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POLICY

Politiques de Santé

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

Volume 4 • Number 2

Data Matters • Discussion and Debate • Research Papers
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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.

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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.

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In the last print issue of Healthcare Policy 4.1, Dr. Stephen Hwang's affiliations were published incorrectly.

His correct affiliations are as follows:

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Errata

Dans le dernier numéro de Politiques de Santé (4.1), il y a eu erreur dans la description des fonctions du Dr Stephen Hwang.

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EDITORIAL

Sustaining Canadian Medicare

The underlying principle of Canadian medicare – access to essential care based on need – commands the enduring loyalty of the Canadian public. How is it, then, that this principle remains insecure, and that attempts to extend it beyond physician and hospital services repeatedly falter?

Despite much noise to the contrary, the issue is not one of affordability. The claim that the Canadian model of publicly funded healthcare is, or will soon become, fiscally unsustainable has been resoundingly debunked (see, e.g., Evans 2005, 2006; Lewis 2007). If the United States can "sustain" a healthcare system that costs almost twice as much as Canada's and accounts for 50% more of its gross domestic product and a larger expenditure of *public* funds, maintaining (and expanding) Canadian medicare ought to be a walk in the park.[1]

Sincere adherents notwithstanding, the sustainability argument most often serves as a stalking horse for other objections to equity of access that reflect personal and class interests. A publicly funded and administered healthcare system forecloses opportunities for both sellers and purchasers of health-related goods and services. For sellers, the lost opportunities are even greater when healthcare is delivered by not-for-profit or public providers. And the more expansive the public system, the higher are the corporate and personal taxes required to support it.

A capitalist economy depends for its survival on economic growth. Capitalists are thus engaged in an unending search for potentially profitable investments. Not surprisingly, they take strong and persistent exception to limitations on the scope of their investment opportunities. Their objections to medicare's constraints are rarely expressed in terms of self-interest, but take the form of claims for the desirability of increased private (for-profit) sector involvement in healthcare financing and delivery – improved efficiency, expanded capacity, reduced wait times, lower taxes (for others), sustainability, greater "consumer choice" and so on. All this in the context of the "big idea" that what's good for the corporate sector is good for us all – the trickle-down theory, described by John Kenneth Galbraith as "the less than elegant metaphor that if one feeds the horse enough oats, some will pass through to the road for the sparrows" (Galbraith 1992). As Evans (2006) has pointed out, during the past 20 years in Canada, almost nothing has trickled down.

The claims that private financing and delivery of healthcare will achieve superior outcomes at reduced costs and lower wait times are grounded much more in ideology

than in evidence. For example, a growing body of recent evidence points to the higher costs and poorer outcomes of for-profit healthcare (e.g., Himmelstein et al. 1999; Devereaux et al. 2002a,b, 2004).

Permitting a parallel system of private insurance for services covered under provincial/territorial public plans, as contemplated by the majority in the Supreme Court of Canada's *Chaoulli* decision (2005), would create investment opportunities in health insurance and for-profit healthcare. On ideological grounds, such a development would likely be seen by the business community as a welcome breach in the dyke of legislative and regulatory restraint. However, at a practical level, recognizing that employers might be pressed to provide parallel private insurance for their employees – thereby incurring increased labour costs and impairing international competitiveness – corporate Canada might be divided on this issue.

The prospect of parallel private insurance appeals to the self-interest of those who can afford to pay for it, or who are likely to receive it as an employee benefit. They could expect to receive speedier access to needed physician and hospital services and, potentially, to "boutique" health services not currently available through provincial/territorial plans. However, given the Canadian public's continuing commitment to the idea of access to care based on need, many who could benefit personally may fail to rally behind parallel private insurance because of a commitment to social solidarity – particularly in light of the risk that large numbers of already scarce healthcare providers will be lured from the public to the private system, resulting in reduced access to needed care for those who are left behind.

The fundamental threat to Canadian medicare is not the challenge of "sustainability" but the interests of corporate Canada, which run counter to the principle of access to healthcare based on need and to the policies that support it. While the corporate claims may be shaky, they are the stuff and substance of media commentary and political discourse. Big business wields enormous economic and political power, both directly and through the media and its support of political candidates. Its use of that power has held medicare in check and threatens to roll it back.

Preserving and strengthening Canadian medicare will require shaking off the notion that what serves big business (usually referred to by mainstream politicians and the media as "the economy") necessarily serves the public interest. Only an unrelenting mobilization of public opinion behind a humane and communitarian vision of health and healthcare – a vision grounded in a commitment to equity – will allow medicare to survive and flourish. Civil society has its work cut out for it.

Note

1. In 2006, total health expenditures per capita measured in US dollars PPP (purchasing parity power) were $6,714 in the United States and $3,678 in Canada,

and accounted for 15.3% and 10.0% of GDP, respectively. Public spending per capita on health was $3,075 in the United States and $2,589 in Canada. Source: IRDES (Institute for Research and Information in Health Economics. Retrieved October 16, 2008. <http://www.irdes.fr/EcoSante/Download/OECDHealthData_FrequentlyRequestedData.xls>.

REFERENCES

Chaoulli v. Quebec (Attorney General), 2005 SCC 35.

Devereaux, P.J., P.T-L. Choi, C. Lachetti, B. Weaver, H.J. Schünemann, T. Haines, J.N. Lavis, B.J.B. Grant, D.R.S. Haslam, M. Bhandari, T. Sullivan, D.J. Cook, S.D. Walter, M. Meade, H. Khan, N. Bhatnagar and G.H. Guyatt. 2002a. "A Systematic Review and Meta-analysis of Studies Comparing Mortality Rates of Private for-Profit and Private Not-for-Profit Hospitals." *Canadian Medical Association Journal* 166: 1399–1406.

Devereaux, P.J., H.J. Schüneman, N. Rwvindran, M. Bhandari, A.X. Garg, P.T.-L. Choi, B.J.B. Grant, T. Haines, C. Lacchetti, B. Weaver, J.N. Lavis, D.J. Cook, D.R.S. Haslam, T. Sullivan, G.H. Guyatt. 2002b. "Comparison of Mortality between Private-For-Profit and Private Not-For-Profit Hemodialysis Centers." *Journal of the American Medical Association* 288(19): 2449–57.

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Evans, R. 2005. "Baneful Legacy: Medicare and Mr. Trudeau." *Healthcare Policy* 1(1): 20–25.

Evans, R. 2006. "From World War to Class War: The Rebound of the Rich." *Healthcare Policy* 2(1): 14–24.

Galbraith, J.K. 1992. *The Culture of Contentment*. New York: Houghton Mifflin.

Himmelstein, D.U., S. Woolhandler, I. Hellander and S.M. Wolfe. 1999. "Quality of Care in Investor-Owned vs Not-for-Profit HMOs." *Journal of the American Medical Association* 282(2): 159–63.

Lewis, S. 2007. "Can a Learning Disabled Nation Learn Healthcare Lessons from Abroad?" *Healthcare Policy* 3(2): 19–28.

BRIAN HUTCHISON, MD, MSC, FCFP

Editor-in-chief

Préserver l'assurance maladie au Canada

Le principe sous-jacent à l'assurance maladie au Canada, c'est-à-dire l'accès aux soins essentiels en fonction des besoins, implique une loyauté ferme de la part des Canadiens. Comment se fait-il, donc, que ce principe demeure précaire et que les tentatives pour l'appliquer au-delà des services médicaux ou hospitaliers échouent continuellement?

Malgré le battage qui nous entoure, il ne s'agit pas en fait d'une question de moyens financiers. L'idée selon laquelle le modèle canadien de services de santé subventionnés par l'État est, ou deviendra bientôt, financièrement non durable a été vivement réfutée (voir, par exemple, Evans 2005, 2006; Lewis 2007). Si aux États-Unis on parvient à « soutenir » un système de santé qui coûte près du double de celui du Canada, un système qui représente plus de 50 % du produit intérieur brut et qui implique de plus grandes dépenses de fonds *publics*, maintenir (et accroître) l'assurance maladie au Canada devrait être un jeu d'enfant[1].

Mises à part les convictions sincères, la durabilité est un argument employé plus souvent comme prétexte pour d'autres objections à l'égalité d'accès, lesquelles reflètent les intérêts personnels et des classes. Un système de services subventionné et administré par l'État prive de possibilités les vendeurs et les acheteurs de biens et services liés à la santé. Pour les vendeurs, la perte de possibilités est encore plus grande si les services sont fournis par des organismes publics ou sans but lucratif. Et plus le système public est généralisé, plus élevés sont les impôts personnels ou d'entreprises nécessaires pour le maintenir.

Pour survivre, une économie capitaliste est tributaire de la croissance économique. Les financiers sont donc continuellement à la recherche d'investissements potentiellement avantageux. Il n'est donc pas surprenant de voir qu'ils s'opposent fermement aux limitations qui peuvent toucher les occasions d'investissement. Leurs objections face aux contraintes en matière d'assurance maladie s'expriment rarement en termes d'intérêts personnels, mais se présentent sous forme de revendications visant une plus grande participation du secteur privé (à but lucratif) dans le financement et la prestation des services de santé – efficacité accrue, plus grande capacité, réduction des temps d'attente, baisse d'impôts (pour les autres), durabilité, meilleur choix pour les consommateurs, etc. Le tout présenté dans le contexte affirmant que ce qui est bon pour l'entreprise est bon pour tous, soit l'« effet de diffusion » décrit par John Kenneth Galbraith comme « la métaphore inélégante voulant que si l'on fournit suffisamment d'avoine à un cheval, quelques grains tomberont sur la route pour les oiseaux » (Galbraith 1992). Comme l'a indiqué Evans (2006), on n'observe pas une telle diffusion au cours des 20 dernières années.

L'idée acceptant que la privatisation du financement et de la prestation des services

de santé permettra de meilleurs résultats à moindre coûts tout en réduisant les temps d'attente s'appuie sur une idéologie plutôt que sur des données probantes. Par exemple, de plus en plus de données récentes démontrent que les organismes de santé à but lucratif obtiennent de plus faibles résultats à un coût plus élevé (voir, par exemple, Himmelstein et al. 1999; Devereaux et al. 2002a,b, 2004).

Permettre un système de santé privé parallèle pour des services subventionnés par le gouvernement, tel qu'envisagé dans la décision majoritaire de la Cour suprême pour la cause Chaoulli (2005), créerait des occasions d'investissement pour l'assurance maladie privée et pour les organismes de santé à but lucratif. Du point de vue idéologique, une telle ouverture serait probablement accueillie par le milieu des affaires comme une percée dans les restrictions et les règlements juridiques. Toutefois, au niveau pratique, le milieu des entreprises canadiennes pourrait être divisé sur cette question puisque les employeurs se sentiraient sans doute obligés d'offrir aux employés une assurance privée parallèle, augmentant ainsi les coûts liés à la main-d'œuvre et réduisant la capacité concurrentielle à l'échelle internationale.

La perspective d'une assurance privée parallèle est intéressante pour ceux qui ont les moyens de payer, ou qui peuvent en bénéficier dans le cadre de leurs avantages sociaux. Ils peuvent s'attendre à un accès plus rapide aux médecins et aux services hospitaliers et, possiblement, à un accès à des services de santé qui ne font pas partie actuellement des régimes d'assurance provinciaux ou territoriaux. Toutefois, étant donné l'engagement profond des Canadiens envers un accès aux soins en fonction des besoins, plusieurs parmi ceux qui en bénéficieraient personnellement pourraient hésiter à approuver l'assurance privée parallèle pour des raisons de solidarité sociale – particulièrement face au risque que de nombreux fournisseurs de santé, déjà en situation de pénurie, soient attirés vers le système privé, réduisant ainsi l'accès aux soins pour les autres.

La principale menace à l'assurance maladie au Canada n'est pas la question de la « durabilité », mais bien celle des intérêts des entreprises canadiennes, qui vont à l'encontre des politiques et du principe de l'accès aux soins en fonction des besoins. Même si les allégations des entreprises demeurent boiteuses, ce sont néanmoins elles qui constituent le matériau des messages médiatiques et du discours politique. Les grandes entreprises exercent avec autorité un énorme pouvoir économique et politique, que ce soit directement ou par l'entremise des médias, ou encore par l'appui de candidats politiques. L'exercice de ce pouvoir freine l'assurance maladie et risque de la faire régresser.

Pour préserver et renforcer l'assurance maladie au Canada, il faut s'attaquer à l'idée voulant que ce qui est bon pour les grandes entreprises (que les principaux politiciens et les médias appellent « l'économie ») est nécessairement bon pour l'intérêt public. Seule une mobilisation déterminée de l'opinion publique, accompagnée d'une vision humaniste et communautaire des services de santé – une vision ancrée dans un engagement envers l'égalité –, permettra la survie et l'essor de l'assurance maladie. La société civile a bel et bien du pain sur la planche.

Note

1. En 2006, les dépenses totales de santé, par tête, calculées selon la parité des pouvoirs d'achat (PPA) en dollars US, étaient de l'ordre de 6 714 $ aux États-Unis et de 3 678 $ au Canada; et elles comptaient, respectivement, pour 15,3 % et 10,0 % du PIB. Les dépenses publiques de santé, par tête, étaient de 3 075 $ aux États-Unis et de 2 589 $ au Canada. Source : IRDES (Institut de recherche et documentation en économie de la santé). Consulté le 16 octobre 2008. <http://www.irdes.fr/EcoSante/Download/OECDHealthData_FrequentlyRequestedData.xls>.

RÉFÉRENCES

Chaoulli v. Quebec (Attorney General), 2005 SCC 35.

Devereaux, P.J., P.T-L. Choi, C. Lachetti, B. Weaver, H.J. Schünemann, T. Haines, J.N. Lavis, B.J.B. Grant, D.R.S. Haslam, M. Bhandari, T. Sullivan, D.J. Cook, S.D. Walter, M. Meade, H. Khan, N. Bhatnagar and G.H. Guyatt. 2002a. "A Systematic Review and Meta-analysis of Studies Comparing Mortality Rates of Private for-Profit and Private Not-for-Profit Hospitals." *Canadian Medical Association Journal* 166: 1399–1406.

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BRIAN HUTCHISON, MD, MSC, FCFP
Rédacteur en chef

Tortoises 1, Hares 0: How Comparative Health Trends between Canada and the United States Support a Long-term View of Policy and Health

Tortues 1, lièvres 0 : la comparaison des tendances de la santé entre le Canada et les États-Unis donne l'avantage aux actions à long terme en matière de politiques et de santé

by CLYDE HERTZMAN AND ARJUMAND SIDDIQI

Abstract

Fifty years ago, Canadian and US life expectancies were roughly equal. Now, however, Canadians are, on average, healthier than Americans. To discover the reasons behind this trend, the authors compared Canada and the United States on a range of determinants of health based on data from 1950 to the present. Their analysis yielded three conclusions: (1) greater economic well-being and spending on healthcare did not yield better health outcomes; (2) public provision and income redistribution trump economic success where population health is concerned; and (3) the gradual development of public provision represents the build-up of social infrastructure that has long-lasting effects on health status. The authors contend that in the context of thinking about population health, the historical, dynamic approach casts a clearer light on trends than does the cross-sectional approach.

Résumé

Il y a cinquante ans, l'espérance de vie au Canada et aux États-Unis était sensiblement la même. Aujourd'hui, toutefois, les Canadiens sont en moyenne plus sains que les Américains. Afin de connaître les raisons de cette tendance, les auteurs ont comparé les deux pays en fonction d'un éventail de déterminants de la santé, à partir de données recueillies de 1950 à nos jours. L'analyse permet de dégager trois conclusions : (1) un bien-être économique accru et des dépenses plus élevées dans les services de santé ne donnent pas de meilleurs résultats pour la santé; (2) en matière de santé de la population, la prestation de services publics et la redistribution du revenu ont plus de poids que la prospérité économique; (3) le développement graduel des services publics se traduit par l'accroissement d'une infrastructure sociale qui a des effets à long terme sur l'état de santé. Les auteurs affirment que, dans le contexte de la santé des populations, une approche historique dynamique permet de mieux comprendre ces tendances qu'une approche transversale.

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Canadians are, on average, healthier than Americans. This is widely known, at least among students of such matters. Less widely known is that this situation was not always so. Fifty years ago, life expectancies were more or less equal on both sides of the border, as were infant mortalities. The gap shown in Figure 1 has emerged over the last half century. Why did this happen?

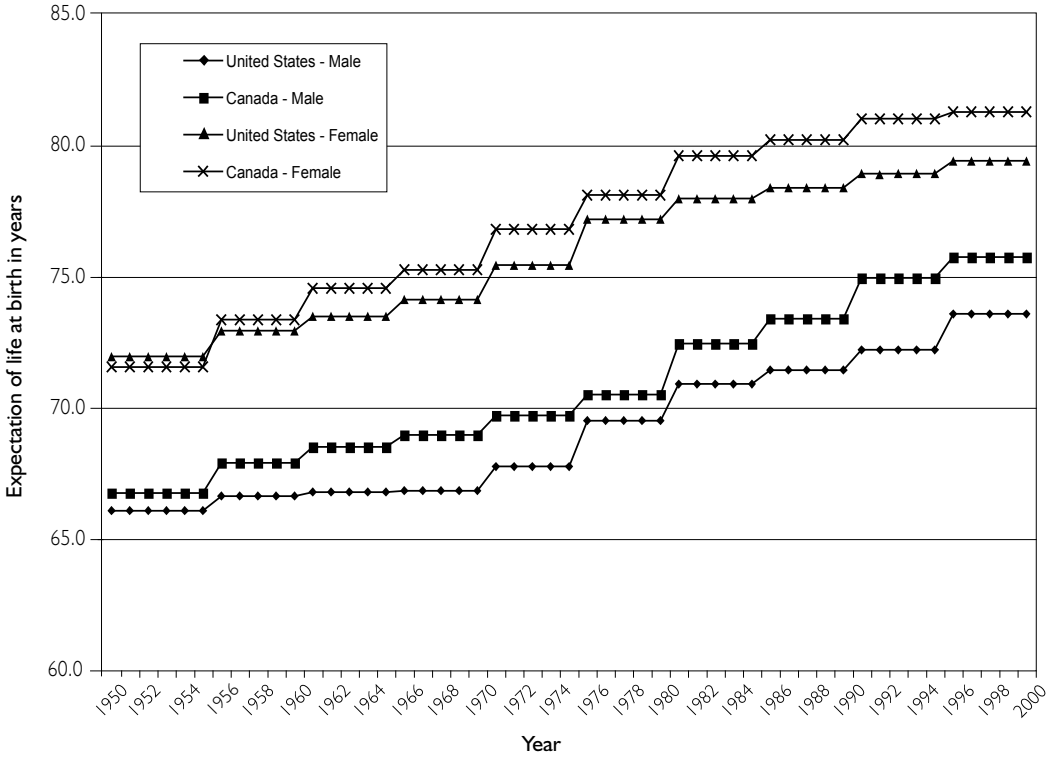
To answer this question, we need to start with the work of Thomas McKeown (1979). McKeown studied mortality and its putative determinants, as they gradually unfolded over decades, in 19th- and 20th-century England and Wales. This long view demonstrated conclusively that the factors that led to large declines in mortality from the major infectious diseases of antiquity were to be found outside the medical care system *per se*, since the force of mortality from these diseases declined in the decades prior to the advent of effective healthcare interventions.

McKeown's work redirected our attention towards such factors as economic growth, rising living standards and improved nutrition. This shift has been foundational for the field of population health and a prime motivator of the search for determinants of health embedded in those aspects of society that are not specifically designed to support health or fight disease. Often neglected, however, is McKeown's view of time.

Population health has rarely returned to the type of evidence McKeown used: tracing health trends that emerge slowly over decades and trying to account for them according to gradually evolving factors deeply embedded in society. Instead, we have tended to focus on cross-sectional and short-term follow-up studies. These have been very useful in many respects. They have demonstrated that, in all wealthy countries,

there is a gradual, non-threshold decline in health status from the richest to the poorest groups and from the most to the least educated groups in society. This phenomenon is known as the *socio-economic gradient* in health.

FIGURE 1. Male and female life expectancy in Canada vs. the United States



Short-term follow-up studies have also shown which countries in Central and Eastern Europe did, or did not, experience a profound health crisis immediately following the collapse of the Soviet system in the late 1980s and early 1990s. But short-term studies have not given us satisfactory answers to the question of why some wealthy societies are healthier than others. This is a critical question for population health and health policy alike.

The long-term Canada–United States comparison clearly demonstrates that slow-moving processes can cumulate over time to have big effects. Figure 1 compares American and Canadian life expectancy, in five-year averages, from 1950 to 2000, showing the gap gradually widening in favour of Canada until, by the end of the 20th century, it reached approximately two years. One crucial detail is that during the late 1970s, the gap narrowed considerably. But starting around 1980, it re-opened and has not closed again. Although differences in infant mortality contributed to the gap, it is driven, primarily, by differences in adult mortality. A two-year life expectancy gap may

not sound large, but during ages 25 to 64, it translates into annual mortality rates that are 30% to 50% higher in the United States.

Between the early 1970s and the late 1990s, the socio-economic gradient in health status remained stable in Canada. Over the 25-year period from 1971 to 1996, each income quintile experienced roughly equal gains in life expectancy (Wilkins et al. 2002). In the United States, by contrast, the highest income quintiles gained life expectancy at a significantly faster pace than the lowest quintile (Singh and Siahpush 2002). By the end of the 20th century, the poorest 20% of Canadians enjoyed the same life expectancy as Americans of average income (Singh and Siahpush 2002; Wilkins et al. 2002). Something big happened here, albeit gradually, and it deserves recognition and explanation.

In order to understand these emerging differences, we compared Canada and the United States on a range of determinants of health for which routine data have been collected for all or most of the period between 1950 and the present (Siddiqi and Hertzman 2007). This analysis, briefly summarized here, led us to three key conclusions:

1. *Greater economic well-being and spending on healthcare did not yield better health outcomes*

As in McKeown's work, our most definitive conclusions are the negative ones: identifying what did not matter. From 1975 to 1988, purchasing power parity (PPP)-adjusted gross domestic product (GDP) per capita grew in both Canada and the United States, tracking closely through business cycles (Figure 2). Throughout this period, the United States remained approximately 10% higher than Canada. From 1988 to 1993, however, there was a brief break in this pattern. Income essentially stagnated in Canada while continuing to grow in the United States. After 1994, parallel growth resumed, but the ground lost during the five-year period of stagnation in Canada was not made up. PPP-adjusted GDP per capita remained approximately 20% lower than in the United States.

Unemployment rates in the two countries show a similar parallelism. From the end of the Second World War until 1982, unemployment rates in Canada and the United States overlapped from business cycle to business cycle, such that no systematic trend can be detected. But from 1982 until 2000, unemployment rates were consistently 2% to 4% higher in Canada than in the United States.

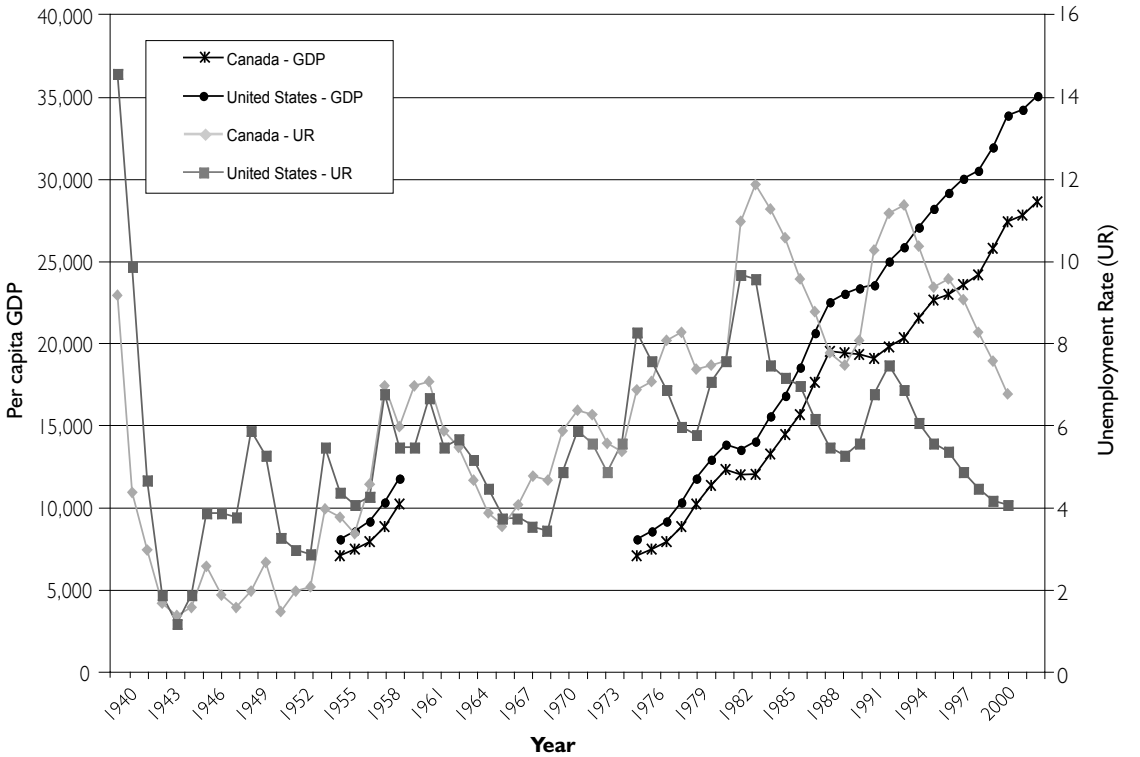
During the 1960s, Canada spent approximately 0.5% of GDP more on healthcare than the United States did. Healthcare spending in the two countries then converged, however, in the 1970–1973 period, at approximately 7% of GDP. After that, spending rates diverged dramatically. From 1973 to 1993, spending on healthcare in Canada rose to 10% of GDP and stayed between 9% and 10% until 2002. In the United States, spending on healthcare rose to 13.5% by 1993, and further to 14% by 2002.

Canada's universal, single-payer medicare plans (for hospitals' and physicians' services) were fully in place by 1971, and the spending gap began to emerge at exactly that point. (The US medicare plan, established in 1965, is universal only for seniors.) Thus, the 30-year period subsequent to 1971 has been characterized by universal access to care "on equal terms and conditions" in Canada, but by much more rapidly growing spending (though unequal access) in the United States. As of the end of this follow-up period, Canada was spending 4% of GDP less than the United States on healthcare. (By 2006, the difference was over 6%.)

The conclusion is clear: the country with lower rates of economic growth, higher unemployment and less spending on healthcare far outstripped its neighbour in mortality reduction.

