countries may be precisely that it permits segregation of the population in terms of access to and quality of care, and distributes the burden of payment regressively.[9]

Such distributional benefits are well worth a bit of extra cost. Besides, all those extra costs are paid to someone. Advocates argue that SHI systems are not under direct government control, and their funding is thus less "vulnerable … to the whimsical nature of governments" (quoted in Wagstaff 2007: 10). Moreover, there are allegedly inherent limits to the taxing capacity of governments, limits that are somehow less binding when taxes are on payrolls, not incomes.

Canadians will be very familiar with this line of argument after 40 years of claims that our health system is "underfunded," and more recent claims that universal pub-

lic health insurance is "unsustainable." Here too, governments are allegedly incapable of raising sufficient funds through taxation to meet the population's growing needs. Opening up private payment, however, supported of course by private insurance with a large public subsidy, would allegedly permit adequate funding of this chronically "underfunded" system – that is, higher costs.

The real attraction of SHI would appear to be that it shields health spending, to some degree at least, from direct accountability to elected governments, while on average providing a larger flow of total income to providers of care and administrators of payment systems. Since at the same time it can be structured to offer greater benefits to the upper end of the income spectrum at lower cost (to them) than a TF system, the reasons for growing interest are obvious. Wagstaff's (2009) findings that SHI costs more, yields no better average health outcomes, reduces participation in the formal labour force and, in developing countries, typically falls far short of universality, seem a small price to pay.

NOTES

1. Hacker (1998) traces the intellectual and institutional roots of the Beveridge model back to Lloyd George's *National Insurance Act* of 1911, arguing that this was the key political turning point.
2. Those enjoying a rich fantasy life – including marketophile economists – may amuse themselves by constructing hypothetical schemes for providing universal health insurance through voluntary private markets. These crumble under any serious analysis. They can, however, be very useful in distracting and delaying serious health system reforms.
3. Wagstaff (2009: 5) excludes the United States on the grounds that it "relies largely on private insurance and out-of-pocket payments … ." This is not strictly accurate; American governments actually cover about 60% of health expenditures either directly or through subsidies to private insurance. A better justification is Ted Marmor's insight (personal communication) that the United States has several distinct subpopulations, each under a different model of coverage (or none at all).
4. "Switching" is a rather colourless term for a more complex process. Sweden is included as moving from SHI to TF, but the centralized public delivery system did not change – only the revenue source. The four formerly Soviet economies had in fact been within the German orbit prior to occupation by the Red Army, and had been developing SHI systems; they might be seen as returning after an extended perturbation.
5. These data, coming in particular from the research group at Dartmouth, have suddenly burst onto public and presidential consciousness through a remarkable essay by Gawande (2009).

6. Substitute "national" for "state," and Bismarck's term has a horribly prophetic ring. Bismarck would have been appalled by Hitler for many reasons, and would probably have squashed him like a bug. Unintended consequences?
7. From Rice et al. (2000: 864), with minor edits.
8. This private option is inconsistent with the Beveridge principles; it was a concession to political realities when the UK NHS was founded. In every country, the political representatives of the better-off strive to establish, maintain and expand the privileges inherent in "two-tier" healthcare.
9. The attraction in eastern Europe may be simply a revulsion against anything from the Soviet period.

REFERENCES

Akerlof, G.A. 1970 (August). "The Market for 'Lemons': Qualitative Uncertainty and the Market Mechanism." *Quarterly Journal of Economics* 84(3): 488–500.

Beveridge, W. 1942. *Social Insurance and Allied Services.* London: His Majesty's Stationery Office. Retrieved June 22, 2009. <http://www.almendron.com/politica/pdf/2009/9119.pdf>.

Gawande, A. 2009 (June 1). "The Cost Conundrum: What a Texas Town Can Teach Us about Health Care." *The New Yorker.* Retrieved June 22, 2009. <http://www.newyorker.com/reporting/2009/06/01/090601fa_fact_gawande>.

Hacker, J.S. 1998 (Spring). "The Historical Logic of National Health Insurance: Structure and Sequence in the Development of British, Canadian and US Medical Policy." *Studies in American Political Development* 12: 57–130.

Nolte, E. and C.M. McKee. 2008 (July/August). "Measuring the Health of Nations: Updating an Earlier Analysis." *Health Affairs* 27(1): 58–71. Retrieved June 22, 2009. <http://content.healthaffairs.org/cgi/content/abstract/27/1/58>.

Rice, T., B. Biles, E.R. Brown and F. Diderichsen. 2000 (October). "Reconsidering the Role of Competition in Health Care Markets: Introduction." *Journal of Health Politics, Policy and Law* 25(5): 863–72.

Wagstaff, A. 2007 (January). "Social Health Insurance Reexamined." *Policy Research Working Paper* #4111. Washington, DC: The World Bank.

Wagstaff, A. 2009 (January). "Social Health Insurance vs. Tax-Financed Health Systems – Evidence from the OECD." *Policy Research Working Paper* #4821. Washington, DC: The World Bank.

Wagstaff, A., E. van Doorslaer, H. van der Burg et al. 1999. "Equity in the Finance of Health Care in Twelve OECD Countries." *Journal of Health Economics* 18(3): 263–90.

Watson, D. and K.M. McGrail. 2009 "More Doctors or Better Care?" *Healthcare Policy* 5(1): 26–31.

ONLINE EXCLUSIVE

Dialogue

Tame Economists Need Not Apply: Career Lessons from the 2008 Canadian Association for Health Services and Policy Research Conference

Économistes dociles, prière de s'abstenir : leçons de carrière tirées de la Conférence 2008 de l'Association canadienne pour la recherche sur les services et les politiques de la santé

CATHERINE L. MAH, KERRY KULUSKI, ELISABETH MARTIN, STEPHANIE D. SOO AND JILLIAN WATKINS

Abstract

A group of student interviewers sat down with distinguished conference attendees at the 2008 Canadian Association for Health Services and Policy Research Conference. These leaders in the field shared a wealth of advice about career planning (don't), seizing opportunities (do) and connecting with colleagues and community (do often). We learned that a passion for lifelong learning, a willingness to get ordinary things done and a little luck go a long way towards career success.

Résumé

Des étudiants ont interrogé d'éminents participants à la Conférence 2008 de l'Association canadienne pour la recherche sur les services et les politiques de la santé. Ces leaders du domaine ont donné de nombreux conseils sur la planification de carrière (ce qu'il faut éviter), sur les occasions à saisir (ce qu'il faut faire) et sur les contacts avec les collègues et la communauté (ce qu'il faut faire souvent). Nous avons appris que la passion pour un apprentissage continu, la volonté d'accomplir des choses ordinaires et un peu de chance sont autant de clés pour une carrière de succès.

To view the full article, please visit
http://www.longwoods.com/product.php?productid=20932

More Doctors or Better Care?

Plus de médecins ou de meilleurs soins?

by DIANE E. WATSON, MBA, PHD
Centre for Health Services and Policy Research
University of British Columbia
Vancouver, BC

KIMBERLYN M. MCGRAIL, MPH, PHD
Centre for Health Services and Policy Research
University of British Columbia
Vancouver, BC

Abstract

The Canadian Medical Association's More Doctors, More Care campaign seeks to align physician supply targets with policy decisions elsewhere in the Organisation for Economic Co-operation and Development (OECD). Using OECD data for 19 countries to assess the relationship between physician supply and healthcare outcomes, we have determined that there is no association between avoidable mortality and overall physician supply. Similarly, there is no relationship between avoidable mortality and general practitioners and family physicians per capita, specialists per capita, nurses per capita, doctors and nurses per capita or health expenditures per capita. These findings should move us to recognize that (a) more doctors will not necessarily translate into better healthcare outcomes for Canadians and (b) it is in Canadians' better interests that we instead focus on realizing opportunities to improve access to high-quality care and to ensure that changes in physician turnover do not threaten the current generalist-to-specialist mix.

Résumé

La campagne de l'Association médicale canadienne « Plus de médecins pour plus de soins » vise à harmoniser les objectifs, en termes de disponibilité de médecins, aux décisions de politiques qu'on trouve ailleurs dans les pays de l'Organisation de coopération et de développement économiques (OCDE). Les données de 19 pays de l'OCDE ont servi à évaluer la relation entre la disponibilité de médecins et les résultats en santé. Nous avons déterminé qu'il n'y a pas de relation entre le taux de mortalité évitable et la disponibilité globale de médecins. De même, il n'y a pas de relation entre le taux de mortalité évitable et le nombre d'omnipraticiens ou de médecins de famille par personne, le nombre de spécialistes par personne, le nombre d'infirmières par personne, le nombre de médecins et d'infirmières par personne ou les dépenses pour la santé par personne. Ces résultats devraient nous porter à reconnaître (a) que le fait d'avoir plus de médecins n'équivaut pas nécessairement à de meilleurs résultats en termes de santé pour les Canadiens et (b) qu'il est plus favorable pour les Canadiens de mettre l'accent sur l'amélioration de l'accès à des services de haute qualité et de s'assurer que le renouvellement des effectifs ne menace pas le ratio actuel d'omnipraticiens et de spécialistes.

In January 2008, the Canadian Medical Association (CMA) launched its More Doctors, More Care campaign "to put the growing doctor shortage on the federal political agenda." While campaigns promoting increases in the number of healthcare providers are not new, tying Canadian physician supply targets to policy decisions elsewhere in the Organisation for Economic Co-operation and Development (OECD) is.

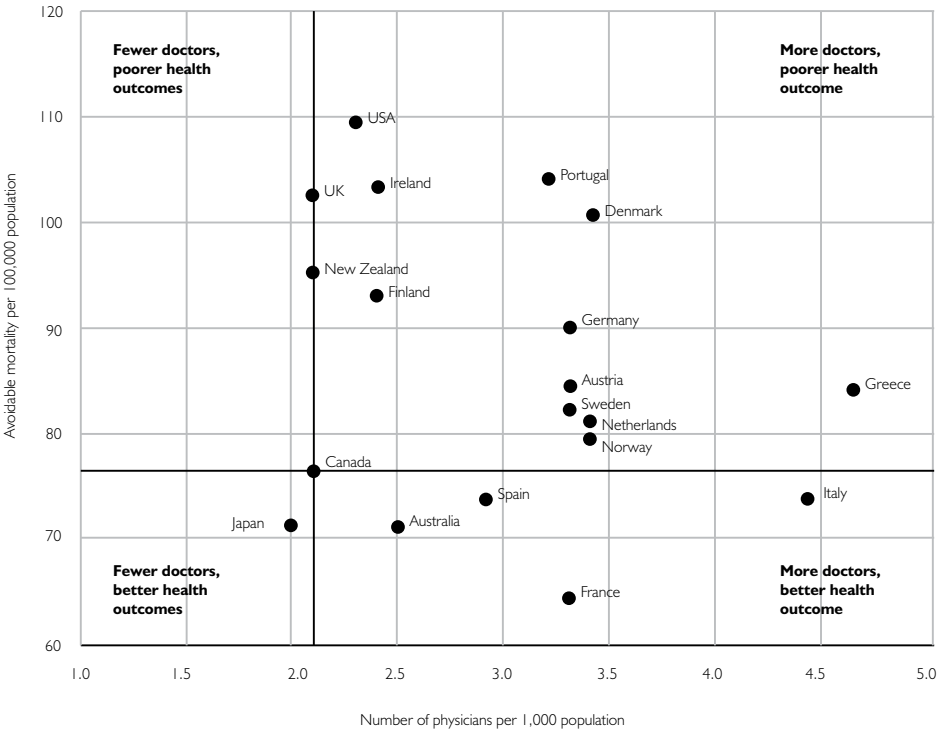
According to the CMA (2008), "Canada would need 26,000 more doctors to meet the OECD average of doctors per population." But is this the right, or even a relevant, metric? If our objective is the pursuit of a high-performing healthcare system that is accessible, efficient and effective at protecting and promoting health, then surely healthcare outcomes ought to be the focus of attention and action.

We used OECD data to assess the degree to which healthcare outcomes are related to physician supply. Avoidable mortality is widely recognized as a valid healthcare outcome indicator and is used extensively in Australia, New Zealand and Europe to inform policy and practice (Nolte and McKee 2008). Avoidable mortality measures the extent of premature death (before age 75) from causes that should be avoidable through timely and effective healthcare, as identified through systematic reviews. Some examples include treatable cancers, maternal death and complications of common surgical procedures, epilepsy, bacterial infections and influenza. In 2002, avoidable mor-

tality accounted for 22% of total premature mortality among males and 29% among females in Canada. Data were available for 19 countries (Nolte and McKee 2008).

The scatter plot in Figure 1 illustrates that there is no association between avoidable mortality and overall physician supply. Similar plots illustrate that there is also no relationship between avoidable mortality and (a) general practitioners and family physicians per capita, (b) specialists per capita, (c) nurses per capita, (d) doctors and nurses per capita or (d) health expenditures per capita, though the ordering of countries changes depending on which indicator is used (graphics available at www.chspr.ubc.ca).

FIGURE 1. Avoidable mortality by physician supply in 19 OECD countries, 2002



Source: Physician-to-population ratios from 2005 OECD Health Data for 2002/03. Avoidable mortality as reported by Nolte and McKee (2008).

The implication is that more doctors will not necessarily translate into better healthcare outcomes for Canadians. Most countries that have more physicians per capita have similar or worse healthcare outcomes than Canada. For example, Spain, Norway and Italy have more physicians per capita and similar outcomes. Portugal, Denmark, Germany and Greece have more physicians per capita and worse outcomes (Figure 1). All these countries also attain worse health outcomes using other OECD metrics (Or et al. 2005).

Closer inspection of these OECD data illustrates that differences in healthcare outcomes for a specific level of supply (or vice versa) reflects variation in efficiency. The relative efficiency of Canada's physician supply is most evident when comparing it to that in the United Kingdom and New Zealand. Both these countries have the same number of physicians per capita, but far worse healthcare outcomes in terms of avoidable mortality (Figure 1).

Countries in the lower left quadrant of the figure use medical personnel most efficiently to attain the best healthcare outcomes. Japan's and Canada's positions in this quadrant are consistent with previous OECD analyses using other health outcomes, including life expectancy (at birth and age 65, female and male), infant mortality and potential years of life lost by heart disease (female and male) (Or et al. 2005).

International experience demonstrates that improvements in access and care processes can be attained without increasing physician-to-population ratios. Though there are no OECD data on patient experiences with physician care, there are international comparative studies on the topic that include countries with physician-to-population ratios similar to Canada's. Results suggest that adults in those countries have both shorter and longer wait times for appointments with primary care and specialist physicians, better and worse doctor–patient communication or care coordination and shorter and longer encounters with primary care doctors (Bindman et al. 2007; Schoen et al. 2005). There is no systematic relationship between physician supply and these metrics, even when three additional countries (France, Germany and the Netherlands) are added, all of which have physician-to-population ratios 1.5 times that of Canada (Schoen et al. 2009).

The Canadian physician-to-population ratio has been stable for over 20 years (Evans and McGrail 2008), and avoidable deaths declined between 1997 and 2002 (Nolte and McKee 2008), demonstrating that improvements in healthcare outcomes can be attained in this country without increasing the physician-to-population ratio. Taken together, the evidence suggests that there is no compelling reason to spend billions more dollars to increase our physician supply simply for the purpose of bringing our ratio more in line with the OECD average.

There are real physician supply issues that should motivate us to continue to focus policy attention on this area, such as increases in physician retirement rates, workload differences between younger physicians and older retirees (Watson et al. 2006), geographic variation in availability and shifts in demand for healthcare providers. But federal, provincial and territorial governments have already made significant investments to expand medical school enrolment and the supply of international medical graduates to ensure that more doctors enter practice at the same time that more retire. In the decade from 1997/98 to 2007/08, first-year enrolment rose by 59%, from 1,577 to 2,506. Graduations should reach about 2,500 in 2011 (Evans and McGrail 2008). It takes time to create doctors, so we are only now starting to feel the effects of these

public investments to put an unprecedented number of graduates from our medical schools into the workforce. It is by no means clear that further increases are required.

One of the possible reasons for Canada's achieving better health outcomes than many OECD countries may be our high generalist-to-specialist physician ratio. A rich supply of general practitioners and family physicians improves health outcomes, including all-cause, cancer, heart disease, stroke and infant mortality; low birth weight; life expectancy and self-rated health (Macinko et al. 2007; Pierard 2009). Analyses of OECD data by others (Macinko et al. 2003) support findings of international syntheses of evidence (Atun 2004; Starfield et al. 2005) that strong primary care systems not only improve population health but also reduce health disparities and buffer the health effects of socio-economic circumstances at lower cost than healthcare systems that rely more extensively on secondary and tertiary care. Conversely, areas with a higher concentration of specialists spend more but rate lower on quality and outcomes (Baicker and Chandra 2004). Areas in Canada with a higher concentration of family physicians have higher levels of health, while areas with a higher concentration of specialists have lower levels of health (Pierard 2009).

These data should inspire us to realize opportunities to improve access to better care and to ensure that increases in workforce turnover (more exits, more entrants) do not shift the current mix of generalist-to-specialist physicians, which is at risk of changing for the worse (Harvey et al. 2005). These efforts seem more in the interests of Canadians than the current CMA campaign to increase overall physician supply ratios to catch up with other OECD nations.

ACKNOWLEDGEMENTS

This work was funded, in part, by a Canadian Institutes of Health Research grant entitled "Anatomy of a Doctor Shortage." Watson is a Harkness alumna of the International Program in Policy and Practice at the Commonwealth Fund.

Correspondence may be directed to: Diane Watson, Centre for Health Services and Policy Research, 201 – 2206 East Mall, Vancouver, BC V6T 1Z3; e-mail: dwatson@chspr.ubc.ca.

REFERENCES

Atun, R. 2004. *What Are the Advantages and Disadvantages of Restructuring a Health Care System to be More Focused on Primary Care Services?* Copenhagen: WHO Regional Office for Europe.

Baicker, K. and A. Chandra. 2004. "Medicare Spending, the Physician Workforce, and Beneficiaries' Quality of Care." *Health Affairs* (Suppl.W4): 184–97. Retrieved May 22, 2009. <http://content.healthaffairs.org/cgi/content/short/hlthaff.w4.184v1>.

Bindman, A.B., C.B. Forrest, H. Britt, P. Crampton and A. Majeed. 2007 (June 16). "Diagnostic Scope of and Exposure to Primary Care Physicians in Australia, New Zealand, and the United States: Cross Sectional Analysis of Results from Three National Surveys." *British Medical Journal* 334(7606): 1261.

Canadian Medical Association (CMA). 2008. "Canadian Medical Association Launches Major Campaign for More Doctors." Retrieved May 22, 2009. <http://www.cma.ca/index.cfm/ci_id/55128/la_id/1.htm>.

Evans, R.G. and K.M. McGrail. 2008. "Richard III, Barer-Stoddart and the Daughter of Time." *Healthcare Policy* 3(3): 18–28.

Harvey, A., J.G. DesCoteaux and S. Banner. 2005. "Trends in Disciplines Selected by Applicants in the Canadian Resident Matches, 1994–2004." *Canadian Medical Association Journal* 172: 737.

Macinko, J., B. Starfield and L.Y. Shi. 2003. "The Contribution of Primary Care Systems to Health Outcomes within Organisation for Economic Co-operation and Development (OECD) Countries, 1970–1998." *Health Services Research* 38(3): 831–65.

Macinko, J., B. Starfield and L.Y. Shi. 2007. "Quantifying the Health Benefits of Primary Care Physician Supply in the United States." *International Journal of Health Services* 37(1): 111–26.

Nolte, E. and C.M. McKee. 2008. "Measuring the Health of Nations: Updating and Earlier Analysis." *Health Affairs* 27(1): 58–71.

Or, Z., J. Wang and D. Jamison. 2005. "International Differences in the Impact of Doctors on Health: A Multilevel Analysis of OECD Countries." *Journal of Health Economics* 24: 531–60.

Pierard, E. 2009. *The Effect of Physician Supply on Health Status as Measured in the National Population Health Survey*. Waterloo Economic Series. Working Paper #09-01. Waterloo, ON: University of Waterloo.

Schoen, C., R. Osborn, S.K. How, M.M. Doty and J. Peugh. 2009 (January–February). "In Chronic Condition: Experiences of Patients with Complex Health Care Needs, in Eight Countries, 2008." *Health Affairs* 28(1): w1–w16.

Schoen, C., R. Osborn, P.T. Huynh, M. Doty, K. Zapert, J. Peugh and K. Davis. 2005 (July–December). "Taking the Pulse of Health Care Systems: Experiences of Patients with Health Problems in Six Countries." *Health Affairs* (Suppl.) W5: 509–25.

Starfield, B., L.Y. Shi and J. Macinko. 2005. "Contribution of Primary Care to Health Systems and Health." *Milbank Quarterly* 83(3): 457–502.

Watson, D.E., S. Slade, L. Buske and J. Tepper. 2006. "Intergenerational Differences in Workloads among Primary Care Physicians: A Ten-Year, Population-Based Study." *Health Affairs* 25(6): 1620–28.

Providing More Choices for Those Who Depend on Ventilators

Offrir plus de choix aux personnes nécessitant une ventilation assistée

by CANADIAN HEALTH SERVICES RESEARCH FOUNDATION

Abstract

The Winnipeg Regional Health Authority (WRHA) is building capacity in community care for those who depend on ventilators. Hoping to reduce pressures in acute and long-term care, increase the housing choices for those dependent on ventilators and improve the transition from one care sector to another, the WRHA, working in partnership with a local housing company, has designed and built unique living spaces tailored to the needs of ventilator-dependent clients. The project has caused a fundamental shift in thinking about the accommodation needs of people with complex medical conditions. It is also changing the WRHA's approach to care management across sectors and the role of allied health providers. This innovative initiative was recently featured in Promising Practices in Research Use, a series produced by the Canadian Health Services Research Foundation highlighting organizations that have invested their time, energy and resources to improve their ability to use research in the delivery of health services. Additional issues from the series can be found at http://www.chsrf.ca/promising/index_e.php.

Résumé

L'Office régional de la santé de Winnipeg (ORSW) renforce les capacités en matière de soins communautaires des patients nécessitant une ventilation assistée. Dans l'espoir de réduire les pressions exercées sur les soins de courte et de longue durée, d'offrir un plus grand choix de logements aux patients nécessitant une ventilation assistée et d'améliorer la transition d'un service de santé à un autre, l'ORSW travaille en partenariat avec un organisme local de gestion de logements afin de concevoir et de créer des surfaces habitables adaptées aux besoins des personnes nécessitant

une ventilation assistée. Le projet a entraîné un changement fondamental dans la façon de concevoir les besoins en matière d'accommodations des patients dont l'état pathologique est complexe. Le projet modifie également la gestion de l'ORSW relativement aux soins prodigués par divers secteurs et sa perception du rôle des fournisseurs de services paramédicaux. Récemment, cette initiative novatrice a fait l'objet d'un numéro de *Pratiques prometteuses dans l'utilisation de la recherche*, publication de la Fondation canadienne de la recherche, qui présente des organismes qui ont investi temps, énergie et ressources pour améliorer leur capacité à utiliser la recherche dans la prestation de services de santé. Il est possible de consulter d'autres numéros au http://www.chsrf.ca/pratiques/index_f.php.