2. *Public provision and income redistribution trump economic success where population health is concerned*

FIGURE 2. Per capita gross domestic product and unemployment rates, 1940–2002



In 1980, public social expenditures consumed approximately 13% of GDP in both Canada and the United States. By 1990, a large gap had opened, such that Canada was spending more than 4% of GDP more than the United States (>18% and <14%,

respectively). These rates were largely unchanged by 1998. In the 1970s, the Gini coefficient of income inequality, post-tax and post-transfer, was approximately two points lower (i.e., the income distribution was more egalitarian) in Canada than in the United States. Canadian Gini coefficients were in the high 20s in Canada and in the low 30s in the United States. From then until the late 1990s, the Gini stayed in the same range in Canada but increased in the United States. By the late 1980s, there was a five-point gap, and by the late 1990s this had grown to approximately seven points. In other words, over this time and by this measure, the distribution of income became increasingly unequal in the United States but not in Canada. The United States has long been a more unequal society than Canada, but the difference has become much more marked since 1980.

Taxes generally take more from those with higher incomes, and transfer payments provide more support for those with lower incomes, thus mitigating the inequality of incomes received from employment alone. In the early 1980s, the net impact of the Canadian tax and transfer programs (that is, their effectiveness in income redistribution) was to reduce the Gini by approximately 24%. During the 1980s and early 1990s, the redistributive work of these programs rose to a 31% reduction in Gini, then fell to slightly under 30% by the late 1990s. In the United States the redistributive work of taxes and transfers remained between 22.5% and 24.5% from the late 1980s to the late 1990s. Thus, the relative redistributive work of the Canadian programs rose compared to the US programs from the late 1980s to the late 1990s. "Market" incomes, before payment of taxes and receipt of transfers, were becoming increasingly unequal in both countries over this period, but Canadian fiscal and other public policies significantly mitigated the impact of this trend. American policies did not.

The relative differences between the countries were particularly marked in their success at poverty reduction (Zuberi 2001). In 1974–1975, taxes and transfers reduced the poverty rate by approximately 11% in both countries. By 1994, poverty reduction had risen to 24% in Canada, but only to 13% in the United States.

In contrast to economic growth and health expenditure, these time trends of changing public expenditure and income redistribution correspond to the changes in relative health status and the relative steepness of the socio-economic gradient in Canada and the United States. The period during which Canadian life expectancy increasingly surpassed the United States was a time when Canada's levels of public spending on social programs and the redistributive impact of its fiscal system and social protection policies worked much more powerfully than those in the United States to maintain a more equitable distribution of income in the face of contrary market forces. The effects go well beyond money income: equity of access to education, as well as, of course, healthcare (not shown here) surpassed those in the United States.

3. *The gradual development of public provision represents the build-up of social infrastructure that has long-lasting effects on health status*

Public provision and income redistribution do not fall from the sky, but are products of a society's evolving institutional landscape. A powerful example of potential health benefits comes from the fact that, despite periods of relatively high unemployment, Canadian health status continued to improve. Where the labour market intersects with social protection, Canada differed from the United States during this period. In particular, Canada scored higher on indexes of unemployment protection, labour relations and corporate governance (Estevez-Abe et al. 2001).

Unemployment protection represents the extent to which wages and benefits accrue to individuals, even in times of unemployment. The higher the unemployment protection score, the greater the wages and benefits afforded to unemployed workers. This index depends upon a set of social policies that are designed to stabilize the labour market and reduce risk (as does the scale on labour relations). Unemployment protection, in particular, is mandated through policies that transfer financial risk to corporations, governments and insurance companies. Such policies are meant to help maintain and sustain the middle class by reducing the burden of risk on individuals in the labour market who are less able to bear it. As Zuberi (2006) has shown, Canadian unemployment protection policies have also benefited highly vulnerable members of the labour force, such as immigrant workers, in ways that US policies have not.

Corporate governance refers to the extent to which the state has a role in determining and enforcing the rights and responsibilities of corporations. Higher scores on this index suggest greater government input. Compared with the United States, Canada features lower incomes for chief executive officers and other upper management and higher tax rates (and fewer loopholes) for large corporations. These features of the institutional landscape are reasonable places to look for an explanation of the observation that Canadians have experienced health gains even during periods of high unemployment.

Although this is only one example, there is reason to believe that comparisons of public policies in a number of other areas with implications for health – such as immigrant-welcoming policies, access to education, regional equalization and the organization of urban space, to name a few – show a similar advantage for Canada.

Understanding the origin and development of institutions with health-supporting or health-threatening capacity poses a timescale challenge of its own. How far back in time should we go? Would telling a full, complete story of institutional evolution and public provision in the United States have to start at least as far back as the Depression-era New Deal? Would it have to take account of the post-war GI bills and the Great Society programs prior to the Reagan-era rollbacks, when American health status started its current relative decline? In Canada, the history might stem from a more muted response to the Great Depression; but a gradual phasing in of national hospital and

unemployment insurance, old age pensions, physician coverage, federal–provincial social assistance transfers, increasing secondary and tertiary education subsidies, increasingly progressive labour legislation after the Second World War, and the gradual embrace of a series of policies and programs that have turned Canada into the world's most multicultural society. From the standpoint of health, these represent a relatively successful evolutionary trajectory in Canada and a relatively unsuccessful one in the United States. Relative mortality measures provide a hard-edged way of keeping score.

Conclusions

The comparative perspective and long-term view employed here have allowed us to detect the gradual divergence in health status between two societies whose fate is closely interconnected and to specify which features of institutions and policies may have the greatest returns to population health. The lesson is of public provision and redistribution trumping traditional economic growth and direct health spending in producing population health. Even when a long view is taken on wealth, spending on healthcare and actual health, associations are non-existent. Canadian health status increasingly surpassed that of the United States in a period in which US economic growth moved increasingly ahead of Canadian growth and US unemployment rates – for the first time since the Second World War – were consistently lower. Moreover, spending on healthcare in the United States increasingly surpassed that in Canada (and everywhere else in the world) during a time in which Canada had a national medicare scheme and the United States did not.

The approach we have taken focuses naturally on the introduction and evolution of institutional differences. In the context of thinking about population health, the historical, dynamic approach casts a clearer light on what has been going on than does the cross-sectional approach. The latter has been dominant in the literature so far, and has led to a number of ambiguities and unresolved controversies, such as, for example, the ongoing debate over absolute versus relative incomes.

Early cross-national research showed a consistent association between income inequality and health status (Wilkinson 1990, 1992). Soon, however, the results of these studies were contested, with charges of poor-quality data and lack of control for potential confounders such as transfer payments and social spending (Judge 1995). The characterization of transfers and social spending as "confounders" illustrates a core problem with an approach that reduces broad, long-term questions of society and health to isolated, current-time variables like income inequality. Instead, the perspective taken here would construe transfer payments and social spending as part of a gradually unfolding institutional landscape. Through a variety of mechanisms, this changing landscape, in turn, has the capacity to transform inequality, health and the relationship between the two.

The Canada–United States case study demonstrates what Roy Amara, former head of the Institute for the Future in California, once formulated as Amara's Law: people typically overestimate the short-run impact of innovations and underestimate their long-run impacts. Institutional and policy changes might take place with the stroke of a pen, but their impacts may unfold gradually over decades to influence population health. Moreover, a series of decisions taken over time may gradually unfold as an institutional/policy regime that would be unrecognizable from those of the past. At the same time, population health trends can change slowly over years and decades, resulting in large differences between societies that no one would have watched for or anticipated. Trends in human health, especially when based upon unambiguous endpoints like mortality, are brutally objective as measures of long-term societal success or failure. Those interested in health policy should be closely watching these big, slow-moving trends.

REFERENCES

Estevez-Abe, M., T. Iversen and D. Soskice. 2001. "Social Protection and the Formation of Skills: A Reinterpretation of the Welfare State." In P.A. Hall and D. Soskice, eds., *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. New York: Oxford University Press.

Hertzman, C. 2001. "Health and Human Society." *American Scientist* 89: 538–45.

Judge, K. 1995. "Income Distribution and Life Expectancy: A Critical Appraisal." B*ritish Medical Journal* 311: 1282–85.

McKeown, T. 1979. *The Role of Medicine: Dream, Mirage or Nemesis?* (2nd ed.). Oxford, UK: Basil Blackwell.

Siddiqi, A. and C. Hertzman. 2007. "Towards an Epidemiological Understanding of the Effects of Long-term Institutional Changes on Population Health: A Case Study of Canada versus the USA." *Social Science & Medicine* 64: 589–603.

Singh, G.H. and M. Siahpush. 2002. "Increasing Inequalities in All-Cause and Cardiovascular Mortality among US Adults Aged 25–64 Years by Area Socioeconomic Status, 1969–1998." *International Journal of Epidemiology* 31(3): 600–13.

Wilkins, R., J.M. Berthelot and E. Ng. 2002. "Trends in Mortality by Neighbourhood Income in Urban Canada from 1971 to 1996." *Health Reports*. Ottawa: Statistics Canada, Catalogue no. 82-003: S13.

Wilkinson, R.G. 1990. "Income Distribution and Mortality: A 'Natural' Experiment." *Sociology of Health and Illness* 12: 391–412.

Wilkinson, R.G. 1992. "Income Distribution and Life Expectancy." *British Medical Journal* 304: 165–68.

Zuberi, D. 2001. "Transfers Matter Most." Luxembourg Income Study Working Paper #271.

Zuberi, D. 2006. *Differences that Matter: Social Policy and the Working Poor in the United States and Canada*. Ithaca, NY: Cornell University Press.

DIALOGUE

Interview with Penny Ballem

Entretien avec Penny Ballem

Steven Lewis talks with Penny Ballem about the challenges of integrating physicians into health reform, federal–provincial relations and health information management.

Penny Ballem is a former Deputy Minister of Health for British Columbia and a Clinical Professor of Medicine at UBC. She has a long-standing interest in teaching across all health disciplines and in clinical and policy research. During her tenure as Deputy Minister of Health, Dr. Ballem served on the board of the Canadian Institute for Health Information, as a member of Canada Health Infoway, as Liaison Deputy Minister for the Canadian Council for Donation and Transplantation and as co-chair of the Pan Canadian Public Health Surveillance Information System Project. She recently talked with **Steven Lewis**, health research and policy consultant based in Saskatoon, adjunct professor of health policy at the University of Calgary and Simon Fraser University, and contributing editor of *Healthcare Policy*.

Steven Lewis discute avec Penny Ballem des défis d'intégration des médecins dans la réforme de la santé, des relations fédérales–provinciales et de la gestion des informations sur la santé.

Penny Ballem, ancienne sous-ministre de la Santé en Colombie-Britannique, est professeure de médecine clinique à l'Université de la Colombie-Britannique. Tout au long de sa carrière, elle a été à la fois professeure clinicienne et administratrice du secteur de la santé. À titre de sous-ministre, la Dre Ballem a siégé au conseil d'administration de l'Institut canadien d'information sur la santé et a été membre d'Inforoute Santé du Canada. Elle était sous-ministre déléguée auprès du Conseil canadien pour le don et la transplantation ainsi que coprésidente du projet pour un système pancanadien de surveillance des informations en matière de santé publique. Récemment, la Dre Ballem s'est entretenue avec **Steven Lewis**, consultant en recherche et politiques de santé établi à Saskatoon, professeur auxiliaire en politiques de santé à l'Université de Calgary et à l'Université Simon Fraser ainsi que collaborateur à la rédaction de *Politiques de Santé*.

SL: You've been a practising haematologist, a senior hospital executive and a deputy minister. Doctors are central to the system and they're very powerful – both collectively and individually. How successful have we been in Canada in aligning the physician agenda with the health reform agenda?

PB: We have a lot more work to do to make autonomous practitioners a more integrated part of our health system and for them to see this as an advantage rather than as one more way to make their life miserable. Most physicians see their role solely in regard to individual patients and not in relation to the broader needs of the public. Not surprisingly, our medical associations in Canada tend to support system change if it does not conflict with their members' economic interests. However, change in response to the public interest is more difficult.

That said, there's been a big shift from the old days where the only system leadership positions really available to doctors were to be a chief of staff in a hospital or the vice-president of medicine. Now we have doctors who are CEOs and deputy ministers, as well as serving in various senior leadership roles in healthcare organizations. In addition, it is encouraging that an increasing number of doctors are getting some formal training in management and business. Having physicians in leadership positions does make a difference as we work to continually reform our health system.

SL: Some have suggested that one way to get physicians more aligned with the broader agenda is to integrate them more fully into the regional health authorities. Do you think that's necessary, and if so, do you think that it's going to be feasible any time soon?

PB: Yes. Ideally, to really serve the public needs and interests, and get value for money from the huge taxpayer investment in our healthcare system, you have to have the physicians integrated and aligned at the regional level. If we were to follow the lead of most other international jurisdictions, the physicians' compensation should flow through the region, because their work is integral to the function and goals of regional healthcare structures.

But funding for physicians constitutes a large part of overall government spending, and the physician compensation file is a complex one. The risk is that some regions will manage the relationship – the labour relations, the compensation issues – well and others won't. To a certain extent, that's why governments have hung onto the physician file and manage it themselves, with variable amounts of input from the health sector.

Primary care physicians are a huge issue, because they tend to be the most isolated in the system, particularly if they're not involved in hospital work, which in the most populated parts of our country (the urban areas) they're not. They often experience the interface with the many parts of the system as an added burden versus something that should enable them to do a better job. To me, the first job of any health region should be to bring its primary care physicians into a more integrated role in the region, recognizing that they are a critical part of a high-quality healthcare system.

SL: In Canada we've begun, gingerly, to talk about pay for performance (P4P) to improve quality, effectiveness and efficiency in physician practice. The international literature seems mixed on the effectiveness of P4P. Do you think it is a major part of the quality and efficiency solution for Canada?

PB: Practising medicine is complex, and we've come to P4P so late – it's just not an integral part of our culture. Governments that also struggle with pay for performance in their own bureaucracies have begun to institute some P4P principles in physician agreements, with mixed success. I'm a big believer in the potential of P4P, and I hope we don't throw it out if early experience is mixed or even a failure. We should build on, and try to understand, the key elements that make for success and leapfrog over the failures. Canada still has a long way to go in terms of having compensation models that reward performance and incentive activities that benefit the public and are auditable to hold people accountable.

SL: Up to now, pay for performance schemes have mostly targeted activities that are easy to count and procedures that are easy to do.

PB: I think that's probably accurate.

SL: By contrast, we don't see P4P aimed at rewarding high-quality care for people with multiple chronic diseases or the complex frail elderly, where success is harder to define and it is difficult to say what ought to be done in all circumstances. So P4P can skew practices towards certain activities and away from others, and influence the choice of residencies among medical school graduates. And we end up a country with 10 times as many paediatricians as geriatricians.

PB: Exactly.

SL: So what do we do about that – how do we shift the focus of medicine, including prospective residents, towards the unmet needs and unsolved quality problems?

PB: If the governments continue to be the payer, they need to help push the profession to deal with these inequities, which in the end put the public at risk. They need to say, "We're not going to move everyone ahead at the same rate. We need to start to close the gap between the top of the pecking order and the bottom, and you medical associations need to support us on that." Some – to take your example of geriatricians – will have to move from the very bottom of the pecking order to somewhere closer to the middle or the mid-high range. P4P incentives that align with public need are certainly one way to accomplish the goal more effectively.

SL: Governments have known about these inequities and gaps for decades. Are they just incompetent negotiators? Have they ceded too much authority to decide what physician categories will earn for doing what, the result inevitably being the current mal-distributions? You're at the table. What are the two or three things that governments absolutely need to do to start turning this around?

PB: First of all, the government has to be clear about what it needs to serve the public interest. How many geriatricians, practising in what model of care, are going to

meet the needs of the public? If there are twice the number of plastic surgeons in one province versus another, which one is the more efficient model of care, and how do you use a physician contract to get there? In Ontario, paediatricians are doing primary care. Does that make sense, and should a physician contract be designed to change this situation over time?

When the only lever that you have with physicians is the fee-for-service payment schedule, it's tough. You have to have a plan, you have to know where you want to go and then you have to figure out the incentives to build into your negotiation strategy. That's a tough gig, and given the amount of money we are spending on physicians, we still have a long way to go. Interestingly, I think the public in Canada also needs to assist with a more informed approach, because ever since the 1960s and the great Saskatchewan battle over the beginning of medicare, the public's general response in relation to physician negotiations has been, "Oh, for God's sake, whatever it takes, give it to my doctors because I want them to be there when I get sick."

Doctors in general in Canada are very well paid, but what is key is that the investment in our doctors and their models of compensation be designed to reward them for work patterns and activities that support the evolving needs of the public and of patients.

SL: That leads us back to primary care. The recommended movement towards a more interdisciplinary, comprehensive primary healthcare model doesn't appear to be catching hold in Canada. There are the early adopters, but no subsequent tidal wave. Physicians appear to prefer physician assistants working under their direction to the real partnership models alongside nurse practitioners, pharmacists and others. Do you think the interprofessional collaborative vision was pie-in-the-sky to begin with? What's the future of primary healthcare?

PB: I think we're making slow progress. There are some great examples of this working – the South Community Birth Program, started in 2003 in Vancouver, is a wonderful example. However, in general, this is one of the areas where there needs to be more overt leadership at the level of the College of Physicians and Surgeons, the medical associations and even the Canadian Medical Protective Association. Canada lags behind the rest of the world in the use of such professionals as midwives, nurse practitioners, pharmacists and other allied professionals to meet the growing needs of the public. In some provinces, the medical regulatory colleges have dragged their feet in terms of working with other professional colleges to enable scope-of-practice changes that could improve access for the public, enhance quality of care and reduce physician burnout. There is also still tension about who leads the team, with a tendency of physicians to feel they must be in charge. I have a family member who is a speech pathologist. She works in the community with children with autism. She's overseeing teams working weekly with profoundly disabled children. She's far better trained to lead the team in providing care to these children than the family physician, the psychiatrist or

the paediatrician, who may see these children only a few times a year. They are important members of the team, but just because they are doctors doesn't always make it appropriate, or even feasible, for them to be in charge.

SL: Students in all disciplines seem quite happy to collaborate and work in teams. There's a generational shift about workloads and preferred lifestyle. But yet again, most people say the movement towards collaborative practice is stalled. The primary healthcare revolution, if it ever got started, has been put down, and what we are getting are pretty conventional, traditional, hierarchical models.

PB: There are some excellent examples in Canada where we have moved on and have discovered the richness of an interdisciplinary model. For everywhere else, we've all got to get over ourselves and start to agree on and drive home some key messages. One is that interdisciplinary care is best practice. We're far behind the rest of the world on this point, to be honest. And I think the health sector in this country has tended to step aside and leave it to the government to carry the ball on moving the collaborative practice agenda ahead. I think that's unfair and an abdication of our responsibility.

SL: One of the dilemmas is that both federal–provincial relations and even interprovincial cooperation are at a low ebb in this country; there isn't very much common ground at the policy and governmental tables, and so medical associations and others can whipsaw provinces and territories to achieve their goals rather easily.

PB: Hmmm.

SL: You've been around those tables. Do you think there's a growing recognition that the jurisdictions need some common strategies that they stick to, or even some elements of negotiations that they can pursue in common across the country?

PB: I had the privilege to co-chair the Federal–Provincial, and chair the Provincial Conference of Deputies for a year. It was an amazing experience. Across all political lines, the provinces and territories did a lot of good work together, and usually were on the same page. They're all getting hammered in the media and their respective legislatures for the same things. The issues are just very tough problems to solve, and they require a lot of hard work and persistence.

To me, the most difficult dynamic was the federal–provincial–territorial relationship. There are tremendous opportunities for the federal government to be an enabling force that could help the provinces move ahead on their difficult health agendas – the creation of a national public drug plan, even if we start with expensive drugs for rare diseases, is an excellent example. This would end the chaos of the diverse plans currently in existence across the provinces and territories and would be a huge step forward for Canada.

I feel quite discouraged about how ineffective we have been in convincing the federal government to play a role in an area such as this, which would enable progress but not require it to get entangled in the service delivery area.

SL: Let me put another perspective on the table. The provinces essentially got

a huge amount of mainly unconditional money from Ottawa, just what they asked for. All they've done is entrench a pattern of very high healthcare spending growth, without getting many substantive results. So is there any way to get some negotiated, but cooperative, conditionality in the cash transfers so that at least the citizens of Canada – who don't really care which level of government is putting the cash on the table, it's all their money in the end – could say, à la Romanow, that the new money bought change?

PB: Yes, I do think that's possible. However, I think the process that leads to these agreements is quite unusual. Just think about this: a $40-billion transfer to deliver a very complex agenda and set of expectations is negotiated in three days by premiers and a small number of officials. The federal government comes in with an agenda and priorities that, in the case of British Columbia, were misaligned in at least two of the five areas they were investing in.

It was during the last Federal–Provincial First Ministers' Meeting that the provinces said, "Look, we're having a real struggle around public drug plans, and there's no reason why Canada shouldn't have a national pharmacare plan." At the end of the day, the federal government had no interest in that. So we said, let's start with expensive drugs for rare diseases, where it makes no sense for provinces to be acting on their own. No, they didn't want to do that.

To me, until the federal government is prepared to get involved in the delivery of a program where a national approach makes sense – resourcing the education of international medical graduates or funding comprehensive immunization programs are other great examples – it will be a struggle to know exactly what value the public got for its investment.

SL: Are provinces getting value for the doubling of costs in the past decade?

PB: I think we don't take enough time to celebrate where we have delivered real value for money. As an example, Ontario should be extremely proud of what it's done on wait times. They looked at the capacity of the system, they then drove it, and they made it work. They did invest more money, but they knew exactly what they got for it and everyone was held accountable – it was transparent.

Going back to federal investments in healthcare, it takes commitment and time to allow the building of a proper business case for agreed-upon priorities. Thrash it out and then let's talk about the money that it's going to take, and then everyone can get in front of the TV lights and write the cheques and all be heroes. You can't do it when you get a brown envelope on a Sunday night and by Tuesday morning, in front of TV cameras, the premiers are signing on.

SL: Let's turn to physicians and the health information agenda. Canada, again lamentably, is at the bottom of the G-7 in adoption of IT – the EMR [electronic medical record], particularly. Some argue that you can solve a lot of problems with a health information system that can produce real-time data and reports at multiple lev-

els, from clinical practice all the way to management and governance. Is this a key part of the solution, or do you think we are placing too much hope in it? Do you think we're prepared to invest the money that it's going to take to get there?

PB: Do I think it has the potential to deliver on the quality agenda? Absolutely. It is a vehicle, but it's not the only thing. Most practitioners have no real way to properly assess whether they're consistently delivering high-quality care to their patients. When we developed the online chronic disease tool kit in BC, it was an eye-opener for our practitioners. Once they started to use it (it was Web-enabled), it made a dramatic difference to them in terms of understanding how well they were doing in relation to best practice.

But while we have a group of physicians who absolutely buy into the need for a comprehensive, interoperable health information system, there is a nervousness about what will change in terms of accountability. I think our medical associations have seen what's happened in the National Health Service in the UK, where every primary care practice is being audited and compensation increases are tied to the quality of care delivered and, in some instances, patient outcomes. This is new territory, and we have lots to learn about how well it works.

Are we going to get productivity gains out of the EMR? That has been the business case used to convince government to invest. I think to achieve the promises will require a major shift in how governments do business. A lot of the return-on-investment estimates assume quality will get better, and we will get economies of scale and price reductions. I see those as being high expectations, particularly where physician fees are concerned. Ontario has probably had the best-documented success, where they were able to lower the hospital costs of hip and knee replacements – although not the physician costs. The obvious next step should be to negotiate the whole price, and have the institution and the providers figure out their roles in achieving the volume discount. Like any other sector, if we develop information systems that can enhance productivity, there should be a reduction in the unit cost – just how to achieve this is the challenge.

SL: What about capacity? We have ramped up medical school enrolments in this country by close to 60%, the effects of which will be felt in a few years. All in all, have we done the right thing, or might we find ourselves, a decade down the road, having made a big mistake by not taking the opportunity to change the status quo, instead having opted mainly to make the status quo bigger?

PB: Well, I worry a lot about that. I think we did need to expand – certainly in some parts of the country. BC has never been remotely self-sufficient in educating its own physicians, so we did need to expand. Do we graduate physicians who have a completely different outlook on life and know they're going to practise in a different model and environment, as part of a system to which they're accountable? I think for sure their outlook and expectations are changing – however, there has been slow

progress in the integration of opportunities for cross-disciplinary training. There are some very innovative programs – many of them involving rural rotations or opportunities to serve hard-to-reach populations, but there is a way to go before everyone, both at the undergraduate and postgraduate levels, has these new models as an integral part of their ongoing training. At UBC, where we created the College of Health Disciplines with great enthusiasm and hope for progress, there has been difficulty over the years in obtaining the appropriate support to have an impact on large numbers of health professional trainees.

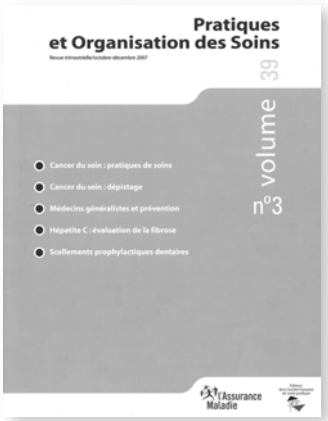
If you look at high-performing health organizations in North America, such as Kaiser Permanente, the Veterans Affairs health system or Group Health Cooperative in Seattle, the environment drives you into interdisciplinary models, and there's an organizational culture that says, "This is the way we do business." But in the parts of Canada where the compensation model is primarily fee-for-service, we are going to struggle to move this agenda.

SL: As a last word, is there anything that makes you optimistic that we can actually start to fix some of these problems?

PB: One of the things that gives me hope is that we are starting to make better use of the information we collect in Canada – imperfect though it may be. As examples, we have seen the publishing of Hospital Standardized Mortality Rates for the first time in Canada; accountability agreements with clear patient-related outcome and access expectations are now standard with health regions; chronic disease management metrics at the provider level are now starting to be common across the country. This is all a shift from when I started practice. All of this provokes more awareness and transparency in regard to the quality of the service we are delivering, and drives an organized response to improve the results. I think we are learning that we don't have to spend a bazillion dollars and take 20 years to produce the perfect evidence to drive quality improvement. Lots of usable information is sitting right there; it's like a little gold mine we're sitting on. So, let's use it and make things better for Canadians.

Pratiques et Organisation des Soins

Issue 3, 2008



It is our pleasure to announce the agreement between *Healthcare Policy/Politiques de Santé* and the French publication *Pratiques et Organisation des Soins*.