Key Messages

- The Winnipeg Regional Health Authority (WRHA) is building capacity in community care for those who depend on ventilators, a group with varied and complex medical issues and limited living options.
- Informed by evidence about successful models of community care for ventilator-dependent people, the WRHA's project aims to reduce pressures in acute and long-term care, increase the housing choices for those dependent on ventilators and improve the transition from one care sector to another.
- The project is changing the organization's thinking about care management across sectors and the role of allied health providers.

The Winnipeg Regional Health Authority (WRHA) is dealing with several interrelated pressures common to healthcare organizations, including the need to reduce wait times and to improve coordination and continuity of care between care sectors. One specific challenge facing the WRHA is to address the needs of the growing number of people, from both the adult and paediatric populations, who depend on ventilators – machines that help them breathe.

Helen Clark is the WRHA's regional director of respiratory therapy and a fellow of the Executive Training for Research Application (EXTRA) program. She says that because of their complex and varied needs, ventilator-dependent clients have few housing options available to them. "Some people try to manage at home, even when they no longer should, or go into long-term care, which many would prefer to avoid," explains Clark. "Others remain in acute care, which puts additional strain in that area."

The WRHA recognized the need to create community-based alternatives for those who depend on ventilators. As a first step, Clark and her team conducted an

evidence review that examined the experiences of other jurisdictions. The evidence showed that the successful community housing models allowed people to live somewhat independently but grouped them together to ensure efficient use of resources. The successful models also involved respiratory therapists – experts in cardio-pulmonary assessment, airway management, monitoring and support services.

From the evidence, it was determined that ventilator-dependent clients could be safely managed in community settings if proper support was in place. This meant that WRHA respiratory therapists – who traditionally operated solely in acute care – could transfer their knowledge and apply it to many roles outside acute care, including discharge planning and case management in the community. This approach, combined with clinical support and education for clients, their families and caregivers, could improve continuity of care and decrease emergency department visits and hospital admissions.

With the support of Ten Ten Sinclair Housing Inc., a local organization that manages housing units for disabled and non-disabled tenants, eight suites were developed for ventilator-dependent clients. Full-time attendant care was part of the package, which included the services of a case coordinator and a staff respiratory therapist.

The first resident arrived in the spring of 2008 from an acute care setting. Others from long-term care settings are currently lined up for a trial residency. "Even moving a small number of people from an acute or long-term care setting can help relieve pressure, not to mention improve the lives of those in the new setting," says Neil Johnston, regional manager of acute and community respiratory therapy.

Based on the success of this initial project, five beds are now being planned for ventilator-dependent children who previously had no option other than an acute care setting. The project has also caused a fundamental shift in thinking about living options for people with complex medical conditions; for example, Ten Ten Sinclair Housing Inc. has a new perspective on the types of facilities it may build in the future.

Clark says that the evidence review helped in many ways, including recognizing the full scope of the issue and identifying potential solutions. "Very importantly," she adds, "it helped us develop a strong business case for funding the project." And for the WRHA, the project has not only eased pressure on acute and long-term care, but has also shown how allied health disciplines can be part of the solution to system issues. "It's helped break down the boundaries," explains Johnston, "so that we are more efficient, seamless and respectful in moving people through care transitions."

For more information, contact Helen Clark at HClark@wrha.mb.ca.

ACKNOWLEDGEMENTS

The EXTRA program is supported by a group of partnering organizations and managed by the Canadian Health Services Research Foundation. More information about this program and its partners can be found at www.chsrf.ca/extra.

RESEARCH PAPER

Measuring Integration of Cancer Services to Support Performance Improvement: The CSI Survey

Mesure de l'intégration des services de cancérologie afin d'appuyer l'amélioration du rendement : le sondage sur l'intégration des services de cancérologie

by MARK J. DOBROW, PHD
Scientist, Cancer Services and Policy Research Unit, Cancer Care Ontario
Assistant Professor, Department of Health Policy Management and Evaluation
University of Toronto
Toronto, ON

LAWRENCE PASZAT, MSC, MD
Senior Scientist, Institute for Clinical Evaluative Sciences
Associate Professor, Department of Health Policy, Management and Evaluation
University of Toronto
Toronto, ON

BRIAN GOLDEN, PHD
Sandra Rotman Chair in Health Sector Strategy
Rotman School of Management
University of Toronto and University Health Network
Toronto, ON

ADALSTEINN D. BROWN, DPHIL
Assistant Deputy Minister, Health System Strategy, Ontario Ministry of Health and Long-Term Care
Assistant Professor, Department of Health Policy, Management and Evaluation
University of Toronto
Toronto, ON

ERIC HOLOWATY, MSC, MD
Senior Consultant, Population Studies and Surveillance, Cancer Care Ontario
Associate Professor, Department of Public Health Sciences
University of Toronto
Toronto, ON

MARGO C. ORCHARD, MSC
Policy Advisor, Strategy, Canadian Partnership Against Cancer
Toronto, ON

NEERAV MONGA, MSC
Biostatistician, Cancer Care Ontario
Toronto, ON

TERRENCE SULLIVAN, PHD
President and Chief Executive Officer, Cancer Care Ontario
Associate Professor, Departments of Health Policy, Management and Evaluation and Public Health Sciences
University of Toronto
Toronto, ON

Abstract

Objective: To develop a measure of cancer services integration (CSI) that can inform clinical and administrative decision-makers in their efforts to monitor and improve cancer system performance.
Methods: We employed a systematic approach to measurement development, including review of existing cancer/health services integration measures, key-informant interviews and focus groups with cancer system leaders. The research team constructed a Web-based survey that was field- and pilot-tested, refined and then formally

conducted on a sample of cancer care providers and administrators in Ontario, Canada. We then conducted exploratory factor analysis to identify key dimensions of CSI.
Results: A total of 1,769 physicians, other clinicians and administrators participated in the survey, responding to a 67-item questionnaire. The exploratory factor analysis identified 12 factors that were linked to three broader dimensions: clinical, functional and vertical system integration.
Conclusions: The CSI Survey provides important insights on a range of typically unmeasured aspects of the coordination and integration of cancer services, representing a new tool to inform performance improvement efforts.

Résumé

Objectif : Mettre au point une mesure de l'intégration des services de cancérologie qui permette de renseigner les décideurs cliniques et administratifs dans le suivi et l'amélioration du rendement du réseau de cancérologie.
Méthode : Nous avons employé une approche systématique pour la mise au point de mesures, notamment par la revue des mesures actuelles de l'intégration des services de cancérologie et de santé, par des entrevues auprès d'informateurs clés et par des groupes de discussion auprès des dirigeants du réseau de cancérologie. L'équipe de recherche a élaboré un sondage en ligne qui a été testé, précisé puis mené auprès d'un échantillon d'administrateurs et de prestataires de soins de cancérologie en Ontario, au Canada. Nous avons ensuite effectué une analyse factorielle exploratoire afin de déterminer les aspects essentiels de l'intégration des services de cancérologie.
Résultats : Au total, 1769 médecins, cliniciens et administrateurs ont répondu au sondage de 67 questions. L'analyse factorielle exploratoire a permis de dégager 12 facteurs qui sont liés à trois aspects généraux : les aspects cliniques, les aspects fonctionnels et les aspects liés à l'intégration systémique verticale.
Conclusions : Le sondage sur l'intégration des services de cancérologie donne d'importantes pistes concernant une variété d'aspects habituellement non mesurés en matière de coordination et d'intégration des services de cancérologie, ce qui représente un nouvel outil pour renseigner les initiatives d'amélioration du rendement.

For more than a decade, health services researchers have focused on the integration of health services as a means to improve performance. Measures have been developed that assess both provider- and patient-derived aspects of the coordination and continuity of health services within and across sectors (Gillies et al.

1993; Burns et al. 2001; Alexander et al. 2001; Fairchild et al. 2002; Ware et al. 2003; Durbin et al. 2004; Dolovich et al. 2004). Cancer systems, representing a microcosm of broader healthcare systems (including health promotion, cancer prevention/screening, surgical interventions, radiation and systemic therapies, supportive and palliative care), present a particularly challenging context for service integration (Sullivan et al. 2008). Cancer patients are often cared for by multiple providers (e.g., surgeons, medical oncologists, radiation oncologists, nurses, radiation therapists, social workers, community healthcare providers, etc.) in multiple care settings (e.g., at specialized/comprehensive cancer centres, teaching and community hospitals, primary care settings and/or at home). In Ontario, Canada, a 2001 review of cancer services highlighted their fragmented nature and recommended "ways to improve the integration of cancer services at the local and regional levels, the quality of patient care, and the productivity and efficiency in the cancer service component of the Ontario health system" (Cancer Services Implementation Committee 2001). While this review led to major reorganization of the Ontario cancer system (Sullivan et al. 2004; Dobrow et al. 2006), a specific measure of cancer services integration (CSI) to guide restructuring and monitor performance improvement did not exist. This paper reports on efforts to develop a measure of integration specific to cancer services as part of a broader undertaking to monitor and improve cancer system performance in Ontario.

Survey Development

We employed a systematic approach to survey development, including a scan for existing models of "integrated" cancer services, a literature review of concepts and measures of health services integration, key-informant interviews and focus groups with cancer system clinicians and administrators. These were followed by item generation, testing and reduction, including pilot surveys and feedback interviews with cancer system decision-makers, before the launch of the CSI Survey in February 2007.

Scan for models of integrated cancer services

Through the mid- to late 1990s, the Veterans Health Administration in the United States went through a period of major restructuring, including the realignment of its cancer services (Wilson and Kizer 1998). Decision-making was decentralized and a system of integrated service networks was developed. This included primary, secondary and comprehensive cancer centres, local cancer registries, a research partnership with the National Cancer Institute and a standard electronic data infrastructure that supported a program of performance accountability and quality improvement (Wilson and Kizer 1998). Similarly, England and Wales recently went through a process of redesigning their cancer services (Department of Health 2000; Griffith and Turner

2004). Their ambitious reforms coincided with broader reforms in the National Health Service (Department of Health 1997, 1998), with a comprehensive cancer plan promoting collaborative partnerships and focused on improving the patient experience (Department of Health 2000). In Canada, British Columbia has developed an integrated cancer system based on central program/network infrastructure, a research centre, a comprehensive cancer registry and a network of service organizations and practice leaders to drive development of standardized processes of care (Carlow 2000).

While these illustrations of evolving cancer systems in different jurisdictions help to characterize important elements of an integrated cancer system, none provided specific definitions of, or tools for measuring, CSI. To augment the jurisdictional scan, we conducted a broader literature review.

Review of measures of cancer/health services integration

A search focusing specifically on published measures of CSI did not yield relevant findings. This was consistent with the findings of two recent reports, one a synthesis on health systems integration research (Suter et al. 2007) and another a systematic review of health system integration measures (Raina et al. 2006). Both identified a number of general and disease-/condition-specific measures of integration; however, none were specific to cancer services. Therefore, to inform our work, we first examined non-cancer measures and drew on the evolving body of research on health services integration to provide a conceptual basis for development of a measure of CSI.

Some of the best-known work comes from the Health Systems Integration Study (Shortell et al. 2000), which characterized health system performance as an output of integration, linking a system's vision, culture, strategy and leadership with three main dimensions of integration (Gillies et al. 1993):

> Functional integration is defined as the extent to which key support functions and activities (such as financial management, strategic planning, human resource management, and information management) are coordinated across operating units of a system.
>
> Physician–system integration is defined as the extent to which physicians are economically linked to a system, use its facilities and services, and actively participate in its planning, management and governance.
>
> Clinical integration is defined as the extent to which patient care services are coordinated across the various functions, activities and operating units of a system.

In their extensive review of this work, Shortell and colleagues (2000) suggested that functional integration was most important for financial management and operating policies, information systems, resource allocation, quality improvement and strategic planning and less important for administrative support, human resources and marketing. Physician–system integration reflected physician remuneration, incentive, interdisciplinary care and accountability models, with physicians under pressure to contain costs, shift focus from individual to population levels and provide public accountability for performance. Shortell and colleagues (2000) described three levels of clinical integration, including a corporate level, where structural, systemic and cultural factors influence clinical integration; an intermediate/managerial level, where economies of scope or scale influence the standardization or duplication of clinical services; and a technical level that reflects the use of practice guidelines or protocols to influence care delivery (Shortell et al. 2000). These authors suggested that clinical integration is the most challenging and important component of an organized delivery system.

Leatt and colleagues (2000) described characteristics of integrated service delivery that reflect health system structures in Canada. They emphasized focus on the individual patient experience, starting with primary healthcare, sharing and utilizing information, creating virtual coordination networks at the local level, revising funding methods and developing performance monitoring capacity (Leatt et al. 2000). In a review of 41 studies, Leatt (2002) recommended that integrated service delivery should be characterized along three key dimensions: clinical, information and vertical integration. Clinical integration was linked to disease management programs, reflecting use of clinical protocols, pathways, guidelines and multidisciplinary teams, along with participatory structures and policies, and communication strategies to ensure stakeholder acceptance (Leatt 2002). Information integration focused on information management and technology that allows timely information sharing across traditional organizational and professional boundaries for all stakeholders (Leatt 2002). Vertical integration was linked to the patient experience, described as interorganizational arrangements across the continuum of care that allow improved coordination of patient care (Leatt 2002).

Leatt's patient-centred focus on integration differs somewhat from other views (Conrad and Dowling 1990; Hernandez 2000; Budetti et al. 2002; Burns and Pauly 2002), raising a fundamental conceptual question regarding the measurement of integration: Should measures of integration be derived from provider or patient perceptions? Interest in continuity of care dates back more than 30 years (Mindlin and Densen 1969; Bass and Windle 1972), yielding diverse patient-derived conceptions of what it is and how it can be measured (Reid et al. 2002; Freeman et al. 2001). In a multidisciplinary review, Haggerty and colleagues (2003) suggested that the concept of continuity of care should capture aspects of informational continuity (use of information on past events and personal circumstances to make current care appropriate

for each individual), relational continuity (ongoing therapeutic relationship between a patient and one or more providers) and management continuity (a consistent, coherent approach to management of a health condition that is responsive to a patient's changing needs). More fundamentally, they suggested that "[c]ontinuity is not an attribute of providers or organisations … [it] is how individual patients experience integration of services and coordination" (Haggerty et al. 2003). Conrad (1993) cautioned, however, that focus ultimately needs to be at the level of the system:

> [t]he essence of a system is the ability to aggregate up individual level care coordination and clinical processes into a system level capacity to plan, deliver, monitor, and adjust the structures and strategies for coordinating the care of populations over time. The coordination of care for individual patients is a necessary but not sufficient condition to realizing system level clinical integration.

Despite these apparent contradictions, both provider-derived conceptions of health services integration and patient-derived conceptions of continuity of care are related. With a survey of ambulatory oncology patient satisfaction already underway in Ontario, which included questions on continuity and coordination of care, our intent was to develop a provider-derived measure of CSI that would complement data and insights drawn from the patient-derived measure.

Interviews, Focus Groups and Survey-Item Generation

We next looked to local cancer system leaders to examine what aspects of existing health services integration measures were relevant to cancer services. Interviews were conducted with clinical program leaders (i.e., systemic therapy, radiation oncology, surgical oncology, nursing, health human resources, clinical guideline development, prevention/screening, palliative care, supportive care, pathology and social work) from Ontario's cancer system. Each informant was asked to describe key challenges or barriers to the integration of cancer services, and to formulate three potential survey items. Focus groups were conducted with members of Cancer Care Ontario's Clinical Council (including clinical program leaders) and Provincial Leadership Council (including regional administrative heads for each Regional Cancer Program and Cancer Care Ontario's executive team). In both cases, council members were asked to identify examples of effective and ineffective integration in the Ontario cancer system and desired features reflecting integrated cancer services.

Survey items were generated iteratively, initially drawing on the 54-item survey instrument produced through the Health Systems Integration Study (Gillies et al. 1993) and supplemented by items suggested by key informants. After field testing and a pilot survey, the survey instrument was further refined, resulting in a 67-item

questionnaire (13 demographic and 54 Likert scale items) with specific versions of each item tailored for the three main participant groups (i.e., physicians, other clinicians, administrators) to improve relevance and comprehension (item descriptions provided in Appendix). http://www.longwoods.com/product.php?productid=20933

Methods

Healthcare providers and administrators that had regular opportunities to interact with the cancer system were the primary focus of the survey (Table 1 describes the target population). Given cost considerations, an electronic survey was selected as the distribution mode, allowing a much larger sample of cancer care providers and administrators to be surveyed than would have been possible with more traditional paper- or telephone-based surveys. The electronic survey allowed real-time data collection and customized survey design, including use of conditional (skip/jump) logic to ensure that respondents were asked questions relevant to their position and region. However, the target population did require Internet or e-mail access at work.

TABLE 1. Target population for the CSI Survey

Physicians	Other clinicians	Administrators
Medical Oncologist	Pharmacist	Corporate Leadership (e.g., CEO, Executive Director)
Radiation Oncologist	Systemic Therapy Clinic Nurse	Cancer Services
Paediatric Oncologist	Chemotherapy Nurse	Case Management
Radiologist	Inpatient Oncology Nurse	Client/Patient Services
Surgical Oncologist	Radiation Therapy Nurse	Clinical Programs
Surgeon – General	Advanced Practice Nurse	Finance
Surgeon – Gynaecologist	Clinical Trials Nurse	Human Resources
Surgeon – Urologist	OBSP Nurse	Information Technology/Management
Surgeon – Thoracic	Social Worker	Nursing
Surgeon – Otolaryngologist	Dietician	Prevention/Screening
Haematologist	Dosimetrist	
Pathologist	Radiation Therapist	
Gastroenterologist	Medical Physicist	
Respirologist	Community Care Planners	
Palliative Care Physician		

The sampling frame was constructed from a variety of sources, including the Canadian Medical Directory, Cancer Care Ontario's e-mail directories and direct

contact with provider organizations, including hospitals and community care access centres (CCACs). In addition to the inclusion of all 14 CCACs in Ontario, 63 Ontario hospitals were selected based on the following criteria:

1. all Regional Cancer Program host hospitals
2. all teaching hospitals
3. all children's hospitals
4. all Cancer Surgery Agreement (CSA)/Systemic Therapy Agreement (STA) hospitals[1]
5. all hospitals performing over 100 cancer surgeries per year (2005/06)[2]
6. minimum of three hospitals per geographically defined Local Health Integration Network (where criteria 1 through 5 did not provide this, up to two additional hospitals were selected in order of highest cancer surgery volume).

Because there were only minimal cost implications of expanding the sample size when using the electronic survey, the sample included the entire target population of identifiable cancer care providers and administrators in Ontario that had Internet/e-mail access at work.

The survey was launched on February 26, 2007 with responses accepted at any time over a three-week period. An e-mail introduction to the survey was sent to all study subjects from the appropriate Regional Cancer Program leader. This mailing was followed by an automated e-mail invitation and three automated reminder e-mails, each with a link to the Web-based survey and co-signed by the appropriate Regional Cancer Program leader and two members of Cancer Care Ontario's executive team. These e-mail invitations described the study, provided contact details for further information and offered an explicit option for the study subject to decline participation and be removed from the reminder list. All respondents were offered a $5 electronic gift certificate for participating. Ultimately, the survey was received by 5,366 cancer care providers and administrators throughout Ontario.

Data were captured automatically through a Surveymonkey.com database and downloaded for analysis using SPSS (version 15). An exploratory factor analysis was the main analytical approach taken to guide identification of CSI dimensions (Harman 1976; Rummel 1970). The factor structure of the full 54-item scale was assessed through unweighted least squares analysis with varimax rotation (Jöreskog 1977). Resultant factors were then interpreted by examining item content and pattern of coefficients.

Ethics approval for the study was granted by the University of Toronto's Research Ethics Board.

Results

Participation rates and participant characteristics

Of the 5,366 e-mail invitations sent to valid e-mail addresses, there were 2,031 responses (i.e., the survey was accessed via the Web link). For the purposes of this study, we defined "participation" as those respondents who completed question 10, which required identification of the Regional Cancer Program most relevant to the respondent's clinical or professional work. According to this criterion, there were 1,769 participants, resulting in a participation rate of 33%. Provincially, 47% of administrators participated in the survey, while participation rates for physicians (25%) and other clinicians (32%) were considerably lower. A detailed analysis of participation rates has been reported elsewhere (Dobrow et al. 2008).

Of the 1,769 participants, 28% were physicians, 35% were other clinicians and 37% were administrators, with the majority female (69%) between the ages of 40 and 60 (71%) (Table 2). Participants represented all 13 Regional Cancer Programs in Ontario, identifying teaching hospitals (47%), community hospitals (37%), CCACs (13%) or other locations (3%) as their primary place of work. A Regional Cancer Program host hospital (teaching or community) was the main location of work for 50% of participants, suggesting that participants provided good representation for both cancer centre and non-cancer centre based individuals.

TABLE 2. Participant characteristics (n=1,769)

		Participants	
		n=1,769	%
Sex	Female	1,212	68.5%
	Male	549	31.0%
	No response	8	0.5%
Age	<40	391	22.1%
	40–49	605	34.2%
	50–59	650	36.7%
	60+	114	6.4%
	No response	9	0.5%
Region Cancer Program (RCP)*†	RCP A	79	4.5%
	RCP B	241	13.6%
	RCP C	67	3.8%
	RCP D	199	11.2%
	RCP E	86	4.9%
	RCP F	406	23.0%

TABLE 2. Continued

	RCP G	56	3.2%
	RCP H	54	3.1%
	RCP I	119	6.7%
	RCP J	190	10.7%
	RCP K	61	3.4%
	RCP L	138	7.8%
	RCP M	73	4.1%
Location of work	Teaching Hospital	835	47.2%
	Community Hospital (100 or more beds)	613	34.7%
	Community Hospital (less than 100 beds)	43	2.4%
	Community Care Access Centre	230	13.0%
	Other (e.g., Private Practice Clinic, Public Health Unit)	39	2.2%
	No response	9	0.5%
Position*	Physician	498	28.2%
	Other Clinician	625	35.3%
	Administrator	646	36.5%
Distance from main RCP in region	At main RCP hospital	878	49.6%
	Less than 10 km but not at main RCP hospital	285	16.1%
	Between 11 and 20 km from main RCP hospital	132	7.5%
	Between 21 and 100 km from main RCP hospital	255	14.4%
	More than 100 km from main RCP hospital	195	11.0%
	No response	24	1.4%

* Answer to item required.
† Sample size for each RCP varied.

It was possible to compare a few characteristics of the survey participants (n=1,769) and the full sample (N=5,366), with no major differences detected. Comparing regional response, 11 of the 13 regions had participation rates within 1% (with all 13 within 3%) of the regional breakdown for the full sample. Compared with the full sample, participants included relatively more administrators and fewer physicians.

Item response distribution and missing data

For the 54 Likert scale items, a five-point scale was used ("strongly agree" to "strongly disagree"), along with a "not applicable" option. Missing responses were relatively low for all items, with non-response rates not higher than 10% for any one item and combined missing and "not applicable" response rates not higher than 20% for any one item. Frequency distributions indicated a full range of responses for all items, with no floor or ceiling effects noted. Therefore, all 54 items were retained for further analysis.

Exploratory factor analysis

Given participants' varying individual item completion rates (i.e., no missing data or "not applicable" responses) for all 54 items, the exploratory factor analysis (EFA) was ultimately based on 722 valid responses. Following examination of eigenvalues, scree plot and factor loadings, a 12-factor (36-item) solution was determined to provide the best fit. Eigenvalues for the 12 factors ranged from 11.6 to 1.1, accounting for 51% of the common variance. While factor loadings above 0.32 can be considered meaningful (Tabachnick and Fidell 2007), 49 of the 54 items had loadings greater than 0.32, creating a complex interpretation of the resultant factors. Therefore, a higher threshold of 0.5 was used to allow clearer interpretation of the resultant factors (Table 3). Internal consistency reliability for each of the resultant factors was estimated using Cronbach's coefficient alpha with acceptable values ranging from 0.74 to 0.90 (Table 3).

TABLE 3. Factor structure and thematic interpretations

Factor	Items* loading to factor (≥0.50)	Factor loading**	Cronbach's coefficient	Interpreted theme	Interpreted dimension
Factor 1	14Q 14R 14O 14P	0.81 0.77 0.67 0.65	0.87	Clinical responsiveness to requests for advice (medical/radiation oncologists, surgeons and pathologists)	Clinical
Factor 2	16B 16C 16A 16D	0.71 0.66 0.57 0.52	0.75	Support and effectiveness of multidisciplinary cancer conferences	Clinical
Factor 3	16G 16H 16I 16J	0.71 0.71 0.58 0.58	0.86	Clinical leadership and guidance regarding best practices and innovations	Clinical
Factor 4	15I 15H 15J 15G	0.74 0.73 0.65 0.64	0.84	Regional coordination of resources (staff/personnel, technology/equipment, financial)	Functional
Factor 5	16O 16P	0.82 0.78	0.90	Support for Regional Cancer Program leadership role	Vertical System
Factor 6	14A 14C 14B	0.76 0.71 0.62	0.81	Regional coordination of health promotion and cancer prevention/ screening activities	Vertical System
Factor 7	14J 14I 14L 14K	0.72 0.70 0.51 0.50	0.75	Awareness of whom to contact for advice (palliative/supportive care, public health, community-based service organizations)	Functional
Factor 8	15K 15L 15M	0.83 0.82 0.74	0.88	Influence of Regional Cancer Program on the allocation of resources (staff/ personnel, technology/equipment, financial)	Vertical System

TABLE 3. Continued

Factor 9	16L 16M	0.80 0.56	0.74	Regional Cancer Program awareness of practice variation within/among regions	Vertical System
Factor 10	15O 15N	0.61 0.58	0.76	Existence of standardized technology use policies and professional training programs in region	Functional
Factor 11	15D 15E	0.79 0.63	0.75	Access to computers/Internet for clinical/professional needs	Functional
Factor 12	14N 14M	0.69 0.67	0.83	Clinical responsiveness to requests for advice (palliative/supportive care)	Clinical

* Item descriptions provided in Appendix.
** All factor loadings below 0.50 suppressed.

Various methods of imputation were performed, including substitution and stochastic regression imputation, to assess the impact of missing data on the resultant factor structure (Little and Rubin 2002). This included recoding "not applicable" responses to "neither agree nor disagree" or extreme values (e.g., "strongly agree" or "strongly disagree") and using regression residuals to impute values for missing data. This approach allowed data from all 1,769 responses to be analyzed. This sensitivity analysis showed that while imputing extreme values did, as expected, produce inconsistent factor structures, recoding of "not applicable" to "neither agree nor disagree" and stochastic substitution using regression residuals resulted in factor structures highly consistent with the initial approach taken.

Overall, the EFA produced a consistent factor structure, with the interpretation of the 36 items loading to one of the 12 factors relatively clear and each of the inferred themes addressing important aspects of CSI (Table 3).

Discussion

Dimensions of CSI

Our intent was to develop a measure of CSI that could provide insights on typically unmeasured aspects of the coordination and integration of cancer services. The 12 factors were compared to the dimensions of integration identified in the literature review, with particular focus on the provider-derived dimensions of health services integration (Table 3). Four factors (factors 1, 2, 3 and 12) reflect key elements of clinical integration (i.e., clinical responsiveness to requests for advice from medical/radiation oncologists, surgeons and pathologists; effectiveness of multidisciplinary clinical teams; and clinical leadership/guidance regarding best practices). Each of these factors directly influences patient care services and directs attention to different aspects of clinical integration, including informal clinical interactions (factors 1 and 12), formal multidisciplinary clinical conferences (factor 2) and the role of clinical leadership in facilitating best practice (factor 3). Accounting for the top three factors in terms of common variance explained,

these results are consistent with the findings of Shortell and colleagues (2000), who suggested clinical integration was the most challenging and important component of an organized delivery system. These findings suggest that efforts to improve clinical integration would have the greatest impact on overall service integration.

Four other factors (factors 4, 7, 10 and 11) reflect elements of functional integration (i.e., regional coordination of resources; awareness of whom to contact for advice regarding palliative/supportive care, public health and community-based services; existence of standardized policies and training programs; and access to computers/Internet). These functional integration factors reflect the potential to facilitate patient care activities, representing a mix of communication and information infrastructure and coordination or standardization of policies and programs. It should be noted that while some of these functional integration factors directly reflect Leatt's (2002) conceptualization of information integration, overall the study's findings suggest that information integration was relevant, and often essential, to most of the 12 identified factors, and therefore difficult to categorize exclusively. Therefore, our interpretation of functional integration is more consistent with that of Shortell and colleagues (2000), which focused on the coordination of key support functions and activities.

The four remaining factors (factors 5, 6, 8 and 9) constitute the final dimension of CSI. These factors primarily reflect elements of system leadership, including support for the role of a system leadership entity (i.e., the Regional Cancer Program in the Ontario context), with specific focus on its awareness of comparative performance (i.e., practice variation within and among regions) and its influence over key stakeholder relationships (i.e., resource allocation, regional coordination of promotion and prevention activities). Consistent with Leatt's (2002) conception of vertical integration, these four factors emphasize the importance of governance and accountability issues and extend Gillies and colleagues' (1993) conception of physician–system integration, which reflects individual and organizational roles and relationships within a broader system. These four factors also emphasize system-level capacity to coordinate services, reflecting Conrad's (1993) attention to aggregated rather than individual-level coordination processes. Therefore, considering these four factors together, we have characterized this third dimension as vertical system integration.

The CSI Survey tool

Improving service integration is a key component of performance improvement efforts in many areas of healthcare, and particularly important for cancer services given the challenges of multiple providers and multiple care settings (Sullivan et al. 2008). However, given the lack of a measure of CSI, an important gap exists for decision-makers interested in improving system performance. Our findings suggest that clinical,

functional and vertical system integration represent the key elements of variation that influence CSI.

The CSI Survey provides decision-makers with the ability to measure 12 key components of service integration, representing an important tool to make informed performance improvement decisions. The 12 CSI factors and three dimensions provide direction for decision-makers, both in terms of targeting where efforts are needed to achieve performance improvements in CSI and in identifying appropriate levels of responsibility for cancer system leaders. Ultimately, the 36 Likert scale items contributing to the 12 factors can detect the majority of variation in CSI, representing a more concise tool for measuring service integration in cancer systems (Appendix).

Preliminary work to disseminate findings from the CSI Survey with cancer system leaders in Ontario has been encouraging. However, to validate the tool further, application of the CSI Survey in other jurisdictions is needed. With most of the identified factors representing aspects of service integration relevant to other complex disease management areas, the CSI Survey may also have broader application beyond a specific focus on cancer services.

Limitations

With the low clinician participation rate for the CSI Survey, a common problem with surveys of clinicians (Schoenman et al. 2003), caution should be exercised when extrapolating these results to broader populations of cancer care providers in Ontario or elsewhere. Similarly, while the survey requirement that participants have an e-mail address and Internet access may have introduced a selection bias, concerns that specific groups of providers or administrators were excluded were not raised in our numerous interactions with provider organizations.

It should also be noted that the sample did not include family physicians. While we acknowledge the contribution that family physicians make in the care of cancer patients, our survey development work suggested that most family physicians in Ontario typically care for only a limited number of cancer patients. Therefore, as the survey was designed and relevant for healthcare providers who routinely provide care to a large number of cancer patients, family physicians were excluded. However, despite their exclusion, the survey still produced several important factors related to the coordination of health promotion, cancer prevention/screening activities, the awareness of primary care contacts and the responsiveness of palliative and supportive care (factors 6, 7 and 12).

Although missing data also presented challenges, the EFA was analytically sound, producing consistent results using various imputation methods and assumptions. Finally, it should be noted that the CSI Survey was developed in the context of a large,

publicly funded healthcare system. However, the integration dimensions are broadly relevant and should be largely transferable to other types of healthcare systems.

Conclusions

We set out to develop a measure of CSI that can inform clinical and administrative decision-makers in their efforts to monitor and improve cancer system performance. Through the development of the CSI Survey, we have created a provider-derived survey tool that provides insights on 12 key factors across three dimensions of integration (i.e., clinical, functional and vertical system). The CSI Survey provides an important starting point for measuring the coordination and integration of cancer services, establishing a tool to guide cancer system leaders on how to target efforts and resources in the ongoing pursuit of high performance.

ACKNOWLEDGEMENTS

The authors acknowledge exceptional support for the project from cancer care providers and administrators representing Regional Cancer Programs, hospitals, community care access centres and public health units across Ontario. Funding for this project was provided by a grant from the Canadian Health Services Research Foundation (#RC1-1071-06), with matching funds provided by Cancer Care Ontario.

Correspondence may be directed to: Mark J. Dobrow, PhD, Assistant Professor, Dept. of Health Policy, Management and Evaluation, University of Toronto, 620 University Avenue, Toronto, ON M5G 2L7; tel.: 416-217-1380; fax: 416-217-1294; e-mail: mark.dobrow@utoronto.ca.

NOTES

1. CSA and STA hospitals were identified through their contract status with Cancer Care Ontario to provide incremental service volumes for cancer surgery and/or systemic therapy.
2. Hospital-specific cancer surgery volumes were obtained from Cancer Care Ontario data sources.

To view the appendix please visit http:www.longwoods.com/URL TO COME

REFERENCES

Alexander, J.A., T.M. Waters, L.R. Burns, S.M. Shortell, R.R. Gillies, P.P. Budetti and H.S. Zuckerman. 2001. "The Ties That Bind: Interorganizational Linkages and Physician–System Alignment." *Medical Care* 39(7): I30–I45.

Bass, R.D. and C. Windle. 1972. "Continuity of Care: An Approach to Measurement." *American Journal of Psychiatry* 129(2): 196–201.

Budetti, P.P., S.M. Shortell, T.M. Waters, J.A. Alexander, L.R. Burns, R.R. Gillies and H. Zuckerman. 2002. "Physician and Health System Integration." *Health Affairs* 21(1): 203–10.

Burns, L.R., J.A. Alexander, S.M. Shortell, H.S. Zuckerman, P.P. Budetti, R.R. Gillies and T.M. Waters. 2001. "Physician Commitment to Organized Delivery Systems." *Medical Care* 39(7): I9–I29.

Burns, L.R. and M.V. Pauly. 2002. "Integrated Delivery Networks: A Detour on the Road to Integrated Health Care?" *Health Affairs* 21(4): 128–43.

Cancer Services Implementation Committee. 2001. *Report of the Cancer Services Implementation Committee.* Toronto: Ontario Ministry of Health and Long-Term Care.

Carlow, D.R. 2000. "The British Columbia Cancer Agency: A Comprehensive and Integrated System of Cancer Control." *Healthcare Quarterly* 3(3): 31–45.

Conrad, D. 1993. "Coordinating Patient Care Services in Regional Health Systems: The Challenge of Clinical Integration." *Hospital and Health Services Administration* 38(4): 491–508.

Conrad, D.A. and W.L. Dowling. 1990. "Vertical Integration in Health Services: Theory and Managerial Implications." *Health Care Management Review* 15(4): 9–22.

Department of Health. 1997. "The New NHS: Modern, Dependable." London, UK: *The Stationery Office*.

Department of Health. 1998. "A First-Class Service: Quality in the New NHS." London, UK: *The Stationery Office*.

Department of Health. 2000. "The NHS Cancer Plan: A Plan for Investment, A Plan for Reform." London, UK: *The Stationery Office*.

Dobrow, M., B. Langer, H. Angus and T. Sullivan. 2006. "Quality Councils as Health System Performance and Accountability Mechanisms: The Cancer Quality Council of Ontario Experience." *HealthcarePapers* 6(3): 8–21.

Dobrow, M.J., M.C. Orchard, B. Golden, E. Holowaty, L. Paszat, A.D. Brown and T. Sullivan. 2008. "Response Audit of an Internet Survey of Health Care Providers and Administrators: Implications for Determination of Response Rates." *Journal of Medical Internet Research* 10(4): e30.

Dolovich, L.R., K.M. Nair, D.K. Ciliska, H.N. Lee, S. Birch, A. Gafni and D.L. Hunt. 2004. "The Diabetes Continuity of Care Scale: The Development and Initial Evaluation of a Questionnaire That Measures Continuity of Care from the Patient Perspective." *Health and Social Care in the Community* 12(6): 475–87.

Durbin, J., P. Goering, D.L. Streiner and G. Pink. 2004. "Continuity of Care: Validation of a New Self-Report Measure for Individuals Using Mental Health Services." *Journal of Behavioral Health Services and Research* 31(3): 279.

Fairchild, D.G., J. Hogan, R. Smith, M. Portnow and D.W. Bates. 2002. "Survey of Primary Care Physicians and Home Care Clinicians: An Assessment of Communication and Collaboration." *Journal of General Internal Medicine* 17(4): 253–61.

Freeman, G., S. Shepperd, I. Robinson, K. Ehrich and S. Richards. 2001. *Continuity of Care: Report of a Scoping Exercise for the National Co-ordinating Centre for NHS Service Delivery and Organisation R&D (NCCSDO)*. London, UK: National Co-ordinating Centre for NHS Service Delivery and Organisation R&D.

Gillies, R.R., S.M. Shortell, D.A. Anderson, J.B. Mitchell and K.L. Morgan. 1993. "Conceptualizing and Measuring Integration: Findings from the Health Systems Integration Study." H*ospital and Health Services Administration* 38(4): 467–89.

Griffith, C. and J. Turner. 2004. "United Kingdom National Health Service. Cancer Services Collaborative 'Improvement Partnership': Redesign of Cancer Services. A National Approach." *European Journal of Surgical Oncology* 30(Suppl. 1): 1–86.

Haggerty, J.L., R.J. Reid, G.K. Freeman, B.H. Starfield, C.E. Adair and R. McKendry. 2003. "Continuity of Care: A Multidisciplinary Review." *British Medical Journal* 327(7425): 1219–21.

Harman, H.H. 1976. *Modern Factor Analysis*. Chicago: University of Chicago Press.

Hernandez, S.R. 2000. "Horizontal and Vertical Healthcare Integration: Lessons Learned from the United States." *HealthcarePapers* 1(2): 59–65.

Jöreskog, K.G. 1977. "Factor Analysis by Least-Square and Maximum-Likelihood Method." In K. Enslein, A. Ralston and H.S. Wilf, eds., *Statistical Methods for Digital Computers*. New York: John Wiley and Sons.

Leatt, P. 2002. *Integrated Service Delivery*. Ottawa: Minister of Public Works and Government Services.

Leatt, P., G.H. Pink and M. Guerriere. 2000. "Towards a Canadian Model of Integrated Healthcare." *HealthcarePapers* 1(2): 13–35.

Little, R.J.A. and D.B. Rubin. 2002. Statistical Analysis with Missing Data. Hoboken, NJ: John Wiley and Sons.

Mindlin, R.L. and P.M. Densen. 1969. "Medical Care of Urban Infants: Continuity of Care." *American Journal of Public Health and the Nation's Health* 59(8): 1294–301.

Raina, P., P.L. Santaguida, M. Rice, M. Gauld, S. Smith and J. Hader. 2006. "A Systematic Review of Health Care System Performance Indicators: Measures of Integration." Hamilton, ON: McMaster Evidence-Based Practice Centre.

Reid, R., J. Haggerty and R. McKendry. 2002. *Defusing the Confusion: Concepts and Measures of Continuity of Healthcare*. Ottawa: Canadian Health Services Research Foundation. Retrieved May 26, 2009. <http://www.chsrf.ca/final_research/commissioned_research/programs/pdf/cr_contcare_e.pdf>.

Rummel, R.J. 1970. *Applied Factor Analysis*. Evanston, IL: Northwestern University Press.

Schoenman, J.A., M.L. Berk, J.J. Feldman and A. Singer. 2003. "Impact of Differential Response Rates on the Quality of Data Collected in the CTS Physician Survey." *Evaluation and the Health Professions* 26(1): 23–42.

Shortell, S.M., R.R. Gillies, D.A. Anderson, K.M. Erickson and J.B. Mitchell. 2000. *Remaking Health Care in America: The Evolution of Organized Delivery Systems*. San Francisco: Jossey-Bass.

Sullivan, T., M. Dobrow, L. Thompson and A. Hudson. 2004. "Reconstructing Cancer Services in Ontario." *HealthcarePapers* 5(1): 69–80.

Sullivan, T., M.J. Dobrow, E. Schneider, L. Newcomer, M. Richards, L. Wilkinson, L. Borella, C. Lepage, G.P. Glossmann and R. Walshe. 2008. "Améliorer la responsabilité clinique et la performance en cancérologie" ["Improving Clinical Accountability and Performance in the Cancer Field"]. *Pratiques et Organisation des Soins* 39(3): 207–15.

Suter, E., N.D. Oelke, C.E. Adair, C. Waddell, G.D. Armitage and L.-A. Huebner. 2007. *Health Systems Integration: Definitions, Processes and Impact. A Research Synthesis.* Calgary: Health Systems and Workforce Research Unit, Calgary Health Region.

Tabachnick, B.G. and L.S. Fidell. 2007. *Using Multivariate Statistics.* Boston: Allyn and Bacon.

Ware, N.C., B. Dickey, T. Tugenberg and C.A. McHorney. 2003. "CONNECT: A Measure of Continuity of Care in Mental Health Services." *Mental Health Services Research* 5(4): 209–21.

Wilson, N.J. and K.W. Kizer. 1998. "Oncology Management by the 'New' Veterans Health Administration." *Cancer* 82(10) (Suppl.): 2003–9.

Attitudes of Family Physicians, Specialists and Radiologists about the Use of Computed Tomography and Magnetic Resonance Imaging in Ontario

Attitude des médecins de famille, des spécialistes et des radiologistes face à l'utilisation de la tomographie par ordinateur et de l'imagerie par résonance magnétique, en Ontario

by JOHN J. YOU, MSC, MD
Assistant Professor of Medicine, McMaster University
Hamilton, ON
Adjunct Scientist, Institute for Clinical Evaluative Sciences
Toronto, ON

WENDY LEVINSON, MD
Professor and Chair of Medicine, University of Toronto
Physician-in-Chief, Sunnybrook Health Sciences Centre
Toronto, ON

ANDREAS LAUPACIS, MSC, MD
Executive Director, Li Ka Shing Knowledge Institute of St. Michael's Hospital
Professor of Medicine, University of Toronto
Toronto, ON

Abstract

Background: Despite efforts to reduce wait times for computed tomography (CT) and magnetic resonance imaging (MRI) in Ontario, little is known about physicians' attitudes regarding contemporary patterns of CT and MRI scan use in this province.
Methods: We interviewed 19 Ontario family physicians, specialists and radiologists from diverse settings between November 2006 and April 2007. Our detailed written notes were independently reviewed to identify major recurring themes.
Results: Major themes were grouped under two categories: (a) non-clinical reasons for ordering CT and MRI ("defensive ordering," indeterminate imaging reports, patient demand, supply-induced demand, marked variation in ordering practices) and (b) communication among groups of physicians (increasing isolation between clinicians and radiologists; specialists and family physicians working in silos).
Conclusion: These interviews revealed infrequent communication among physician groups and marked variations in ordering practices that are often driven by a number of non-clinical factors, such as fear of litigation and patient demand. Recent increases in CT and MRI capacity may not be leading to better care for patients. Our findings, however, are very preliminary and require validation in other studies.

Résumé

Contexte : Malgré les efforts visant à réduire les temps d'attente pour une tomographie par ordinateur (TO) ou pour une imagerie par résonance magnétique (IRM) en Ontario, on connaît peu l'attitude des médecins face aux schémas actuels d'utilisation des TO et des IRM dans la province.
Méthode : Nous avons interviewé 19 médecins de famille, spécialistes et radiologistes dans divers établissements en Ontario, entre novembre 2006 et avril 2007. Les notes détaillées que nous avons prises pendant les entrevues ont été examinées de façon indépendante afin de dégager des thèmes récurrents importants.
Résultats : Les thèmes importants ont été regroupés en deux catégories : (a) les raisons non cliniques invoquées pour prescrire une TO ou une IRM (« prescription de protection », imagerie non concluante, requête de la part du patient, demande causée par l'offre, variations marquées dans les pratiques de prescription) et (b) la communication entre les groupes de médecins (isolement accru entre médecins et radiologistes; cloisonnement du travail chez les spécialistes et les médecins de famille).
Conclusion : Ces entrevues ont révélé une communication sporadique entre les groupes de médecins et elles font voir des variations marquées dans les pratiques de prescription, lesquelles sont souvent stimulées par nombre de facteurs non cliniques tels que la crainte du litige et les requêtes formulées par les patients. L'accroissement récent de la capacité d'effectuer des TO et des IRM ne conduit pas nécessairement à

de meilleurs services pour les patients. Toutefois, nos résultats restent préliminaires et il est nécessaire de les faire valider par d'autres études.

Despite a marked increase in the number of computed tomography (CT) and magnetic resonance imaging (MRI) scans performed in Ontario during the decade prior to 2005 (Tu et al. 2005), there were still reports of unacceptably long wait times for these services (Mackie 2002). Therefore, the Ontario Ministry of Health and Long-Term Care identified CT and MRI scanning as a priority for further investment, and in 2005 committed $95 million to increase Ontario's capacity to perform CT and MRI scans (Hudson and Glynn 2005, 2007). To complement these supply-side efforts to reduce wait times, the Institute for Clinical Evaluative Sciences (ICES) was asked to undertake a study to examine the demand side of CT and MRI scan utilization. The ICES team performed an audit of the indications for and results of 24,000 CT and MRI scans performed in 2005 at 29 randomly selected Ontario hospitals. The results show that for some common indications, such as CT scan of the brain for headache, only 2% of scans revealed a treatable abnormality, whereas for other common indications, such as an MRI scan of the spine for back pain, 90% of scans revealed multiple imaging abnormalities whose clinical importance was often unclear. Furthermore, it was found that recommendations for further diagnostic testing occur frequently (as often as one in four CT scans of the chest), particularly when scan results are indeterminate (You et al. 2007).

Despite mounting public pressure and increased funding to reduce wait times for CT and MRI scans, little is known about physicians' attitudes regarding current patterns of CT and MRI scan use. Accordingly, after abstracting data from 6,000 scans, the ICES investigators shared preliminary results of their CT/MRI audit with selected Ontario radiologists and clinicians to elicit their attitudes regarding contemporary patterns of CT and MRI scan use in Ontario. In this paper, we describe the results of these interviews.