Based on the agreement, the journals will publish each other's Table of Contents and, upon editorial assessment, articles of relevance that were originally published in one of their respective journals by publishing them in the other journal. The publication of articles in both English and French will enhance the dissemination of articles from the sectors of knowledge common to both journals. For more information on *Pratiques et Organisation des Soius* visit http://www.longwoods.com/pages.php?pageid=119

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Denis JL, Contandriopoulos AP, Pomey MP

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A conceptual framework for analyzing clinical governance in healthcare establishments
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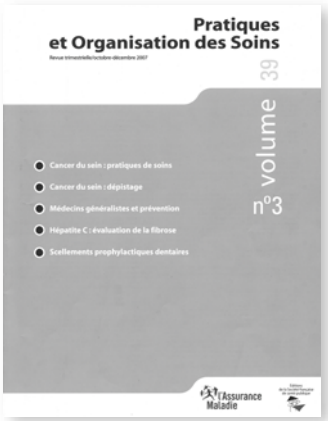
Pratiques et Organisation des Soins
Numéro 3, 2008



Il nous fait plaisir d'annoncer l'accord entre *Healthcare Policy/Politiques de Santé* et la revue française *Pratiques et Organisation des Soins*.

D'après cet accord, les revues vont publier leurs Table des Matières respectives et, suite à une évaluation de la rédaction, les articles pertinents d'une revue seront publiés dans l'autre revue. La publication des articles en anglais ainsi qu'en français accroîtra donc la dissémination d'articles du domaine de la connaissance qu'ont en commun les deux revues. Pour plus d'information, visitez le site de la revue : http://longwoods.com/pages.php?pageid=119

Éditorial

Denis JL, Contandriopoulos AP, Pomey MP

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Discussion et perspectives

Gouvernance clinique : discussion et perspectives
Denis JL, Contandriopoulos AP

Health Services Researchers Working within Healthcare Organizations: The Intriguing Sound of Three Hands Clapping

Les chercheurs au sein des organismes de services de santé

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Abstract

Healthcare organizations offer a promising but complicated work environment for health services researchers. Working directly within these organizations can yield stronger connections with decision-makers, better access to organizational data and, ultimately, greater potential for research findings to influence decisions. However, there are also challenges for the researcher and the host organization related to divergent work objectives, mismatched timelines and unclear criteria for performance assessment. The authors examine the advantages and disadvantages of this research model for both the health services researcher and the decision-maker.

Résumé

Les organismes de santé représentent des milieux de travail prometteurs, bien que complexes, pour les chercheurs qui s'intéressent aux services de santé. En travaillant directement au sein de ces organismes, les chercheurs peuvent établir des liens plus forts avec les décideurs et accéder plus facilement aux données. Leurs résultats ont également plus de chances d'influer sur les décisions. Toutefois, les chercheurs comme les organismes font face à des défis quant aux objectifs de travail divergents, aux échéanciers incompatibles et aux critères imprécis en matière d'évaluation du rendement. Les auteurs examinent les avantages et les désavantages de ce modèle de recherche, tant pour les chercheurs que pour les décideurs.

For the last decade or more, researchers and decision-makers in Canada have been actively trying to break down the walls that have separated health services researchers from healthcare providers, managers and policy makers (Lomas 1997; CHSRF 2007). There has been focused examination on the nature of researcher/decision-maker partnerships (Denis and Lomas 2003; Denis et al. 2003; Ross et al. 2003; Martens and Roos 2005), their impact on the uptake of research by decision-makers (Innvaer et al. 2002; Lavis et al. 2002) and the structures and processes that facilitate or impede these interactions (Ross et al. 2003; Mitton and Bate 2007; Martens and Roos 2005).

One of the consequences of this push to bring decision-makers and researchers closer together is that it is becoming more common for health services researchers to work directly within healthcare organizations. Some examples of Canadian healthcare organizations directly employing researchers include the British Columbia Cancer Agency's Health Economics and Cancer Research Program, Cancer Care Ontario's Cancer Services and Policy Research Unit, the Centre for Addiction and Mental Health's Health Systems Research and Consulting Unit and health services/policy research units in a number of regional health authorities (e.g., the Calgary Health Region and Eastern Health in Newfoundland and Labrador). However, the implications of this research model are not always clear for either health services researchers or the organizations in which they work.

In this paper, we look at some of the advantages and disadvantages of this type of research position, primarily based on our own experiences as researchers who currently work within this research context. Although the nature of these positions varies from organization to organization, our experience will likely resonate with others working in similar situations. We conclude by identifying issues requiring further consideration and make some recommendations on how to maximize the benefits of this increasingly common research arrangement.

Defining the Role

Traditionally, health services research has been conducted by university-based researchers or researchers working in dedicated research institutes. Many healthcare providers, in addition to their clinical responsibilities, have also been engaged in health services research. However, we are focusing here on those health services researchers (a) who are embedded within organizations that have responsibility for the organization or delivery of health services (e.g., government ministries or agencies responsible for health services, regional health authorities, hospitals and other provider organizations) and (b) whose primary responsibility is to develop and lead independent health services research.

We view a key feature of being a health services researcher, regardless of setting, as the intent to produce work that is useful beyond a particular organization and the desire to disseminate research findings to audiences beyond that organization. Much of the tension associated with health services researchers working directly within a healthcare organization relates to this dual focus – supporting decision-making within a specific organization, but also producing work that will be valuable to those outside it (and, hopefully, publishable as well).

Interactions with Decision-Makers

One of the proposed ways to improve research uptake is to have early and regular interaction between researchers and decision-makers (Lomas 2000; Lavis et al. 2002). Working directly within a healthcare organization allows for a greater level of interaction with policy makers, managers, clinicians and clinical leaders than can usually be maintained by researchers who are based outside these organizations. Regular opportunities to participate in organizational meetings and activities, discuss organizational challenges and consider prospective research questions with decision-makers gives the researcher based in a healthcare organization a better understanding of the decision-making context and extends the researcher/decision-maker relationship beyond the confines of individual research projects (Ross et al. 2003).

Established connections with decision-makers can improve access to organizational data. The identification of data sources and the ability to secure timely organizational approval for data access facilitates proposal development and the conduct of research. The decision-makers themselves represent key qualitative data sources. Their existing relationships with in-house health services researchers creates a natural context for data collection via key-informant interviews or focus groups.

While having greater access to decision-makers, health services researchers based in healthcare organizations will likely have less interaction with academic colleagues and students. This potential disadvantage is mitigated to some extent if the researcher holds an academic appointment or has academic responsibilities (e.g., teaching or supervi-

sion of graduate students). From a healthcare organization's perspective, one of the advantages of having health services researchers on staff is that they can be an excellent conduit for connecting with the external health services research community. These connections can be important for bringing new knowledge into the organization and fostering innovation.

Healthcare organizations must also consider whether developing internal health services research capacity is a wise use of scarce resources. Ongoing interaction between researchers and decision-makers may broaden the scope of research questions addressed and identify research opportunities that support decision-making within the organization. However, decision-makers face the fine balance between influencing the research questions pursued and biasing the direction of the research or its outcomes. As researchers in healthcare organizations often report to a senior decision-maker, the freedom to pursue an independent research agenda depends, then, to a much larger extent than in other research environments, on the degree of independence the decision-maker provides to the researcher. The nature of these freedoms can be, but are often not, explicitly framed through contractual agreements between healthcare organizations and embedded researchers, as is done for broader relationships between healthcare organizations and external health services researchers (Martens and Roos 2005).

Research Funding and Infrastructure

The ability to secure funding is critical for maintaining a high-quality and sustainable research program. Many of the main Canadian health services research funding agencies (e.g., Canadian Institutes of Health Research, Canadian Health Services Research Foundation and Canadian Patient Safety Institute) are increasingly encouraging researcher/decision-maker collaboration in targeted funding competitions. For example, the CIHR Partnerships grant competition requires applicants to bring together a team of researchers and decision-makers, with decision-making organizations committed to matching funds dollar for dollar (CIHR 2007). Health services researchers working within healthcare organizations are well positioned to compete in these funding competitions and provide an important link to external funds for healthcare organizations that want to pursue strategic issues that might not otherwise receive attention.

These same funding programs also expose one of the most critical barriers to collaborative work between health services researchers and decision-makers: the mismatch in timelines between the typical research cycle and decision-makers' needs (Lomas 2000). Major research funding competitions often require between six months and one year from initial submission to the awarding of funds to successful applicants. With decision-making often a sprint, and research a journey, this lag can create difficulties for researcher/decision-maker collaborations that do not anticipate the mismatch in timelines. Health services researchers embedded in healthcare

organizations must actively work with decision-maker colleagues to set out realistic expectations for research outputs that can inform decision-making, usually over the medium to long term (Black 2001).

Methodological Rigour and Research Ethics

The time required to conduct research depends, to some degree, on the level of rigour required. For decision-makers, it is often more important to produce work quickly, increasing its relevance for issues that are currently on the organization's agenda. Healthcare organizations often hire external consultants to conduct program evaluations in relatively tight timeframes, often at the expense of methodological rigour. Researchers, on the other hand, require a higher degree of rigour, especially if they intend to disseminate their work to wider audiences (e.g., in peer-reviewed journals). Ensuring the appropriate level of methodological rigour takes time. Health services researchers in healthcare organizations can often face the dilemma of needing to provide timely, relevant research results to their organizational decision-maker colleagues, while at the same time attempting to meet the methodological expectations of the wider research community. Embedded researchers may often be involved in projects that solely support organizational objectives; however, this work lies in a grey zone regarding the need for ethics approval, timeliness relative to organizational demands and the potential acceptability by peer-reviewed publications.

Other issues related to research ethics arise because of the researcher's position within the organization they are often studying. While in other fields, most researchers do not have direct reporting relationships with study subjects, health services researchers based in healthcare organizations often have such links. As many new funding opportunities require decision-maker involvement in research projects, the traditional assurance of confidentiality or anonymity given to study subjects can be complicated. Researchers and decision-maker partners need to establish at the outset of a project who will be allowed to view raw data, particularly identifiable data from interviews of other decision-maker colleagues, and their respective contributions to the analysis, so that study participants can provide informed consent. However, the potential need to restrict the role of decision-makers in the analysis of data can sometimes negate the critical insights that decision-makers can bring to this research arrangement.

Beyond concerns of confidentiality and anonymity, health services researchers based in healthcare organizations regularly produce results that are linked, directly or indirectly and either positively or negatively, to the efforts of their decision-maker colleagues. While there are high-profile cases of industry and institutional influence over the dissemination of research results (Thompson et al. 2001), there are more implicit and intangible ways for decision-makers to influence research. While external funding sources and ethics review processes can facilitate proper conduct, there may be subtle

internal pressures that influence or bias the publication of negative findings to which researchers working in this context need to be attuned.

Assessing Performance

Another aspect of the research context that differs considerably between universities or research institutes and healthcare organizations is the assessment of performance of health services researchers. In traditional academia, the tenure-track model guides performance reviews, which value scientific success and output (mostly based upon peer-reviewed grants and publications) and teaching performance as key elements in assessments for promotion. For health services researchers in healthcare organizations, the assessment of performance is less clear.

Because many health services researchers hold academic appointments and also work in healthcare organizations, they essentially report to two masters. While Mitton and Bate (2007) have suggested that reward structures for university-based applied researchers do not require fundamental reform, health services researchers based in healthcare organizations face a different set of intrinsic and extrinsic incentives that expose misalignments between specific organizational objectives and traditional academic aims.

Closely linked to the confusion over performance review, differences in pay scales in healthcare organizations versus universities create further uncertainty. Should the health services researcher working for a healthcare organization be paid based on pay scales for a relevant university department or on the employing organization's scales? When the scales are similar, there are fewer issues; however, when the scales differ significantly, there may be expected but unintended consequences. For example, higher pay scales in a healthcare organization may influence the health services researcher to shift roles and take on more decision-making responsibilities, while higher pay scales in the university department may influence the researcher to give academic performance greater priority. If health services researchers become more prevalent in healthcare organizations, the impact of remuneration models requires greater consideration.

Moving Forward

Health services researchers working within healthcare organizations create a complex but potentially synergistic environment in which health services research can flourish. In Table 1, we set out some of the key advantages and disadvantages of this research model.

To maximize the benefits of this arrangement, there are a number of measures that could further support health services researchers embedded in healthcare organizations. First, health services research funders need to continue to develop funding opportunities that explicitly recognize and encourage researchers based in healthcare organiza-

tions. Expansion of partnership grants creates excellent opportunities for embedded researchers, while salary support programs, such as Ontario's Career Scientist Awards (OMHLTC 2008) or those offered by the Michael Smith Foundation for Health Research (2008), make this model more appealing to healthcare organizations (by reducing salary costs) and researchers (by providing more opportunities to improve performance based on academic criteria). Second, contractual agreements between healthcare organizations and their embedded health services researchers should be enhanced. These contracts need to define the researcher's role and explicitly establish the researcher's academic freedom to conduct research and disseminate findings. The contracts should also clearly set out criteria for performance assessment and remuneration that acknowledge contributions to the organization beyond the scope of traditional academic performance assessment. Third, ethics review boards need to address the implications of this embedded research model, including development of clearer criteria for the types of research that require ethics review, and guidance for the role that decision-makers can or should play in the conduct of research. Finally, given the emergent nature of this type of health services research position, there is much to learn from those currently working in this context. Greater efforts are needed to document and compare the experiences of others in similar positions, both in Canada and internationally, to improve the potential of this research model.

TABLE 1. Advantages and disadvantages of health services researchers working within healthcare organizations

	Advantages	Disadvantages
For decision-makers	• Increased interaction with researchers • Allows decision-makers easy access to researchers to support decision-making • Conduit for interactions with external health services research expertise • Helps foster innovation • Allows development of a more relevant research agenda • Greater potential for research findings to influence decision-making • Greater potential to draw on external research funding sources to support organization objectives	• Resources for researchers may be used for some projects that are not specifically focused on the organization • Researchers' timelines are often too long to be useful for decision-makers • Requires organizational resources that could be used for other purposes, including service provision
For health services researchers	• Increased interaction with decision-makers • Allows development of a more relevant research agenda • Greater potential for research findings to influence decision-making • Facilitates development of researcher/decision-maker collaborations required for many grant funding competitions • Facilitates access to organizational data sources	• Less control over research agenda • Dilemma between methodological rigour appropriate for academic audiences and relevance/timeliness for decision-maker audiences • Involvement of decision-makers in research projects can result in more complex research ethics contexts • Confusion around performance assessment

Jonathan Lomas' "one hand clapping" paper (1997) was a rallying cry for greater interaction between researchers and decision-makers. A decade later, there appears to have been some movement. The sound of one hand clapping has become intriguingly audible, with the hands of health services researchers, academia and a range of decision-making organizations attempting to join in. However, while we are moving in the right direction, it is still too early for an ovation. With interest in health services research greater than ever before, more funding opportunities mean more research projects and more health services research positions (Hutchison 2007). Ultimately, the success of researchers working directly within healthcare organizations will depend on the commitment and cooperation of health services researchers, healthcare organizations, funders, universities, ethics review boards and other stakeholders. We now have important opportunities to structure these relationships to ensure that this model of health services research delivers on its promise.

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REFERENCES

Black, N. 2001. "Evidence Based Policy: Proceed with Care." *British Medical Journal* 323: 275–79.

Canadian Health Services Research Foundation (CHSRF). 2007. *Knowledge Exchange. Resources.* Retrieved September 30, 2008. <http://www.chsrf.ca/knowledge_transfer/resources_e.php>.

Canadian Institutes of Health Research (CIHR). 2007. *Partnerships for Health System Improvement.* Retrieved September 30, 2008. <http://www.cihr-irsc.gc.ca/e/34347.html>.

Denis, J.L., P. Lehoux, M. Hivon and F. Champagne. 2003. "Creating a New Articulation between Research and Practice through Policy? The Views and Experiences of Researchers and Practitioners." *Journal of Health Services Research and Policy* 8(S2): 44–50.

Denis, J.L. and J. Lomas. 2003. "Convergent Evolution: The Academic and Policy Roots of Collaborative Research." *Journal of Health Services Research and Policy* 8(S2): 1–6.

Hutchison, B. 2007. "Divvying Up the Funding Pie: What Share for Health Services and Policy Research?" *Healthcare Policy* 2(4): 12–16.

Innvaer, S., G. Vist, M. Trommald and A. Oxman. 2002. "Health Policy-Makers' Perceptions of Their Use of Evidence: A Systematic Review." *Journal of Health Services Research and Policy* 7(4): 239–44.

Lavis, J.N., S.E. Ross, J.E. Hurley, J.M. Hohenadel, G.L. Stoddart, C.A. Woodward and J. Abelson. 2002. "Examining the Role of Health Services Research in Public Policymaking." *Milbank Quarterly* 80(1): 125–54.

Lomas, J. 1997. *Improving Research Dissemination and Uptake in the Health Sector: Beyond the Sound of One Hand Clapping*. Hamilton, ON: McMaster University Centre for Health Economics and Policy Analysis, Policy Commentary C97-1. Retrieved September 30, 2008. <http://www.chsrf.ca/knowledge_transfer/pdf/handclapping_e.pdf>.

Lomas, J. 2000. "Connecting Research and Policy." *Canadian Journal of Policy Research* 1(1): 140–44.

Martens, P. and N. Roos. 2005. "When Health Services Researchers and Policy Makers Interact: Tales from the Tectonic Plates." *Healthcare Policy* 1(1): 72–84.

Michael Smith Foundation for Health Research. 2008. Career Investigator Program. Retrieved September 30, 2008. <http://www.msfhr.org/sub-funding-career.htm>.

Mitton, C. and A. Bate. 2007. "Speaking at Cross-Purposes or Across Boundaries?" *Healthcare Policy* 3(1): 32–37.

Ontario Ministry of Health and Long-Term Care (OMHLTC). 2008. *Research Competitions*. Retrieved September 30, 2008. <http://www.health.gov.on.ca/english/providers/ministry/research/competitions.html>.

Ross, S., J. Lavis, C. Rodriguez, J. Woodside and J.L. Denis. 2003. "Partnership Experiences: Involving Decison-Makers in the Research Process." *Journal of Health Services Research and Policy* 8(S2): 26–34.

Thompson, J., P. Baird and J. Downie. 2001. *Report of the Committee of Inquiry on the Case Involving Dr. Nancy Olivieri, the Hospital for Sick Children, the University of Toronto, and Apotex Inc*. Ottawa: Canadian Association of University Teachers.

Call to Authors

DISCUSSION AND DEBATE

The Discussion and Debate section of *Healthcare Policy* offers a forum for essays and commentaries that address: (1) important health policy or health system management issues; or (2) critical issues in health services and policy research. Submissions should be a maximum of 2,000 words exclusive of (no more than 20) references. The main points of the paper should be highlighted in an abstract (summary) of 100 words or less.

Appel aux auteurs

DISCUSSIONS ET DÉBATS

La section « Discussions et débats » de *Politiques de Santé* offre un forum pour la publication de comptes rendus et de commentaires portant sur les sujets suivants : (1) d'importantes questions liées aux politiques de santé ou à la gestion du système de soins de santé; ou (2) des questions cruciales concernant les services de santé et la recherche sur les politiques. Les articles devraient être d'au plus 2 000 mots, sans compter les références (pas plus de 20). Les points saillants de l'article devraient être mis en évidence dans un résumé (sommaire) 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.

"Mind the Gap": Seven Key Issues in Aligning Medical Education and Healthcare Policy

« Attention à la marche » : sept lacunes dans l'harmonisation entre la formation médicale et les politiques de santé

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Abstract

To ensure an adequate supply of physicians for the future, Canadian faculties of medicine have been expanding and modifying physician training at the undergraduate and postgraduate levels with the intention of producing more physicians and addressing long-standing challenges in the Canadian physician workforce. While these medical education initiatives may partly address these goals, the lack of alignment between

health services policy and education policy may well lead to failures and disappointing results. The authors argue that changes in related healthcare policy are required both to support the intended outcomes and to sustain innovations in medical education. From their perspective as medical educators, the authors describe seven key gaps in this alignment, identify those who are in a position to address them and call for ongoing opportunities to identify, discuss and address alignment of policy with other initiatives at the national and provincial levels.

Résumé

Afin d'assurer une disponibilité adéquate de médecins pour l'avenir, les facultés de médecine au Canada ont augmenté et modifié leurs programmes de premier cycle et d'études supérieures dans le but de former davantage de médecins et d'affronter les défis chroniques de la main-d'œuvre médicale au Canada. Bien que ces initiatives permettent dans une certaine mesure d'atteindre les buts visés, le manque d'harmonisation entre les politiques des services de santé et les politiques d'enseignement peut potentiellement mener à des échecs et donner des résultats insatisfaisants. Les auteurs affirment qu'il est nécessaire d'apporter des changements aux politiques de santé pour atteindre les résultats souhaités et pour consolider les innovations en matière de formation médicale. Les auteurs – qui enseignent la médecine – décrivent sept lacunes, identifient les intervenants en mesure d'y pallier et demandent la mise en place de conditions durables pour cerner, discuter et traiter la question de l'harmonisation des politiques avec les autres initiatives aux niveaux national et provincial.

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Current discussions regarding physician shortages in Canada are yielding solutions that involve multiple potential stakeholders, including provincial and federal governments, healthcare systems, licensing bodies and universities. Canadian medical schools are expanding and innovating to train appropriate numbers of physicians, but long-term outcomes of these initiatives may fall short unless gaps in policy between education and those of the supporting sectors are identified and addressed. This paper describes seven such gaps. We write from the perspective of medical educators, and call for new forums for dialogue to analyze and effectively address alignment of policy with medical education initiatives on the national and provincial levels.

Canada has faced an imbalance between its physician supply and its population since the 1990s. Chan (2002) reported a 5.1% drop in the real physician–population ratio, which adjusts for aging of the population and changing physician demographics, between 1993 and 2000. Twenty-five percent of the drop was attributed to increased

time spent in postgraduate training, 22% to decreased intake of international medical graduates, 21% to the drop in enrolment in rotating internships, 17% to an increase in retirements, 11% to reduced enrolment in the classes of 1991 to 1997 and 3% to a loss of Canadian physicians to migration (Chan 2002). Other physician changes include reduced physician hours from those doctors close to retirement age, an increased number of female physicians with families (National Physician Survey 2008) and a younger generation of physicians who, male or female, focus on work–life balance (Buske 2005). Further, increases in the number of physicians entering practice from 2002 to 2006 only kept pace with population growth of 4% during the same period (CIHI 2007a). The aging of the population will continue to increase the requirement for physicians (Denton et al. 2003), and the increased burden of chronic illness is affecting physician caseloads (National Physician Survey 2008). While interprofessional care teams and the development of new allied health professional roles, such as physician assistants, may mitigate some perceived shortages, physician workforce shortfalls are unlikely to be fully addressed through such changes in practice.

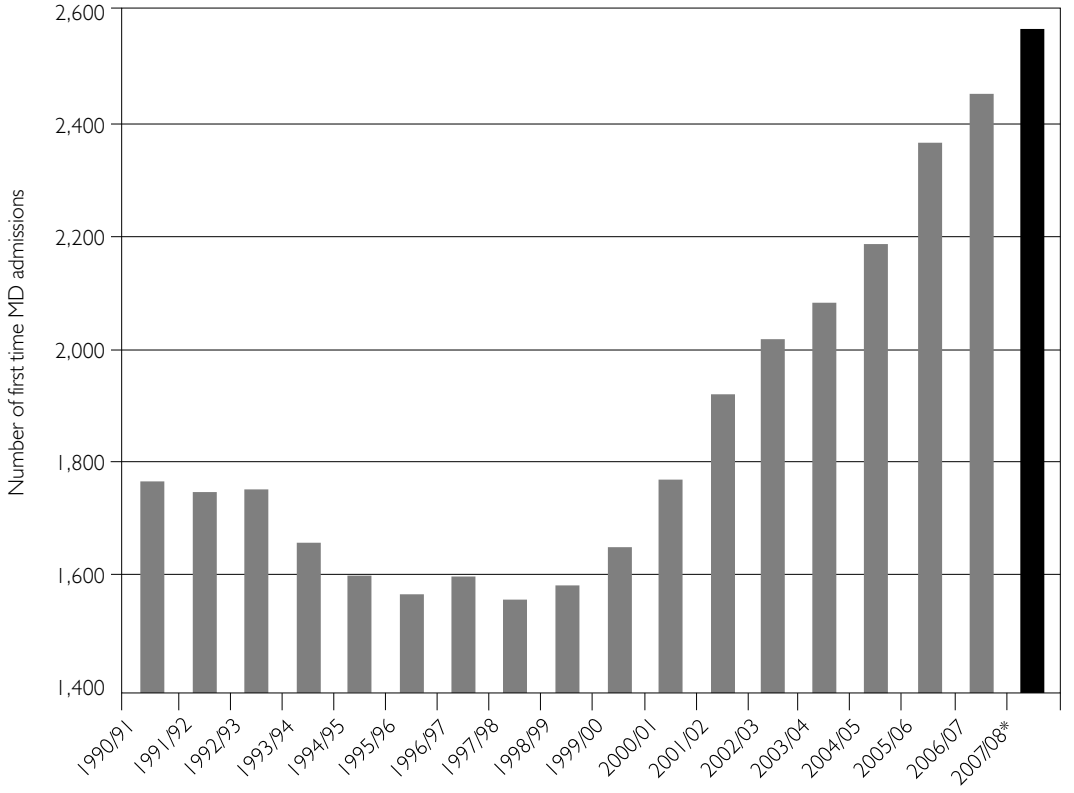
While the number of new doctors required can be debated, there is general agreement regarding the need to increase the number of physicians overall, with particular emphasis on increasing physician supply for chronically underserved urban, rural, northern and Aboriginal populations. Canadian faculties of medicine and federal and provincial governments have responded to the need to train more physicians with planned expansion of both undergraduate and postgraduate medical education capacity. Coincident with this expansion, the Association of Faculties of Medicine of Canada (AFMC) has articulated a framework of social accountability for medical schools (Health Canada 2001) that focuses on the needs of underserved populations. Resulting new models of medical education are designed to address long-standing issues of the Canadian physician workforce. However, these initiatives are placing new pressures on the healthcare system, and may falter because of inadvertent gaps created between education and health services policy, some of which threaten the viability of the new educational initiatives. We argue that the loss of viability is neither necessary nor inevitable, but that we must address these seven key gaps to avoid such inadvertent failures.

1. Increased Demands for Clinical Medical Education

In 2006, 17 faculties of medicine in Canadian universities entered 2,460 students into first-year MD undergraduate programs, up from a low of 1,577 in 1997 (Figure 1) (AFMC 2007). That same year, postgraduate programs entered 2,058 trainees into first-year postgraduate training, an increase from 1,664 in 1996/97 (CAPER 2006), and the number of postgraduate trainees is expected to increase further as expanded undergraduate classes enter postgraduate training. This expanded number of medical trainees accelerates the need for additional clinical settings in which students train

during their third and fourth years, and for the majority of their postgraduate training. As a result, hospitals, health regions, clinics and physicians, not previously engaged in teaching medical students, are being recruited to take both undergraduate students and postgraduate residents. This situation creates the first challenge.