Methods

Participants

We interviewed 19 Ontario physicians from diverse practice settings: academic medical oncology (n=3), academic clinicians who frequently order CT/MRI brain scans (n=3), academic orthopaedic surgery (n=2), academic spine surgery (n=2), northern Ontario family practice (n=3), southern Ontario urban family practice (n=2) and radiology (n=4). Radiologists were community-based and academic; family

practitioners were community-based. The participants were chosen because of their expertise and the respect in which they are held by their peers (i.e., opinion leaders). Participants had been in practice in Ontario for an average of 24 ± 10 years (mean ± standard deviation).

Interviews

Interviews were conducted by teleconference, with physicians from the various groups being interviewed together (e.g., radiologists together, oncologists together, etc.). They took place between November 2006 and April 2007, lasted 60 minutes and were led by one of the authors (J.J.Y.), who took detailed written notes to document the proceedings. Each session began with a 10-minute overview of the rationale for the ICES CT/MRI study and a review of the preliminary findings (i.e., summary of the most common indications for scanning and the results of these scans), which had been sent to the participants beforehand. A series of open-ended questions were then posed to serve as a starting point for discussion about the preliminary findings from the CT/MRI audit. These questions included some general questions, such as, "Are the findings consistent with your clinical practice?," and "Do you think these patterns of CT and MRI use indicate underuse, overuse or optimal use of this technology?," followed by specific questions for each group of participants, such as, "Over 90% of MRI spine scans had at least one abnormal finding – what are the implications for clinical practice?," or "The majority of CT scans of the brain for headache and dementia were normal – what are the implications for clinical practice?"

This study was approved by the Sunnybrook Health Sciences Centre Research Ethics Board. Written informed consent was obtained from all study participants.

Analysis

Three authors (J.J.Y., A.L. and W.L.) independently reviewed detailed notes from the interviews to identify major recurring themes. Differences in opinion were resolved by discussion. For validation, the study findings were shared individually with each study participant, with an invitation to provide feedback. There were no objections to the major themes identified.

Results

We grouped the major themes into two broad categories: non-clinical reasons for ordering CT and MRI, and communication between physician groups (Table 1).

TABLE 1. Major themes emerging from interviews

Non-clinical reasons for ordering CT and MRI
Defensive medicine
Indeterminate imaging reports
Patient demand/Patient reassurance
Supply-induced demand
Variation in ordering practices
Communication among physician groups
Increasing isolation between clinicians and radiologists
Specialists and family physicians working in silos

CT = computed tomography; MRI = magnetic resonance imaging

Non-clinical reasons for ordering CT and MRI

THE PRACTICE OF "DEFENSIVE MEDICINE"

Medico-legal concerns were felt to be an important reason that physicians order CT and MRI scans. Participants said that even in situations in which the pre-test likelihood of life-threatening disease is low (e.g., most patients with headache), they would feel more comfortable ordering a CT scan because of the fear of being sued for a delay in diagnosis. Some physicians felt that clinical decision rules, such as the Ottawa Ankle rules (Stiell et al. 1993), would be helpful in protecting them from future legal action should they decide not to order an imaging test that they feel is not clinically indicated.

THE DILEMMA OF INDETERMINATE IMAGING REPORTS

Several clinicians discussed problems arising from indeterminate imaging reports that make written recommendations for further diagnostic testing. Although clinicians felt they could sometimes disregard such recommendations because of their knowledge of their patient's history, the perceived medico-legal consequences of missing a serious diagnosis after ignoring an expert recommendation emerged as an important reason that clinicians feel pressured to follow through with further testing, even when they believe it is not clinically indicated. It was also noted that recommendations such as "no change in small mesenteric nodes in two years; further repeat scans are not necessary unless new symptoms develop" would be helpful because they would give ordering physicians added confidence to stop repeated testing. Currently, such notation rarely occurs. Finally, it was suggested by some that, as advances in medical imaging produce increasingly detailed images, indeterminate findings and recommendations for follow-up testing will become more common.

THE INFLUENCE OF PRESSURE FROM PATIENTS

Patient demand was frequently cited as an important reason that physicians order CT and MRI scans. Clinicians described several reasons why their patients demand imaging tests. One was that persistent and unexplained symptoms (e.g., chronic back pain) sometimes lead to repeated physician visits and frustration among patients with what they perceive as little being done by their doctor to address their symptoms. In these situations, physicians said that they might order an imaging test to satisfy their patient that something concrete was being done. Clinicians also reported that a patient's desire for reassurance that he or she does not have a serious condition (e.g., cancer) was an important driver of patient demand for CT/MRI scans.

SUPPLY-INDUCED DEMAND: "IF YOU BUILD IT, THEY WILL COME"

Interview participants consistently noted changes in physician and patient behaviour associated with recent increases in CT and MRI capacity. For example, several physicians remarked that since their local hospital obtained a CT scanner, they were ordering CT scans for minor head injuries more frequently and in a broader spectrum of patients than in the past. Several family physicians also stated that patients are increasingly expecting that a scan will be performed as part of the routine work-up of their symptoms (e.g., back pain), either because patients are aware of the added capacity for CT and MRI scanning in their communities, have spoken to friends who had a scan as part of the work-up for a similar complaint or have received recommendations from healthcare professionals (e.g., physiotherapist, sports trainer) that they get a scan to investigate their symptoms further.

MARKED VARIATION IN ORDERING PRACTICES

Participants described marked variations in ordering practices. For example, one family physician said that some of his colleagues would order a CT scan for virtually every new headache patient, whereas other colleagues would almost never order a CT scan for headache. Similarly, another physician described one consultant who ordered a CT scan for every new patient referred for assessment of dementia, whereas another consultant in the same community rarely obtained a CT scan.

Communication among physician groups

INCREASING ISOLATION BETWEEN CLINICIANS AND RADIOLOGISTS

Several participants raised issues related to communication between ordering clinicians and radiologists both at the point of the original imaging request and at the time the results of the scan are being communicated back to the referring physician. Radiologists described the challenges of providing a definitive interpretation when given scant

clinical information (e.g., "rule out pathology"). Radiologists felt strongly, particularly in more complex cases, that they could give a more useful interpretation after a verbal discussion with the ordering physician. Many clinicians, however, reported increasing difficulty in talking to their local radiologists. Sometimes this difficulty was related to hospital restructuring and mergers, which resulted in relocation of radiologists to more remote sites and administrative changes within imaging departments (e.g., more interaction with booking clerks than with radiologists). Radiologists also noted that their increasing workload gives them less time to talk with ordering physicians.

Radiologists suspected overuse of CT and MRI scans for some indications but stated that the sheer number of requisitions they receive prevents them from discussing most potentially inappropriate requisitions with ordering physicians. Moreover, radiologists expressed discomfort with acting as "gatekeepers" because of the difficulty in assessing appropriateness without having seen the patient, and the tension it would create with their referral base. Although the purpose of recently published Diagnostic Imaging Referral Guidelines (Canadian Association of Radiologists 2005) is to "[assist physicians] in making decisions in regard to appropriate imaging studies for specific cases," none of the clinicians that we interviewed was aware of them. It was felt that a Web-based order entry system that prompts the clinician with evidence-based ordering guidelines and clinical decision rules would be a more effective and efficient way of improving the appropriateness of ordering.

SPECIALISTS AND FAMILY PHYSICIANS WORKING IN SILOS

One of the most striking findings of our study was that each group of physicians blamed other physician groups for problems in the use of CT and MRI scanning in the province. Academic specialists often spoke pejoratively about the "community," suggesting that if one wanted to find evidence of inappropriate CT and MRI scan use, one should examine community practice. Specialists also gave the impression that general practitioners overused scanning for some symptoms. For example, spine surgeons were frustrated by the considerable amount of time they spent explaining to patients with back pain why they do not need surgery despite their abnormal MRI scan. In contrast, family physicians pointed out that spine surgeons would not see new referrals for back pain without an MRI scan and complained about the long waits for specialist consultation, saying that it is much faster to get an MRI scan of the spine than to see a specialist. This was especially true in Northern Ontario, where physicians said they will sometimes order an MRI scan of the spine to obviate the need for specialist referral.

Discussion

In a series of interviews, we elicited the attitudes of academic specialists, family

physicians and radiologists regarding contemporary patterns of CT and MRI scan use in Ontario. The picture that emerged was one of a fractured health system, with academic specialists, family physicians and radiologists often showing disdain for one another and blaming one another for problems in the use of CT and MRI scanning; infrequent communication among physician groups; and marked variation in ordering practices that are often driven by a number of non-clinical reasons, such as fear of litigation and patient demand. Although we often heard that access to CT and MRI scanning was getting better, we did not hear that care was improving.

Although the fear of being sued was cited as an important reason for ordering tests, Canadian malpractice insurance data indicate that overall, legal actions occur much less frequently than physicians believe – currently, 13 actions per 1,000 physicians, which is 50% less than a decade ago (Jones 2007). In fact, many lawsuits stem from poor physician–patient communication rather than negligence in care (Levinson et al. 1997). Clinical decision rules addressing the most common reasons for ordering CT and MRI scans (e.g., headache, back pain, etc.), if rigorously developed and aggressively disseminated, may help give clinicians added security and alleviate this fear.

Patient demand was cited as another important reason for ordering CT and MRI scans. Such demand is probably driven by many factors: a genuine worry that a serious diagnosis is being missed, unrealistic views about the ability of the scans to make a diagnosis and the high value that our society generally places on sophisticated medical technology (Mechanic 2002). Certainly, it can be easier to order a scan than to explain to a patient why it is not necessary, and several participants reported that they order scans to reassure their patients. However, several studies have shown that patients are not consistently reassured by normal test results (Spiegel et al. 2005; McDonald et al. 1996). Although public education that provides a balanced view of the benefits and limitations of diagnostic imaging may prove useful, it is unclear whether this information would truly influence patient demand. Further research is needed to develop effective means for public education.

As has been described for other medical interventions (Fisher et al. 2000; Nallamothu et al. 2007; Wennberg et al. 1997), supply-induced demand appeared to be an important driver of CT and MRI ordering in Ontario. As a result, it is possible that recent increases in CT/MRI scanning capacity may not lead to a decrease in wait times if more patients receive scans for questionable indications. In fact, some of those interviewed suggested that this phenomenon is already occurring.

Although physicians, not surprisingly, are affected by a missed diagnosis, the fear of missing a serious diagnosis must be balanced with the potential risks of diagnostic imaging – e.g., investigation of incidentalomas with potentially invasive tests, unnecessary radiation exposure and anxiety associated with false positive results (Stone 2006; Fisher and Welch 1999; Laupacis and Evans 2005; Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation 2006). It was clear from the

interviews that some physicians are quite selective about the patients for whom they order a scan. To encourage more appropriate use of diagnostic imaging, academic teaching hospitals must highlight the importance of responsible ordering. At present, it is our impression that the "complete work-up" is held up as a model that may be giving trainees the wrong message.

Finally, the coordination of our healthcare system is challenging. Our interviews illustrate the difficulty in communication among specialists, family physicians and radiologists, and indicate that at times, they express disdain for one another. In a healthcare system that appears increasingly to value specialization, the solution to this problem will not be easy. Web-based ordering of imaging tests, with pop-up screens that provide advice to ordering physicians in real time, would be one way of improving the quality of information received by radiologists from clinicians and may improve the appropriateness of ordering patterns. Indeed, a systematic review of interventions to improve outpatient referrals from primary care to specialist care found that, although passive dissemination of practice guidelines was not effective, the use of standardized referral tools for a variety of problems was effective in improving the appropriateness of referrals (Akbari et al. 2008). There are also preliminary data showing that computerized decision support using structured referral templates for ordering of imaging tests can be effective (Kaushal et al. 2006; Khorasani 2006); however, more studies are needed. To improve communication further, a department could potentially designate a radiologist each day who would be available to referring clinicians to answer questions about the most appropriate use of imaging tests. However, increases in radiologists' workloads are such that this strategy may not be practical.

Limitations

Our study has some limitations. First, full transcripts of the interviews were not recorded. Although detailed notes were taken, it remains possible that our own views on the subject may have unconsciously influenced the findings. The fact that all study participants reviewed and did not object to the major themes we identified suggests that significant distortions or omissions were unlikely to have taken place and provides some validation of our findings. Second, we interviewed a small number of physician groups who were not randomly sampled and we did not use data saturation methods; therefore, the results cannot necessarily be considered representative of all Ontario physicians. Given these limitations, our findings should be interpreted with caution and are best considered as a preliminary identification of key issues regarding the use of CT and MRI in Ontario that may serve as a useful starting point for further inquiry.

Conclusion

Recent increases in CT and MRI scan capacity may not be leading to better care. Several factors, such as communication breakdowns, medico-legal concerns and patient expectations for testing appear to be important non-clinical drivers of CT/MRI scan ordering. It is interesting to note that within the United States, regions spending the most on healthcare also have the highest rates of imaging utilization and yet do not have better health outcomes compared to lower-spending regions (Fisher et al. 2003a,b). Although rates of CT and MRI scanning are much lower in Ontario than in the United States, it is important that our preliminary findings be confirmed in other studies so that we are better positioned to make the best possible use of diagnostic imaging.

ACKNOWLEDGEMENTS

This study was funded by the Wait Time Strategy of the Ontario Ministry of Health and Long-Term Care (MOHLTC). John You is supported by an Ontario MOHLTC Career Scientist Award. We thank the 19 physicians who kindly agreed to be interviewed.

Correspondence may be directed to: Dr. John You, MD, Assistant Professor of Medicine and Clinical Epidemiology & Biostatistics, McMaster University, 1200 Main St. West, HSC-3V51, Hamilton, ON L8N 3Z5; tel.: 905-521-2100, ext. 76722; e-mail: jyou@mcmaster.ca.

REFERENCES

Akbari, A., A. Mayhew, M.A. Al-Alawi, J.M. Grimshaw, R.A.G. Winkens, E. Glidewell et al. 2008 (October 8). "Interventions to Improve Outpatient Referrals from Primary Care to Secondary Care." *Cochrane Database System Review 4:* CD005471.

Canadian Association of Radiologists. 2005. *Diagnostic Imaging Referral Guidelines.* Saint-Laurent, QC: Author.

Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation. 2006. *BEIR VII: Health Risks From Exposure to Low Levels of Ionizing Radiation.* Washington, DC: National Academies Press.

Fisher, E.S. and H.G. Welch. 1999. "Avoiding the Unintended Consequences of Growth in Medical Care: How Might More Be Worse?" *Journal of the American Medical Association* 281(5): 446–53.

Fisher, E.S., D.E. Wennberg, T.A. Stukel, D.J. Gottlieb, F.L. Lucas and E.L. Pinder. 2003a. "The Implications of Regional Variations in Medicare Spending. Part 1: The Content, Quality and Accessibility of Care." *Annals of Internal Medicine* 138(4): 273–87.

Fisher, E.S., D.E. Wennberg, T.A. Stukel, D.J. Gottlieb, F.L. Lucas and E.L. Pinder. 2003b.

"The Implications of Regional Variations in Medicare Spending. Part 2: Health Outcomes and Satisfaction With Care." *Annals of Internal Medicine* 138(4): 288–98.

Fisher, E.S., J.E. Wennberg, T.A. Stukel, J.S. Skinner, S.M. Sharp, J.L. Freeman et al. 2000. "Associations among Hospital Capacity, Utilization and Mortality of US Medicare Beneficiaries, Controlling for Sociodemographic Factors." *Health Services Research* 34(6): 1351–62.

Hudson, A.R. and P. Glynn. 2005. "The Wait Time Strategy Report on Phase I and a Preview of Phase II. March 29, 2005." Retrieved May 26, 2009. <http://www.health.gov. on.ca/transformation/wait_times/providers/reports/wt_update_032905.pdf>.

Hudson, A.R. and P. Glynn. 2007. "The Wait Time Strategy Review of Activities April–August 2005. Update #3 – August 16, 2005." Retrieved May 26, 2009. <http://www.health.gov.on.ca/transformation/wait_times/providers/reports/wt_update_081605.pdf>.

Jones, D. 2007. "Legal Actions against Doctors Down 50% in Past Decade." *Canadian Medical Association Journal* 177(7): 710–11.

Kaushal, R., A.K. Jha, C. Franz, J. Glaser, K.D. Shetty, T. Jaggi et al. 2006. "Return on Investment for a Computerized Physician Order Entry System." *Journal of the American Medical Informatics Association* 13(3): 261–66.

Khorasani, R. 2006. "Clinical Decision Support in Radiology: What Is It, Why Do We Need It, and What Key Features Make It Effective?" *Journal of the American College of Radiology* 3(2): 142–43.

Laupacis, A. and W. Evans. 2005. "Diagnostic Imaging in Canada." *HealthcarePapers* 6(1): 8–15.

Levinson, W., D.L. Roter, J.P. Mullooly, V.T. Dull and R.M. Frankel. 1997. "Physician–Patient Communication. The Relationship with Malpractice Claims among Primary Care Physicians and Surgeons." *Journal of the American Medical Association* 277(7): 553–59.

Mackie, R. 2002 (July 9). "Queue-Jumping Foes Fear Launch of MRI Clinics." *The Globe and Mail*: A7.

McDonald, I.G., J. Daly, V.M. Jelinek, F. Panetta and J.M. Gutman. 1996. "Opening Pandora's Box: The Unpredictability of Reassurance by a Normal Test Result." *British Medical Journal* 313(7053): 329–32.

Mechanic, D. 2002. "Socio-Cultural Implications of Changing Organizational Technologies in the Provision of Care." *Social Science and Medicine* 54(3): 459–67.

Nallamothu, B.K., M.A. Rogers, M.E. Chernew, H.M. Krumholz, K.A. Eagle and J.D. Birkmeyer. 2007. "Opening of Specialty Cardiac Hospitals and Use of Coronary Revascularization in Medicare Beneficiaries." *Journal of the American Medical Association* 297(9): 962–68.

Spiegel, B.M., I.M. Gralnek, R. Bolus, L. Chang, G.S. Dulai, B. Naliboff et al. 2005. "Is a Negative Colonoscopy Associated with Reassurance or Improved Health-Related Quality of Life in Irritable Bowel Syndrome?" *Gastrointestinal Endoscopy* 62(6): 892–99.

Stiell, I.G., G.H. Greenberg, R.D. McKnight, R.C. Nair, I. McDowell, M. Reardon et al. 1993. "Decision Rules for the Use of Radiography in Acute Ankle Injuries. Refinement and Prospective Validation." *Journal of the American Medical Association* 269(9): 1127–32.

Stone, J.H. 2006. "Incidentalomas – Clinical Correlation and Translational Science Required." *New England Journal of Medicine* 354(26): 2748–49.

Tu, J.V., S.P. Pinfold, P. McColgan and A. Laupacis. 2005. *Access to Health Services in Ontario.* Toronto: Institute for Clinical Evaluative Sciences.

Wennberg, D., J. Dickens Jr, D. Soule, M. Kellett Jr, D. Malenka, J. Robb et al. 1997. "The Relationship between the Supply of Cardiac Catheterization Laboratories, Cardiologists and the Use of Invasive Cardiac Procedures in Northern New England." *Journal of Health Services Research and Policy* 2(2): 75–80.

You, J.J., I. Purdy, D. Rothwell, R. Przybysz, J. Fang and A. Laupacis. 2007. "Indications for and Results of Outpatient Computed Tomography and Magnetic Resonance Imaging in Ontario: A Population-Based Study." *Canadian Association of Radiologists Journal* 59(3): 135–43.

Call to Authors

Health Technology Briefs provides a forum for brief reports of health technology assessments and policy analyses that can inform Canadian health policy development and health system management. Submissions from health technology assessment organizations or researchers working in other settings should be no more than 1500 words, exclusive of up to two tables and 10 references and an abstract of 100 words or less.

Appel aux auteurs

La rubrique « Coup d'œil sur les technologies de la santé » est une tribune qui présente de courts résumés d'évaluations des technologies de la santé ou d'analyses de politiques, visant à éclairer l'élaboration de politiques ou la gestion des systèmes de santé au Canada. Les résumés, proposés par des organismes d'évaluation des technologies de la santé ou par des chercheurs provenant d'autres types d'établissements, ne comptent pas plus de 1500 mots, et sont accompagnés d'un maximum de deux figures, de dix références et d'un résumé de 100 mots ou moins.

For more information contact Ania Bogacka, Managing Editor, at abogacka@longwoods.com.

Pour de plus amples renseignements, veuillez communiquer avec Ania Bogacka, Directrice de rédaction, à abogacka@longwoods.com

RESEARCH PAPER

The Use of Research Evidence in Two International Organizations' Recommendations about Health Systems

Utilisation des données de recherche par deux organismes internationaux dans leurs recommandations visant les systèmes de santé

by STEVEN J. HOFFMAN, BHSC
Faculty of Law, Department of Political Science and Munk Centre for International Studies
University of Toronto
Toronto, ON

JOHN N. LAVIS, MD, PHD
Professor and Canada Research Chair in Knowledge Transfer and Exchange
Department of Clinical Epidemiology and Biostatistics
Department of Political Science
McMaster University
Hamilton, ON

SARA BENNETT, PHD
Advisor, Alliance for Health Policy and Systems Research
World Health Organization
Geneva, Switzerland

Abstract

Background: Little is known about the extent to which research evidence informs the development of recommendations by international organizations.
Methods: We identified specific World Health Organization (WHO) and World Bank recommendations on five topics (contracting, healthcare financing, health human resources, tuberculosis control and tobacco control), catalogued the related systematic reviews and assessed the recommendations to determine their consistency with the systematic reviews that were available at the time of their formulation.
Findings: Only two of the eight publications examined were found to cite systematic reviews, and only five of 14 WHO and two of seven World Bank recommendations were consistent with both the direction and nature of effect claims from systematic reviews. Ten of 14 WHO and five of seven World Bank recommendations were consistent with the direction of effect claims only.
Conclusion: WHO and the World Bank – working with donor agencies and national governments – can improve their use of (or at least, their reporting about their use of) research evidence. Decision-makers and clinicians should critically evaluate the quality and local applicability of recommendations from any source, including international organizations, prior to their implementation.

Résumé

Contexte : On ne sait pas vraiment à quel point les données de recherche renseignent la formulation des recommandations émises par les organismes internationaux.
Méthode : Nous avons identifié des recommandations précises formulées par l'Organisation mondiale de la santé (OMS) et par la Banque mondiale au sujet des cinq points suivants : la sous-traitance, le financement des services de santé, les ressources humaines dans le domaine de la santé, la lutte contre la tuberculose et la lutte contre le tabagisme. Nous avons répertorié les revues systématiques pertinentes et nous avons évalué les recommandations afin de déterminer si elles sont cohérentes avec les éléments des revues systématiques qui étaient disponibles au moment de leur formulation.
Résultats : Seulement deux des huit publications examinées citaient des revues systématiques et seulement cinq des 14 recommandations de l'OMS et deux des sept recommandations de la Banque mondiale étaient cohérentes avec la direction et la nature des effets décrits par les revues systématiques. Dix des 14 recommandations de l'OMS et cinq des sept recommandations de la Banque mondiale étaient seulement cohérentes avec la direction des effets décrits.
Conclusion : L'OMS et la Banque mondiale, qui toutes deux travaillent avec des organismes donateurs et des gouvernements nationaux, peuvent améliorer leur utilisation des données de recherche (ou, du moins, leur façon d'indiquer une telle utilisation). Quelle

que soit la source d'une recommandation, y compris si elle provient d'un organisme international, les décideurs et les cliniciens devraient en faire une évaluation critique en matière de qualité et d'application à l'échelle locale, avant de la mettre en application.