FIGURE 1. First-time admissions to MD programs, Canada, 1990/91–2007/08



Source: AFMC, *Canadian Medical Education Statistics*, 2007.
* Data for 2007/08 are a preliminary estimate.

Publicly funded organizations have a mandate to operate in a cost-effective manner and to allocate resources based on the immediate care needs of their population. While some learners at senior levels contribute to the overall capacity of health services delivery, in general, introducing learners into clinical settings reduces the efficiency of services delivery by all healthcare workers, including physicians (Kirz and Larsen 1986). With supervision requirements for pre-licensure learners increasing because of patient safety agendas, operational efficiencies are further reduced. If education is to be seen as a core healthcare function, a certain element of "operational inefficiency" will need to be acceptable and costed as a part of healthcare as trainee numbers increase. New high-efficiency surgical units designed to reduce waiting lists will have to include trainees in

their mandate, although this requirement is at odds with their stated purpose. As well, financial and administrative support for preceptors is needed, even though ministries responsible for university education are hesitant to develop a funding precedent that might spread to workplace education of other professionals. To resolve this challenge productively, government sectors must cooperate for overall outcomes, but academic programs must also examine their educational programs to ensure the most effective use of clinician teachers and clinical settings. New methods of clinical teaching, using simulation and standardized patients, must be developed and funded to reduce the burden of student learners on the healthcare system.

2. Integration of Internationally Educated Medical Graduates into the Physician Workforce

A second challenge occurs with the assessment and training required of medical schools to integrate internationally educated medical graduates (IMGs) into Canada's physician workforce. Canadian faculties of medicine are responsible for the domestic production of medical doctors (Canadian medical graduates, or CMGs), while the postgraduate programs train both CMGs and IMGs for practice in specific disciplines. In Canada, nearly one-third of licensed physicians are fully or provisionally licensed IMGs; the proportion is higher in some provinces (Audas et al. 2005). In order to increase physician supply, there is pressure to increase the speed of integration of IMGs into the Canadian workforce (Canadian Task Force on Licensure of International Medical Graduates 2004). IMGs entering postgraduate training have quadrupled in the past 10 years: in 1996, 236 IMGs applied to the Canadian Resident Matching Service, and 11 were placed in postgraduate training programs; in 2006, 932 applied and 111 were placed (CaRMS 2006a). Those being called on to assess and retrain IMGs are, in most cases, the same physician educators who are being asked to accommodate the increased numbers of CMGs. These same physicians are also often stretched to deliver clinical services. Thus, federal and regional efforts to integrate IMGs and provincial efforts to increase domestic supply require careful coordination to prevent strain on clinician educators.

The second dimension of the challenge to integrate IMGs into the workforce relates to issues of social justice. The current pool of IMGs in practice in Canada is drawn extensively (43.4%) from the world's poorest nations (Mullan 2005), whose societies would benefit more by retaining their doctors domestically (Eckhert 2002). Canada's role in not only actively recruiting these physicians but also encouraging immigration of professionals who arrive, only to find themselves unable to access licensure to practise, requires debate. The increasingly large number of Canadians studying medicine outside North America and intending to return for postgraduate training, currently estimated to be over 1,500 (Sullivan 2007), and the opening of additional medical schools in

the Caribbean and elsewhere for internationally recruited students, raise important questions about whether to allocate a finite Canadian resource for clinical education to domestically produced medical doctors, Canadians who have accessed training outside North America in part because of limitations in medical school capacity, or new Canadians who have been recruited or encouraged to immigrate from other countries to fill physician workforce shortages. Only one thing is sure: we do not have the capacity to fulfill all these needs. However, there is little public debate about how to balance these competing demands.

3. Lengthened Postgraduate Training

A third challenge is due to the increasing length of postgraduate training, which delays formal entry into the workforce (Chan 2002). While this phenomenon appears to result from student preference, the highly specialized environment of academic teaching centres may model extended training and subspecialization as desirable to trainees. While extension of training produces a negative effect on numbers of practising physicians, senior trainees provide a lower-cost service capacity to the healthcare sector that is not quantified. Reducing time in undergraduate education has been suggested as one pathway to shortening the education time for physicians (Flegel et al. 2008), but there is also a need to explore strategies other than extended accredited training to build special skills desired by postgraduate trainees. To address this challenge, we advocate that university divisions of continuing professional development, professional medical associations and health authorities collaboratively restructure the funding support and expectations for the development of enhanced skills desired by practising physicians and the regions in which they serve.

4. Retention of Physicians

While medical schools may design educational programs to place trainees in underserved settings to enhance the possibility of recruitment, the agreement on national licensing standards, which creates portability of licensure across Canada, facilitates the flow of licensed physicians to desirable practice locations, creating regional physician shortages. Between 1991 and 1999, 19% of physicians moved between provinces or outside the country, with much of the interprovincial movement from "have not" provinces to "have" provinces (Thurber and Buske 2001). Such physician movement, while upholding individual rights, constitutes a fourth challenge to the equitable distribution of physicians across regions within Canada. For example, provinces that gain physicians trained in "have not" provinces currently have no responsibility to reimburse the costs of medical education to the province of training, and there is little appetite in the Canadian setting for "return of service" arrangements. While IMGs

are often recruited to practise in settings that are unable to recruit Canadian graduates, such recruiting is expensive, especially as there is a rapid turnover of IMGs out of underserved areas (Audas et al. 2005). Those small provinces that cannot support training programs in all specialties face further challenges in recruitment of some specialist physicians. We argue that policies are needed to balance individual rights of physicians for mobility with societal rights for access to care. Also, provincial licensing bodies must review their licensure regulations and, where possible, address regional disparities through national collaboration.

Furthermore, in the 1990s, about 9.5% of Canadian physicians moved to locations outside Canada (mainly the United States). During the same period, about 186, or one in nine, Canadian-educated physicians from each graduating class joined the US physician workforce (Phillips et al. 2007). However, the number of physicians who moved abroad decreased by 57% over the last five years, and for the third year in a row in 2006, the number of physicians returning from abroad was greater than the number leaving Canada, suggesting a reversal of the outflow trend (CIHI 2007a). However, the anticipated shortages of physicians in the United States are likely to lead to intensified recruitment of Canadian physicians to the USA (AAMC 2006). Unless these are counteracted with well-thought-out retention strategies, the Canadian physician outflow may again intensify. Increased understanding of the reasons for out-migration and effective strategies for retention are needed, and strategies are likely to cross sectors.

5. Shortages of Physician Supply in Northern and Rural Canada

New medical education initiatives, including a new northern medical school and regional campuses, are attempting to address the challenge of physician shortages in northern and rural areas of Canada. While all medical schools in Canada are located in urban environments with populations over 100,000, these urban-centric faculties are developing new admissions processes to increase recruitment of rural students and advance rural placements. They are also implementing community-based models of clinical education in rural communities and developing regional campuses in underserved areas. Additionally, they seek to enhance postgraduate medical education to address the need for physicians in rural, remote and northern settings. Seven faculties of medicine in Canada are establishing satellite campuses for undergraduate medical education (Kondro 2006), some in areas of physician shortages. At the postgraduate level, the number of rural family medicine residency (postgraduate) positions offered in Canada increased from 36 in 1989 to 144 in 2003, and by 2002, 20% of the 712 Canadian family medicine residency positions were in rural training sites (Krupa and Chan 2005). In many regions of the country, the alignment of university mission with provincial policy to address need has led to the development of a set of strategies aimed at easing these shortages.

While these are positive developments regarding medical education in rural and northern regions, retention is an ongoing challenge. Rural programs achieve excellent retention rates of 70% to 80% following certification (McDonald et al. 2002; Thommasen 2000), but research indicates that extended retention initiatives are weak (Society of Rural Physicians of Canada 2002). For example, in 2000, about 45% of graduates of Université Laval family medicine programs were practising in rural areas two years post-residency. However, in 2002, only about 15% of the class of 1992 from the same university was still in rural areas. There are some practices that suggest how to improve the retention of rural physicians. In Queensland, Australia, factors negatively related to retention included workload/after-hours work, locum access, practice management load and chronic conflict (Hays et al. 1997). A small town in northern Ontario noted that such strategies as implementation of alternative payment plan funding, consensus physician group decision-making and recruitment of 50% more physicians than FTEs required for the population have stabilized physician services there (Orrantia 2005). These findings suggest that multiple strategies must be developed through government, university and local community initiatives to support physicians in small communities across Canada.

Information and communication technology holds great promise to educate future health professionals in rural and northern communities and to support them in practice. High-speed internet connections and video conferencing systems are increasingly available in northern and rural areas of Canada, but the lack of integrated planning between telehealth networks intended for service delivery to patients and university networks designed to educate students and link physicians represents an undeveloped opportunity. Under current arrangements, in order to train physicians in rural areas, medical schools establish and manage regional campuses and distribute programs using high-speed video conferencing networks designed for education, while academic health centres develop high-speed network applications for telehealth services delivery. Joint planning could achieve a more collaborative use of resources and lead to increased support for the development and stabilization of a rural workforce.

6. Shortage of Generalists

Traditionally, Canada has had strong postgraduate educational programs in family medicine, with approximately 30% of graduates selecting a career in that specialty (CaRMS 2003). However, an alarming decline in these traditional choices occurred during the 1990s, as the number of graduating medical students choosing family medicine declined from 44% in 1992 to 25.5% in 2004 (CaRMS 2004). In response, the College of Family Physicians of Canada funded Family Practice Interest Groups at every medical school to increase student interest in choosing family medicine. This initiative may be responsible in part for the recent reversal in the decline (Kerr et al. 2008). The selection of

family medicine residencies increased to 27.6% in 2005 and to 31.7% in 2006 (CaRMS 2005, 2006b).

In order to ensure that students choose such specialties as family practice, general paediatrics, general internal medicine and general surgery, changes to the healthcare system must enhance the role and stature of generalists, not reduce it. Health authorities need to counter the perception of coercion of family physicians into primary care reform that discourages medical students from choosing this discipline (Scott et al. 2007). Medical schools must be able to find and recruit generalist physicians as faculty in tertiary care teaching settings, requiring that healthcare systems offer improved roles and recognition to generalists in these settings. Health regions and specialist associations must critically assess the current trend towards subspecialization in terms of its consequent strains on healthcare resource planning. Finally, physician professional organizations and governments must reward and recognize generalist expertise.

7. Shortages of Aboriginal Physician Workforce

Canada's needs in Aboriginal healthcare comprise the seventh challenge. Despite 4.4% of people reporting Aboriginal ancestry (Statistics Canada 2003), according to recent estimates there are only 150 Aboriginal physicians practising in Canada out of a total complement of about 62,000 (Romanow 2002; Sullivan 2005). Health status of Aboriginal people in Canada is dismal, and increasing the number of Aboriginal healthcare workers has been seen as one way to address the health needs of our founding peoples. In 2001, Aboriginal students made up only 0.7% of the first-year class (Dhalla et al. 2002). Since then, several medical schools have implemented high school and undergraduate outreach programs and facilitated admissions processes for Aboriginal applicants, and the number of Aboriginal students studying medicine is climbing every year. Unfortunately, these initiatives falter because of high dropout rates prior to medical school enrolment. As of 2001, 48% of Aboriginals 15 years old and over had less than high school education (versus 31% for Canada's total population), and only 4% obtained a university degree, compared to 15% in the total population (Mendelson 2006).

Attention has recently turned to a pipeline approach to the development of an Aboriginal physician workforce (Acosta and Olsen 2006), involving sectors of early childhood, K–12 education, premedical education, medical education and new clinical placements. Best practices from the United States and Canada should be examined to develop a national plan, supported by federal funding. Canada must be willing to support enhanced access for Aboriginal Canadians to a very competitive area of training. This approach may raise difficult issues for our multicultural society. At the same time, practising physicians and physicians in training must increase their skills in supporting

the health of Aboriginal peoples, requiring the recruitment of new faculty and the development of new curriculum and clinical settings.

Conclusions

While some of the workforce challenges identified in this paper have existed for a long time, the recent changes in educational programs described here offer the potential to address them. However, these educational innovations will have limited success unless policy changes both upstream and downstream are implemented to support the intended outcomes. Specifically, policy implementation must address retention of physicians within Canada and rural areas, migration across provinces, IMG recruitment, IMG integration into practice, integration of health professions education into healthcare settings and increasing the number of successful Aboriginal medical students. Further, all partners must acknowledge an impending crisis in human resources for physician education, currently stretched by a number of colliding issues: (a) increased service demands, (b) requirements for more clinician educators and (c) more oversight responsibilities to integrate IMGs into the Canadian physician workforce. Importantly, we caution that although this paper notes the stresses on physicians arising from initiatives to address physician shortages, other initiatives (to develop nurse practitioners, physician assistants, midwives and other allied health professionals) all call on these same physician educators. Therefore, a balance between short-term and longer-term strategies must be sought collaboratively to reduce the effect. Although both health and education are provincial responsibilities, the federal government has a role to play in "leveling the playing field" to ensure cooperation between provinces on issues that cut across provincial boundaries, as well as underscoring collective responsibility for Aboriginal health.

We have outlined the challenges, and in some cases suggested possible policy or educational direction. But there is currently no ongoing venue for different sectors to meet to discuss and debate these issues, our final challenge. While the Task Force Two Report (2006) brought together education with government, and the recent conference on health and human resources sponsored by the Canadian Institute for Health Information (CIHI 2007b) provided opportunities for presentation and discussion across sectors, ongoing formal collaboration is required for real action. A desirable first step is the development of an annual national conference on the physician workforce, appropriately structured for information, debate and policy recommendations. A second possible step would be dissemination of the outcomes of such a conference through a special issue of this journal. The eventual creation of a national institute of health professions workforce planning – integrating federal and provincial governments, educational institutions and other stakeholders – would provide an effective forum for development and alignment of policy and educational initiatives.

A complex medical education system operating in a complex environment of healthcare to address complex issues of physician resources requires collaboration, innovation and discussion. New partnerships must be forged, with increased understanding of the challenges for all stakeholders. Every challenge outlined above requires multisectoral partnership and collaboration in order to produce effective solutions. No one community, level of government, university or healthcare delivery organization can independently address these challenges. In the end, our success in addressing physician human resource issues in Canada will depend on our ability to work together thoughtfully and collaboratively.

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REFERENCES

Acosta, D. and P. Olsen. 2006. "Meeting the Needs of Regional Minority Groups: The University of Washington's Programs to Increase the American Indian and Alaskan Native Physician Workforce." *Academic Medicine* 81(10): 863–70.

Association of American Medical Colleges (AAMC). 2006. *AAMC Statement on the Physician Workforce, June 2006*. Washington, DC: Author. Retrieved September 30, 2008. <http://www.aamc.org/workforce/workforceposition.pdf>.

Association of Faculties of Medicine of Canada (AFMC). 2007. *Canadian Medical Education Statistics*. Retrieved September 30, 2008. <http://www.afmc.ca/pdf/pdf_2007_cmes_trend_first_time_undergraduate_enrolment.pdf>.

Audas, R., A. Ross and D. Vardy. 2005. "The Use of Provisionally Licensed International Medical Graduates in Canada." *Canadian Medical Association Journal* 173(11): 1315–16.

Buske, L. 2005. "Understanding the Physician Labour Market: Results of the 2004 National Physician Survey." Paper presented at CERF Conference on Health Human Resources, Hamilton, ON. Retrieved September 30, 2008. <http://www.cerforum.org/conferences/200505/papers/buske_cerf 05.pdf>.

Canadian Institute of Health Information (CIHI). 2007a. *Supply, Distribution, and Migration of Canadian Physicians, 2006*. Revised November 2007. Retrieved September 30, 2008. <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=PG_870_E&cw_topic=870&cw_rel=AR_14_E>.

Canadian Institute of Health Information (CIHI). 2007b. *Health Human Resources Conference, Ottawa, Ontario*. Retrieved September 30, 2008. <http://www.cihiconferences.ca/en/HHR2007/index_e.shtml>.

Canadian Post-MD Education Registry (CAPER). 2006. "Quick Facts 2005–2006." Retrieved

September 30, 2008. <http://www.caper.ca/docs/pdf_quickfacts_2005_2006.pdf>.

Canadian Resident Matching Service (CaRMS). 2003. "Reports and Statistics: History of Family Medicine as the Career Choice of Canadian Graduates." Retrieved September 30, 2008. <http://www.carms.ca/eng/operations_R1reports_03_e.shtml#table9>.

Canadian Resident Matching Service (CaRMS). 2004. "Reports and Statistics: Proportion of Canadian Graduates Choosing Family Medicine by Medical School 2004 Match First Iteration." Retrieved September 30, 2008. <http://www.carms.ca/eng/operations_R1reports_04_e.shtml#table111>.

Canadian Resident Matching Service (CaRMS). 2005. "Reports and Statistics: Proportion of Canadian Graduates Choosing Family Medicine by Medical School 2005 Match First Iteration." Retrieved September 30, 2008. <http://www.carms.ca/eng/operations_R1reports_05_e.shtml#table111>.

Canadian Resident Matching Service (CaRMS). 2006a. "Reports and Statistics: Match Results for International Medical Graduates." Retrieved September 30, 2008. <http://www.carms.ca/pdfs/2007MatchResults/Match_Results_IMG_en.pdf>.

Canadian Resident Matching Service (CaRMS). 2006b. "Reports and Statistics: Proportion of Canadian Graduates Choosing Family Medicine by Medical School 2006 Match First Iteration." Retrieved September 30, 2008. <http://www.carms.ca/eng/operations_R1reports_06_e.shtml#table15>.

Canadian Task Force on Licensure of International Medical Graduates. 2004. *Report of the Canadian Task Force on Licensure of International Medical Graduates*. Ottawa: Federal/Provincial/Territorial Advisory Committee on Health Delivery and Human Resources. Retrieved September 30, 2008. <http://www.hc-sc.gc.ca/hcs-sss/alt_formats/hpb-dgps/pdf/hhr/medical-graduates.pdf>.

Chan, B. 2002. *From Perceived Surplus to Perceived Shortage: What Happened to Canada's Physician Workforce in the 1990s?* Ottawa: Canadian Institute for Health Information. Retrieved September 30, 2008. <http://secure.cihi.ca/cihiweb/products/chanjun02.pdf>.

Denton, F.T., A. Gafni and B.G. Spencer. 2003. "Requirements for Physicians in 2030: Why Population Aging Matters Less Than You May Think." *Canadian Medical Association Journal* 168(12): 1545–47. Retrieved September 30, 2008. <http://www.cmaj.ca/cgi/reprint/168/12/1545>.

Dhalla I.A., J.C. Kwong, D.L. Streiner, R.E. Baddour, A.E. Waddell and I.L. Johnson. 2002. "Characteristics of First-Year Students in Canadian Medical Schools." *Canadian Medical Association Journal* 166(8): 1029–35.

Eckhert, N.L. 2002. "The Global Pipeline: Too Narrow, Too Wide or Just Right?" *Medical Education* 36: 606–13.

Flegel, F., P.C. Hébert and N. MacDonald. 2008. "Is It Time for Another Medical Curriculum Revolution?" *Canadian Medical Association Journal* 178(1): 11.

Hays, R.B., P.C. Veitch, B. Cheers and L. Crossland. 1997. "Why Rural Doctors Leave Their Practices." *Australian Journal of Rural Health* 5(4): 198–203.

Health Canada. 2001. *Social Accountability: A Vision for Canadian Medical Schools*. Retrieved September 30, 2008. <http://www.afmc.ca/pdf/pdf_sa_vision_canadian_medical_schools_en.pdf>.

Kerr, J., M.B. Seaton, H. Zimcik, J. McCabe and K. Feldman. 2008. "The Impact of Interest." *Canadian Family Physician* 54(1): 78–79.

Kirz, H.L. and C. Larsen. 1986. "Costs and Benefits of Medical Student Training to a Health Maintenance Organization." *Journal of the American Medical Association* 256(6): 734–39.

Kondro, W. 2006. "Eleven Satellite Campuses Enter the Orbit of Canadian Medical Education." *Canadian Medical Association Journal* 175(5):461–62.

Krupa, L.K. and B.T.B. Chan. 2005. "Canadian Rural Family Medicine Training Programs." *Canadian Family Physician* 51: 853–1007.

McDonald, C.M. and Associates. 2002. *Physician Retention in Rural Alberta: An Update of Pockets of Good News (1994).* Edmonton: The Alberta Rural Physician Action Plan. Retrieved September 30, 2008. <http://www.rpap.ab.ca/pdf/Pockets_of_Good_News_Update_30Mar2002.pdf>.

Mendelson, M. 2006. *Aboriginal Peoples and Postsecondary Education in Canada*. Ottawa: Caledon Institute of Social Policy. Retrieved September 30, 2008. <http://www.caledoninst.org/Publications/PDF/595ENG.pdf>.

Mullan, F. 2005. "The Metrics of the Physician Brain Drain." *New England Journal of Medicine* 353(17): 1810–18.

National Physician Survey. 2008. "2007 National Physician Survey (NPS)." Retrieved September 30, 2008. <http://www.nationalphysiciansurvey.ca/nps/NPS.2007.Backgrounder-FINAL.pdf>.

Orrantia, E. 2005. "Marathon Works: How to Thrive in a Rural Practice." *Canadian Family Physician* 51: 1217–21.

Phillips, Jr., R.L., S. Petterson, G.R. Fryer Jr. and W. Rosser. 2007. "The Canadian Contribution to the US Physician Workforce." *Canadian Medical Association Journal* 176(8): 1083–87.

Romanow, R. 2002. Building on Values: The Future of Health Care in Canada—Final Report. Saskatoon: Commission on the Future of Health Care in Canada. Retrieved September 25, 2008. <http://www.cbc.ca/healthcare/final_report.pdf>.

Scott, I., M. Gowans, B. Wright and F. Brenneis. 2007. "Why Medical Students Switch Careers: Changing Course During the Preclinical Years of Medical School." *Canadian Family Physician* 53: 94–95.

Society of Rural Physicians of Canada. 2002. "Keith Awards for 2002." Shawville, QC: Author. Retrieved September 30, 2008. <http://srpc.ca/keithawards2002.html>.

Statistics Canada. 2003. "Aboriginal Peoples of Canada." 2001 Census. Retrieved September 30, 2008. <http://www12.statcan.ca/english/census01/products/analytic/companion/abor/canada.cfm>.

Sullivan, P. 2005. "New Association for Aboriginal MDs." Ottawa: Canadian Medical Association. Retrieved September 30, 2008. <http://www.cma.ca/index.cfm/ci_id/10026847/la_id/1.htm>.

Sullivan, P. 2007. "Estimated 1500 Canadians Studying Medicine Abroad." *Canadian Medical Association Journal* 176(8): 1069.

Task Force Two. 2006. *A Physician Human Resources Strategy for Canada. Final Report.* Retrieved September 30, 2008. <http://www.physicianhr.ca/reports/TF2FinalStrategicReport-e.pdf>.

Thommasen, H.V. 2000. "Physician Retention and Recruitment Outside Urban British Columbia." *British Columbia Medical Journal* 42: 304–8.

Thurber, D. and L. Buske. 2001. "Interprovincial and International Mobility of the 1989 Cohort of Physicians Who Exited from Canadian Post-MD Training Programs." Ottawa: Canadian Post-MD Education Registry. Retrieved September 30, 2008. <http://www.caper.ca/docs/pdf_2001_forum_canadian_exits.pdf>.

How Busy Are Private MRI Centres in Canada?

Taux d'activité des centres privés d'IRM au Canada

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Abstract

Background: Long waits for publicly funded magnetic resonance imaging (MRI) services have spurred the opening of private MRI centres in Canada. Little is known about the number and utilization of these facilities.
Methods: The authors surveyed all 17 private and 69 of 73 public English-speaking MRI centres in Canada in 2006, using hours of operation and waits for an elective MRI as surrogate measures of procedure volume and facility capacity.
Results: Public MRIs had more hours of operation on weekdays (14.7 vs. 9.7, $p<0.001$)

and weekends (11.8 vs. 8.2, p<0.001). Waits were longer in public vs. private MRI centres (13.6 vs. 0.5 weeks, p<0.001).
Conclusions: Private MRIs provided fewer hours of operation but shorter wait times compared to public centres. This finding suggests that private centres have unused capacity and relatively small procedure volumes, and provide a minority of studies.

Résumé

Contexte : Les temps d'attente pour les services publics d'imagerie par résonance magnétique (IRM) ont stimulé l'ouverture de centres d'IRM privés au Canada. On connaît peu le nombre de centres privés ou leur taux d'utilisation.
Méthodologie : En 2006, les auteurs ont effectué un sondage auprès des 17 centres privés et auprès de 69 des 73 centres d'IRM publics anglophones au Canada. Ils ont employé les heures d'activité et les temps d'attente pour les IRM non urgentes comme mesures de substitution pour calculer le volume d'activité et la capacité des installations.
Résultats : On observe plus d'heures d'activité dans les centres d'IRM publics pendant les jours de semaine (14,7 par rapport à 9,7; p<0,001) et les fins de semaine (11,8 par rapport à 8,2; p<0,001). Les temps d'attente étaient plus longs dans les centres publics par rapport aux centres privés (13,6 par rapport à 0,5 semaines; p<0,001).
Conclusions : Comparé aux centres d'IRM publics, on observe dans les centres d'IRM privés moins d'heures d'activité, mais des temps d'attente plus courts. Ces résultats portent à croire qu'une partie de la capacité n'est pas employée dans les centres privés, que leur volume d'activité est relativement faible et qu'ils procèdent à une minorité d'examens.

Access to timely healthcare is a central issue in Canada. In 2002, the Romanow report stated that diagnostic imaging wait times were increasing at a high rate and patients were consulting newly formed private MRI clinics. Recently, the Federal Advisor on Wait Times released his final report (Postl 2006) highlighting the continuing issue of increasing wait times despite the injection of resources following the 2004 First Ministers' meeting. Indeed, the issue of wait times, the report concludes, cannot be determined independently of the rest of the healthcare system. Wait times for high-technology services continue to be lengthy despite enhanced federal funding (Romanow 2002; Esmail and Walker 2002). Long waits for MRI procedures have garnered particular attention because of the technology's broad clinical indications (Keller 2005; CIHI 2004; Ehman 2004a). Since MRIs are critically important in diagnosing many conditions that require superior image

resolution, the evidence that Canada has fewer MRI machines per capita than most developed countries is a potential concern for the public because of slower diagnostic time and reduced ability to monitor disease progression (Keller 2005; CIHI 2004; Ehman 2004a).

The increased demand for MRIs and relative lack of public funding has provided the incentive for private groups in many provinces throughout Canada to open MRI facilities (Fischer 2005; Brooks 1993, 1994; Moran 1994). The move to private MRI centres has been controversial because some feel it challenges our long-standing model of universal access and the public delivery of healthcare. Similarly, offering privately funded MRIs suggests that, in some respects, a two-tiered model may be emerging (Brooks 1994).

Many point to the increased utilization of private MRI centres as justification for the relaxation of government controls on private medicine (Pinker 2000; CBC News 2002). However, as compared to the detailed information on public MRI services, relatively little is known about the utilization of private MRI facilities (Pindera 2004). One of the main reasons is that there is no single governing body, whether provincial or federal, that regulates the delivery of private healthcare. Estimating the extent and volume of privately delivered MRIs is central to understanding the magnitude and future impact of this technology on our public healthcare system. Therefore, the main goals of the current investigation involved surveying public and private MRI facilities to determine (a) hours of operation, a measure that would serve as a surrogate for procedure volume, and (b) estimated wait time for a standard elective MRI study.

Methods

All English-speaking MRI centres in Canada were surveyed by telephone between January and September 2006. Lists of public MRI centres were obtained from the Canadian Institute for Health Information (CIHI 2004) and the Canadian Coordinating Office for Health Technology Assessment (now the Canadian Agency for Drugs and Technologies in Health) (CCOHTA 2001). Private MRI centres were identified via Internet and local business searches, as well as inquiries at neighbouring public facilities. We defined private MRI facilities as those that require payments distinct from government or other publicly insured bodies to provide medically necessary services (Madore 2005; Health Canada 2004).

We performed standardized scenario-based surveys of public and private MRIs. During the first part of the survey, we asked about hours of weekend and weekday operation for the MRI facilities. Hours of operation were then grouped according to business hours (Monday to Friday, 8 a.m. to 5 p.m.), after-hours (Monday to Friday, 5 p.m. to 8 a.m.) or weekend hours (Friday 5 p.m. to Monday 8 a.m.) (Churchill et al. 2003; Feeney et al. 2005). During the second part of the survey, average wait times

(in weeks) were elicited to provide additional information on the facility's capacity. We used a standardized scenario for an elective MRI of the knee in order to minimize bias, because our earlier pilot testing demonstrated that all MRI centres questioned could perform MRIs of this body part as compared to limitations posed by other body sites, such as the spine or brain.

All data are presented as mean values. Data pertaining to proportions of MRIs open at certain times were analyzed using chi-square tests. Differences in daily and weekly hours of operation and mean wait times between public and private MRI centres were analyzed with the Mann–Whitney–Wilcoxon non-parametric test. We theorized that private facilities would be responsive to patient demand and add additional hours of operation if they were working at capacity during business hours. To examine this hypothesis, we investigated the relationship between the total time per day that MRIs operated and average wait time for that facility. This relationship was obtained using Spearman rank order correlations (r and r^2) between hours of operation and average wait times. Specifically, the r^2 value would delineate the proportion of average wait times that could be explained by variation in hours of operation. Estimates of hours of operation for non-responding facilities were extrapolated from mean values. For all statistical analyses, significance was set at $p<0.05$. The research protocols were approved by the St. Michael's Hospital Research Ethics Board.

Results

Complete information was obtained from all of the 17 identified private MRI centres in six provinces (100%) and 69 of 73 (94.5%) of the public MRI centres in nine provinces. The private MRIs were located in Ontario, Quebec, Nova Scotia, Alberta, Manitoba and British Columbia. Most MRI centres were located in urban centres and close to major hospitals. Hours of operation were obtained for 72 of 73 (99%) public MRI centres. Public MRIs were open longer during weekdays (14.7 vs. 9.7 hours, $p<0.001$) and weekend days (11.8 vs. 8.2 hours, $p<0.001$) (Figure 1). Comparing the average hours of operation for all 17 private facilities and the hours of operation for all 73 public facilities allowed us to estimate the overall system capacity. In total, 6,563 (86%) hours of operation per week could be provided by public MRIs compared to 1,103 (14%) hours for private MRIs if both systems ran at equal capacity.

Of the total MRI centres in Canada, 93% of the public centres offered non-business hours appointments compared to only 53% within the private sector. MRIs that were open exclusively during business hours comprised 47% of private facilities but only 8% of public centres. Similarly, 64% of public MRIs offered weekend appointments compared to only 12% of the private MRI faculties ($p<0.001$) (Figure 2).

Wait times were longer in public centres compared to private MRI centres (13.6 vs. 0.5 weeks, $p<0.001$) (Figure 3). Publicly funded MRI centres offering only business hours had significantly longer wait times compared to private MRI centres (14.4 vs. 0.4 weeks, $p<0.01$) (Table 1). Similarly, wait times were markedly higher in public centres offering after-hours (13.5 vs. 0.8 weeks, $p<0.001$) and weekend appointments (12.1 vs. 0.6 weeks, $p<0.05$) compared to private MRI centres.

FIGURE 1. Total number of hours that MRI centres are open each day

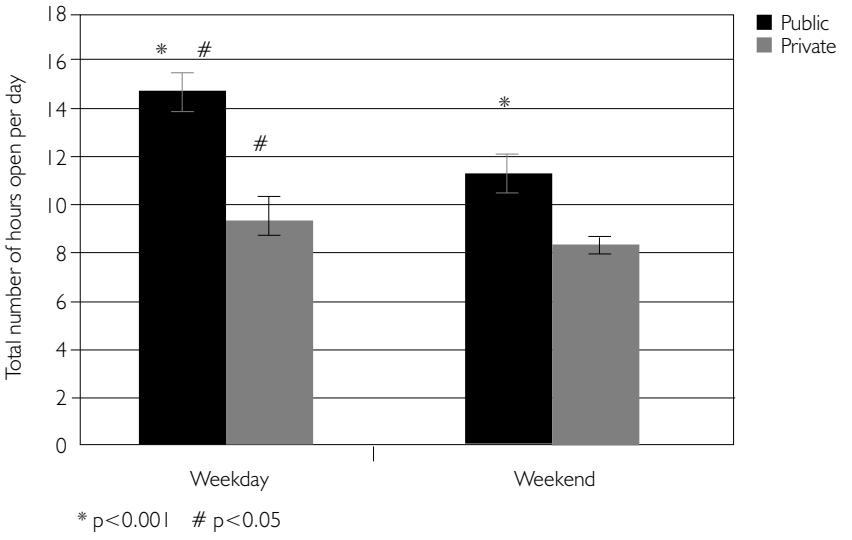
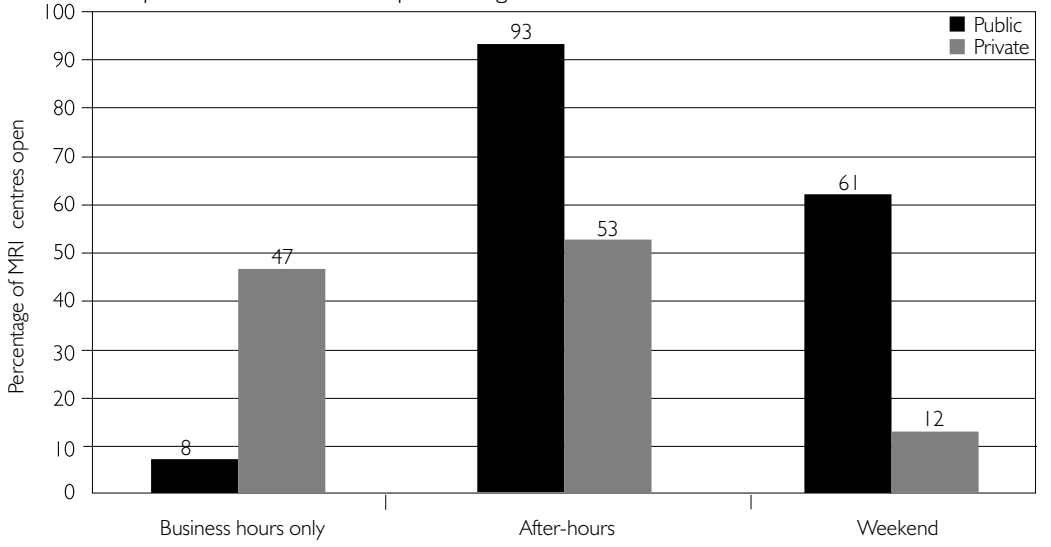


FIGURE 2. Proportion of MRI centres open during the week*



* Clinics are counted more than once if they offer both after-hours and weekend appointments.

FIGURE 3. Mean wait times in public- and private-funded MRI centres

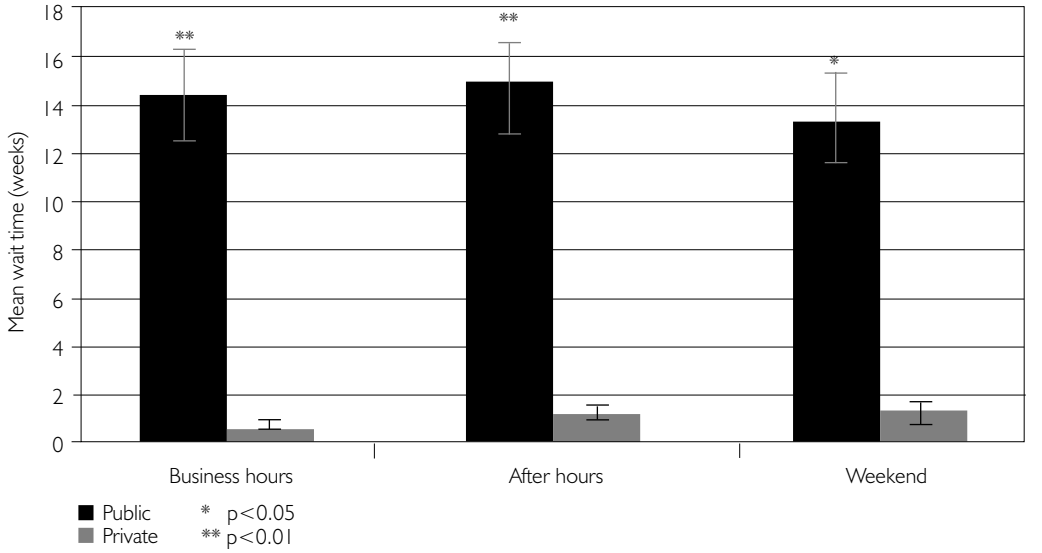


TABLE 1. Hours of operation and wait times for public and private MRI clinics

Hours of operation*		Number of facilities†	Mean wait (weeks) (SD)	Median wait (weeks)
Business hours only	Public	4	14.4 (4.0)	15
	Private	8	0.4 (0.25)	0.3
After-hours	Public	65	13.5 (11.0)	11.3
	Private	7	0.8 (0.63)	0.4
Weekend	Public	41	12.1 (10.1)	10.7
	Private	2	0.6 (0.51)	0.6

* Hours of operation grouped by:
Business hours only (Monday to Friday, 8 a.m.– 5 p.m.)
After-hours (Monday to Friday, 5 p.m. – 8 a.m.)
Weekend hours (Friday 5 p.m. to Monday 8 a.m.)
† Facilities could be counted more than once in the after-hours and weekend categories, depending on their hours of operation.
SD – standard deviation

Correlation coefficients were computed to compare associations between the total hours of operation and mean wait times. For public MRI facilities, there was a significant negative correlation between hours of operation and wait time (i.e., longer hours of operation were associated with shorter wait times ($r=-0.289$, $r^2=0.083$, $p<0.05$). However, the correlations between hours of operation and mean wait time were not significant in the subsets of public MRI centres that offered business hours only ($r=-0.258$, $r^2=0.067$, $p>0.05$) or after-hours diagnostic scans ($r=-0.277$, $r^2=0.076$, $p>0.05$). No significant correlations between hours of operation and wait times were

found among the private MRI facilities for all clinics ($r=0.337$, $r^2=0.113$, $p>0.05$), for clinics providing after-hours MRI scans ($r=0.323$, $r^2=0.104$, $p>0.05$) or for those offering scans only during business hours ($r=0.252$, $r^2=0.063$, $p>0.05$).

Interpretation

We contacted what we believe to be all private MRI facilities in Canada. We found that they have significantly fewer hours of operation, limited (if any) weekend appointment times and little (if any) waits for tests compared to public centres. These findings suggest that private MRIs in Canada have relatively small volumes and provide a minority of all MRI studies.

We believe our cross-sectional estimates are robust because they compare with government-collected data for the public facilities for the same time period (OMHLTC 2007; Alberta Health & Wellness 2008; Manitoba Health n.d.). Given that there should be little variation in the number of studies performed per hour at each facility, our results of hours of operation per week provide a reasonable estimate of potential procedure volume. The findings are further strengthened by the survey's high response rate. Still, studies with more direct volume measures would likely provide improved accuracy.

How are the private clinics different from their public-sector counterparts? Based on our data, it is apparent that public MRI centres offer longer hours of operation and concomitantly longer wait times compared to private facilities. However, our correlational findings demonstrate that among public MRI centres there is a negative but small association between hours of operation and wait times, i.e., longer hours of operation, shorter wait times. However, analyses of subsets of public MRI centres demonstrated no significant correlation among either centres that offered only business-hours service or those that offered after-hours service. Further, no significant correlations between hours of operation and wait times were observed among the private facilities. This finding could reflect the overall short waits, small numbers of facilities and similar hours of operation for private MRIs. However, private centres appear to have additional capacity to respond to increased demand by increasing hours of operation.

The issue of how accessible private MRI facilities are to patients is also of interest, both to policy makers and to the general public. Indeed, our data highlight the fact that public facilities provide more after-hours and weekend care than private MRIs. However, our findings were predicated on an elective scenario. We did not use a scenario that describes a more urgent diagnostic indication (such as symptomatic brain cancer) because these are usually considered higher-priority studies and are triaged by radiologists. We specifically chose to investigate elective MRIs because they are more frequently encountered than urgent ones and are easier to correlate with wait times. Thus, we cannot comment on issues regarding a different case mix of patients.

Whether private facilities have the capacity or ability to provide quick responses for urgent or emergent care was not considered.

Our study has limitations that merit mention. The results are cross-sectional and survey-based. Therefore, they rely on accurate information from respondents. This may be more of an issue with estimates of wait times compared to hours of operation. As well, we may have missed some private and non–English-speaking public MRI facilities. However, the sites and numbers of private MRIs are similar to those reported in other studies (Madore 2005; Health Canada 2004; Lambert 2006). Therefore, any biases are small and unlikely to account for the large observed differences. It is important to note that we used a standardized scenario to question each public and private facility to minimize selection and responder bias. Hence, our scenario may not capture the true wait time because we acted as a patient requesting an appointment and did not formally obtain an appointment with radiologist approval. Finally, our findings likely overestimate private MRI volume because we found significantly shorter procedure waits at private facilities, thereby implying unused capacity. Further investigations are needed to determine whether the volumes per unit of time are comparable between public and private sites.

The information from this study has implications for health system management. First, policy makers should note that privately funded and delivered MRIs are now established in many provinces as an alternative to the publicly funded ones. Thus, our healthcare system needs to find ways to record the care received at private centres. For example, our difficulties in obtaining objective data about the number and location of these facilities highlights an important deficit in the registration of privately funded health delivery modules such as MRIs. Data systems covering private centres would allow wait time strategists to make objective comparisons between public and private MRI centres, for example, in determining whether current wait time reduction policies have an impact. Second, our results suggest that the volume in private MRI centres may be significantly less than that of their public counterparts. If this inference is correct, then wait times within the public MRI centres could potentially be reduced if cases were contracted out to the private MRI centres. That is, by purchasing time slots from private MRIs, non-urgent and elective MRI cases could potentially be performed in one of the private centres, thereby reducing wait times and complications due to long waits.

The status and future role of private MRIs is a topic that should be debated among policy makers and the public (Madore 2005). Our study indicates that private MRI centres are functioning well below capacity and account for at most 14% of studies performed in Canada. However, future private MRI facilities are planned, and others have been purchased and converted to public facilities (Ehman 2004b; Pindera 2005; Lambert 2006).

At this time, it is uncertain how or even whether the market share of private MRI centres is changing, and whether they pose a clear and present danger to the public delivery of MRI services in Canada.

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REFERENCES

Alberta Health & Wellness. 2008. *Alberta Waitlist Registry*. "Trend Reports." Retrieved September 28, 2008. <http://www.ahw.gov.ab.ca/waitlist/TrendReports.jsp?rcatID=18&rhaID=All&doSearch=true>.

Brooks, J. 1993. "Canada's First Private MRI Clinic: Does It Signal a Shift to Two-Tiered Medicine?" *Canadian Medical Association Journal* 149: 1155–58.

Brooks, J. 1994. "Alberta's Private MRI Clinics One Sign of Move Away from Cash-Free Medical Care." *Canadian Medical Association Journal* 151: 647–48.

Canadian Coordinating Office for Health Technology Assessment (CCOHTA). 2001 (July 15). "Magnetic Resonance Imaging Scanners in Canadian Hospitals." Retrieved September 28, 2008. <http://cadth.ca/media/pdf/mri_report_01.pdf>.

Canadian Institute for Health Information (CIHI). 2004. *Medical Imaging in Canada*. Retrieved September 28, 2008. <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=PG_328_E&cw_topic=328&cw_rel=AR_1043_E>.

CBC News. 2002. "Private MRI Clinic Opens amidst Protests." Retrieved January 31, 2007. <http://www.cbc.ca/canada/nova-scotia/story/2002/08/01/ns_mridump020801.html>.

Churchill, A.J., C. Gibbon, S. Anand and M. McKibbin. 2003. "Public Opinion on Weekend and Evening Outpatient Clinics." *British Journal of Ophthalmology* 87: 257–58.

Ehman, A.J. 2004a. "Saskatchewan's 22-Month Wait for an MRI Is 'Almost Criminal,' Says Radiologists' Association." *Canadian Medical Association Journal* 170: 776.

Ehman, A.J. 2004b. "Prairie First Nations Groups Planning 8 Private MRI Clinics." *Canadian Medical Association Journal* 171: 437.

Esmail, N. and M. Walker. 2002. *Waiting Your Turn: Hospital Waiting Lists in Canada* (17th ed.). The Fraser Institute. Retrieved September 28, 2008. <http://www.fraserinstitute.org/Commerce.Web/publication_details.aspx?pubID=4962>.

Feeney, C.L., N.J. Roberts and M.R. Partridge. 2005. "Do Medical Outpatients Want 'Out of Hours' Clinics?" *BMC Health Services Research* 5: 47. Retrieved September 28, 2008. <http://www.biomedcentral.com/1472-6963/5/47>.

Fischer, D. 2005. "Expert Laments Lack of Private Health Care Debate." CanWest News Service. Retrieved September 28, 2008. <http://www.canada.com/national/features/decisioncanada/story_05.html?id=e6d65de3-b275-4d13-992e-3639393cc3c2>.

Health Canada. 2004. *Canada Health Act Annual Report 2003–2004*. Retrieved September 28, 2008. <http://www.hc-sc.gc.ca/hcs-sss/alt_formats/hpb-dgps/pdf/pubs/cha-lcs-ar-ra/2003-04_e.pdf>.

Keller, A. 2005 (April). *MRI and CT Expert Panel Phase I Report* (pp. 8–25). Retrieved September 28, 2008. <http://www.health.gov.on.ca/transformation/wait_times/wt_reports/mri_ct.pdf>.

Lambert, S. 2006. "Deal Reached to End Dispute over Private Health Care in Manitoba." Canadian Press. Retrieved September 28, 2008. <http://aol.mediresource.com/channel_health_news_details.asp?news_id=11371&channel_id=131>.

Madore, O. 2005 (May 17). "Private Diagnostic Imaging Clinics and the *Canada Health Act*." Ottawa: Parliamentary Information and Research Service, Library of Parliament, PRB-05-02E. Retrieved September 28, 2008. <http://dsp-psd.pwgsc.gc.ca/Collection-R/LoPBdP/PRB-e/PRB0502-e.pdf>.

Manitoba Health. n.d. *Manitoba Wait Time Information*. Retrieved September 28, 2008. <http://www.gov.mb.ca/health/waitlist/diagnostic/mri.html>.

Moran, T. 1994. "Province's Former Health Minister Brings Private-Sector MRI to BC." *Canadian Medical Association Journal* 151: 645–46.

Ontario Ministry of Health and Long-Term Care (OMHLTC). 2007 (December 11). *Ontario Wait Times*. Retrieved September 28, 2008. <http://www.health.gov.on.ca/transformation/wait_times/wait_mn.html>.

Pinker, S. 2000. "Private MRI Clinics Flourishing in Quebec." *Canadian Medical Association Journal* 163: 1326.

Pindera, L. 2004. "For-Profit Clinics Are Legal But 'No Solution.'" *Canadian Medical Association Journal* 171: 1333.

Pindera, L. 2005. "Increasing Private Delivery of Publicly Funded Services?" *Canadian Medical Association Journal* 175: 167.

Postl, B. 2006 (June). *Final Report of the Federal Advisor on Wait Times*. Retrieved September 28, 2008. <http://www.hc-sc.gc.ca/hcs-sss/alt_formats/hpb-dgps/pdf/pubs/2006-wait-attente/index_e.pdf>.

Romanow, R.J. 2002. *Building on Values: The Future of Health Care in Canada – Final Report*. Saskatoon: Commission on the Future of Health Care in Canada. Retrieved September 28, 2008. <http://www.cbc.ca/healthcare/final_report.pdf>.

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Performance Reporting to Help Organizations Promote Quality Improvement

Favoriser l'amélioration de la qualité par la diffusion d'information sur le rendement

by CANADIAN HEALTH SERVICES RESEARCH FOUNDATION

Abstract

In healthcare, a great deal of time, money and energy go into producing public reports for a wide range of audiences. Reporting strategies often target audiences like the general public, whose behaviour is not readily changed by the information in report cards. However, when it comes to effectively targeting groups that can actually use the data to achieve significant impacts, one audience stands out from the rest: health system managers and providers, who can interpret and apply performance data to improve the quality of care their organizations deliver. The evidence behind performance reports was recently summarized in *Evidence Boost for Quality*, a special subseries of *Evidence Boost*, produced by the Canadian Health Services Research Foundation to showcase healthcare issues where research indicates a preferred course of action in health services management and policy. To access archived issues of *Evidence Boost*, visit <http://www.chsrf.ca/mythbusters/eb_e.php>.

Résumé

Dans les services de santé, beaucoup de temps, d'argent et d'énergie sont consacrés à la production de rapports publics destinés à des auditoires variés. Les stratégies de reddition de comptes ciblent souvent des auditoires tels que le grand public, dont le comportement est peu influencé par l'information rapportée. Toutefois, lorsqu'il est question de cibler efficacement des groupes qui peuvent réellement mettre cette information à profit pour changer des choses, un auditoire se démarque : les gestionnaires et les fournisseurs de services de santé qui sont en mesure d'interpréter les données obtenues sur le rendement et de s'en servir pour améliorer les soins dispensés. Les données probantes sur la diffusion d'information sur le rendement ont fait l'objet d'un numéro spécial de *Données à l'appui*, « *Données à l'appui pour la qualité* », produit récemment par la Fondation canadienne de la recherche sur les services de santé pour faire connaître les aspects des services de santé où la recherche indique un plan d'action prometteur pour la gestion et les politiques en matière de services de santé. Pour consulter les anciens numéros de *Données à l'appui*, veuillez visiter le <http://www.chsrf.ca/mythbusters/eb_f.php>.

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The problem: The greatest quality improvement opportunities *happen at the organizational level, where performance reports are scarce.*

In healthcare, a great deal of time, money and energy go into producing public reports for a wide range of audiences. In Canada, this type of performance reporting – often packaged as public "report cards" – is carried out not only by governments, but also by advocacy groups, independent agencies and, in some cases, arm's-length organizations established by governments (Wallace et al. 2007). All these organizations try to present their data in a way that suits the needs of a specific audience. However, when it comes to effectively targeting groups that can actually use the data to achieve significant impacts, one audience stands out from the rest: health system managers and providers, who can interpret and apply performance data to improve the quality of care their organizations deliver (Wallace et al. 2007; Brown et al. 2005).

Reporting strategies often target audiences like the general public, whose behaviour is not readily changed by the information in report cards (CHSRF 2006). As well, report cards often provide systems-level or aggregate data that are of little use to managers or providers wanting to make sustainable improvements in individual organizations or facilities (Robinowitz and Dudley 2006; Shekelle 2005). If the goal, then, is to spur quality improvement activities and enhance quality of care, performance reports are best targeted at hospitals and managed-care organizations (Wallace et al. 2007; Brown et al. 2005).

Strategy for Change

When it comes to using results to make improvements, process-of-care indicators are often more useful than outcomes indicators (Wallace et al. 2007). Take reporting on wait times, for example. Knowing how long people are waiting in some areas of the country compared to other areas may be helpful in gauging the state of healthcare, but it's not altogether helpful in identifying *why* wait times vary and where improvement efforts need to be focused (CHSPR 2004). In the same way, if the data are not accurately risk adjusted, the report doesn't allow a proper "apples-to-apples" comparison.

Benchmarks are also useful, particularly for identifying top- and bottom-performing facilities (Robinowitz and Dudley 2006). Reporting agencies can adopt and adapt the best practices from top performers, while working with low performers to improve care (Wallace et al. 2007). In fact, this is a common practice of agencies like Cancer Care Ontario, which feeds data on wait times back to organizations across the province and works with them to make quality improvements. To promote a culture of learning, however, reporting should be carried out in a way that celebrates improvement and doesn't lay blame or condemn individual providers for poor quality of care (Marshall et al. 2003).

It is important that reporting agencies regularly consult with their stakeholders to ensure the relevance and validity of the indicators on which they report (Wallace et al. 2007). This is common practice for the Canadian Institute for Health Information (CIHI) – an independent, not-for-profit organization that reports annually to managers, policy makers and others on Canada's health systems and the health of Canadians (CIHI 2007a,b).

What the Research Says

While report cards don't appear to influence the healthcare decisions of patients (CHSRF 2006), they do have some success with providers, particularly health system managers and groups of providers working in hospitals and other healthcare organizations (Wallace et al. 2007). It is generally agreed that most quality improvements happen at the organizational level (Marshall et al. 2003; Hibbard et al. 2003; Barr et al. 2006; Halm and Siu 2005), and healthcare organizations have been found to be more likely than individual providers to respond to public reports (Barr et al. 2006). Responsiveness, or the lack of it, may be due to organizational culture, which can sometimes lie at the root of quality issues (Marshall et al. 2004).