The importance of linking research evidence to action has been well established (WHO 2004a; Haines et al. 2004). This linkage, however, is particularly essential for health systems in low- and middle-income countries (Commission on Health Research for Development 1990). Health system limitations and fragmentation have been described as a "bottleneck" that slows the full implementation of existing interventions (Travis et al. 2004; WHO 2005a). Just one package of interventions, if fully implemented, has been estimated to have the potential to reduce child mortality by two-thirds and maternal mortality by three-quarters (Jones et al. 2003; World Bank 2004). Yet, many studies have reinforced the view that policy making about health systems is often not informed by research evidence (Aaserud et al. 2005; Lush et al. 2003; Ogden et al. 2003). The need to develop mechanisms to support policy makers' use of health policy and systems research has been widely acknowledged (WHO 2005a; Lavis et al. 2004; Lavis, Davies et al. 2006; Lavis, Lomas et al. 2006), and a number of country- and region-level initiatives have been launched to address this need (Hamid et al. 2005; East African Community 2006).

The recommendations about health systems that are formulated by international organizations like the World Health Organization (WHO) and the World Bank have the potential to serve as important mediators between the best available research evidence and policy for the many low- and middle-income countries that rely on both the recommendations for technical guidance and the financial support that often accompanies a commitment to follow the recommendations (Oxman et al. 2006). Indeed, policy makers would have a much more valuable resource on which to draw in national policy making processes if international organizations were to use (among other information sources) systematic reviews of effects – the best available synthesis of global research evidence about the likely effects of different policy options – as a starting point for their deliberations and to report whether, how and why their recommendations are consistent with the direction and nature of effect claims made in these reviews (Lavis, Lomas et al. 2006; Oxman and Guyatt 2002). Yet, despite the value of systematic reviews and the practical efficiencies associated with their use (as highlighted over the past five years by WHO's "Guidelines for WHO Guidelines" [2003], *World Report on Knowledge for Better Health* [2004a], Task Force on Health Systems Research [2005] and Advisory Committee on Health Research [2006]), two recently published studies have revealed that systematic reviews (among other types of research evidence) are not widely used within at least one international organization – WHO

(Oxman et al. 2007; Nahar Kabir and Holmgren 2005).

This study is the first of its kind to systematically compare health systems recommendations by two prominent international organizations – WHO and the World Bank – to the research evidence that was available at the time of their formulation. The overall goal was to contribute to international efforts aiming to link research to action by supporting the development of evidence-informed recommendations by international organizations that focus, at least in part, on strengthening health systems in resource-poor settings.

This study was approved by the McMaster University Faculty of Health Sciences/ Hamilton Health Sciences Research Ethics Board in Hamilton, Ontario, Canada.

Methods

We examined the use of research evidence in health systems recommendations by developing a series of inventories that facilitated the purposive sampling of two international organizations, five health topics, 10 relevant publications (two per topic) and 30 recommendations (three per publication) based on explicit selection criteria (Table 1), and comparing the chosen recommendations to the nature and direction of effect claims made in systematic reviews compiled specifically for this purpose.

We selected WHO and the World Bank for this study because they are two of the largest and most prominent international organizations that operate in the health field. In addition to their work at the country level, both organizations strive to stimulate the dissemination and use of research evidence by articulating evidence-informed policy options, offering technical support and publishing hundreds of guidelines and reports each year (WHO 2006a; World Bank 2006).

We identified health topics by reviewing all resolutions of the World Health Assembly (WHA) that were adopted between 2000 and 2003 (a period that provides sufficient time for countries to act), as they often reflect the priorities of the global health community. Resolutions were catalogued based on their applicability to different country contexts (i.e., low- and middle-income, high-income and a combination of both); one specific resolution and corresponding health topic were chosen for each of governance arrangements (WHA56.25/*contracting*), financial arrangements (WHA53.14/*healthcare financing*) and delivery arrangements (WHA54.12/*health human resources*). One resolution and health topic were also chosen for each of clinical program content (WHA53.1/*tuberculosis control*) and population and public health program content (WHA56.1/*tobacco control*) to enable comparisons with the three health systems topic areas. These resolutions, however, were not compared to the research evidence in isolation, as they are declarative in nature and rarely contain technical guidance that could practically be compared to the available research evidence; rather, relevant WHO and World Bank recommendations-containing documents in

these five health topic areas were then identified through a comprehensive search of their respective websites for major publications as well as complementary searches in their respective library catalogue systems.

TABLE 1. Selection criteria for each stage of the study

Item	Target	Actual	Selection criteria
International organizations	2	2	• Part of the United Nations system • Prominence in the global health field • Publishes recommendations-containing documents (e.g., guidelines and/or international standards)
Health topics addressed by the selected organizations	5	5	• World Health Assembly resolution on the topic adopted between 2000–2003 • Applicable to different country contexts (i.e., low- and middle-income countries and a combination of low-, middle- and high-income countries) • Collectively cover a broad range of types of topics (i.e., governance arrangements, financial arrangements, delivery arrangements, clinical program content and population and public health program content)
Publications produced on the selected health topics (1 per health topic from each organization)	10	8	• Official publication (e.g., not working papers, internal briefing notes or memoranda) • Published between the 2003 publication of WHO's "Guidelines for WHO Guidelines" and 2006 • Authorship clearly attributed to WHO or the World Bank (i.e., not published by a global partnership or alliance within which these organizations are only one contributing member) • Most recent edition if more than one edition exists • Clear policy orientation (e.g., not clinical guidelines or historical reviews) • Wide applicability across countries (i.e., global relevance or to all developing countries, but not specific to one country or a small region of countries) • Ready for application to policy (e.g., not training tools, project summaries, meeting reports or methodology documents) • Breadth of policy options considered (e.g., not focused on either user fees or vaccination exclusively, but on multiple healthcare financing solutions or disease prevention options)
Recommendations contained in the selected publications (3 per publication)	30	21	• Availability of systematic reviews that address one or more facets of the recommendations • Ability to compare WHO and World Bank recommendations on the same topic

One publication was then sought from each organization for each of the five topics through purposive sampling based on the selection criteria for publications; data were collected on each publication's number of pages, citation of any type of research evidence and citation of systematic reviews. Three central recommendations with

effect claims (i.e., assertions about the likely impact of the intervention under consideration) were subsequently sought from each publication for a target of 30 recommendations across organizations and topics based on the availability of systematic reviews and a desire to compare WHO and World Bank recommendations on the same issue (Mucciaroni and Quirk 2006).[1]

The research evidence with which to compare the recommendations was subsequently compiled for each topic using existing overviews of systematic reviews on health financing (Lagarde and Palmer 2006), health human resources (Chopra et al. 2006), maternal and child health (Kakad and Oxman 2006) and from an ongoing comprehensive overview of systematic reviews of a range of governance, financial and delivery arrangements (Lavis et al. under review),[2] as well as an update of each of these searches and new searches for tuberculosis and tobacco control on MEDLINE, CINAHL and EMBASE, using optimized search strategies specific for systematic reviews (Montori et al. 2005; Wong et al. 2006; Wilczynski et al. 2007). In instances where systematic reviews were found but were published after the relevant WHO or World Bank publication, the number and proportion of studies in the systematic review that were published one year prior to the recommendations-containing publication were recorded.

The systematic reviews were then assessed and coded based on whether the authors' effect claims indicated that the intervention under study *works* (achieves specific positive effects), *doesn't work* (fails to achieve specific positive effects or achieves negative effects), *works in some contexts* (achieves specific positive effects in some groups, jurisdictions or time periods but not others) or *lacks enough high-quality research evidence to draw conclusions*. This coding scheme facilitated an objective comparison by two independent reviewers of the effect claims of WHO and World Bank recommendations to those of the systematic reviews (or, in their absence, studies) that were available at the time of the recommendations' publication. The comparison of the effect claims was separated into two different assessments: (a) consistency in the direction of effect claims (i.e., whether research evidence supports use of the intervention) and (b) nature of the effect claims (i.e., whether research evidence supports the rationale for using the intervention). Where research evidence from systematic reviews existed at the time that recommendations were written and it was not utilized, an explanation for this discrepancy was sought within the publication.

Results

The search of the respective websites of WHO and the World Bank in the identified topic areas yielded 187 official documents from both organizations that were published between the 2003 release of "Guidelines for WHO Guidelines" (WHO 2003) and 2006. While a publication from WHO was selected for each of the five topics,

no World Bank publications met the selection criteria for health human resources and tuberculosis control, mainly because the published documents were specific to a single country or region (Table 2). Four of the eight publications were books (de Beyer and Waverley 2003; Gottret and Schieber 2006; Harding and Preker 2003; WHO 2004b), two were technical briefs for policy makers (WHO 2005b,c), one was a set of guidelines for national governments (WHO 2004c) and one was a WHO world health report (WHO 2006b). All publications were featured prominently on the two organizations' respective websites and were made publicly available free of charge, except for one book that required a minimal payment for full access (Gottret and Schieber 2006).[3]

TABLE 2. Use of citations and systematic reviews in the WHO and World Bank publications

WHO publications	Total pages	Total refs.	Systematic reviews	Systematic reviews	Total refs.	Total pages	World Bank publications
Contracting World Health Organization. 2005. ***Application of Contracting in Health Systems: Key Messages. Technical Briefs for Policy-Makers Series No. 4***. Geneva: Author.	5	0	**0**	**0**	187	254	**Contracting** Harding, A. and A. Preker, eds. 2003. ***Private Participation in Health Services***. Washington, DC: World Bank.
Healthcare Financing World Health Organization. 2005. ***Achieving Universal Health Coverage: Developing the Health Financing System. Technical Briefs for Policy-Makers Series No. 1***. Geneva: Author.	8	0	**0**	**2**	357	310	**Healthcare Financing** Gottret, P. and G. Schieber. 2006. ***Health Financing Revisited: A Practitioner's Guide***. Washington, DC: World Bank.
Health Human Resources World Health Organization. 2006. ***World Health Report 2006: Working Together for Health***. Geneva: Author.	209	486	**6**	-	-	-	**Health Human Resources** *No publications met the inclusion criteria.*
Tuberculosis Control World Health Organization. 2004. ***Treatment of Tuberculosis: Guidelines for National Programmes (3rd ed.)***. Geneva: Author.	108	14	**0**	-	-	-	**Tuberculosis Control** *No publications met the inclusion criteria.*

TABLE 2. Continued

Tobacco Control World Health Organization. 2004. ***Building Blocks for Tobacco Control: A Handbook***. Geneva: Author.	306	288	**0**	**0**	255	178	**Tobacco Control** de Beyer, J. and L. Waverley, eds. 2003. ***Tobacco Control Policy: Strategies, Successes and Setbacks***. Ottawa and Washington, DC: Research for International Tobacco Control and the World Bank.

Citation practices and the use of systematic reviews in these publications varied greatly across topics and between the two organizations. While all three World Bank publications used extensive citations, only two of the five WHO publications are referenced (i.e., the WHO world health report and the book on tobacco control): one of the other WHO documents cited research evidence rarely and the remaining two did not use referencing at all. Systematic reviews were cited by only two of the eight publications (i.e., one from each organization) and constituted eight of the 1,587 citations that were recorded in the six publications that referenced research evidence (see Table 2) (Buchan and Dal Poz 2002; Buchan et al. 2000; Coomarasamy and Khan 2004; Davis et al. 1995; Ekman 2004; Gosden et al. 2001; Hanson et al. 2001; Littlewood et al. 2005). The total count of citations, however, is artificially raised by the fact that six of the eight publications had end-of-chapter references that often overlapped.

The overviews and searches for additional systematic reviews on the five health topics resulted in the collection of 255 systematic reviews (including updates of systematic reviews), with five for contracting, 12 for healthcare financing, 93 for health human resources, 71 for tuberculosis control and 74 for tobacco control. This collection of systematic reviews consisted of this study's evidence base, which was compared to the recommendations contained in the selected publications.

A total of 14 WHO and seven World Bank recommendations from the eight publications were compared to the research evidence from systematic reviews that were available at the time of their formulation (Table 3) (Lagarde and Palmer 2006; Buchan and Dal Poz 2002; Coomarasamy and Khan 2004; Littlewood et al. 2005; Bordley et al. 2000; Chang et al. 2006; Fichtenberg and Glantz 2002; Gelband 2000, 2006; Grilli et al. 2002a,b; Holland et al. 2005; Horrocks et al. 2002; Jamtvedt et al. 2003; Jamtvedt et al. 2006a,b; Kaper et al. 2005; Laurant et al. 2004; Lexchin and Grootendorst 2004; Lovato et al. 2003; McAlister et al. 2004; Moher et al. 2003, 2005; Mwandumba and Squire 2000, 2001; Serra et al. 2000; Silagy et al. 2001, 2002, 2004; Sowden and Arblaster 2000; Stewart 2006; Thomson O'Brien et al. 2000; Veloski et al. 2006; Volmink and Garner 2000a,b, 2001, 2003, 2006; Volmink et al. 2000; Wellman et al. 2006; Zwarenstein and Bryant 2000). As evaluated by two independent reviewers with almost perfect agreement (kappa=0.95 [0.86, 1.04:

p-value < 0.0005]), five of the 14 WHO and two of the seven World Bank recommendations were consistent with both the direction and nature of effect claims from systematic reviews; a total of 10 WHO and five World Bank recommendations were consistent with the direction of effect claims. Overall, consistency between recommendations and research evidence varied greatly across topic but not between organizations (with user fees in healthcare financing serving as an exception). Whereas every examined recommendation on health human resources and tobacco control was consistent with the direction of effect claims from the available research evidence (of which half were also consistent with the nature of effect claims), the same was not found for any of the tuberculosis control recommendations. While WHO and the World Bank provided contradictory recommendations on social insurance as a healthcare financing mechanism, the fact that no high-quality studies were found by the available systematic review meant that neither the direction nor nature of the effect claims for either recommendation were supported by research evidence. No meaningful patterns, however, emerged across health topics or organizations for the few recommendations that were found to be consistent with the specific nature of effect claims from the available research evidence.

No explanation was found within any of the WHO or World Bank publications for the discrepancies between the recommendations and the existing research evidence from systematic reviews.

Discussion

Statement of principal findings

This study is the first to confirm previous hypotheses and demonstrate with evidence from purposively sampled recommendations-containing publications that systematic reviews are rarely cited by two prominent international organizations and are not consistently used (or at least reported as having been used and then weighed explicitly against competing social, political, economic or ethical considerations) in the development of their recommendations (Oxman et al. 2006). While differences can certainly be identified among the various health topics, overall there appears to be no clear rationale for the consistency between recommendations and research evidence that occurs with some health topics but not others. Neither the recommendations' date of publication nor the differences between health systems and program content recommendations appeared to explain the discrepancies. All publications appeared after the "Guidelines for WHO Guidelines" (WHO 2003), which emphasized the importance of systematic reviews, but before the creation of the WHO Guidelines Review Committee in May 2007 (WHO 2007), the development of the WHO Rapid Advice Guidelines (Schünemann et al. 2007), the introduction of continuing education

TABLE 3. Comparing WHO and World Bank recommendations to the research evidence that was available at the time of their publication

	Research evidence	WHO	Whether to use	Rationale for use	World Bank	Whether to use	Rationale for use
Contracting	Contracting may have a positive impact on service utilization (Lagarde and Palmer 2006)	Contracting improves health systems (2005) *[4 of 5 included studies published by 2004]*	✓	×	Contracting can harness private sector resources for national goals (2003) *[2 of 5 included studies published by 2002]*	✓	×
Healthcare Financing	User fees reduce utilization (Lexchin and Grootendorst 2004; Lagarde and Palmer 2006)	Reduce reliance on high user fees as they diminish access to care (2005) *[16 of 17 included studies published by 2004]*	✓	✓	User fees can be harmonized to improve access to and quality of care while protecting poor (2006) *[All 16 included studies published by 2005]*	×	×
	No evidence on the effects of social insurance (Lagarde and Palmer 2006)	Social insurance can improve coverage (2005)	×	×	Social insurance may not ensure financial sustainability and can be regressive (2006)	×	×
Health Human Resources	Clinically integrated teaching improved knowledge, skills, attitudes and behaviour (Coomarasamy and Khan 2004); early clinical experience enhances medical education (Littlewood et al. 2005)	Early clinical education promotes competence (2006)	✓*	✓*	—	—	—
	Extend use of nursing staff (Buchan and Dal Poz 2002); increasing nurse practitioners enhances patient satisfaction and quality of care (Horrocks et al. 2002); nurses can provide as high-quality care as primary care doctors and achieve as good health outcomes (Laurant et al. 2004)	Experience in substituting nurses for physicians shows that skill delegation or task shifting increases overall workforce productivity (2006)	✓*	×*	—	—	—
	Audit and feedback can be effective in improving professional practice (Thomson O'Brien et al. 2000; Bordley et al. 2000; Jamtvedt et al. 2003, 2006a,b; Veloski et al. 2006)	Audit and feedback can be effective in improving professional practice (2006)	✓*	✓*	—	—	—
	Multidisciplinary collaboration improves outcomes of importance to patients and to healthcare managers (Zwarenstein and Bryant 2000) and reduces hospital admission and all-cause mortality in patients with heart failure (McAlister et al. 2004; Holland et al. 2005; Stewart 2006)	Health workers are more motivated to perform well when their organization and managers encourage teamwork (2006)	✓	×	—	—	—

TABLE 3. Continued

Tuberculosis Control	Direct observation of treatment is no better than self-administered treatment (Volmink and Garner 2000a,b, 2001, 2003, 2006; Volmink et al. 2000)	Directly observed treatment is required to ensure treatment adherence (2004)	X	X	—	—	—
	There may be no benefits for the longer, 6-month treatments under field conditions (Gelband 2000, 2006)	6-month treatment is most effective (2004)	X	X	—	—	—
	Not enough evidence to assess differences between fully intermittent, rifampicin-containing short-course chemotherapy and similar daily therapy in patients with pulmonary tuberculosis (Mwandumba and Squire 2000, 2001); cavitary tuberculosis is best treated with daily drug intake for first 6 months with thrice-weekly drug intake for the continuation phase (Chang et al. 2006)	Thrice-weekly drug intake facilitates observation, reduces costs and inconvenience for the patient and liberates staff time (2004)	X	X	—	—	—
Tobacco Control	Tobacco promotion increases likelihood that adolescents will start to smoke (Lovato et al. 2003); pro-tobacco marketing and media stimulate tobacco use among youth (Wellman et al. 2006)	Comprehensive bans on tobacco product advertising and promotion reduce tobacco consumption (2004)	✓	✓	Complete ban on advertising and promotion of tobacco has a real impact on tobacco control (2003)	✓	✓
	Bans can reduce smoking in public places, but it is not clear whether they reduce overall prevalence or consumption (Serra et al. 2000; Fichtenberg and Glantz 2002; Moher et al. 2003, 2005)	Legislation to prohibit smoking in public places and workplaces reduces tobacco consumption (2004)	✓	X	Ban on smoking in public places has a real impact on tobacco control (2003)	✓	X
	Mass media interventions may be able to prevent smoking among young people, but evidence is not strong (Sowden and Arblaster 2000; Grilli et al. 2000a, b)	Information and advocacy campaigns reduce tobacco consumption (2004)	✓	X	Combination of education and information has real impact on tobacco control (2003)	✓	X
	Nicotine replacement therapy (Silagy et al. 2001, 2002, 2004) and subsidizing cessation interventions can help people quit smoking (Kaper et al. 2005)	Cessation programs to assist those who want to quit smoking reduce tobacco consumption (2004)	✓	✓	Prevention and cessation programs in various settings have a real impact on tobacco control (2003)	✓	✓
			10 / 14	5 / 14		5 / 7	2 / 7

* At least one of the systematic reviews found in the study was cited by the publication that contained this recommendation.

opportunities for WHO staff in guideline development (Hill and Pang 2007) and the development of WHO's strategy on research for health (WHO 2008).

Strengths and weaknesses of the study

As a first attempt at systematically comparing health systems recommendations by two prominent international organizations to the research evidence that was available at the time of their formulation, the study has several strengths: (a) explicit and replicable sampling criteria were used at every stage of the recommendation-identification process and were consistently implemented by two reviewers with high inter-rater agreement; (b) existing overviews of systematic reviews and optimized search strategies were used to identify systematic reviews to compare against the recommendations; (c) comparisons were conducted both conservatively in terms of the direction of effects and more strictly in terms of the nature of effects; and (d) a mix of health topics was chosen, including both health systems topics and more traditional program content.

Several weaknesses of this study must also be recognized: (a) only a small sample of each of the two organizations' recommendations were examined and, in the case of WHO, sometimes as little as one year after the development of "Guidelines for WHO Guidelines" (WHO 2003); (b) comparisons were focused primarily on health systems recommendations, a domain in which systematic reviews have only recently begun to take hold (Lavis et al. 2004); (c) access to research evidence was restricted by the availability of relevant systematic reviews (and the inclusion of high-quality studies in these systematic reviews); and (d) systematic reviews were coded based only on the authors' conclusions (and not on a standardized grading of the recommendations' strength or a rating of the systematic reviews' quality).

Strengths and weaknesses in relation to other studies

This study builds upon previous work as the first attempt to systematically compare health systems recommendations by two prominent international organizations to the research evidence that was available at the time of their formulation. While the use of research evidence in WHO recommendations has been previously examined (Oxman et al. 2006, 2007; Nahar Kabir and Holmgren 2005; Panisset 2005), this study begins to quantify this challenge while offering data on a second international organization, the World Bank, as a comparator. Nevertheless, this study, unlike previous work, did not examine what international organizations are currently doing to support the use of research evidence but rather looked exclusively at the outcome of this process.

Meaning of the study: Possible mechanisms and implications for clinicians and policy makers

Results from this study point to the necessity of implementing and building upon the recommendations of the subcommittee of the WHO Advisory Committee on Health Research that examines the use of research evidence. This group conducted several environmental scans and literature reviews that identified strategies to improve the use of research evidence in recommendation development. Specifically, the subcommittee looked at such issues as priority setting, composition of expert committees, gathering evidence, incorporating other considerations, implementation and evaluation (Oxman et al. 2006). This comprehensive work is certainly an excellent starting point for international organizations' efforts to improve their use of research evidence to inform their recommendations.

However, the existence of the "Guidelines for WHO Guidelines" prior to the publication of the recommendations examined in this study demonstrates the limitations of such operating policies. It is clear that international organizations must not only (a) help to strengthen the research base about health systems and (b) demand the explicit use of research evidence as a standard operating policy, but also support this stipulation by (c) building institutional capacity to acquire, assess, adapt and apply research evidence, (d) allocating the necessary financial and staff resources to use research evidence and (e) adopting appropriate quality control mechanisms for recommendations and publications. A number of practical suggestions for international organizations have been identified for each of these five priority areas that build upon and extend beyond the report from the WHO's Subcommittee on the Use of Research Evidence (Table 4) (Nahar Kabir and Holmgren 2005; CHSRF 2001; Center for Global Development 2006). Given the different mandates, operating modalities and management structures of international organizations, it is likely that each will need to address the practical suggestions presented in rather different ways.

TABLE 4. Possible options to enhance international organizations' use of research evidence

Priority areas	Practical suggestions
1. Strengthen the research base about health systems	• Conduct or commission high-quality studies and systematic reviews in priority areas • Embed evaluation as an essential component of all activities
2. Demand the explicit use of research evidence as a standard operating policy	• Articulate clear policies at the highest levels that require recommendations to be based explicitly on research evidence with recognition that deviation from this policy is acceptable only when the reasons for the deviation are clearly explained • Actively and continually promote awareness for the policy on using research evidence • Build a culture of using research evidence (including systematic reviews) by explaining its importance to staff and reinforcing its value with frequent reminders • Set expectations that all staff in supervisory roles demand the use of research evidence from those reporting to them as part of their annual performance contracts/reviews

TABLE 4. Continued

3. Build institutional capacity to acquire, assess, adapt and apply research evidence	• Offer mandatory and/or optional training sessions on research methods and evidence-informed policy making • Encourage and train staff to use a systematic approach to reviewing the research evidence • Raise the importance of basic research skills as a criterion for employment • Compile and maintain a database of research evidence on relevant health topics with systematic reviews featured prominently • Partner with other organizations to develop an international registry of policy-relevant systematic reviews
4. Allocate the necessary financial and staff resources to use research evidence	• Explicitly earmark resources to departments for the increased time and effort that the use of research evidence requires • Assign a special person within each department whose role includes responsibility for research evidence and its use
5. Adopt appropriate quality control mechanisms for recommendations and publications	• Develop procedures that ensure all publications were informed by an attempt to synthesize the global research evidence (or draw on existing syntheses of this evidence) and meet expected standards • Enlist the help of all staff in supervisory roles to enforce policies on the use of research evidence • Establish external technical advisory committees for each department that review the research evidence used as support in every document before it is published • Adopt external peer review as a precondition for any document to be published with the organization's authorship, endorsement and/or logo • Establish an independent audit unit to continually evaluate the effectiveness of the organization's programming and the foundation of its work in research evidence (e.g., similar to the World Bank's Operations Evaluation Department)

Donor organizations and national governments can also contribute to efforts in this area by demanding international organizations' accountability to the best available research evidence as a minimum expectation, highlighting in various forums the importance of reporting whether, how and why their recommendations were consistent with the direction and nature of effect claims made in available systematic reviews, and using their influence on the governing bodies of international organizations (e.g., WHO's World Health Assembly and the World Bank's Board of Governors) to apply pressure as necessary. Additional financial resources can be specifically allocated to enhance international organizations' use of research evidence, and impact evaluations of health interventions can be systematized. Decision-makers at donor organizations and national governments, and clinicians in general, should also always make sure to critically evaluate the quality and local applicability of recommendations from international organizations prior to their implementation.

Unanswered questions and future research

A dearth of research evidence still exists for evaluating the potential strategies for enhancing the use of research evidence in the development and reporting of recommendations. While a number of practical steps have been suggested, limited high-

quality research evidence exists to prioritize the allocation of resources to support their implementation. Future investigations, however, must give serious consideration to the feasibility and practicality of such measures in recognition of the significant workloads and pressures placed on staff at international organizations. Further research is necessary to test the effectiveness of the practical strategies that have been suggested in this paper and to determine the most effective and feasible ways in which they can be operationalized. Qualitative research is needed to illuminate the factors that influence the use of research evidence by international organizations, and the success of any implemented interventions must also be examined so that the goal of using research evidence as a starting point for recommendations can be achieved.

COMPETING INTERESTS

Steven J. Hoffman worked as an intern for the Alliance for Health Policy and Systems Research (which is co-sponsored by and housed within WHO) while conducting this study. Sara Bennett formerly led the Alliance for Health Policy and Systems Research's secretariat and John N. Lavis serves on its Scientific and Technical Advisory Committee. John N. Lavis also serves as President of the PAHO/WHO Advisory Committee on Health Research and as a member of the WHO Advisory Committee on Health Research

ACKNOWLEDGEMENTS

This study was supported by an Ontario Tobacco Research Unit Ashley Studentship for Research in Tobacco Control and a grant from the McMaster University Bachelor of Health Sciences (Honours) Program. These funders had no role in designing the study, collecting the data, analyzing the results, deciding to publish or preparing the manuscript. Significant in-kind support was also provided by the Alliance for Health Policy and Systems Research. John Lavis receives salary support as the Canada Research Chair in Knowledge Transfer and Exchange.

Correspondence may be directed to: John N. Lavis, McMaster University, HSC-2D3, 1200 Main St. West, Hamilton, ON L8N 3Z5; tel.: 905-525-9140, ext. 22907; fax: 905-529-5742; e-mail: lavisj@mcmaster.ca.

NOTES

1. See Mucciaroni and Quirk (2006) for a study that similarly assessed the validity of effect claims made by elected members of the US Congress based on information that would have been available to them at the time of their statements.
2. This inventory of systematic reviews of governance, financial and delivery arrange-

ments within health systems is now publicly available at <http://www.research-topolicy.ca/search/reviews.aspx>. (Retrieved June 1, 2009.)

3. Full access to an electronic copy of Gottret and Schieber (2006) was purchased for USD$10 on March 21, 2007. This book has since been made available free of charge at <http://siteresources.worldbank.org/INTHSD/Resources/topics/Health-Financing/HFRFull.pdf>. (Retrieved June 1, 2009.)

REFERENCES

Aaserud, M., S. Lewin, S. Innvaer, E.J. Paulsen, A.T. Dahlgren, M. Trommald, L. Duley, M. Zwarenstein and A.D. Oxman. 2005. "Translating Research into Policy and Practice in Developing Countries: A Case Study of Magnesium Sulphate for Pre-Eclampsia." *BMC Health Services Research* 5: 68.

Bordley, C., A. Chelmeinski, P. Margolis, R. Kraus, P. Szilagyi and J. Vann. 2000. "The Effect of Audit and Feedback on Immunization Delivery: A Systematic Review." *American Journal of Preventative Medicine* 18(4): 343–50.

Buchan, J. and M.R. Dal Poz. 2002. "Skill Mix in the Health Care Workforce: Reviewing the Evidence." *Bulletin of the World Health Organization* 80: 575–80.

Buchan, J., M. Thompson and F. O'May. 2000. *Health Workforce Incentive and Remuneration Strategies: A Research Review*. Geneva: World Health Organization.

Canada Health Services Research Foundation (CHSRF). 2001. *Is Research Working for You? A Self-Assessment Tool for Health Service and Policy Organizations*. Ottawa: Author.

Center for Global Development. 2006. *When Will We Ever Learn? Improving Lives through Impact Evaluation*. Washington, DC: Author.

Chang, K.C., C.C. Leung, W.W. Yew, S.L. Chan and C.M. Tam. 2006. "Dosing Schedules of 6 Month Regimens and Relapse for Pulmonary Tuberculosis." *American Journal of Respiratory and Critical Care Medicine* 174(10): 1153–58.

Chopra, M., S. Munro and G. Vist. 2006. *Evidence from Systematic Reviews of Effects to Inform Policy-Making about Optimizing the Supply, Improving the Distribution, Increasing the Efficiency and Enhancing the Performance of Health Workers: A Policy Brief Prepared for the International Dialogue on Evidence-informed Action to Achieve Health Goals in Developing Countries (IDEAHealth) in Khon Kaen, Thailand, 13–16 December 2006*. J.N. Lavis, ed. Geneva: Alliance for Health Policy and Systems Research.

Commission on Health Research for Development. 1990. *Health Research: Essential Link to Equity in Development*. New York: Oxford University Press.

Coomarasamy, A. and K.S. Khan. 2004. "What Is the Evidence That Postgraduate Teaching in Evidence-Based Medicine Changes Anything? A Systematic Review." *British Medical Journal* 329: 1017–21.

Davis, D.A., M.A. Thomson, A.D. Oxman and R.B. Haynes. 1995. "Changing Physician Performance: A Systematic Review of the Effect of Continuing Medical Education Strategies." *Journal of the American Medical Association* 274: 700–5.

de Beyer, J. and L. Waverley, eds. 2003. *Tobacco Control Policy: Strategies, Successes and Setbacks*. Ottawa and Washington, DC: Research for International Tobacco Control and the World Bank.

East African Community. 2006. "Regional East African Community Health (REACH) – Policy Initiative: Prospectus." Retrieved May 28, 2009. <http://www.idrc.ca/uploads/user-S/11551301781REACH_Prospectus.pdf>.

Ekman, B. 2004. "Community-Based Health Insurance in Low-Income Countries: A Systematic Review of the Evidence." *Health Policy and Planning* 19(5): 249–70.

Fichtenberg, C.M. and S.A. Glantz. 2002. "Effect of Smoke-Free Workplaces on Smoking Behaviour: Systematic Review." *British Medical Journal* 325: 188.

Gelband, H. 2000. "Regimens of Less Than Six Months for Treating Tuberculosis [Cochrane Review]." In *The Cochrane Library, Issue 2*. Chichester, UK: John Wiley and Sons.

Gelband, H. 2006. "Regimens of Less than Six Months for Treating Tuberculosis [Cochrane Review]." In *The Cochrane Library, Issue 4*. Chichester, UK: John Wiley and Sons.

Gosden, T., F. Forland, I.S. Kristiansen, M. Sutton, B. Leese, A. Giuffrida, M. Sergison and I. Pedersen. 2001. "Impact of Payment Method on Behaviour of Primary Care Physicians: A Systematic Review." *Journal of Health Services Research and Policy* 6: 44–55.

Gottret, P. and G. Schieber. 2006. *Health Financing Revisited: A Practitioner's Guide*. Washington, DC: World Bank.

Grilli, R., C. Ramsay and S. Minozzi. 2002a. "Mass Media Interventions: Effects on Health Services Utilization [Cochrane Review]." In *The Cochrane Library, Issue 1*. Chichester, UK: John Wiley and Sons.

Grilli, R., C. Ramsay and S. Minozzi. 2002b. "Mass Media Interventions: Effects on Health Services Utilization [Cochrane Review]." In *The Cochrane Library, Issue 2*. Chichester, UK: John Wiley and Sons.

Haines, A., S. Kuruvilla and M. Borchert. 2004. "Bridging the Implementation Gap between Knowledge and Action for Health." *Bulletin of the World Health Organization* 82: 724–31.

Hamid, M., T. Bustamante-Manaog, T. Dung, K. Akkhavong, H. Fu, Y. Ma, X. Zhong, R. Salmela, U. Panisset and T. Pang. 2005. "EVIPNet: Translating the Spirit of Mexico." *Lancet* 366: 1758–60.

Hanson, K., M.K. Ranson, V. Oliveira-Cruz and A. Mills. 2001. "Approaches to Overcoming Health Systems Constraints at a Peripheral Level: A Review of the Evidence." *CMH Working Paper Series WG5:15*. Geneva: World Health Organization Commission on Macroeconomics and Health.

Harding, A. and A. Preker, eds. 2003. *Private Participation in Health Services*. Washington, DC: World Bank.

Hill, S. and T. Pang. 2007. "Leading by Example: A Culture Change at WHO." *Lancet* 369: 1842–44.

Holland, R., J. Battersby, I. Harvey, E. Lenaghan, J. Smith and L. Hay. 2005. "Systematic Review of Multidisciplinary Interventions in Heart Failure." *Heart* 91(7): 899–906.

Horrocks, S., E. Anderson and C. Salisbury. 2002. "Systematic Review of Whether Nurse Practitioners Working in Primary Care Can Provide Equivalent Care to Doctors." *British Medical Journal* 324: 819–23.

Jamtvedt, G., J.M. Young, D.T. Kristoffersen, M.A. Thomson O'Brien and A.D. Oxman. 2003. "Audit and Feedback: Effects on Professional Practice and Health Care Outcomes [Cochrane Review]." In *The Cochrane Library, Issue 3*. Chichester, UK: John Wiley and Sons.

Jamtvedt, G., J.M. Young, D.T. Kristoffersen, M.A. Thomson O'Brien and A.D. Oxman. 2006a. "Audit and Feedback: Effects on Professional Practice and Health Care Outcomes [Cochrane Review]." In *The Cochrane Library, Issue 2*. Chichester, UK: John Wiley and Sons.

Jamtvedt, G., J.M. Young, D.T. Kristoffersen, M.A. O'Brien and A.D. Oxman. 2006b. "Does Telling People What They Have Been Doing Change What They Do? A Systematic Review of the Effects of Audit and Feedback." *Quality and Safety in Health Care* 15(6): 433–36.

Jones, G., R.W. Stekettee, R.E. Black, Z.A. Bhutta, S.S. Morris and the Bellagio Child Survival Study Group. 2003. "How Many Child Deaths Can We Prevent this Year?" *Lancet* 362: 65–71.

Kakad, M. and A.D. Oxman. 2006. *Evidence from Systematic Reviews to Inform Decision-Making towards Achieving the Millennium Development Goals for Reducing Maternal and Child Mortality: A Background Document Prepared for an International Dialogue on Evidence-Informed Action to Achieve Health Goals in Developing Countries (IDEAHealth) in Khon Kaen, Thailand, 13–16 December 2006.* Geneva: Alliance for Health Policy and Systems Research.

Kaper, J., E.J. Wagena, J.L. Severens and C.P. Van Schayck. 2005. "Healthcare Financing Systems for Increasing the Use of Tobacco Dependence Treatment [Cochrane Review]." In *The Cochrane Library, Issue 1*. Chichester, UK: John Wiley and Sons.

Lagarde, M. and N. Palmer. 2006. *Evidence from Systematic Reviews to Inform Decision-Making Regarding Financing Mechanisms That Improve Access to Health Services for Poor People: A Policy Brief Prepared for the International Dialogue on Evidence-Informed Action to Achieve Health Goals in Developing Countries (IDEAHealth) in Khon Kaen, Thailand, 13–16 December 2006*. S. Bennett, ed. Geneva: Alliance for Health Policy and Systems Research.

Laurant, M., D. Reeves, R. Hermens, J. Braspenning, R. Grol and B. Sibbald. 2004. "Substitution of Doctors by Nurses in Primary Care [Cochrane Review]." In *The Cochrane Library, Issue 2*. Chichester, UK: John Wiley and Sons.

Lavis, J.N., H.T.O. Davies, R.L. Gruen, K. Walshe and C.M. Farquhar. 2006. "Working Within and Beyond the Cochrane Collaboration to Make Systematic Reviews More Useful to Healthcare Managers and Policy Makers." *Healthcare Policy* 1(2): 21–33.

Lavis, J.N., A.C. Hammill, M.G. Wilson, J.A. Boyko, J. Grimshaw, A.D. Oxman and S. Flottorp. "Systematic Reviews That Can Inform Health Systems Management and Policy Making." Manuscript under review.

Lavis, J.N., J. Lomas, M. Hamid and N.K. Sewankambo. 2006. "Assessing Country-Level Efforts to Link Research to Action." *Bulletin of the World Health Organization* 84(8): 620–28.

Lavis, J.N., F.B. Posada, A. Haines and E. Osei. 2004. "Use of Research to Inform Policymaking." *Lancet* 364: 1615–21.

Lexchin, J. and P. Grootendorst. 2004. "Effects of Prescription Drug User Fees on Drug and Health Services Use and on Health Status in Vulnerable Populations: A Systematic Review of the Evidence." *International Journal of Health Services* 34(1): 101–22.

Littlewood, S., V. Ypinazar, S.A. Margolis, A. Scherpbier, J. Spencer and T. Dornan. 2005. "Early Practical Experience and the Social Responsiveness of Clinical Education: Systematic Review." *British Medical Journal* 331: 387–91.

Lovato, C., G. Linn, L.F. Stead and A. Best. 2003. "Impact of Tobacco Advertising and Promotion on Increasing Adolescent Smoking Behaviours [Cochrane Review]." In *The Cochrane Library, Issue 3*. Chichester, UK: John Wiley and Sons.

Lush, L., G. Walt and J. Ogden. 2003. "Transferring Policies for Treating Sexually Transmitted Infections: What's Wrong with Global Guidelines?" *Health Policy and Planning* 18(1): 18–30.

McAlister, F.A., S. Stewart, S. Ferrua and J.J.V. McMurray. 2004. "Multidisciplinary Strategies for the Management of Heart Failure Patients at High Risk for Admission: A Systematic Review of Randomized Trials." *Journal of the American College of Cardiology* 44(4): 810–19.

Moher, M., K. Hey and T. Lancaster. 2003. "Workplace Interventions for Smoking Cessation [Cochrane Review]." In *The Cochrane Library, Issue 2*. Chichester, UK: John Wiley and Sons.

Moher, M., K. Hey and T. Lancaster. 2005. "Workplace Interventions for Smoking Cessation [Cochrane Review]." In *The Cochrane Library, Issue 2*. Chichester, UK: John Wiley and Sons.

Montori, V.M., N.L. Wilczynski, D. Morgan, R.B. Haynes and the Hedges Team. 2005. "Optimized Search Strategies for Retrieving Systematic Reviews from MEDLINE: Analytical Survey." *British Medical Journal* 330: 68.

Mucciaroni, G. and P.J. Quirk. 2006. *Deliberative Choices: Debating Public Policy in Congress*. Chicago: University of Chicago Press.

Mwandumba, H.C. and S.B. Squire. 2000. "Fully Intermittent Dosing with Drugs for Tuberculosis [Cochrane Review]." In *The Cochrane Library, Issue 4.* Chichester, UK: John Wiley and Sons.

Mwandumba, H.C. and S.B. Squire. 2001. "Fully Intermittent Dosing with Drugs for Treating Tuberculosis in Adults [Cochrane Review]." In *The Cochrane Library, Issue 4.* Chichester, UK: John Wiley and Sons.

Nahar Kabir, Z. and J. Holmgren. 2005. *Overview of Research Activities at the World Health Organization*. Stockholm: Swedish International Development Cooperation Agency.

Ogden, J., G. Walt and L. Lush. 2003. "The Politics of 'Branding' in Policy Transfer: The Case of DOTS for Tuberculosis Control." *Social Science and Medicine* 57: 179–88.

Oxman, A.D., A. Fretheim and H.J. Schünemann for the Subcommittee on the Use of Research Evidence of the WHO Advisory Committee on Health Research. 2006. "Improving the Use of Research Evidence in Guideline Development: Introduction." *Health Research Policy and Systems* 4: 12.

Oxman, A.D. and G. Guyatt. 2002. "When to Believe a Subgroup Analysis." In G. Guyatt, ed., *Users' Guide to the Medical Literature: A Manual for Evidence-Based Clinical Practice* (pp. 553–65). Chicago: AMA Press.

Oxman, A.D., J.N. Lavis and A. Fretheim. 2007. "The Use of Evidence in WHO Recommendations." *Lancet* 369: 1883–89.

Panisset, U. 2005. "A Review of WHO Recommendations Published in 2005." Unpublished paper.

Schünemann, H.J., S.R. Hill, M. Kakad, G.E. Vist, R. Bellamy, L. Stockman, T. Fosen Wisløff, C.D. Mar, F. Hayden, T.M. Uyeki, J. Farrar, Y. Yazdanpanah, H. Zucker, J. Beigel, T. Chotpitayasunondh, T.T. Hien, B. Özbay, N. Sugaya and A.D. Oxman. 2007. "Transparent Development of the WHO Rapid Advice Guidelines." *PLoS Medicine* 4(5): e119.

Serra, C., C. Cabezas, X. Bonfill and M. Pladevall-Vila. 2000. "Interventions for Preventing Tobacco Smoking in Public Places [Cochrane Review]." In *The Cochrane Library, Issue 3.* Chichester, UK: John Wiley and Sons.

Silagy, C., T. Lancaster, L. Stead, D. Mant and G. Fowler. 2001. "Nicotine Replacement Therapy for Smoking Cessation [Cochrane Review]." In *The Cochrane Library, Issue 3*. Chichester, UK: John Wiley and Sons.

Silagy, C., T. Lancaster, L. Stead, D. Mant and G. Fowler. 2002. "Nicotine Replacement Therapy for Smoking Cessation [Cochrane Review]." In *The Cochrane Library, Issue 4.* Chichester, UK: John Wiley and Sons.

Silagy, C., T. Lancaster, L. Stead, D. Mant and G. Fowler. 2004. "Nicotine Replacement Therapy for Smoking Cessation [Cochrane Review]." In *The Cochrane Library, Issue 3.* Chichester, UK: John Wiley and Sons.

Sowden, A.J. and L. Arblaster. 2000. "Mass Media Interventions for Preventing Smoking in Young People [Cochrane Review]." In *The Cochrane Library, Issue 2.* Chichester, UK: John Wiley and Sons.

Stewart, S. 2006. "Review: Multidisciplinary Interventions Reduce Hospital Admission and All Cause Mortality in Heart Failure." *Evidence-Based Nursing* 9(1): 23.

Thomson O'Brien, M.A., A.D. Oxman, D.A. Davis, R.B. Haynes, N. Freemantle and E.L. Harvey. 2000. "Audit and Feedback: Effects on Professional Practice and Health Care Outcomes [Cochrane Review]." In *The Cochrane Library, Issue 2.* Chichester, UK: John Wiley and Sons.

Travis, P., S. Bennett, A. Haines, T. Pang, Z. Bhutta, A.A. Hyder, N.R. Pielemeier, A. Mills and T. Evans. 2004. "Overcoming Health-Systems Constraints to Achieve the Millennium Development Goals." *Lancet* 364: 900–6.

Veloski, J., J.R. Boex, M.J. Grasberger, A. Evans and D.B. Wolfson. 2006. "Systematic Review of the Literature on Assessment, Feedback and Physicians' Clinical Performance: BEME Guide No. 7." *Medical Teacher* 28(2): 117–28.

Volmink, J. and P. Garner. 2000a. "Interventions for Promoting Adherence to Tuberculosis Management [Cochrane Review]." In *The Cochrane Library, Issue 2*. Chichester, UK: John Wiley and Sons.

Volmink, J. and P. Garner. 2000b. "Interventions for Promoting Adherence to Tuberculosis Management [Cochrane Review]." In *The Cochrane Library, Issue 4.* Chichester, UK: John Wiley and Sons.

Volmink, J. and P. Garner. 2001. "Directly Observed Therapy for Treating Tuberculosis [Cochrane Review]." In *The Cochrane Library, Issue 4.* Chichester, UK: John Wiley and Sons.

Volmink, J. and P. Garner. 2003. "Directly Observed Therapy for Treating Tuberculosis [Cochrane Review]. In *The Cochrane Library, Issue 1.* Chichester, UK: John Wiley and Sons.

Volmink, J. and P. Garner. 2006. "Directly Observed Therapy for Treating Tuberculosis [Cochrane Review]." In *The Cochrane Library, Issue 2.* Chichester, UK: John Wiley and Sons.

Volmink, J., P. Matchaba and P. Garner. 2000. "Directly Observed Therapy and Treatment Adherence." *Lancet* 355(9212): 1345–50. [Erratum in *Lancet* 356: 434.]

Wellman, R.J., D.B. Sugarman, J.R. DiFranza and J.P. Winickoff. 2006. "The Extent to Which Tobacco Marketing and Tobacco Use in Films Contribute to Children's Use of Tobacco: A Meta-Analysis." *Archives of Pediatrics and Adolescent Medicine* 160(12): 1285–96.