The evidence of the effectiveness of public reporting on healthcare quality comes mainly from the United States, with some evidence from the United Kingdom and Canada (Brown et al. 2005; Morris and Zelmer 2005; Wallace et al. 2007). Several US studies that have measured improvements of quality initiatives have demonstrated small but important effects (Hibbard et al. 2005; Castle et al. 2007; Lindenauer et

al. 2007). For example, a 2005 US study measuring the effect of public reporting on hospital performance in Wisconsin noted that hospitals receiving a public or private report showed statistically significant quality improvement compared to the control group that received no report (Hibbard et al. 2005). One important caveat is that if the data and indicators being reported are limited, reporting can provide an incomplete picture of care and lead to "gaming" of the system – the phenomenon of "what's measured is what matters" (Bevan and Hood 2006).

Meanwhile, other US studies looking at whether reporting stimulates quality improvement activities have found reporting to be effective (Mannion et al. 2005; Barr et al. 2006; Hibbard et al. 2003). In a study of 13 hospitals in Rhode Island, researchers found that one of the results of releasing a public report was that the data were used to target new quality improvement activities, evaluate performance and monitor progress (Barr et al. 2006). A similar study found that more quality improvement activities were launched in hospitals that were reported on publicly and privately versus those that received no report at all (Hibbard et al. 2003).

Conclusion

Public reporting is about more than mere accountability. Policy makers and reporting agencies wanting to ensure that these reports have an impact should look at the facility or the regional level as their prime target audience. Performance reports can lead to quality improvement activities, and to overall improvement in health services and outcomes, when they are directed at people involved in the delivery of care at the organizational level.

REFERENCES

Barr, J.K., T.E. Giannotti, S. Sofaer, C.E. Duquette, W.J. Waters and M.K. Petrillo. 2006. "Using Public Reports of Patient Satisfaction for Hospital Quality Improvement." *Health Services Research* 41(3 Pt. 1): 663–82.

Bevan, G. and C. Hood. 2006. "What's Measured Is What Matters: Targets and Gaming in the English Public Health Care System." *Public Administration* 84(3): 517–38.

Brown, A.D., H. Bhimani and H. MacLeod. 2005. "Making Performance Reports Work." *Healthcare Papers* 6(2): 8–22.

Canadian Health Services Research Foundation (CHSRF). 2006 (September). "Myth: People Use Health System Report Cards to Make Decisions about Their Healthcare." *Mythbusters*. Retrieved September 30, 2008. <http://www.chsrf.ca/mythbusters/pdf/myth23_e.pdf>.

Canadian Institute for Health Information (CIHI). 2007a. *Health Care in Canada*. Retrieved September 30, 2008. <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=AR_43_E>.

Canadian Institute for Health Information (CIHI). 2007b. *Health Indicators*. Retrieved September 30, 2008. <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=indicators_e>.

Castle, N.G., J. Engberg and D. Liu. 2007. "Have Nursing Home Compare Quality Measure Scores Changed Over Time in Response to Competition?" *Quality and Safety in Health Care* 16: 185–91.

Centre for Health Services and Policy Research (CHSPR). 2004. "What a Tangled Web We Weave: Improving Performance Reporting and Accountability in BC." Vancouver: University of British Columbia. Retrieved September 30, 2008. <http://www.chspr.ubc.ca/files/publications/2004/chspr04-20C.pdf>.

Halm, E.A. and A.L. Siu. 2005. "Are Quality Improvement Messages Registering?" *Health Services Research* 40(2): 311–15.

Hibbard, J.H., J. Stockard and M. Tusler. 2003. "Does Publicizing Hospital Performance Stimulate Quality Improvement Efforts?" *Health Affairs* 22(2): 84–94.

Hibbard, J.H., J. Stockard and M. Tusler. 2005. "It Isn't Just about Choice: The Potential of a Public Performance Report to Affect the Public Image of Hospitals." *Medical Care Research and Review* 62(3): 358–71.

Lindenauer, P.K., D. Remus, S. Roman, M.B. Rothberg, E.M. Benjamin, A. Ma and D.W. Bratzler. 2007. "Public Reporting and Pay for Performance in Hospital Quality Improvement." *New England Journal of Medicine* 356(5): 486–96.

Mannion, R., H. Davies and M. Marshall. 2005. "Impact of Star Performance Ratings in English Acute Hospital Trusts." *Journal of Health Services Research and Policy* 10(1): 18–24.

Marshall, M.N., P.S. Romano and H.T. Davies. 2004. "How Do We Maximize the Impact of the Public Reporting of Quality of Care?" *International Journal for Quality in Health Care* (Suppl. 1): 57–63.

Marshall, M.N., P.G. Shekelle, T.O. Huw and P.C. Smith. 2003. "Public Reporting on Quality in the United States and the United Kingdom." *Health Affairs* 22(3): 134–48.

Morris, K. and J. Zelmer. 2005. "Public Reporting of Performance Measures in Health Care." Report no. 4. Ottawa: Canadian Policy Research Networks. Retrieved September 30, 2008. <http://www.cprn.org/documents/34883_en.pdf>.

Robinowitz, D.L. and R.A. Dudley. 2006. "Public Reporting of Provider Performance: Can Its Impact Be Made Greater?" *Annual Review of Public Health* 27: 517–36.

Shekelle, P.G. 2005. "The English Star Rating System – Failure of Theory or Practice?" *Journal of Health Services Research and Policy* 10(1): 3–4.

Wallace, J., J.F. Teare, T. Verrall and B.T.B. Chan. 2007. "Public Reporting on the Quality of Healthcare: Emerging Evidence on Promising Practices for Effective Reporting." Ottawa: Canadian Health Services Research Foundation. Retrieved September 30, 2008. <http://www.chsrf.ca/pdf/Public_Reporting_E.pdf>.

Vascular Ultrasound Screening for Asymptomatic Abdominal Aortic Aneurysm

Dépistage par échographie vasculaire de l'anévrisme de l'aorte abdominale asymptomatique

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Abstract

This health technology assessment examines vascular ultrasound screening for abdominal aortic aneurysm (AAA) in asymptomatic populations. Screening reduces the incidence of AAA ruptures, rates of emergency surgical repair and AAA-attributable mortality in males ages 65 to 74. The benefit of screening women has not been established. Ontario data suggest that AAA is underdiagnosed in women, and that women are systematically undertreated. Targeting smokers for screening was found to maximize cost-effectiveness. Economic analysis found that screening may generate savings from the avoidance of emergency surgeries. Based on these findings, the Ontario Health Technology Advisory Committee has recommended screening for AAA in both male and female ever-smokers ages 65 to 74.

Résumé

L'évaluation de cette technologie de la santé se penche sur le dépistage, par échographie vasculaire de l'anévrisme de l'aorte abdominale (AAA) auprès des populations asymptomatiques. Le dépistage permet de réduire l'incidence de ruptures d'AAA ainsi que le taux d'interventions chirurgicales urgentes et le taux de mortalité attribuables aux AAA chez les hommes de 65 à 74 ans. Les avantages du dépistage auprès des femmes n'ont pas encore été démontrés. En Ontario, les données suggèrent que les taux de prévalence et de détection chez les femmes sont sous-estimés et que celles-ci reçoivent un traitement systématiquement insuffisant. On observe que le dépistage ciblé auprès des fumeurs permet de maximiser le rapport coût-efficacité. L'analyse économique révèle que le dépistage peut mener à des économies, notamment en permettant de réduire le recours aux chirurgies urgentes. Le Comité consultatif ontarien des technologies de la santé recommande le dépistage de l'AAA chez les hommes et les femmes, entre 65 et 74 ans, fumeurs ou ex-fumeurs.

Context

Abdominal aortic aneurysm (AAA) is an abnormal dilatation of the aorta that can rupture, often without warning. Ruptured AAAs are always life-threatening and require emergency surgical repair. Risk of death from ruptured AAA is 80% to 90%, with over half of deaths occurring before the patient reaches hospital. In comparison, mortality for individuals undergoing elective surgery is only 5% to 7%. Since AAA symptoms rarely occur prior to rupture, detection of aneurysms at a size when rupture is unlikely is viable through screening. Ultrasound screening can visualize the aorta in 99% of patients, and with sensitivity and specificity approaching 100%, it is non-invasive, fast, relatively inexpensive and does not expose patients to radiation.

The review of AAA screening summarized here was initiated by the Ontario Health Technology Advisory Committee (OHTAC) – an arms-length expert advisory committee composed of clinicians, researchers and administrators – which provides evidence-based recommendations on health technologies to the Ontario Ministry of Health and Long-Term Care. OHTAC met in January 2006 to review the utility of vascular ultrasound screening for AAA in Ontario patients over the age of 65. The committee's complete analysis and recommendations are publicly available (OHTAC 2006a,b).

Policy Questions

- Is population-based ultrasound screening for asymptomatic AAA effective in improving health outcomes?
- How often should screening occur?
- What are treatment options post-screening?
- Are there differences between universal and targeted screening strategies?
- Are there harms of screening?
- What is the cost of universal and targeted screening strategies?

Evidence

Methodology

English-language articles were retrieved from ACP Journal Club, DARE, INAHTA, EMBASE, MEDLINE and references of extracted articles to determine the effectiveness of ultrasound screening for AAA. Case reports, letters, editorials, non-systematic reviews, non-human studies and comments were excluded. Studies that met the inclusion/exclusion criteria were included and appraised for quality. The complete analysis is described in the full report (OHTAC 2006b).

The systematic review yielded four large, moderate- to high-quality, population-based randomized controlled trials (RCT) evaluating screening program effectiveness (Lindholt et al. 2005; Norman et al. 2005; Ashton et al. 2002; Scott et al. 1995) and two high-quality RCTs evaluating management of small aneurysms after screening (Lederle et al. 2000; UK Small Aneurysm Trial Participants 1998). Three low- to moderate-quality RCTs (Lederle et al. 2000; Norman et al. 2005; Jamrozik et al. 2000), one meta-analysis of 14 population-based screening studies (Cornuz et al. 2004) and administrative database information (Ontario Ministry of Finance 2005; Statistics Canada 2001) were included to evaluate targeted screening strategies based on risk factors associated with AAA prevalence in screening studies. Analysis of the psychological effects of AAA screening was based on moderate-quality RCTs and observational studies (Ashton et al. 2002; Lederle et al. 1997; Lucarotti et al. 1997;

Lederle et al. 2003; UK Small Aneurysm Trial Participants 1998; Spencer et al. 2004; Wanhainen et al. 2004). Screening trial results were stratified by sex. Meta-analyses were conducted for men aged 65 years and older, and, for both sexes in the small-aneurysm trials, for which reporting was not stratified by sex.

Effectiveness

Meta-analysis among men aged 65 to 74 indicated that invitation to a population-based AAA ultrasound screening reduced AAA rupture incidence (odds ratio [OR] 0.50; 95% confidence interval [CI] 0.31, 0.80: absolute difference [AD] –0.16%), rates of emergency AAA surgical repair (OR 0.46; 95% CI 0.24, 0.88: AD –0.09%) and AAA-attributable mortality (OR 0.57; 95% CI 0.45, 0.74: AD –0.12%); but had no significant impact on all-cause mortality (OR 0.97; 95% CI 0.93, 1.01: AD –0.19%); and increased elective surgical repair rates for AAA >5 cm (OR 3.18; 95% CI 2.11, 4.79: AD 0.56%) (Lindholt et al. 2005; Norman et al. 2005; Ashton et al. 2002; Scott et al. 1995). Meta-analysis of small-aneurysm (4.0–5.4 cm) trials indicated no significant differences in survival between early elective surgical repair and surveillance for AAA-attributable mortality (OR 0.77; 95% CI 0.54, 1.12: AD –1.27%) or all-cause mortality (OR 0.99; 95% CI 0.66, 1.48: AD –0.36%). These findings support surveillance as the appropriate small-aneurysm treatment option after screening and offering surgical repair for AAA ≥5.5 cm (Lederle 2000; UK Small Aneurysm Trial Participants 1998).

Smoking is the greatest risk factor for developing AAA. The impact of screening based on smoking status was modelled using assumptions based on meta-analysis of the screening trials combined with Ontario population data (2005) and smoking prevalence estimates from the National Population Health Survey (Ontario Ministry of Finance 2005; Statistics Canada 2001). Targeted screening based on smoking history may detect 89% of prevalent AAAs and increase screening program efficiency. The number needed to screen (NNS) to prevent one AAA death was 288 for ever-smokers and 1,024 for never-smokers.

The only screening trial including women found no evidence of effectiveness for AAA screening; however, the sample size was small (Scott et al. 1995). According to Ontario administrative data, women have a higher than expected ruptured AAA case-fatality rate and later age of onset for AAA, potentially introducing harms of screening, since treatment would occur at older ages.

One-time screening is sufficient for a population-based screening program (Lederle et al. 2000; Emerton et al. 1994). The average detection rate of AAA ≥3 cm was 5% from the screening trials (Lindholt et al. 2005; Norman et al. 2005; Ashton et al. 2002; Scott et al. 1995). Among 1,011 men aged 65 to 80 with negative scans, the incidence of new aneurysms at 10 years was 4%, with no new aneurysm larger than 4.0 cm (Scott et al. 2001).

Elective surgical repair was associated with a 6% operative mortality rate in screening trials (Lindholt et al. 2005; Norman et al. 2005; Ashton et al. 2002; Scott et al. 1995), and approximately 3% of small aneurysms 3.0–4.5 cm ruptured during surveillance (Lederle et al. 2000; UK Small Aneurysm Trial Participants 1998). Less than 1% of aneurysms are not visualized on initial screen. Although increased anxiety is associated with screening, there is no evidence of permanent psychological harm (Ashton et al. 2002; Lindholt et al. 2000; Lucarotti et al. 1997; Lederle et al. 2003; UK Small Aneurysm Trial Participants 1998; Spencer et al. 2004; Wanhainen et al. 2004).

Economic evaluation

Three options were analyzed for up-front budget impact where the entire specified cohort was screened over a three-year period with repeat screenings for two subsequent years for prevalent AAA cases using focused (abdominal aorta) ultrasound: (a) male ever-smokers ages 65 to 74, (b) male and female ever-smokers ages 65 to 74 and (c) all males and females ages 65 to 74. Quick-screen ultrasound was chosen owing to shorter time needed to screen patients, lower cost in comparison to full abdominal scans and high-level diagnostic accuracy for screening (Lee 2002).

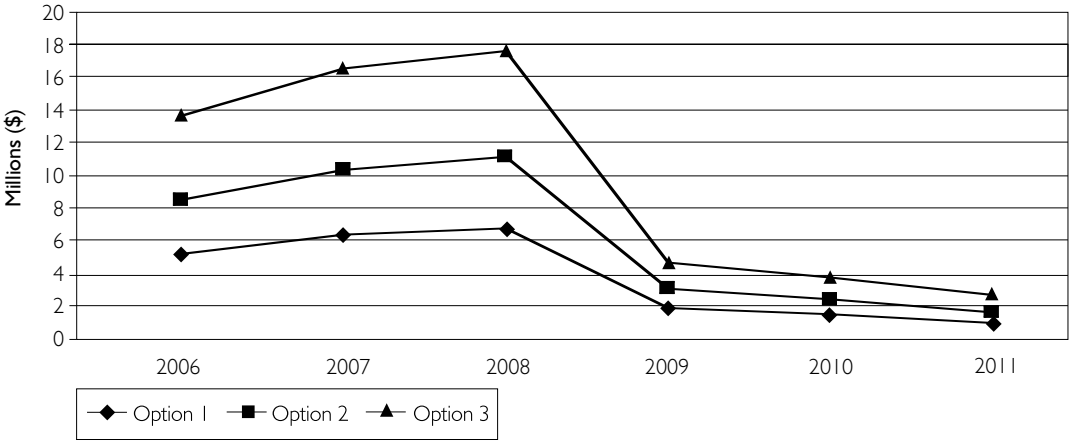
In Ontario, the technical and professional cost of an ultrasound of the aorta is $53.80. Figure 1 shows the direct total budget impact of each screening option as implemented over three years. The up-front budget impact takes into account only the cost of screening. Costs decrease in subsequent years once the entire cohort (as defined by the option) undergoes screening. Table 1 displays the general assumptions used in the budget impact model.

Screening can also generate downstream savings to the hospital system. With screening, the number of urgent cases can be reduced, as these can now move to elective surgeries. At present, ruptured AAAs account for 15% of urgent repair, and unruptured cases account for another 15% of urgent cases. The hospital cost for a ruptured urgent case is $30,157 versus $17,996 for an unruptured elective case (Ontario Case Costing data, OCCI 2008). Analysis based on current practice patterns indicates savings of $6,826 for each emergency ruptured repair avoided, and $5,883 for each emergency unruptured repair avoided by elective surgical repair.

Policy Considerations and Recommendations

AAA screening programs exist in other jurisdictions. In Ontario, there are approximately 331,214 men and 211,825 women aged 65 to 74 who have a history of smoking; corresponding estimates for never-smokers are 82,286 for males and 246,175 for females.

FIGURE 1. Budget impact of screening options (2006–2011)*



* Option 1: All males aged 65 to 74 years that have ever smoked (80.1% smoking rate); Option 2: Males and females aged 65 to 74 years that have ever smoked (80.1% and 46.25% smoking rates, respectively); Option 3: Universal screening of males and females aged 65 to 74 years.

TABLE 1. Assumptions used in budget impact model

Population description	Estimate
a) Percentage of ever-smoked males > 65 years	80.10%
b) Percentage of ever-smoked females > 65 years	46.25%
c) Percentage of repeat screens	6.40%
d) Acceptance rate for screening	72.00%
e) Percentage of males > 65 years	8.00% (2006)
f) Percentage of females > 65 years	9.70% (2006)

Sources: (a–b): Statistics Canada 2001; (c) average across 4 screening trials (Lindholt et al. 2005; Norman et al. 2005; Ashton et al. 2002; Scott et al. 1995); (d) Crow et al. 2001 and Cornuz et al. 2004; (e–f) Ontario Ministry of Finance 2005.

Substantial system pressures related to AAA screening include ultrasound screening, patient waiting rooms, ultrasound technologists, radiologists, operating room time, acute care hospital beds and numbers of vascular surgeons in the province. There are also pressures associated with follow-up and aftercare of patients, including repeated scans of small aneurysms. Use of an aorta-only ultrasound takes <10 minutes to perform reducing cost, time and potential incidental findings of conditions unrelated to screening (e.g., benign lesions) associated with a traditional full abdominal scan screening test. Increases in primary care, radiology and vascular surgeon workloads and associated costs are expected with screening program implementation. Despite the increase in services for both surveillance of small aneurysms and elective repair, urgent and emergency repairs would be avoided, with reductions in operative complications and mortality rates.

Smaller aneurysms in women may be of more clinical significance since women normally have a smaller aortic diameter than men. A 5 cm aneurysm in a woman

stretches the aortic wall to a greater extent, and aneurysms in women rupture more frequently and at smaller diameters (Small Aneurysm Trial Participants 1998). Canadian studies indicate that there is a gender bias regarding diagnosis and patient selection for surgical treatment of AAA. (Johnston 1994; Parsons et al. 1997) Although there is insufficient evidence to support screening women for AAA, ultrasound screening is relatively inexpensive and could be considered for this population taking into account the smaller aortic diameter in women and later ages of rupture.

Screening has been found to be cost-effective and increase life years saved (Wanhainen et al. 2005; Boll et al. 2003; Lee 2002; UK Small Aneurysm Trial Participants 1998; Multicentre Aneurysm Screening Study Group 2002; Connelly et al. 2002). Despite the initial cost of establishing screening in Ontario, screening results in cost avoidance of emergency repairs, decreased morbidity from operative complications and reduced number of unnecessary deaths due to ruptured aneurysms. Savings from AAA screening result from the cost difference between urgent emergency repair and the lower cost (and associated lower complication and mortality rates) of elective surgical repair of AAA. Cost-effectiveness of AAA screening compares favourably with cited estimates of $26,000 to $44,000 USD per quality-adjusted life-year for cervical cancer, hypertension and breast cancer screening programs that are currently practised in Ontario (Wanhainen et al. 2005).

Based on the above findings, OHTAC recommended to the Ontario Ministry of Health and Long-Term Care:

- AAA screening for men and women ages 65 to 74 years with a history of smoking;
- Pragmatic evaluation of AAA screening outcomes, especially given the paucity of evidence for women; and
- An implementation strategy to be developed to introduce AAA screening, including stakeholder involvement to promote AAA screening.

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REFERENCES

Ashton, H.A., M.J. Buxton, N.E. Day, L.G. Kim, T.M. Marteau, R. A. Scott, S. G. Thompson and N.M. Walker. 2002. "The Multicentre Aneurysm Screening Study (MASS) into the Effect of Abdominal Aortic Aneurysm Screening on Mortality in Men: A Randomised Controlled Trial." *Lancet* 360(9345): 1531–39.

Boll, A.P.M., J.L. Severens, A.L.M. Verbeek and J.A. van der Vliet. 2003. "Mass Screening on Abdominal Aortic Aneurysm in Men Aged 60 to 65 Years in the Netherlands. Impact on Life Expectancy and Cost-Effectiveness Using a Markov Model." *European Journal of Vascular and Endovascular Surgery* 26: 75–80.

Connelly, J.B., G.B. Hill and W.J. Millar. 2002. "The Detection and Management of Abdominal Aortic Aneurysm: A Cost-Effectiveness Analysis." *Clinical and Investigative Medicine* 25(4): 127–33.

Cornuz, J., C.S. Pinto, H. Tevaearai and M. Egger. 2004. "Risk Factors for Asymptomatic Abdominal Aortic Aneurysm: Systematic Review and Meta-analysis of Population-Based Screening Studies." *European Journal of Public Health* 14(4): 343–49.

Crow, P., E. Shaw, J.J. Earnshaw, K.R. Poskitt, M.R. Whyman and B.P. Heather. 2001. "A Single Normal Ultrasound Scan at Age 65 Years Rules Out Significant Aneurysm Disease for Life in Men." *British Journal of Surgery* 88(7): 9414.

Emerton, M.E., E. Shaw, K.R. Poskitt and B.P. Heather. 1994. "Screening for Abdominal Aortic Aneurysm: A Single Scan Is Enough." *British Journal of Surgery* 81(8): 1112–13.

Jamrozik, K., P.E. Norman, C.A. Spencer, R.W. Parsons, R. Tuohy, M.M. Lawrence-Brown and J.A. Dickinson. 2000. "Screening for Abdominal Aortic Aneurysm: Lessons from a Population-Based Study." *Medical Journal of Australia* 173(7): 345–50.

Johnston, K.W. 1994. "Influence of Sex on the Results of Abdominal Aortic Aneurysm Repair." *Journal of Vascular Surgery* 20(6): 914–26.

Lederle, F.A., G.R. Johnson, S.E. Wilson, C.W. Acher, D.J. Ballard, F.N. Littooy and L.M. Messina. 2003. "Quality of Life, Impotence, and Activity Level in a Randomized Trial of Immediate Repair versus Surveillance of Small Abdominal Aortic Aneurysm. Aneurysm Detection and Management Veterans Affairs Cooperative Study." *Journal of Vascular Surgery* 38: 745–52.

Lederle, F.A., G.R. Johnson, S.E. Wilson, E.P. Chute, R.J. Hye, M.S. Makaroun, G.W. Barone, D. Bandyk, G.L Moneta and R.G Makhoul. 2000. "The Aneurysm Detection and Management Study Screening Program: Validation Cohort and Final Results. Aneurysm Detection and Management Veterans Affairs Cooperative Study Investigators." *Archives of Internal Medicine* 160(10): 1425–30.

Lederle, F.A., G.R. Johnson, S.E. Wilson, E.P. Chute, F.N. Littooy, D. Bandyk, W.C. Krupski, G.W. Barone, C.W. Acher and D.J. Ballard. 1997. "Prevalence and Associations of Abdominal Aortic Aneurysm Detected through Screening." *Annals of Internal Medicine* 126(6): 441–49.

Lee, T.Y. 2002. "The Cost-Effectiveness of a 'Quick-Screen' Program for Abdominal Aortic Aneurysms." *Surgery* 132(2): 399–407.

Lindholt, J.S., S. Juul, H. Fasting and E.W. Henneberg. 2005. "Screening for Abdominal Aortic Aneurysms: Single Centre Randomised Controlled Trial." *British Medical Journal* 330(7494): 750.

Lindholt, J.S., S. Vammen, H. Fasting and E.W. Henneberg. 2000. "Psychological Consequences of Screening for Abdominal Aortic Aneurysm and Conservative Treatment of Small Abdominal Aortic Aneurysms." *European Journal of Vascular and Endovascular Surgery* 20: 79–83.

Lucarotti, M.E., B.P. Heather, E. Shaw and K.R. Poskitt. 1997. "Psychological Morbidity Associated with Abdominal Aortic Aneurysm Screening." *European Journal of Vascular and Endovascular Surgery* 14: 499–501.

Multicentre Aneurysm Screening Study Group. 2002. "Multicentre Aneurysm Screening Study (MASS): Cost Effectiveness Analysis of Screening for Abdominal Aortic Aneurysms Based on 4-Year Results from Randomised Controlled Trial." *British Medical Journal* 325: 1135–41.

Norman, P.E., K. Jamrozik, M.M. Lawrence-Brown, M.T. Le, C.A. Spencer, R.J. Tuohy, R.W. Parsons and J.A. Dickinson. 2005. "Population Based Randomised Controlled Trial on Impact of Screening on Mortality from Abdominal Aortic Aneurysm." *British Medical Journal* 329(7477): 1259.

Ontario Case Costing Initiative (OCCI). 2008 (July). Retrieved September 29, 2008. <http://www.occp.com>.

Ontario Health Technology Advisory Committee (OHTAC). 2006a. *Ultrasound Screening for Abdominal Aortic Aneurysm. OHTAC Recommendation*. Retrieved September 29, 2008. <http://www.health.gov.on.ca/english/providers/program/ohtac/tech/recommend/rec_usaaa_012406.pdf>.

Ontario Health Technology Advisory Committee (OHTAC). 2006b. *Ultrasound Screening for Abdominal Aortic Aneurysm. Health Technology Policy Assessment*. Medical Advisory Secretariat Review. Retrieved September 29, 2008. <http://www.health.gov.on.ca/english/providers/program/ohtac/tech/reviews/pdf/rev_usaaa_010106.pdf>.

Ontario Ministry of Finance. 2005. Ontario Population *Projections 2004–2031. Ontario and Its 49 Census Divisions*. Retrieved September 29, 2008. <http://www.fin.gov.on.ca/english/economy/demographics/projections/2005/>.