Wilczynski, N.L. and R.B. Haynes for the Hedges Team. 2007. "EMBASE Search Strategies Achieved High Sensitivity and Specificity for Retrieving Methodologically Sound Systematic Reviews." *Journal of Clinical Epidemiology* 60: 29–33.

Wong, S.S.L., N.L. Wilczynski and R.B. Haynes. 2006. "Optimal CINHAL Search Strategies for Identifying Therapy Studies and Review Articles." *Journal of Nursing Scholarship* 38(2): 194–99.

World Bank. 2004. *The Millennium Development Goals for Health: Rising to the Challenges*. Washington: Author.

World Bank. 2006. *World Bank Group: Working for a World Free of Poverty*. Washington: Author.

World Health Organization. 2003. "Guidelines for WHO Guidelines." EIP/GPE/EQC/2003.1. Geneva: Author. Retrieved May 28, 2009. <http://whqlibdoc.who.int/hq/2003/EIP_GPE_EQC_2003_1.pdf>.

World Health Organization. 2004a. *World Report on Knowledge for Better Health* (pp. 97–130). Geneva: Author.

World Health Organization. 2004b. *Building Blocks for Tobacco Control: A Handbook*. Geneva: Author.

World Health Organization. 2004c. *Treatment of Tuberculosis: Guidelines for National Programmes* (3rd ed.). Geneva: Author.

World Health Organization. 2005a. *WHA58.34: Ministerial Summit on Health Research*. Fifty-Eighth World Health Assembly, A58/22, 1-7. Geneva: Author.

World Health Organization. 2005b. *Application of Contracting in Health Systems: Key Messages. Technical Briefs for Policy-Makers Series No. 4*. Geneva: Author.

World Health Organization. 2005c. *Achieving Universal Health Coverage: Developing the Health Financing System. Technical Briefs for Policy-Makers Series No. 1*. Geneva: Author.

World Health Organization. 2006a. *Engaging for Health: Eleventh General Programme of Work 2006-2011: A Global Health Agenda*. Geneva: Author.

World Health Organization. 2006b. *World Health Report 2006: Working Together for Health*. Geneva: Author.

World Health Organization. 2007. *WHO Publications: Report by the Secretariat*. EB122/20. Retrieved May 28, 2009. <http://www.who.int/gb/ebwha/pdf_files/EB122/B122_20-en.pdf>.

World Health Organization. 2008. *WHO's Role and Responsibilities in Health Research: Draft WHO Strategy on Research for Health: Report by the Secretariat*. EB124/12. Retrieved May 28, 2009. <http://www.who.int/gb/ebwha/pdf_files/EB124/B124_12-en.pdf>.

World Health Organization Advisory Committee on Health Research. 2006. *Research for Health: A Position Paper on WHO's Role and Responsibilities in Health Research*. ACHR45/05.16/Rev.1. Geneva: WHO.

World Health Organization Task Force on Health Systems Research. 2005. *The Millennium Development Goals Will Not Be Attained without New Research Addressing Health System Constraints to Delivering Effective Interventions: Report of the Task Force on Health Systems Research*. Geneva: WHO.

Zwarenstein, M. and W. Bryant. 2000. "Interventions to Promote Collaboration between Nurses and Doctors [Cochrane Review]." In *The Cochrane Library, Issue 2*. Chichester, UK: John Wiley and Sons.

RESEARCH PAPER

Reasons for Self-Reported Unmet Healthcare Needs in Canada: A Population-Based Provincial Comparison

Raisons invoquées pour la déclaration de besoins non comblés en matière de services de santé au Canada : comparaison provinciale fondée sur la population

by LYN M. SIBLEY, PHD
Postdoctoral Fellow, Institute for Clinical Evaluative Sciences
Health System Performance Research Network, Department of Health Policy, Management and Evaluation, University of Toronto
Toronto, ON

RICHARD H. GLAZIER, MPH, MD
Senior Scientist, Institute for Clinical Evaluative Sciences
Scientist, Centre for Research on Inner City Health, St. Michael's Hospital
Associate Professor, Department of Family and Community Medicine
University of Toronto
Toronto, ON

Abstract

In this study, we compare self-perceived unmet need across Canadian provinces and assess how the reasons for unmet need – problems with availability, accessibility and acceptability – vary. This cross-sectional study uses data from the Canadian Community Health Survey (2.1) conducted in 2003. Overall, 11.7% perceived having had unmet healthcare needs in the previous 12 months. The adjusted provincial rates varied from 13.3% in Manitoba to 7.8% in Prince Edward Island. Among those reporting unmet health service needs, the leading reason was problems of availability of services (54.9%), followed by acceptability (42.8%) and accessibility related to cost or transportation (12.7%). Unmet need due to problems of availability was most likely in Quebec, Newfoundland and Manitoba, while Alberta and British Columbia had the highest likelihood of unmet need due to accessibility problems. Those in British Columbia, Saskatchewan and Manitoba were more likely to report problems of acceptability. The reasons for unmet need vary across provinces, with each reason having different policy implications.

Résumé

Cette étude compare la perception de la population face aux besoins non comblés et évalue la variation des raisons qui mènent à cette perception (raisons liées à des problèmes de disponibilité, d'accessibilité et d'acceptabilité), entre les provinces canadiennes. Cette étude transversale s'appuie sur les données de l'Enquête sur la santé dans les collectivités canadiennes (2.1) effectuée en 2003. En général, 11,7 pour cent des répondants perçoivent avoir eu des besoins non comblés au cours des 12 mois précédents l'enquête. Les taux provinciaux ajustés varient entre 13,3 pour cent au Manitoba et 7,8 pour cent à l'Île-du-Prince-Édouard. Parmi les besoins non comblés déclarés, les raisons principalement invoquées sont liées aux problèmes de disponibilité des services (54,9 pour cent), suivi de l'acceptabilité (42,8 pour cent) et de l'accessibilité en raison des coûts de transport (12,7 pour cent). Les besoins non comblés attribués à la disponibilité sont plus susceptibles d'avoir lieu au Québec, à Terre-Neuve et au Manitoba tandis que pour l'Alberta et la Colombie-Britannique, ce sont les besoins non comblés attribués à l'accessibilité qui sont le plus invoqués. Les résidents de la Colombie-Britannique, de la Saskatchewan et du Manitoba sont plus susceptibles d'invoquer des problèmes liés à l'acceptabilité. Les raisons invoquées pour signaler des besoins non comblés varient entre les provinces, et chacune d'entre elles a ses propres répercussions sur les politiques.

Canadian policy makers have long struggled with how best to provide access to high-quality healthcare to all Canadians. Access to care is of great concern to the general public, who expect equitable distribution of access across the population, regardless of socio-demographic factors and region or province of residence (Hutchison 2007). Often, access to healthcare services is evaluated based on measures of utilization. These measures do not provide information about those who do not use healthcare services, or the adequacy of access of those who do. Self-perceived unmet healthcare need is a commonly used indicator of access to care. This measure is derived from surveys and does not rely on respondents' use of healthcare services, as is the case with utilization-based access measures.

Research using data from the Canadian Community Health Survey (CCHS 1.1) and the National Population Health Survey (NPHS) has shown that the proportion of people reporting unmet healthcare needs rose from 4.2% in 1994/95 to three times that in 2000/01 (12.5%) (Sanmartin et al. 2002). In order to address this potential worsening in access to care, greater understanding is needed about the reasons healthcare needs are not being met and how these reasons vary by region and segment of the population.

Reasons for unmet need can be classified into three categories: availability of services, accessibility and acceptability of available services (Table 1) (Chen and Hou 2002). Unmet need due to problems of *availability* includes too-lengthy wait times, services not available when required and services not available in area. This category of reasons has the strongest policy implications because these factors could potentially be altered by governments and health authorities/regions. Unmet need due to problems of *accessibility* includes reasons related to cost and transportation – both of which also have policy implications. The final category, *acceptability* of available services, is related to personal preferences or circumstances of individuals. Because these reasons are not related to characteristics of healthcare services (with the possible exception of language), their implication for healthcare planning is unclear.

TABLE 1. Reasons for self-perceived unmet need

%	Availability	%	Acceptability	%	Accessibility
35.6	Waiting time too long	9.9	Felt it would be inadequate	11.5	Cost
16.5	Not available when required	8.5	Other	1.6	Transportation
11.0	Not available in area	8.4	Didn't get around to it		
		7.9	Decided not to seek care		
		7.1	Too busy		
		3.7	Didn't know where to go		
		1.7	Dislike doctors/Afraid		
		1.3	Personal/Family responsibilities		
		0.6	Language problems		

Because healthcare delivery and planning occur largely at the provincial level, it is

useful to evaluate the reasons for unmet need by province. Based on data from the 1998/99 NPHS, rates of perceived unmet need ranged from 4.5% in Newfoundland to 8.3% in Manitoba (Wilson and Rosenberg 2002). Differences in reasons for unmet need among some provinces have also been reported; however, these results did not adjust for other determinants of healthcare utilization (Chen and Hou 2002).

The purpose of this study was to assess provincial variation in unmet need in general and across the three categories of reasons: availability, accessibility and acceptability. This study also explored the contribution to unmet need of other determinants, including demographic factors, health status and socio-economic variables.

Methods

This was a cross-sectional study of the population of the 10 Canadian provinces, using data from the Canadian Community Health Survey (CCHS 2.1) conducted in 2003. Self-perceived unmet need was compared across the provinces while taking into account known determinants of access according to Anderson's Health Behaviour Model (Andersen 1995).

The CCHS is a national population health survey aimed at describing the health and health services experiences of Canadians. The survey sample for this study included 111,258 non-proxy survey respondents aged 20 or older who lived in one of the 10 Canadian provinces in 2003. After applying the weights that adjust for the multi-staged cluster sampling design and the distribution of responses, the survey represents approximately 22.6 million people, or 69.5% of the Canadian population. The CCHS excluded residents of Indian reserves, Crown lands, certain remote areas, institutions and full-time members of the Canadian Forces (Statistics Canada 2005).

The outcome variable, self-perceived unmet need, is the response to the survey question, "During the past 12 months, was there ever a time when you felt that you needed healthcare but didn't receive it?" The reasons for unmet need are the response to the question, "Thinking of the most recent time, why didn't you get care?" The reported reasons were categorized into the three categories of availability, accessibility and acceptability as reported by Chen and Hou (Table 1) (Chen and Hou 2002).

The independent predictor variables were selected based on Andersen's Health Behaviour Model (HBM). The HBM is a framework that is designed to assist in the understanding of the determinants of health services use and patient satisfaction (Andersen 1995). These predictors were identified as components of contextual characteristics, need, predisposing characteristics and enabling resources. *Contextual characteristics* were indicated as the province of residence and Statistical Area Classification (SAC), which indicates the rural–urban status of the respondents' municipality of residence (du Plessis et al. 2001).

Two measures of *need* are used in this study: the presence of chronic conditions

and self-rated health status. The measure of chronic conditions indicates whether subjects have zero, one or two or more chronic conditions (Table 2). Self-rated health status has been shown to be strongly related to utilization of healthcare services (Eyles et al. 1991). This measure has the five categories excellent, very good, good, fair and poor, which are rated by survey respondents in response to the question, "In general, would you say your health is…?"

TABLE 2. Chronic conditions

Asthma	Cataracts
Fibromyalgia	Glaucoma
Arthritis or rheumatism	Thyroid condition
High blood pressure	Chronic fatigue syndrome
Migraine headaches	Multiple chemical sensitivities
Diabetes	Schizophrenia
Epilepsy	Mood disorder
Heart disease	Anxiety disorder
Cancer	Other developmental disorder
Stomach or intestinal ulcers	Eating disorder
Effects of stroke	Chronic bronchitis
Bowel disorder/Crohn's or colitis	Emphysema of COPD
Alzheimer's disease or other dementia	Other long-term health conditions

Predisposing characteristics describe an individual's propensity to use healthcare services and are generally demographic factors that are related to utilization and are not easily altered. The predisposing variables used in this study were sex, age, marital status, educational attainment and ethnic or cultural origin. *Enabling resources* are the means that individuals have available to them for the use of healthcare services. The more enabling resources that exist, the greater the likelihood that health services will be used (given that there is a need). Enabling resources include having a regular medical doctor, adequate household income and pharmaceutical insurance, and occupational class.

The analytical approach for this study consisted of constructing multivariate logistic regression models following the steps outlined by Hosmer and Lemeshow (2000) and calculating least squared means to determine an adjusted percentage for each province. The CCHS used a probability sample – that is, each subject was assigned a weight indicating the number of individuals in the population that they are meant to represent. Because of the complex nature of the survey design, a bootstrap re-sampling technique was used to estimate the adjusted variances and confidence intervals.

Results

Overall, 11.7% reported having had unmet healthcare needs in the previous 12 months. Table 3 gives the demographic distribution of the study population and those

reporting self-perceived unmet need. Unmet need was more common among women, younger people, those with higher educational attainment and those with lower household income. Figure 1 shows the unadjusted and adjusted rate of self-perceived unmet need by province. The unadjusted provincial rates for overall unmet need varied from 13.1% in Quebec to 8.2% in Prince Edward Island. Adjusting for other factors associated with unmet need resulted in slight changes in the rank order, with the highest rate in Manitoba (13.3%) and the lowest in Prince Edward Island (7.8%).

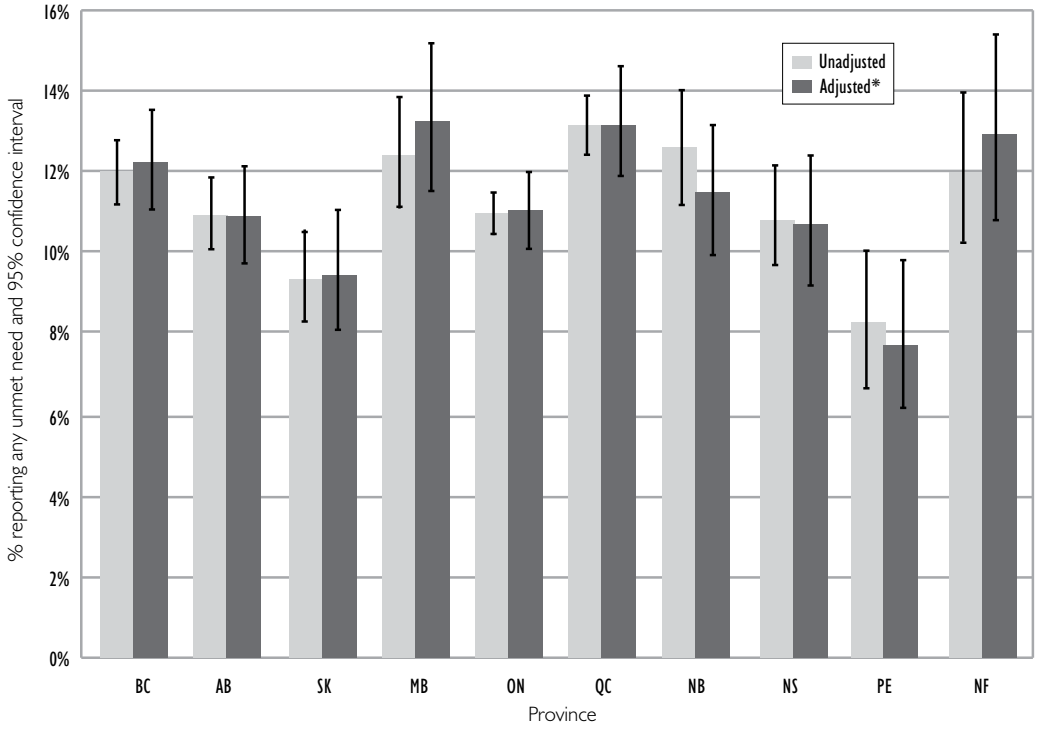
TABLE 3. Distribution of study population and self-perceived unmet need

Variable	Study population (%)	Reported unmet need (%)
Sex		
Female	51.3	13.1
Male	48.7	10.1
Age		
20 to 29 years	18.4	15.2
30 to 39 years	19.9	13.5
40 to 49 years	22.5	12.2
50 to 59 years	17.6	10.6
60 to 69 years	11.1	7.9
70 to 79 years	7.6	7.1
80+ years	3.1	4.7
Educational Attainment		
< Secondary school graduation	18.5	9.9
Secondary school graduation	19.3	10.3
Some post-secondary	7.7	14.4
Post-secondary graduation	54.5	12.4
Income Adequacy		
Low income	7.6	16.0
Middle or high income	80.2	11.4
Not stated	12.3	10.8
Province		
British Columbia	13.4	12.0
Alberta	9.7	10.9
Saskatchewan	3.0	9.3
Manitoba	3.4	12.4

TABLE 3. Continued

Variable	Study population (%)	Reported unmet need (%)
Ontario	38.7	11.0
Quebec	24.2	13.1
New Brunswick	2.4	12.5
Nova Scotia	3.0	10.9
Prince Edward Island	0.4	8.2
Newfoundland	1.7	12.0

FIGURE 1. Self-perceived unmet need by province



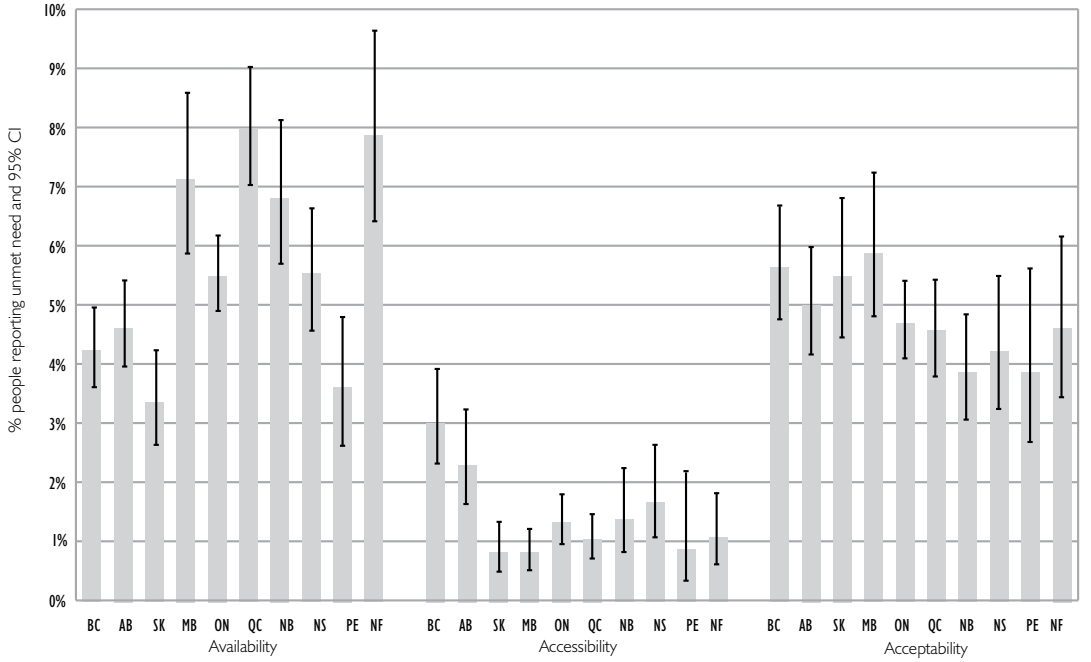
* Adjusted for rural–urban status chronic conditions, self-rated health, sex, age, marital status, educational attainment, ethic origin, having a regular medical doctor, income adequacy, pharmaceutical insurance and occupational class.

Among those reporting unmet health services needs, the leading reason was problems with availability of services (54.9%), followed by acceptability (42.8%) and accessibility (12.7%), respectively. (Because respondents could select more than one reason, the percentages do not total 100%.) Table 1 shows the breakdown by reasons within each category.

The adjusted percentages of self-perceived unmet need by reason are illustrated

by province in Figure 2. Unmet healthcare need due to problems of availability was most likely in Quebec, Newfoundland and Manitoba and least likely in Saskatchewan, Prince Edward Island, British Columbia and Alberta. Alberta and British Columbia had the highest likelihood of unmet need due to problems of accessibility, with little variation among the other provinces. There was less variation in unmet need due to problems of acceptability, with British Columbia, Saskatchewan and Manitoba more likely to report problems and New Brunswick, Nova Scotia and Prince Edward Island less likely.

FIGURE 2. Unmet need by reported reason*



* Adjusted for rural–urban status chronic conditions, self-rated health, sex, age, marital status, educational attainment, ethic origin, having a regular medical doctor, income adequacy, pharmaceutical insurance and occupational class.

The placement of each province within the rank order varies depending on the stated reason (Table 4). Only two provinces had a constant ranking for all three causes: Ontario, with mid-range rankings, and Prince Edward Island, with low levels of unmet need for all reasons. Manitoba showed the most notable differences, with the highest rate of unmet need due to acceptability problems and the lowest rate for problems of accessibility. British Columbia and Alberta, the two most western provinces, had the highest percentage of unmet need due to problems of accessibility, with moderately high levels of acceptability-related unmet need and low levels of availability-

related unmet need. Quebec and Newfoundland, two of the most eastern provinces, both had moderate to low levels of unmet need due to acceptability and accessibility, and the highest level of need due to availability. Because problems of availability were most common, they were most closely aligned with all-cause unmet need.

TABLE 4. Rank order of provinces by adjusted* rates of self-perceived unmet need, overall and by reason

Province	Overall unmet need	Reason for unmet need		
		Availability	Accessibility	Acceptability
BC	4	8	1	2
AB	7	7	2	4
SK	9	10	9	3
MB	1	3	10	1
ON	6	6	5	5
QC	2	1	7	7
NB	5	4	4	10
NS	8	5	3	8
PE	10	9	8	9
NF	3	2	6	6

1 = highest/most unmet need; 10 = lowest/least unmet need

* Adjusted for rural–urban status chronic conditions, self-rated health, sex, age, marital status, educational attainment, ethnic origin, having a regular medical doctor, income adequacy, pharmaceutical insurance and occupation class.

Table 5 shows the adjusted odds ratios for all factors associated with unmet need that were controlled for in this analysis. Residents of rural communities were less likely to report unmet need overall or due to problems of availability or accessibility. Although they follow the same trend, differences across the rural–urban spectrum in unmet need due to problems of acceptability were small (to view Table 5 go to: http://www.longwoods.com/product.php?productid=20934).

Higher need was associated with increased odds of reporting unmet need overall and for each of the three reasons. There were some differences among the predisposing characteristics. Women were more likely to report unmet need for each reason. Age was negatively associated with reporting unmet need overall and for each of the three reasons. Level of educational attainment had a strong association; those with the highest level of education were most likely to report unmet need overall and need due to problems of availability or accessibility. Some differences were observed among the

enabling resources. People without a regular medical doctor were more likely to report unmet healthcare need for each of the three reasons. People in the lowest income quintile were more likely to report unmet need due to problems of accessibility. People without pharmaceutical insurance were much more likely to report unmet need related to problems of accessibility.

Discussion

We found provincial variations in unmet need overall, and large variations in reasons for unmet need among some provinces. Overall rates of unmet need reported in 2003 did not increase from the 2000/01 cycle of the CCHS (Sanmartin et al. 2002). The overall rate for Canada (11.7%) was lower than the rate reported for the United States population (18%) but higher than the estimated rate for the insured population of the United States (6.8%) (Pagan and Pauly 2006).