Scott, R.A., K.A. Vardulaki, N.M. Walker, N.E. Day, S.W. Duffy and H.A. Ashton. 2001. "The Long-Term Benefits of a Single Scan for Abdominal Aortic Aneurysm at Age 65." *European Journal of Vascular and Endovascular Surgery* 21(6): 535–40.

Scott, R.A., S.E. Wilson, H.A. Ashton and D.N. Kay. 1995. "Influence of Screening on the Incidence of Ruptured Abdominal Aortic Aneurysm: 5-Year Results of a Randomized Controlled Study." *British Journal of Surgery* 82: 1066–70.

Spencer, C.A., P.E. Norman, K. Jamrozik, R. Tuohy and M. Lawrence-Brown. 2004. "Is Screening for Abdominal Aortic Aneurysm Bad for Your Health and Well-being?" *Australian and New Zealand Journal of Surgery* 74(12): 1069–75.

Statistics Canada. 2001. *Health Indicators*. Table 2.1.1.1. "Smoking, by Age Group and Sex, Household Population Aged 12 and Over, Canada Excluding Territories, 1994/95–1998/99." Retrieved September 29, 2008. <http://www.statcan.ca/english/freepub/82-221-XIE/00601/tables/htmltables/P2111.htm>.

UK Small Aneurysm Trial Participants. 1998. "Mortality Results for Randomised Controlled Trial of Early Elective Surgery or Ultrasonographic Surveillance for Small Abdominal Aortic Aneurysms." *Lancet* 352: 1649–55.

Wanhainen, A., J. Lundkvist, D. Bergqvist and M. Bjorck. 2005. "Cost-Effectiveness of Different Screening Strategies for Abdominal Aortic Aneurysm." *Journal of Vascular Surgery* 41(5): 741–51.

Wanhainen, A., C. Rosen, J. Rutegard, D. Bergqvist and M. Bjorck. 2004. "Low Quality of Life Prior to Screening for Abdominal Aortic Aneurysm: A Possible Risk Factor for Negative Mental Effects." *Annals of Vascular Surgery* 18(3): 287–93.

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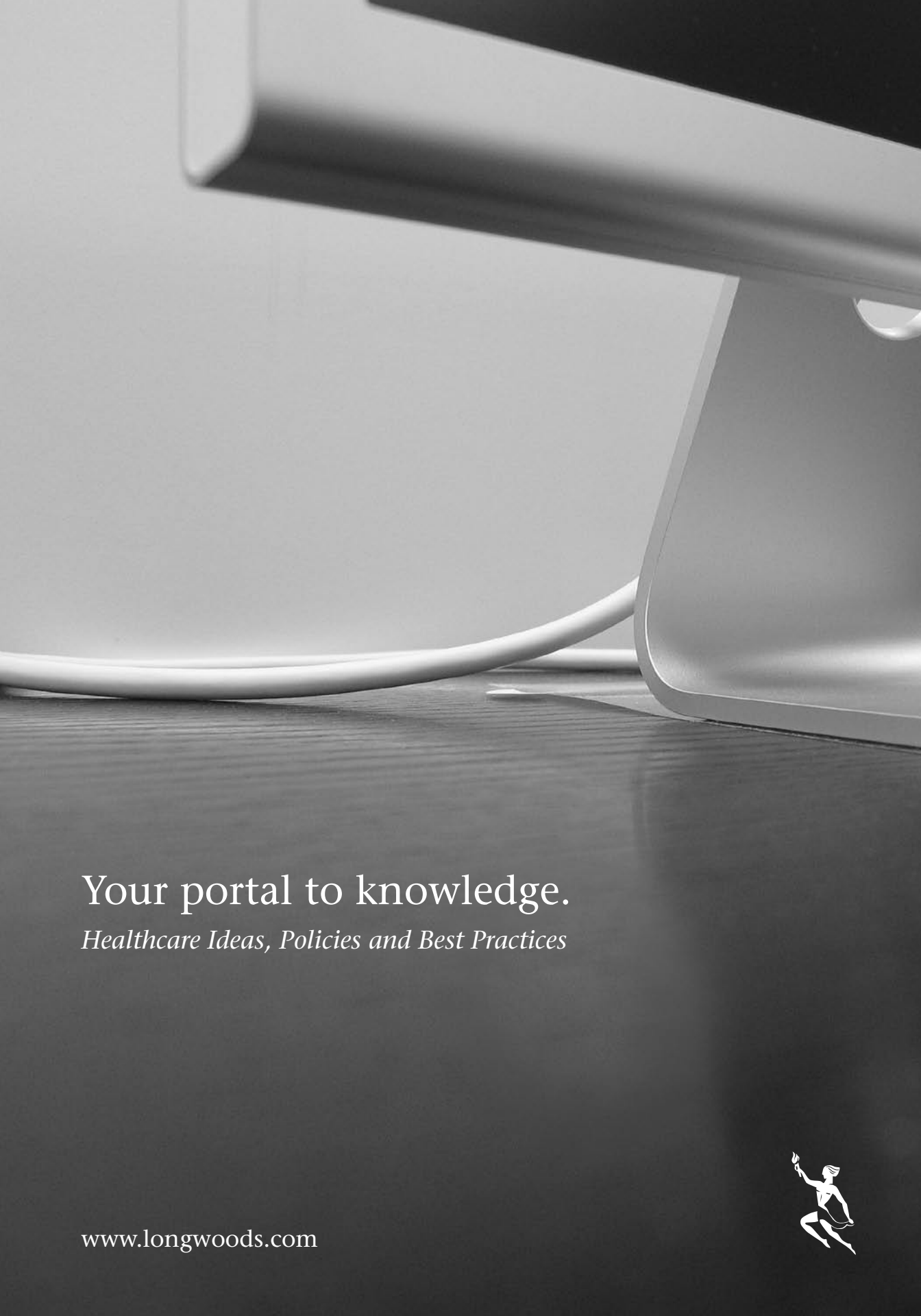
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RESEARCH PAPER

In the Eyes of the Beholder: Population Perspectives on Performance Priorities for Primary Care in Canada

Le regard de l'autre : point de vue de la population sur les priorités en matière de rendement dans les soins primaires au Canada

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Abstract

The purposes of this study were to identify the Canadian population's performance priorities for primary care, to ascertain the stability of these priorities over time and to examine variation across priorities among different subgroups of the population. The authors administered a survey of 10 priorities (determined through earlier work) to over 1,000 Canadians in 2001, and again in 2004. Analysis of variance was used to compare the ratings of each priority across the two years. The authors completed a forward stepwise regression analysis to examine the relationships between performance priorities and population characteristics in each year.

The overall order of importance ascribed to the 10 performance priorities is sustained from 2001 to 2004, as is the significance and directionality of several relationships between performance priorities and population subgroups distinguished by sex, age, education, income and province. Respondents generally think that the evaluation of primary care services should be predicated on assessments of physicians' technical skill along with their communication skills, but place less emphasis on practice management aspects of primary care.

The findings offer a basis for a meaningful, feasible, national public performance reporting strategy for primary healthcare (reform), where measures reflect the 10 performance priorities highly valued by the Canadian population.

Résumé

L'objet de cette étude était de déterminer, du point de vue de la population canadienne, les priorités en matière de rendement dans les soins primaires, de vérifier la stabilité de ces priorités au fil du temps et d'étudier leurs variations en fonction de différents sous-groupes de la population. Les auteurs ont effectué un sondage au sujet de 10 priorités (établies au cours de travaux antérieurs) auprès d'un échantillon de 1 000 Canadiens en 2001 et en 2004. L'analyse de la variance a servi à comparer le classement de chacune des priorités au cours des deux années. Pour chacune des années, les auteurs ont employé la régression multiple ascendante pour analyser la relation entre les priorités en matière de rendement et les caractéristiques de la population.

En général, l'ordre d'importance attribuée aux 10 priorités se maintient entre 2001 et 2004, de même que la signification et le lien directionnel dans plusieurs relations entre les priorités et les sous-groupes populationnels déterminés selon le genre, l'âge, la scolarisation, le revenu et la province. En général, les répondants considèrent que l'évaluation des services de première ligne devrait tenir compte des compétences techniques et communicationnelles des médecins, mais ils accordent moins d'importance aux aspects concernant la gestion de la pratique des soins primaires.

Les conclusions jettent les bases d'une stratégie nationale de divulgation publique du rendement des soins primaires (réforme), dans laquelle les mesures reflètent les 10 priorités jugées importantes par la population canadienne.

Following the release of the Romanow and Kirby reports on healthcare (Romanow 2002; Kirby 2002), First Ministers across Canada committed to public reporting on the investments made in primary healthcare reform (e.g., 2003's First Ministers' Accord on the Future of Health Care; 2004's First Ministers' Meeting on the Future of Health Care). Consequently, a number of government-funded entities have developed primary care performance indicators. For example, the Canadian Institute for Health Information developed over 100 indicators, 85 of which were organized under seven objectives for primary care performance (CIHI 2006).

While there is an abundance of indicators upon which to predicate a measurement strategy for primary healthcare reform, there is a dearth of "measurement capacity" or resources available with the expertise to execute such a strategy. Nor, to date, has there emerged any clear mechanism by which to prioritize indicators and so facilitate an effort to develop a more parsimonious indicator set that can be used to inform the public of progress – and the policy makers of wise future investments in reform.

Our study complements those that have led to the generation of indicators. Here, we aim to establish which primary care *performance priorities* are valued by the public, to assess the stability of these priorities over time and to reveal variation across the priorities among different subgroups of the population. Performance priorities are "statements that indicate the importance of specific aspects of the clinical behaviour of care providers or the organization of care" (Wensing et al. 1998). Performance priorities are similar, conceptually, to values (Ross et al. 1993), preferences (Ross et al. 1993; Nathorst-Boos et al. 2001) and importance ratings (Ross et al. 1993; Nathorst-Boos et al. 2001). All these concepts have their origins in the field of marketing, where researchers have endeavoured to understand the antecedents of customer/consumer choice and to position alternative products or services based on distinguishable consumer characteristics or target markets (Lovelock 1991). The primary care performance priorities we identify here can inform efforts to prioritize among performance indicators, and therefore offers the basis for a meaningful, feasible, national public performance reporting strategy for primary healthcare reform.

In addition to identifying the primary care performance priorities valued by Canadians, we sought to understand some of the bases for their valuation. Differences in patient characteristics, such as the type and severity of illness, socio-economic status, culture, ethnicity and literacy have been found to influence patient satisfaction

levels (Draper and Hill 1996; Entwisle et al. 1996). We expected that the Canadians would be similarly varied in their ratings of performance priorities for primary care. Therefore we examined the relationships between several population characteristics and ratings of primary care performance priorities.

Our study addressed three objectives:

1. To determine which of 10 performance priorities are considered by the general population to be of particular importance in the evaluation of primary care performance;
2. To ascertain the stability of these priorities by examining whether the relative importance of the 10 performance priorities changed between 2001 and 2004; and
3. To determine whether priority ratings vary according to identifiable population subgroups.

Methods

We report on findings from a telephone survey administered to samples of the general Canadian population in 2001 and again in 2004. Survey respondents were asked to rate each of 10 performance priorities on their importance for evaluating primary care services where the priorities would hypothetically serve as the bases for public performance reporting.

Identification of performance priorities

The 10 primary care performance priorities we examined were established as part of a study completed by Murray and colleagues (2000). These researchers conducted a literature review of studies on healthcare performance from the perspectives of both consumers and potential consumers of healthcare. Based on this review, the team identified the information needed to evaluate, monitor and improve primary care performance from a population perspective. Performance priorities were then identified through 20 focus groups conducted across Canada between June and July 1999. Two focus groups were completed in each of the following cities: St. John, New Brunswick; Halifax, Nova Scotia; Montreal, Quebec; Trois-Rivières, Quebec; Peterborough, Ontario; Saskatoon, Saskatchewan; Calgary, Alberta; and Vancouver, British Columbia. Four focus groups were conducted in Toronto, Ontario. Participants were selectively recruited from a listing of volunteers maintained by a social marketing firm, and represented variation in the following characteristics specified by the researchers: age, gender, experience with the healthcare system, urban or rural location, type of employment, health status, ethnicity and time in Canada. The focus groups opened

with general discussion of the healthcare system followed by the value of public report cards and the preferred content of the report cards. The top 10 priorities for primary care performance identified in the focus groups and from the literature were included in both the 2001 and 2004 surveys. A follow-up review of the literature, completed in 2003 in preparation for the 2004 survey, confirmed that the performance priorities used in the 2001 survey remained pertinent.

Survey development and administration

IBM Business Consulting Services prepared and pre-tested the telephone survey in consultation with the research team (a copy of the telephone survey is available from the corresponding author upon request). Our telephone survey was incorporated into the HealthInsider survey administered to Canadian consumers through the IBM Business Consulting Services' National Survey Centre in Ottawa.[1] A scale from 10 (of critical importance) to 0 (not at all important) was used in the survey. The survey was administered by trained professional telephone interviewers in February 2001 and again in October 2004. Respondents were interviewed in their official language of choice.

Sample selection and weighting

The sample for HealthInsider was generated using a stratified two-stage random sampling technique. Each of the 10 provinces in Canada was allocated a quota that was treated independently in the sampling process of the survey. The provincial quota was then distributed among five community-size strata according to their contributions to the provincial population. In addition, separate strata were created for Montreal, Toronto and Vancouver. As a result, Quebec, Ontario and British Columbia had a total of six strata.

Data were weighted and verified against 2001 and 2004 Statistics Canada census information at the provincial and national levels.

Population characteristics

Based on the work of others (Wensing et al. 1998; Williams and Calnan 1991), we included the following population characteristics in our surveys: sex, age (15–24 years, 25–44 years, 45–64 years and 65 and older), marital status (partner vs. no partner), level of education (less than secondary education, secondary education, post-secondary education), work status (working vs. non-working), level of income (less than $20,000 per year, $20,000–$49,999 and $50,000 per year and over) and province.

Analysis

We completed chi-square tests to determine whether there were significant differences in respondent characteristics between the two observation years. We used weighted analysis of covariance to compare the ratings of each priority across the two years, and forward entry (stepwise) regression analysis to examine relationships between the primary care performance priorities (modelled separately as dependent variables) and population characteristics (independent variables) for each observation year.

Results

The results are based on a probability sample of 1,162 and 1,099 Canadians 15 years of age and older in 2001 and 2004, respectively. For both years, we excluded records with missing data; in 2001, this led to the exclusion of 156 cases and in 2004, 148 cases. Comparable to other studies that used telephone-administered surveys (e.g., Tortora 2004, Alberta Survey 2005), the completion rates for our survey were 36.2% in 2001 and 22% in 2004. While the population demographics of respondents were relatively stable across the two observation years, we note that the sample is somewhat biased, as respondents over both years are highly educated relative to national levels reported in the Canadian census. The 2001 Census reports the Canadian population 15 years and over as comprising 33% individuals with less than secondary education, 23% individuals with secondary education and 44% with post-secondary education; our respondents are under-representative of the population having less than secondary education, and over-representative of the other two categories (see Table 1).

TABLE 1. Respondent characteristics

	2001 (%)	2004 (%)	*P* value (χ^2 statistic)
	N=1,318	N=1,247	
Sex			**0.659**
Male	42.0	41.1	
Female	58.0	58.9	
Age			**0.235**
24 and under	14.2	12.8	
25–44	37.1	37.0	
45–64	32.4	35.7	
65 and over	16.3	14.5	

Table 1. Continued

Marital status			**0.179**
Partner	50.2	52.9	
No partner	49.8	47.1	
Education			**<0.001**
Less than secondary	6.3	4.0	
Secondary	45.7	38.4	
Post-secondary	48.1	57.6	
Working status			**0.903**
Working	60.7	60.4	
Not working	39.3	39.6	
Income			**<0.001**
Less than $20,000	25.2	18.6	
$20,000 to $49,999	42.2	41.3	
$50,000 and over	32.6	40.1	
Province			**0.465**
British Colombia	12.7	12.3	
Alberta	12.2	13.5	
Saskatchewan	13.5	11.5	
Manitoba	13.0	12.5	
Ontario	11.6	13.8	
Quebec	12.7	13.1	
Atlantic*	24.2	23.3	

* Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick.

Table 2 shows that the orders of importance ascribed to primary care priorities in 2001 and 2004 were identical. In both years, the extent to which physicians keep their knowledge and skills up to date (PC1), the physician's diagnostic and treatment skills (PC2) and his or her ability to explain things in a way that the patient can understand (PC3) received the highest scores across all 10 variables – first, second and third, respectively. Also in both years, reminder of upcoming visit (PC9) and waiting time to appointment (PC10) were rated as the lowest of the 10 primary care performance priorities, and were the only two priorities with a mean less than 7 (in our survey, 5 = *neither important nor unimportant* and 10 = *of critical importance*) and a median less than 8. While the order of importance did not change from one observation year to the next, a weighted analysis of covariance identified four priorities with significant ($p<0.001$) mean differences in their ratings between 2001 and 2004. Ratings of the importance of the family physician keeping his or her knowl-

edge and skills up to date (PC1) and the physician's skill in identifying and treating patient's problems (PC2) decreased, while ratings of whether the physician (or his or her staff) contacts patients to remind them when it is time for a check-up, test or immunization (PC9) and the waiting time for an appointment with a physician for a non-urgent problem (PC10) increased.

TABLE 2. Comparison of 2001 and 2004 primary care performance priorities

Performance priority	2004			2001		
	Order of importance	Mean	SD	Order of importance	Mean	SD
The extent to which the family physician (FP) keeps his/her knowledge and skills up to date (PC1)	1	9.17↓	1.51	1	9.29	1.49
The FP's skill in identifying and treating patient's problems (PC2)	2	9.02↓	1.60	2	9.17	1.54
Ability of the FP to explain things in a way that the patient can understand (PC3)	3	8.99	1.62	3	8.91	1.74
Whether the FP makes referral to specialists or other healthcare providers when needed (PC4)	4	8.97	1.63	4	8.87	1.59
Patient satisfaction with care (PC5)	5	8.65	1.74	5	8.75	1.70
Extent to which the FP is sensitive and caring (PC6)	6	8.42	1.90	6	8.47	1.92
Whether the FP spends adequate time with a patient (PC7)	7	8.31	2.02	7	8.34	2.04
Whether the FP or a colleague can be contacted for urgent problems after the office is closed (PC8)	8	7.71	2.50	8	7.96	2.25
Whether the FP or his/her staff contacts patients to remind them when it is time for a check-up, test or immunization (PC9)	9	6.98↑	2.65	9	6.80	2.59
Waiting time for an appointment with the FP for a non-urgent problem (PC10)	10	6.11↑	2.71	10	5.64	2.74

Note 1: 10 = critical importance; 0 = not at all important.
Note 2: ↑ and ↓ indicate significant increase or decrease in ratings from 2001 to 2004, respectively.

Table 3 summarizes the stepwise regression analysis; only variables with significant coefficients are shown in the table. While there are a few instances between 2001 and 2004 where population characteristics shifted from significance to non-significance and vice versa (e.g., age and marital status), there are a number of performance priority scores that are consistently explained by particular population characteristics that we

highlight here. Most notable is the persistent significance of *Sex* in explaining ratings for performance priorities that relate predominantly to the primary care physician's demonstration of clinical (diagnostic) knowledge, interpersonal skills and responsiveness reflected in accessibility, or availing respondents of specialty services when needed (PC1 through PC8 in Table 3)(To view table visit http://www.longwoods.com/product.php?productid=20170). In 2004, female respondents generally rated priorities PC1 through to PC8 half a point higher on the 10-point scale than male respondents.

Though less striking than *Sex*, *Province* also played a consistently significant role in explaining ratings for three of the performance priorities over both observation years – PC1, PC2 and PC7. Specifically, respondents residing in Quebec rated these priorities significantly lower than respondents from all other jurisdictions; knowledge, diagnostic skills and time spent with the patient were considered of less importance by Quebec respondents than by respondents in other provinces.

Income and *Education* were consistently significant over the two observation years in explaining PC9, which relates to whether the patient is reminded of check-ups, tests or immunizations. Respondents within the highest income category rated PC9 almost one point lower than did respondents earning less that $20,000 annually. Respondents with less than secondary education consistently rated PC9 higher than respondents with higher levels of education. In 2004, respondents with less than secondary education rated PC9 more than one and a half points higher than did respondents with secondary education and over two points higher than respondents with post-secondary education. To put this finding into perspective, a respondent earning less than $20,000 with less than secondary education would, in 2004, award a rating of 9.3 to PC9, while a respondent earning $50,000 and over with post-secondary education would award the same priority a rating of 6.3, or 3 points lower on a 10-point scale.

Discussion

A promising foundation?

To us, the most remarkable finding – and that of greatest potential significance to policy makers – is the stability at the population level of the performance priority ratings and their similarity to the priorities of consumers identified in other healthcare settings (e.g., Wensing et al. 1998; Haddad et al. 2000; Thom and Campbell 1997). The only significant changes in scores from 2001 to 2004 served to reduce the scores of the most highly rated priorities and to increase the scores of the lowest-rated priorities. This finding may reflect increased public attention to issues of accountability and general anxiety around health system performance, heightened through the Romanow and Kirby reports and through a number of media reports. These effects may be rooted either in respondents' reduced ability to distinguish

major problems in healthcare when confronted with an overabundance of information, or in a generally heightened awareness of healthcare that has rendered all aspects of healthcare "major" priorities for a knowing public that is alert to the erosion of this valued aspect of Canadian society.

Regardless the root cause, our findings offer insights of interest to policy makers intent on establishing a performance measurement strategy for primary care. The stability of the primary care performance priorities offers a promising foundation upon which to develop performance measures. The importance ascribed by the public to these priorities appears stable; therefore, investments in the development of performance measures, and in the accompanying information systems, seem sensible. Further, as suggested by one anonymous reviewer, data collection against a performance measurement system predicated on the 10 priorities presented here could – for the majority of the priorities – be executed easily and inexpensively, through population-based telephone surveys. However, priorities 1, 2 and 4, relating to physician skills (currency, PC1 and level, PC2) and referrals (PC4), present a greater measurement challenge and they are of utmost importance to demonstrating the efficacy of some of the key aspects of recent primary care reform efforts.

Of further interest to policy makers investing in the development of a performance measurement system are our observations relating to the population determinants of the 10 priorities. Our findings can serve as a comparator for changes in population priorities for primary care that may arise in the future. *Sex*, *Province*, *Income* and *Education* emerge as helpful in explaining the primary care performance ratings.

WOMEN ATTACH HIGHER IMPORTANCE TO MOST PERFORMANCE PRIORITIES

Sex, in particular, explains variation in the scores of eight of 10 of the performance priorities, a finding that is consistent with the fact that women are more frequent users of healthcare services themselves and manage the care of dependents. Women may therefore be better situated to evaluate and compare the technical knowledge and interpersonal skills of primary care service providers.

JURISDICTIONAL DIFFERENCES

Province also plays a notable role in explaining variation in priority scores. Respondents residing in Quebec rated three priorities – relating to clinical knowledge, diagnostic skills and time spent with the patient – of significantly lower importance than respondents from all other jurisdictions. We found that Quebec respondents differed in the emphasis given to these three priorities, illustrating slightly different valuation of priorities in different jurisdictions in Canada.

INCOME AND EDUCATION

The fact that respondents within the highest income category attributed less importance to PC9 than did respondents in other income categories suggests to us that accessing physicians or expenditure of resources to complete visits may present less of a challenge to high-income patients than to lower-income patients – an important aspect of care quality to consider when arranging follow-up visits or scheduling appointments, and when planning reform initiatives designed to increase the continuity of care.

Education emerged as a significant explanatory variable in 2004 for four of the performance priorities. In 2004, less than secondary education was always positively associated with priorities PC5, PC6, PC8 and PC10, while post-secondary education always had a negative association with these priorities. Two of these priorities relate to the patient–provider interaction (PC5 and PC6), suggesting that respondents with less education value the interactive component of visits to their primary care providers significantly more than those with higher levels of education. The other two priorities significantly associated with education relate to access to care (PC8 and PC10) and may reflect prior unfavourable experiences with access to care.

Other researchers (e.g., Ross et al. 1993) who have remarked on similar differences in patient preferences (importance rankings) by age and income have suggested that they reflect differences in discretionary purchasing capacity or in the ability to exercise choice among service providers. Those patients with greater choice or more discretionary power tend to hold a more consumerist view than those with less discretionary power; therefore, they value, choose and evaluate the same services differently. What our findings suggest to us is the importance of provider–patient relationships, service accessibility and effective reminder/follow-up systems in primary care when serving lower-income and lower-education populations.

ACCESS TO CARE

Finally, we note the consistently low prioritization of access to care. Waiting time for a non-urgent appointment remains the lowest priority for primary care performance, despite attention at the federal and provincial levels to issues of access and ways to address them (e.g., the development of health human resources policies to increase the number of primary care physicians, the development of multidisciplinary models of care to increase access and a pan-Canadian commitment to report on access to care). On the other hand, access to referred services and to urgent care outside regular office hours are rated as considerably more important.

TECHNICAL AND INTERPERSONAL SKILLS

Our observations in this study suggest to us that policies in primary care, including those relating to measurement systems, should continue to focus predominantly on

sustaining and reinforcing those aspects of care that are highly valued by consumers – that is, the technical and interpersonal skills of their physicians. In general, respondents value physicians' technical skills along with their communication skills, and place comparatively less value on the importance of practice management aspects of primary care. Some studies have suggested that consumers of healthcare are not generally capable of accurately assessing the technical quality of care they receive (Wensing et al. 1998; Bowers et al. 1994) – instead, they base their assessments of technical quality on physicians' interpersonal skills, including communication skills. Although Canadians value technical competence in primary care physicians, they may not be able to assess it.

Prior studies on patient satisfaction

To our knowledge, ours is the first population-based study of primary care performance priorities pertaining to Canada, and one of a few existing studies of patient priorities for primary care that is based on population data. Most studies of patient preferences and values, as they relate to primary care, have examined patients' views, their levels of satisfaction or opinions. That said, while we examined population-level data to ascertain values placed on performance priorities, our findings are not incompatible with those of other studies that have focused on patient satisfaction or opinion.

In their assessment of consumer satisfaction criteria across general practice, dental and hospital settings in the United Kingdom, Williams and Calnan (1991) found that four variables served as key predictors of overall satisfaction with general practitioners (GPs): the giving of information by the GP, the GP's medical skills, the GP's personal skills and the patient's faith in doctors. In the same study, both age and gender significantly influenced consumer satisfaction: older people tended to be more satisfied with most aspects of general practice than their younger or middle-aged counterparts, and women tended to be slightly less satisfied overall with general practice.