The 2003 data used in this study show Quebec having the highest unadjusted rate of unmet need; this figure is more than double that found in the 1998/99 NPHS (Wilson and Rosenberg 2002). Whether organizational factors might have contributed to this change in self-reported unmet need is unknown; however, over the time in question (1999 to 2003), the *Chaoulli* case was working its way through the courts in Quebec (Flood and Xavier 2008; Pinker 1999). The media attention that was given to this claim – that unduly long wait times for necessary healthcare violated the Quebec *Charter of Human Rights and Freedoms* – may have altered the Quebec public's perception of the availability and accessibility of healthcare services and thus influenced their responses to this survey question.

The province with the lowest level of unmet need in 2003 was Prince Edward Island. Although its level was higher than that reported in 1998/99, the province did not change substantially in rank, moving from the second lowest to lowest (Wilson and Rosenberg 2002). Manitoba had the second highest unadjusted rate and the highest adjusted rate – not a change in rank from 1998/99, when it had the highest unadjusted rate (Wilson and Rosenberg 2002). Adjusted provincial comparisons of self-reported unmet need have not previously been reported. Because of the smaller sample sizes in the NPHS, statistically significant relationships among many of the factors associated with the reasons for unmet need could not be identified (Chen and Hou 2002; Wilson and Rosenberg 2002).

This study shows availability to be the most common category of reasons for unmet need, while previous research based on 1998/99 data showed availability as the second most common reason (Chen and Hou 2002). The most common single reason related to availability was long waiting times; this was also the most common single reason in 1998/99 and 2000/01 (Sanmartin et al. 2002). The residents of the provinces of Quebec, Newfoundland and Manitoba were most likely to report unmet

need due to problems of availability. This finding does not correlate directly with the supply of family physicians in these provinces in the survey year, 2003. At that time, Quebec had 104 family physicians per 100,000 population, a figure higher than the national average of 96, while Manitoba had less than the national average, with 92 per 100,000, and Newfoundland had about average (CIHI 2007). These findings also do not correlate with reported wait times for specialists or surgery in that period (Esmail and Walker 2003).

The second most common category of reasons for unmet need is acceptability; in 1998/99, this was the most common reason (Chen and Hou 2002). These reasons are related to personal preferences or circumstances of individuals and are mostly unrelated to characteristics of healthcare services.

The least common reasons for unmet need were those related to accessibility, reported at the same rate as in 1998/99. Residents of British Columbia and Alberta were most likely to have unmet need due to problems of accessibility. This finding may be related to population distribution in these provinces, with the majority of tertiary services centralized at a few locations, although this analysis does control for rural–urban status. The majority of people who reported problems of accessibility cited cost as the primary barrier. Health insurance premiums account for the largest proportion of out-of-pocket healthcare costs in Canada. In 2002, British Columbia, Alberta and Quebec were the only provinces that had public healthcare premiums in place (Luffman 2005); however, because these premiums are collected by the government (often as a payroll deduction) and not at the point of care, this factor is unlikely to account for higher rates of unmet need due to cost in British Columbia and Alberta. There is no evidence that higher private insurance premiums are charged in these two provinces. The third most common category of out-of-pocket costs is eye care goods and services; in 2002, routine eye care for those between the ages of 18 and 65 was delisted from the BC health insurance plan. However, many other provinces had not covered routine eye care prior to that – Alberta, Saskatchewan, Manitoba, Quebec, Nova Scotia, Prince Edward Island and Newfoundland (Stabile and Ward 2006). There is no evidence that residents of British Columbia or Alberta pay higher out-of-pocket costs for the other common categories of dental services, prescription drugs or other drugs (Luffman 2005).

Unmet need due to problems of availability is the most common and most variable reason across provinces; it also has the greatest potential for policy intervention. Barriers to availability include too-lengthy waiting time, lack of services when required and lack of services in a particular area – all factors that governments and health authorities/regions could potentially alter. Strategies to address these potential barriers to access include increasing available services through the use of primary care teams, non-physician care providers such as physician assistants or nurse practitioners, and telephone advisory services. Some areas of Canada have successfully implemented

telemedicine programs that expand the delivery of services in dermatology, radiology, cardiology and diabetes (Cheung et al. 1998; Dunscombe and Roberts 2001; Jin et al. 2003; Reid et al. 1998). Decentralized service delivery can also be implemented to reduce travel time from patients' homes to healthcare services and associated out-of-pocket costs (Roberts et al. 2002; Seto 2008). Given that a too-lengthy wait time is the most common reason for reporting unmet need, particular attention should be focused on this barrier. Little is known about waiting times for primary care; international comparisons show that Canada has a great deal of room to improve in access to primary care (Schoen et al. 2005; Walberg et al. 2008), and that enhanced access is possible through better scheduling practices, without increasing costs or healthcare personnel (Murray and Berwick 2003). There is also evidence that surgical wait times can be reduced by centralizing wait lists and wait list management (Priest et al. 2007).

While unmet need due to availability has increased since 1998/99 (Chen and Hou 2002), it is unclear whether actual availability, or just public perception, has changed. Either way, the problem of availability is important to policy makers and healthcare providers particularly in Quebec, Newfoundland and Manitoba, where the lack is greatest. Also important is the higher rates of perception of unmet need due to accessibility in British Columbia and Alberta, where the additional travel time and related costs may be preventing people from getting needed healthcare services. Unmet need due to problems of acceptability presents a quandary, as it generally results from individual patient perceptions and not necessarily from factors that can be addressed by health policy. Further research to understand acceptability would help with the interpretation of this variable.

Limitations

The limitations of this study are largely related to the design and conduct of the Canadian Community Health Survey (CCHS). Because the study is based on survey data, there is a risk of recall bias; respondents were asked about unmet need and the reason for it in only the previous 12 months, an approach that could potentially lead to an underestimation of problems with unmet needs. There are also limitations related to the sample selection for the survey, the most notable being the exclusion of a large number of Aboriginal Canadians, an omission that may result in overestimating the level of access in rural areas. While this study describes some characteristics of unmet need and the variation across provinces, it is unable to elucidate causes for this variation.

Conclusion

This study found that after controlling for other factors, higher rates of unmet need

were reported among people who resided in urban communities, had poorer health status, had physician-diagnosed chronic conditions, were female, were of younger age, had more education, had lower income, did not have a regular medical doctor and did not have pharmaceutical insurance. These are similar to the findings of Kasman and Badley (2004), based on data from the 2001 CCHS. The odds ratios for most determinants of unmet need except province were similar across the categories of reasons.

Future research on self-perceived unmet need should focus on distinguishing between unmet need that is related to public and personal perceptions versus that which is directly mutable by government and health policy makers. These further analyses could help identify factors that are associated with provincial variation, such as the supply of physicians and services, and the location and distribution of services within provinces.

ACKNOWLEDGEMENTS

This study was supported by the Institute for Clinical Evaluative Sciences (ICES), which is funded by an annual grant from the Ontario Ministry of Health and Long-Term Care (MOHLTC). The opinions, results and conclusions reported in this paper are those of the authors and are independent from the funding sources. No endorsement by ICES or the Ontario MOHLTC is intended or should be inferred. Lyn Sibley was supported by a postdoctoral fellowship from the Canadian Institute of Health Research and the Institute for Health Services and Policy Research (CIHR–IHSPR).

Correspondence may be directed to: Lyn M. Sibley, PhD, Postdoctoral Fellow, Health System Performance Research Network, Department of Health Policy, Management and Evaluation, University of Toronto, 155 College Street – 425, Toronto ON M5T 3M6; tel.: 416-978-5017; e-mail: Lyn.Sibley@utoronto.ca.

REFERENCES

Andersen, R.M. 1995. "Revisiting the Behavioral Model and Access to Medical Care: Does It Matter?" *Journal of Health and Social Behavior* 36(1): 1–10.

Canadian Institute for Health Information (CIHI). 2007. *Supply, Distribution and Migration of Canadian Physicians, 2006.* Retrieved May 27, 2009. <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=PG_870_E&cw_topic=870&cw_rel=AR_14_E#full>.

Chen, J. and F. Hou. 2002. "Unmet Needs for Health Care." *Health Reports* 13(2): 23–34.

Cheung, S.T., R.F. Davies, K. Smith, R. Marsh, H. Sherrard and W.J. Keon. 1998. "The Ottawa Telehealth Project." *Telemedicine Journal* 4(3): 259–66.

du Plessis, V., R. Beshiri, R.D. Bollman and H. Clemenson. 2001. "Definitions of Rural." *Rural and Small Town Canada Analysis Bulletin 3(3).* Cat. no. 21-006-XIE2001003. Ottawa: Statistics

Canada. Retrieved May 27, 2009. <http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=21-006-XIE2001003&lang=eng>.

Dunscombe, P. and G. Roberts. 2001. "Radiotherapy Service Delivery Models for a Dispersed Patient Population." *Clinical Oncology* (Royal College of Radiologists) 13(1): 29–37.

Esmail, N. and M. Walker. 2003. *Waiting Your Turn: Hospital Waiting Lists in Canada* (13th ed.). Vancouver: The Fraser Institute.

Eyles, J., S. Birch, S. Chambers, J. Hurley and B. Hutchison. 1991. "A Needs-Based Methodology for Allocating Health Care Resources in Ontario, Canada: Development and an Application." *Social Science and Medicine* 33(4): 489–500.

Flood, C.M. and S. Xavier. 2008. "Health Care Rights in Canada: The Chaoulli Legacy." *Medicine and Law* 27(3): 617–44.

Hosmer, D.W. and S. Lemeshow. 2000. *Applied Logistic Regression*. New York: John Wiley & Sons.

Hutchison, B. 2007. "Disparities in Healthcare Access and Use: Yackety-Yack, Yackety-Yack." *Healthcare Policy* 3(2): 10–13.

Jin, A., D. Martin, D. Maberley, K. Dawson, D. Seccombe and J. Beattie. 2003. "Evaluation of a Mobile Diabetes Care Telemedicine Clinic Serving Aboriginal Communities in Northern British Columbia, Canada." *Circumpolar Health* 62(2): 124–28.

Kasman, N.M. and E.M. Badley. 2004. "Beyond Access: Who Reports That Health Care Is Not Being Received When Needed in a Publicly Funded Health Care System?" *Canadian Journal of Public Health* 95(4): 304–8.

Luffman, J. 2005. "Out-of-Pocket Spending on Prescription Drugs." *Perspectives on Labour and Income* 6(9): 5–13.

Murray, M. and D.M. Berwick. 2003. "Advanced Access: Reducing Waiting and Delays in Primary Care." *Journal of the American Medical Association* 289(8): 1035–40.

Pagan, J.A. and M.V. Pauly. 2006. "Community-Level Uninsurance and the Unmet Medical Needs of Insured and Uninsured Adults." *Health Services Research* 41(3 Pt. 1): 788–803.

Pinker, S. 1999. "The Chaoulli Case: One-Tier Medicine Goes on Trial in Quebec." *Canadian Medical Association Journal* 161(10): 1305–6.

Priest, A., A. Rachlis and M. Cohen. 2007. "Why Wait? Public Solutions to Cure Surgical Waitlists." Vancouver: Canadian Centre for Policy Alternatives and the BC Health Coalition.

Reid, D.S., L.E. Weaver, J.M. Sargeant, M.J. Allen, W.F. Mason, P.J. Klotz and D.B. Langille. 1998. "Telemedicine in Nova Scotia: Report of a Pilot Study." *Telemedicine Journal* 4(3): 249–58.

Roberts, G.H., P.B. Dunscombe and R.S. Samant. 2002. "Geographic Delivery Models for Radiotherapy Services." *Australasian Radiology* 46(3): 290–94.

Sanmartin, C., C. Houle, S. Tremblay and J.M. Berthelot. 2002. "Changes in Unmet Health Care Needs." *Health Reports* 13(3): 15–21.

Schoen, C., R. Osborn, P.T. Huynh, M. Doty, K. Zapert, J. Peugh and K. Davis. 2005 (November 3). "Taking the Pulse of Health Care Systems: Experiences of Patients with Health Problems in Six Countries." *Health Affairs (Millwood) Web Exclusives: W5–25*. Retrieved May 27, 2009. <http://content.healthaffairs.org/cgi/content/abstract/hlthaff.w5.509>.

Seto, E. 2008. "Cost Comparison between Telemonitoring and Usual Care of Heart Failure: A Systematic Review." *Telemedicine Journal and E-Health* 14(7): 679–86.

Stabile, M. and C. Ward. 2006. "The Effects of Listing Public Health Care Services." In C. Beach, R. Chaykowski, S. Shortt, F. St-Hilaire and A. Sweetman, eds., *Health Services Restructuring: New Evidence and New Directions*. Kingston, ON: McGill-Queen's University Press.

Statistics Canada. 2005. *Canadian Community Health Survey 2003: User Guide for the Public Use Microdata File*. Cat. no. 82M0013XCB. Ottawa: Author.

Walberg, M., A. Björnberg and R. Nagy. 2008. Euro-Canada Health Consumer Index 2008. *Health Consumer Powerhouse AB and Frontier Centre for Public Policy*. Retrieved May 27, 2009. <http://www.fcpp.org/pdf/ECHCI2008finalJanuary202008.pdf>.

Wilson, K. and M.W. Rosenberg. 2002. "The Geographies of Crisis: Exploring Accessibility to Health Care in Canada." *Canadian Geographer* 46(3): 223–34.

ONLINE EXCLUSIVE

Research Paper

Primary Care Organization and Outcomes of an Emergency Visit among Seniors

Organisation des soins primaires et résultats pour les aînés qui se rendent dans les services des urgences pour consultation

JANE MCCUSKER, DANIÈLE ROBERGE, ANTONIO CIAMPI, JEAN-FRÉDÉRIC LÉVESQUE, RAYNALD PINEAULT, ÉRIC BELZILE ET DANIELLE LAROUCHE

Abstract

This study explored whether organizational characteristics of primary care services provided by area of residence in two Quebec regions are related to outcomes of an emergency department (ED) visit among seniors discharged home. Provincial administrative databases on a sample of seniors who made an ED visit and their 30-day outcomes were linked by area of residence to data from a survey of key informants from primary care clinics. Measures of organizational characteristics included three scales derived from principal components analysis and one theoretically derived global score that measured the degree of conformity to characteristics of ideal emerging primary care models. In multivariate analyses, adjusting for patient characteristics, patients living in areas in the lowest quartile for the global score had higher rates of return ED visits without hospitalization. Emerging primary care organizational models along the lines currently being pursued in Quebec may help to reduce the growing burden of ED care of seniors.

Résumé

Cette étude avait comme objectif de voir si les caractéristiques de l'organisation des soins primaires offerts selon les zones de résidence, dans deux régions du Québec, sont liées aux résultats obtenus dans les services des urgences (SU) pour les aînés qui y ont reçu un congé après une consultation. Les données administratives provinciales portant sur un échantillon d'aînés qui se sont rendus aux SU pour consultation, ainsi que les résultats obtenus au cours de 30 jours suivant la consultation, ont été mises en relation (en fonction des zones de résidence) avec les données d'un sondage mené auprès d'informateurs clés provenant des cliniques de soins primaires. Les mesures des caractéristiques de l'organisation comprenaient trois échelles dérivées de l'analyse en composantes principales ainsi qu'une note globale, dérivée théoriquement, qui a servi à mesurer le degré de conformité face aux caractéristiques des modèles idéaux émergeants pour les soins primaires. Selon les analyses multivariables, ajustées en

fonction des caractéristiques des patients, les résidents des zones qui ont obtenu le plus faible quartile pour la note globale avaient de plus haut taux de retour aux SU sans hospitalisation. Les modèles émergeants pour l'organisation des soins primaires qui sont conformes aux lignes directrices actuellement favorisées au Québec peuvent contribuer à réduire le fardeau grandissant des soins pour les aînés dans les SU.

To view the full article, please visit
http://www.longwoods.com/product.php?productid=20935

ONLINE EXCLUSIVE

Research Paper

Three Policy Issues in Deciding the Cost of Nursing Home Care: Provincial Differences and How They Influence Elderly Couples' Experiences

Trois enjeux politiques en matière de décisions sur les coûts des services en maison de soins infirmiers : différences entre les provinces et influences sur l'expérience des couples aînés

ROBIN L. STADNYK

Abstract

Nursing home care is subsidized in all Canadian provinces, but residents must personally contribute to the cost. This paper explores policy issues that have led to differences in costs of nursing home care among provinces, and how policy and cost differences influence the experiences of married couples when one spouse requires nursing home care. The paper is based on a multiple-case study of three Canadian provinces, each of which had a different system for determining personal contributions to the cost of care. Cross-case analysis of payment systems showed that provinces addressed three main policy issues in determining the cost of care: (a) what costs should be the responsibility of nursing home residents, (b) how subsidies should be determined and (c) how community-dwelling spouses of nursing home residents should be assured of an adequate income. In provinces with policies that resulted in higher care costs to couples and lower amounts of income and assets available to the community-dwelling spouses, study participants described reduced discretionary spending, increased financial concerns and perceptions of system unfairness. This paper discusses the implications of these three policy issues and recent related changes to provincial policies.

Résumé

Les maisons de soins infirmiers sont subventionnées dans toutes les provinces, mais les résidents doivent personnellement contribuer aux coûts. Cet article examine les enjeux politiques qui ont mené à des différences entre les provinces quant aux coûts pour les services en maison de soins infirmiers. Il examine également de quelle façon les politiques et les différences de coûts influent sur l'expérience des couples mariés où l'un des deux conjoints nécessite des services en maison de soins infirmiers. L'article se fonde sur une étude de cas multiples effectuée dans trois provinces canadiennes, lesquelles emploient différents systèmes pour déterminer le montant des contributions personnelles au coût des soins. L'analyse transversale des systèmes de paiement montre que les provinces ont fait face à trois principaux enjeux politiques au moment de déterminer le coût des soins : (a) quels coûts devraient être sous la responsabilité des résidents en maisons de soins infirmiers, (b) comment doit-on déterminer la nature des subventions (c) comment peut-on assurer un revenu adéquat pour les conjoints qui demeurent dans la communauté. Les participants à l'étude qui vivent dans les provinces où les politiques donnent lieu à des coûts de services plus élevés pour les couples et à un revenu et des biens moindres pour le conjoint qui demeure dans la communauté indiquent une réduction de leurs dépenses discrétionnaires, un accroissement des préoccupations financières et une perception d'injustice devant le système. Nous abordons les répercussions de ces trois enjeux politiques ainsi que les récents changements liés aux politiques provinciales.

To view the full article, please visit
http://www.longwoods.com/product.php?productid=20936

ONLINE EXCLUSIVE

Research Paper

Aging in Atlantic Canada: Service-Rich and Service-Poor Communities

Vieillir dans le Canada atlantique : communautés riches en services et communautés pauvres en services

JAMIE DAVENPORT, THOMAS A. RATHWELL AND MARK W. ROSENBERG

Abstract

The delivery of services for seniors in Canada is increasingly complex and challenging. Communities across Canada age at different rates, and the forces underlying the differ-

ences, such as "aging in place" and migration, vary from community to community. We have identified two types of aging communities: service-rich communities, in which seniors have good health status and better amenities, and service-poor communities, in which seniors have poor health status and limited amenities. We also report on results for Atlantic Canada from a national study of service provisions. Three issues stand out: (a) the impact on communities of migration and aging in place, (b) the factors that distinguish service-rich and service-poor communities and (c) the conditions necessary to create a service-rich community. All levels of government in Atlantic Canada must work together to develop policies and programs that create and sustain service-rich communities.

Résumé

Au Canada, la prestation de services pour les aînés est de plus en plus complexe et pose de plus en plus de défis. Les communautés au Canada vieillissent à des rythmes différents et les forces sous-jacentes à ces différences (telles que le « vieillissement sur place » et les migrations) varient d'une communauté à l'autre. Nous avons déterminé deux types de communautés vieillissantes : les communautés riches en services, dans lesquelles les aînés présentent un bon état de santé et où les installations sont meilleures, et les communautés pauvres en services, dans lesquelles les aînés présentent un faible état de santé et où les installations sont limitées. Nous faisons également rapport, dans le cadre de la région de l'Atlantique, sur une étude nationale portant sur la prestation des services. Trois enjeux s'en dégagent : (a) l'impact, sur les communautés, de la migration et du vieillissement sur place, (b) les facteurs qui distinguent les communautés riches en services de celles pauvres en services et (c) les conditions nécessaires pour mettre en place une communauté riche en services. Dans le Canada atlantique, tous les niveaux de gouvernement doivent travailler de concert pour élaborer des politiques et des programmes qui permettent la mise en place et le maintien de communautés riches en services.

To view the full article, please visit
http://www.longwoods.com/product.php?productid=20937

Pratiques et Organisation des Soins

Volume 40, Number 2 / April – June 2009

Healthcare Policy/Politiques de Santé and the French publication *Pratiques et Organisation des Soins*, publish each other's Table of Contents and relevant articles – subject to editorial review. For more information on *Pratiques et Organisation des Soins* visit http://www.longwoods.com/pages.php?pageid=119.

Original Research

Knowledge synthesis

Pratiques et Organisation des Soins

Volume 40 - Numéro 2 / avril – juin 2009

Politiques de Santé/Healthcare Policy et la revue française *Pratiques et Organisation des Soins* publient réciproquement leurs tables des matières ainsi que des articles pertinents, sous réserve de révision. Pour plus de renseignements sur la revue *Pratiques et Organisation des Soins*, veuillez consulter http://longwoods.com/pages.php?pageid=119.

Recherches originales

Synthèse

The Canadian Institutes of Health Research (CIHR)
is a proud supporter of *Healthcare Policy/Politiques de Santé.*

CIHR IRSC
Canadian Institutes of Health Research | Instituts de recherche en santé du Canada

CIHR provides financial and in-kind support for the publication of *Healthcare Policy/Politiques de Santé*, and has played a key role in the journal's inception and development.

Longwoods Publishing gratefully acknowledges the financial support of the following organizations:

CHSRF FCRSS
Canadian Health Services Research **Foundation**
Fondation canadienne de la recherche sur les services de santé

CIHR IRSC
Canadian Institutes of Health Research | Instituts de recherche en santé du Canada

Institute of Aging
Institute of Infection and Immunity

Canadian Agency for Drugs and Technologies in Health
Agence canadienne des médicaments et des technologies de la santé

CAHSPR ACRSPS
Canadian Association for Health Services and Policy Research
l'Association canadienne pour la recherche sur les services et les politiques de la santé

Saskatchewan Health Research FOUNDATION

By invitation only.

Breakfast *with the* Chiefs

longwoods.com/events

This year we count among our guest Chiefs:
Dr. Alan Hudson | Matt Anderson | Dr. Vivek Goel | Murray T. Martin, | Cliff Nordal
Glenda Yeates | Graham Scott | Dr. Brian Postl | Dr. Michael Guerriere | Ida Goodreau
Mary Ferguson Pare | Adalsteinn Brown | Hon. George Smitherman
Tom Closson | Ross Baker | Joseph D'Cruz | Sarah Kramer

Longwoods.com

Policy is always in the making. This journal is designed to serve readers from diverse backgrounds including health system managers, practitioners, politicians and their administrators, educators and academics. Our authors come from a broad range of disciplines including social sciences, humanities, ethics, law, management sciences and knowledge translation. They want good policy – a foundation for best practices.

www.healthcarepolicy.net