A subsequent review paper completed by Lewis (1994) summarized the methods by which patient satisfaction is assessed and the factors shown consistently to influence patient satisfaction. While Lewis notes that age and sex are variables that emerge fairly consistently as predictors of patient satisfaction across a variety of studies and settings, he highlights the findings of a number of meta-analyses and a few other discrete studies showing that both technical and interpersonal skills are valued by patients. This observation is corroborated in the review of literature on patient priorities for general practice care completed by Wensing and colleagues (1998).

A study published in 2005 by Fung and colleagues helped to clarify the "trade-offs" that patients make when selecting primary care physicians and setting priorities in the context of report cards: while two-thirds of study participants selected physicians with higher technical skills (and lower interpersonal skills) over physicians with higher

interpersonal skills (and lower technical skills), a substantial proportion (one-third) still preferred physicians of high interpersonal quality.

Study limitations

While we examined provincial differences in priority ratings, and found negligible differences in ratings across provinces, our data did not permit us to examine finer-grained contextual differences. Respondents in rural settings, for example, may experience the availability and access to primary care services and other healthcare services differently than those in urban settings, and so value them differently. Future research that examines the relationship between medical rurality and performance priority ratings is merited.

While the sample weighting we undertook mitigates the effects of bias inherent in our low response rates, it does so only in light of factors that have been identified in the literature, *a priori*, as significant determinants of patient satisfaction (i.e., age, gender and geographic location). It is possible, therefore, that other respondent biases are not taken into account (e.g., religion, immigrant status, political orientation).

Finally, while the population demographics of respondents were relatively stable across the two observation years, we noted earlier that our sample was biased in that there was an over-representation of educated Canadians.

Conclusions

Our study aimed to establish the public's priorities for primary care performance, to assess their stability over time and to reveal variation across the priorities among different subgroups of the population. Our findings offer the basis for a meaningful, feasible, national public performance reporting strategy for primary healthcare reform where measures are predicated on 10 performance priorities highly valued by the Canadian population.

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Note

[1] In 2001 and 2004, Canadian consumers were asked questions relating to both primary care and acute care performance priorities. We focus here exclusively on the questions relating to primary care performance priorities; the results of the acute care part of the survey have been published elsewhere (see Sandoval et al. 2007).

REFERENCES

Alberta Survey. 2005. *Sampling Report*. Retrieved September 25, 2008. <http://www.uofaweb.ualberta.ca/prl/AlbertaSurvey.cfm>.

Bowers, M.R., J.E. Swan and W.F. Kohler. 1994. "What Attributes Determine Quality and Satisfaction with Health?" *Health Care Management Review* 19(4): 49–55.

Canadian Institute for Health Information (CIHI). 2006. *Pan-Canadian Primary Health Care Indicator Development Project. Report 2: Enhancing the Primary Health Care Data Collection Infrastructure in Canada*. Ottawa: Author.

Draper, M. and S. Hill. 1996. "Feasibility of National Benchmarking of Patient Satisfaction with Australian Hospitals." *International Journal for Quality in Health Care* 8(5): 457–66.

Entwisle, V.A., T.A. Sheldon, A.J. Sowden and I.S. Watt. 1996. "Supporting Consumer Involvement in Decision Making: What Constitutes Quality in Consumer Health Information?" *International Journal for Quality in Health Care* 8(5): 425–37.

Fung, C.H., M.N. Elliott, R.D. Hay, K.L. Kahn, D.E. Kanouse, E.A. McGlynn, M.D. Sprancam and P.G. Shekelle. 2005. "Patients' Preferences for Technical versus Interpersonal Quality When Selecting a Primary Care Physician." *Health Services Research* 40(4): 957–77.

Haddad, S., L. Potvin, C. Roberge, R. Pineault and M. Remondin. 2000. "Patient Perception of Quality Following a Visit to a Doctor in a Primary Care Unit." *Family Practice* 17(1): 21–29.

Kirby, M.J.L. 2002. *The Health of Canadians – The Federal Role. Final Report on the State of the Health Care System in Canada.* Volume Six: Recommendations for Reform. Ottawa: Standing Senate Committee on Social Affairs, Science and Technology. Retrieved September 25, 2008. <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/com-e/soci-e/rep-e/repoct02vol6-e.htm>.

Lewis, R.J. 1994. "Patient Views on Quality Care in General Practice: Literature Review." *Social Science & Medicine* 39(5): 655–70.

Lovelock, C.H. 1991. *Services Marketing*. Englewood Cliffs, NJ: Prentice Hall.

Murray, M., J. Barnsley, G.R. Baker, K. Leonard, G. Pink and V. Rackow. 2000. *What Do Canadians Want to Know about Healthcare Performance?* Toronto: University of Toronto Department of Health Policy, Management & Evaluation.

Nathorst-Boos, J., I.M.E. Munch, I. Eckerlund and C. Ekfeldt-Sandberg. 2001. "An Evaluation of the QSP and the QPP: Two Methods for Measuring Patient Satisfaction." *International Journal for Quality in Health Care* 13(3): 257–64.

Romanow, R.J. 2002. *Building on Values: The Future of Health Care in Canada – Final Report.* Saskatoon: Commission on the Future of Health Care in Canada. Retrieved September 25, 2008. <http://www.cbc.ca/healthcare/final_report.pdf>.

Ross, C.K., C.A. Steward and J.M. Sinacore. 1993. "The Importance of Patient Preferences in the Measurement of Health Care Satisfaction." *Medical Care* 31(12): 1138–49.

Sandoval, G.A., J. Barnsley, Whitney Berta, M. Murray, and A.D. Brown. 2007. "Sustained Public Preferences on Hospital Performance across Canadian Provinces." *Health Policy* 83:246-256.

Statistics Canada. 2004. "Population 15 years and Over by Highest Degree, Certificate or Diploma." 1986–2001 Censuses. Retrieved September 25, 2008. <http://www40.statcan.ca/l01/cst01/educ41a.htm>.

Thom, D.H. and B. Campbell. 1997. "Patient–Physician Trust: An Exploratory Study." *Journal of Family Practice* 44(2): 169–76.

Tortora, R.D. 2004. "Response Trends in a National Random Digit Dial Survey." *Metodolski Szezki* 1(1): 21–32.

Wensing, M., H.P. Jung, J. Mainz, F. Olesen and R. Grol. 1998. "A Systematic Review of the Literature on Patient Priorities for General Practice Care." *Social Science & Medicine* 47(10 pt 1): 1573–88.

Williams, S.J. and M. Calnan. 1991. "Convergence and Divergence: Assessing Criteria of Consumer Satisfaction across General Practice, Dental and Hospital Care Settings." *Social Science & Medicine* 33(6): 707–16.

RESEARCH PAPER

First Nations Health Networks: A Collaborative System Approach to Health Transfer

Réseaux santé des Premières nations : approche collaborative pour le transfert des services de santé

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Abstract

The Health Transfer Policy (HTP) of Health Canada's First Nations and Inuit Health Branch (FNIHB) offers First Nations the opportunity to assume a degree of administrative control over community-based health services. Although shortcomings

* This paper is based on research undertaken as part of a graduate studies program at Queen's University's School of Policy Studies. The views expressed are those of the authors and do not necessarily reflect those of the Ministry of Health and Long-Term Care of the Government of Ontario.

of the policy have been documented, certain elements, particularly second- ("zone") and third- ("regional") level transfer (Health Canada 2001), have provided First Nations the flexibility to create novel organizations. These First Nations Health Networks (FNHNs), which have emerged through grassroots movements and inter-jurisdictional processes, have brought together a number of communities under a planning body, tribal council or health authority.

The authors discuss the concept of First Nations Health Networks as variously implemented across Canada. In this study, the FNHNs may be defined as health authorities, fall under the auspices of a tribal council or be limited to a planning instrument. Yet, they all aspire to similar principles: cooperation, collaboration and sharing, under a consensus of optimizing health resources (Warry 1998). The authors explore these health management entities, look at their perceived strengths and challenges and identify key issues that may define the inherent risks and benefits or illuminate best practices for the benefit of other First Nation groups considering such a collaborative undertaking.

The paper begins with a discussion of the emergence of the FNHN concept, followed by detailed case studies of six collaborative First Nation initiatives. The third section explores common themes, regional differences and jurisdictional challenges faced by these organizations. The authors conclude with an exploration of the FNHN as a health management concept and recommendations for further analysis.

Résumé

La Politique sur le transfert des services de santé de la Direction générale de la santé des Premières nations et des Inuits offre aux Premières nations la possibilité d'assumer un certain contrôle administratif sur les services de santé communautaires. Bien que les lacunes de la politique aient été documentées, certains éléments – notamment les transferts aux deuxième (« zone ») et troisième (« région ») niveaux – ont permis aux Premières nations de créer de nouveaux organismes. Ces réseaux santé des Premières nations (RSPN), qui ont vu le jour grâce à la mobilisation populaire et à des collaborations interrégionales, réunissent plusieurs communautés sous un même centre de planification, sous un même conseil tribal ou encore sous une même autorité sanitaire.

Les auteurs décrivent le concept des RSPN comme étant très varié au Canada. Dans cette étude, les RSPN sont définis soit comme des autorités sanitaires, soit comme des entités sous l'égide des conseils tribaux ou soit simplement comme des centres de planification. Cependant, ils adhèrent tous à des principes semblables, c'est-à-dire la collaboration et le partage, dans une volonté commune d'optimisation des ressources sanitaires (Warry 1998). Les auteurs étudient ces organisations de gestion de la santé, examinent leurs forces et les défis auxquels elles font face, cernent les

principaux enjeux en matière de risques et d'avantages et dégagent les meilleures pratiques au profit d'autres groupes des Premières nations intéressés à mettre en place un tel système de collaboration.

L'article débute par une description de l'émergence du concept des RSPN. Il se poursuit par l'étude de cas détaillée de six initiatives des Premières nations. Puis, dans la troisième section, il fait état de thèmes communs, de différences régionales et de défis administratifs pour ces organisations. En conclusion, les auteurs abordent le concept de gestion de la santé propre aux RSPN et formulent des recommandations pour d'éventuelles analyses.

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The Health Transfer Policy (HTP) was introduced in Parliament in 1987, with the stated intent of offering eligible First Nations and Inuit communities a degree of control over community health services (National Health and Welfare and Treasury Board of Canada 1989), previously delivered by the Medical Services Branch of Canada's Department of Health and Welfare (now the First Nations and Inuit Health Branch of Health Canada, or FNIHB). While most First Nations can apply for health transfer under the policy, only those Inuit communities located in Labrador are eligible.

The transfer of health services control from FNIHB to First Nations and Inuit communities arguably offers a significant opportunity for enhancement of local capacity and culturally appropriate health planning and delivery. First Nations and Inuit groups have widely sought to take advantage of it; as of September 2006, a total of 160 transfer agreements, representing 279 First Nations and Inuit communities (or 46% of eligible communities) have been signed (Health Canada 2006). Such transfer agreements may include any or all of the three tiers of FNIHB healthcare: first level (community – direct service delivery), second level (zone – coordination, supervisory) and third level (regional – consultant, advisory). A fourth level, headquarters services, remains the exclusive purview of FNIHB (Lavoie et al. 2005).

Since this policy was first introduced, different approaches have emerged across the country. One such approach has been the development of collaborative networks involving a number of First Nation communities, often organized through affiliation with tribal councils or health authorities. Multiple communities joining together have the opportunity to share available expertise and ensure an efficient use of resources (Lemchuk-Favel 1999).

Transfer hinged on the idea of transferring pre-existing services that were located in the community (Level 1), zone (where they existed; Level 2) and region (Level 3), and were identified as transferable to First Nation or Inuit communities. Assuming responsibility for second- and third-level services may expand opportunities for First Nations to develop a more systemic approach to their healthcare planning and deliv-

ery. The resources allocated for the transfer of community-based services are based on historical expenditures. With regard to second- and third-level services, establishing and recruiting for a partial position, or finding support for partially funded roles, are tasks that tend to be impractical for most communities (Lavoie et al. 2005). FNHNs enable the pooling of financial resources, thereby improving opportunities to sustain second- and third-level services. Similarly, support for transferred positions may require cooperation and coordination at a higher level, having previously been the function of FNIHB. If such services are to be taken on through transfer, one mitigating strategy is the development of a collaborative system such as the FNHN. These agencies are able to combine their communities' resources strategically to plan, deploy and evaluate these elements of healthcare.

One challenge arising from these features of the HTP has been termed the "residual role" of FNIHB, which may potentially result in conflict and confusion between FNIHB and FNHNs. With flexible negotiation processes between First Nations and the various FNIHB zones and regions, each health transfer agreement can potentially result in a different set of second- and third-level services and, thereby, varied expectations for the First Nation. Thus, FNIHB and its staff may be left with a different residual role for each individual agreement. This patchwork of residual roles may lead to a lack of consistency in the relationship between the FNHN and its primary founder (Lavoie et al. 2005: 55–56).

The concept of the FNHN is not new. In a discussion paper written for the Royal Commission on Aboriginal Peoples, O'Neil (1993) recommended the recognition of collaborative networks as the "central building blocks for a progressive Aboriginal health service," further suggesting that they could provide the foundation for potential provincial or national Aboriginal health institutions, or both. Such organizations would receive block funding – i.e., revenue combined from federal, provincial and other sources – which they would allocate according to locally established priorities.

The Assembly of First Nations, in its 2005 Health Blueprint submission to the Aboriginal Roundtable, further suggested "First Nations Health Authorities" as the potential building blocks of a proposed "distinct yet interdependent" First Nation Health System, thus largely echoing O'Neil's earlier recommendation (AFN 2005: 4).

The FNHN idea has not been without its critics. Small, independent First Nations are often advised by FNIHB to join an FNHN in order to make transfer viable, even if they lack natural alignment of a service-delivery, cultural or political nature with such an organization (Sommerfeld and Payne 2004).

Methodology

This study is based on a series of interviews conducted with six FNHNs across

Canada. The criteria used in the identification of potential FNHN participant organizations were based on the following defining characteristics:

1. First Nation organizations (and/or their member communities) that had signed, or were in the process of signing, a health transfer agreement with FNIHB;
2. A First Nation–governed agency that had pre-existed, been formed or proposed to support the planning, administration and/or delivery of health services in multiple First Nation communities; and
3. Delivery or proposed delivery of health services primarily by the organization and/or its affiliated communities (i.e., not by Health Canada or other non–First Nation entities), chiefly to local on-reserve populations. Provincial services may also have been delivered in concert with federally funded healthcare programs.

Ethics approval for the research and methodology was granted by the Queen's University General Research Ethics Board in November 2004.

A national scan was conducted through consultation with academics, federal government and Aboriginal organization representatives, as well as Internet and literature searches, to identify potential participant agencies. Once these were identified, health directors or executive directors of appropriate agencies were contacted in order to solicit participation in the study. Ten organizations were contacted, of which six agreed to participate. The study, interview and ethics protocols were reviewed with health directors or executive directors as part of the consent process. None required that ethical approval be pursued with another organization. Informed consent was obtained through a letter of information and consent form. Data gathering consisted of a one-hour telephone interview using a set questionnaire covering topics of governance, administrative structure and supports, funding, staffing and self-perceived organizational strengths and weaknesses.

A total of seven individual, semi-structured interviews were conducted by telephone at the convenience of the participants. In the case of one organization, two representatives were interviewed. The interview guide was provided to participants in advance and consisted of standard questions exploring the following areas:

- Description of the FNHN, its model, management and governance structure;
- Development of the FNHN and its relationship to partner communities;
- Integration with other services, e.g., social services, provincial healthcare;
- Quality assurance measures, health outcomes and staff satisfaction measures;
- Funding and cross-jurisdictional relationships, including barriers to cooperation;
- Strengths, weaknesses, challenges and potential remedies; and
- Advice to other potential FNHNs.

Most participants in the research volunteered that they were of First Nation ancestry; many also had backgrounds in a healthcare profession. All held senior positions (e.g., executive director, health director) in their respective organizations. A profile of the collaborating organizations is shown in Table 1.

TABLE 1. Organizational profiles

First Nations Health Network	Location	Cultural affiliation	Number of communities	Average population per community	Services
Inter-Tribal Health Authority (ITHA) (ITHA informant #1, personal communication, February 25, 2005; ITHA informant #2, personal communication, March 18, 2005)	Nanaimo, BC	Coast Salish and Kwakiutl	29	528 14 FN <500	Primary care, prevention and secondary supports
Northern Inter-Tribal Health Authority (NITHA) (NITHA informant, personal communication, February 1, 2005)	Prince Albert, SK	Plains Cree, Woodland Cree, Dakota, Dene	32	1,559 1 FN <500	Advisory support to community-based services offering primary, secondary and tertiary prevention interventions as well as treatment.
Dilico (District Liaison Council) (Dilico informant, Personal communication, March 18, 2005)	Thunder Bay, ON	Ojibwe	13	922 2 FN <500	Primary care, prevention and secondary interventions (provincial – mental health, child welfare)
Matawa First Nation Tribal Council (MTC) (MTC informant, personal communication, March 3, 2005)	Thunder Bay, ON	Cree, Ojibwe	10	917 2 FN <500	Secondary prevention and supports (e.g., diabetes)
Wabun Tribal Council (WTC) Health (Wabun informant, personal communication, March 15, 2005)	Timmins, ON	Cree, Ojibwe	6 year-round + 1 summer only	370 4 FN <500	Primary care, secondary supports and some tertiary prevention (provincial long-term care)
Tui'kn Initiative (Tui'kn informant, personal communication, March 15, 2005)	Eskasoni, NS	Mi'kmaq	6	1,360 0 FN <500	Primary prevention (provincial primary care)

Source: INAC 2000, 1997.

Using the FNHN as a case study, a qualitative design was adopted, as described for health services environments by Keen and Packwood (1995). The interview transcript was subjected to content analysis in order to identify patterns of those factors most commonly cited by informants as playing a significant role in the development, governance and ongoing operations of their FNHN. These factors were then grouped and analyzed for commonalities and differences, and this framework was then checked against the literature. As required, follow-up by telephone or e-mail was conducted in order to clarify interview data. A copy of the final report was provided to the six participant FNHNs.

Findings

The six organizations described in Table 1 are, in many ways, as diverse as the communities, the cultures and the land in which they operate. They emerged largely in isolation by navigating through their own unique needs and challenges, some by strong internal partnerships, others by a collegial process with FNIHB. No two cases were alike owing to a number of factors, including unique program funding opportunities, jurisdictional issues, clinical program development and individual community capacity and participation. The interviews and case study analysis did, however, reveal a number of common themes that were identified by the key informants as significant in their efforts to plan, administer and provide services with their partner communities: the relationship with FNIHB (including its "residual role"), funding and administrative issues, culturally appropriate care and processes, and community development and knowledge transfer. As most informants requested anonymity prior to their interview, no names have been divulged, and the organizations have been identified only in cases where disclosures were accepted through the participant's express written consent.

Relationship with FNIHB

The relationship with FNIHB, the primary funder, was clearly identified in the interviews as an important factor to the FNHN. Informants cited the FNIHB's aforementioned residual role as a challenge. One FNHN discovered it was being seen by local First Nations as the replacement for FNIHB yet had to confront the difficulties inherent in losing FNIHB capacity, such as knowledge transfer, Community Health Representative training and nursing supports. As liaison with the federal government, another FNHN informant reported a sense of inadvertently inheriting the mistrust and blame normally directed by First Nations at the federal government, to the point where the FNHN's representatives were equated with the notorious "Indian agents" by their own stakeholders. The Indian agent, who was the historically appointed feder-

al government community representative, was once responsible for virtually all aspects of the administration of Indian Affairs, which included a role in the provision of basic medical care (as keepers of the community's "medicine chest"). The agents have been described as "all powerful" and responsible for executing policies "designed to facilitate the protection, civilization and assimilation" of First Nation individuals (Waldram et al. 2006: 187–88).

One participant described the "double-edged sword" scenario in which FNIHB representatives took a hands-off approach with the FNHN, leaving it to manage risks and opportunities. This experience speaks at least partially to a reduced residual role for FNIHB in a post-transfer environment. Other informants, however, reported excellent working relationships with their FNIHB contacts, generally characterized by open communication and mutual respect.

While the residual role of FNIHB may be in decline, its presence remains. The 2005 National Evaluation of the Health Transfer Policy identified that FNIHB could require 60 or more reports annually from a First Nation (Lavoie et al. 2005: 47), relevant to HTP and other funding transfers.

Administrative and funding issues

The efforts of FNHNs to administer Non-Insured Health Benefits – those FNIHB-funded extended health benefits, such as eyeglasses and prescription drugs (not available through standard provincial coverage) – were frequently hampered by arduous eligibility criteria and inadequate funding. In some cases, funding for such benefits, previously negotiated through a health transfer agreement, had been returned to FNIHB as it was found insufficient to meet the service needs of the FNHN's communities. Recruitment challenges were commonly noted related to funding factors such as the "no escalation" clause of the HTP, which freezes funding at levels negotiated through the original health transfer agreement. These constraints put FNHNs in competition for scarce health human resources against the superior salaries and benefits offered by provincial and federal unionized employers.

"Mandatory programs" (i.e., those prescriptive FNIHB services mandated to First Nations through their health transfer agreement) also presented challenges in that such programs do not necessarily align with the community health priorities identified in the locally developed Community Health Plan (CHP), a required component of the HTP. Furthermore, informants suggested that FNIHB has imposed new priority programs without consultation with the First Nation, or consideration of fit with the CHP. Meanwhile, other priority needs voiced by the community, such as traditional healing services, are often ineligible for HTP funding.

Nevertheless, there was a hope that services supporting local priorities could be provided through savings associated with the economies of scale and greater budget-

ary flexibility of a larger healthcare organization. Similarly, although "no escalation" means that HTP funding is based on the original CHP, the FNHN model expands opportunities to shift funds between budget lines, according to changing health needs. However, because of the "no escalation" clause, fund-shifting often involves reduced spending on administration or second- or third-level services in favour of front-line, community-based services.

Culturally appropriate care and processes

A common struggle for a number of the participants in their attempt to offer holistic healthcare was the lack of sustainable, comprehensive mental health services. Informants noted that small-scale mental health funding programs, coupled with the great need for services in their communities, create challenges in developing and supporting appropriate mental healthcare. While mental health funding is available from a number of FNIHB and Indian and Northern Affairs proposal-based programs (Aboriginal Healing Foundation, Brighter Futures, Building Healthy Communities), each has a different mandate and provides inadequate amounts of funding, even with considerable FNHN economies of scale. With mental health and addictions being among the greatest issues facing First Nations, a sustainable, comprehensive, flexible program would appear to be of the utmost priority.

Several informants mentioned a desire to make their programs and services relevant to their First Nation service users. One FNHN had proposed developing a new model based on the time-honoured trapping tradition of its constituents and attempting to translate its values and principles to a regional health delivery milieu. This approach signifies a way in which FNHNs can bring culturally oriented thinking to their individual context, rather than the more uniform approach of FNIHB. As a liaison between FNIHB and the community, the FNHN would then introduce a layer of flexibility in policy and practice. In this case, a benefit of this flexibility is a stronger connection between health delivery and the culture of the partner First Nations.

One agency noted that the CHP process, as designed by FNIHB, is not one in which community members can adequately participate. The FNHN has instead developed its own planning and evaluation methods, which use a traditional storytelling format to facilitate input and participation from service users. One respondent referred to this approach as "adapting our own way of knowing" rather than enforcing academic or provider-centric perspectives.

Knowledge transfer and community development

Best practices can also be shared through the FNHN. The Tui'kn Initiative, which

builds on the prior success of the Eskasoni Health Centre (EHC), aims to implement the EHC's multi-jurisdictional collaborative model of care in another five local First Nations, thereby breaking down barriers to accessing care (Tui'kn informant, personal communication, March 15, 2005).

Similarly, an informant from the Northern Inter-Tribal Health Authority (NITHA) noted that a great deal of invaluable knowledge transfer has occurred between the partners (personal communication, February 1, 2005). The four NITHA First Nation partners have developed strengths through delivery of their individual second-level programs and through their collaborative governance of NITHA's third-level services.

All informants spoke of the substantial numbers of staff of Aboriginal origin employed by their health networks. Similarly, their boards, being composed of community chiefs and other First Nation officials, could be seen as role models and a source of inspiration for their communities. A Dilico informant (personal communication, March 18, 2005) reported that the organization has become a "rallying point for the region" through its successful administration and delivery of provincially and federally funded health and social programs. The leadership skills and abilities developed by those involved in management, governance and program delivery of the FNHN contributed significantly to other efforts in community and professional development.

The success of Dilico in providing high-quality healthcare to the community, as verified by its accreditation by the Canadian Council on Health Services Accreditation, was reportedly due, in part at least, to the lessons learned and capacity developed in their initial experiences providing provincial child welfare services. Further, in providing child welfare services to Aboriginal children on- and off-reserve, the organization became aware of the two-tiered nature of service delivery, and resolved to provide services that were both culturally appropriate and comparable in quality with non-Aboriginal programs, while also advocating for improvements to the broader determinants of health, such as income and housing.

Discussion and Conclusions

It is evident that, while the First Nations Health Network is, first and foremost, a health management model, it brings other benefits to its leadership and to the communities it represents. Most participants in the research mentioned the value of community development in bringing confidence, strength and knowledge to First Nations. This benefit was particularly significant where an atmosphere of multi-jurisdictional collaboration could be established. As illustrated by the experience of Tui'kn/EHC and Dilico, the combined efforts of First Nations, provincial and federal governments and other sectors can bring a result that – through a broader range of services, multi-partite support and flexibility in funding – is greater than the sum of its parts.

Provinces, health authorities and other non-Aboriginal health and social service bodies need to be included in these developments in order to provide the holistic, multidisciplinary primary healthcare continuum that most Canadians take for granted.

The case of the FNHN, however, provides an alternative perspective on the shortcomings of FNIHB's Health Transfer Policy. FNHNs are able to mitigate some of the policy's weaknesses through their liaison role and their ability to confer advantages such as economies of scale. They remain, nevertheless, heavily challenged by the funding and administrative constraints imposed on them by the HTP. FNHNs may offer the potential for a unique, community-based approach to healthcare planning, administration and delivery for First Nations, but will be unable to succeed fully without significant modifications to the federal Health Transfer Policy.

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REFERENCES

Assembly of First Nations (AFN). 2005. "An Agenda for Restoring and Improving First Nations Health." Retrieved September 25, 2008. <http://www.afn.ca/cmslib/general/L3.pdf>.

Health Canada. 2001. *Transfer Policy for Second- and Third-Level Services*. Ottawa: Government of Canada.

Health Canada. 2006. "Transfer Status as of September 2006." Retrieved September 25, 2008. <http://www.hc-sc.gc.ca/fnih-spni/finance/agree-accord/trans_rpt_stats_e.html>.

Indian and Northern Affairs Canada (INAC). 1997. *First Nations Profiles*. Retrieved June 12, 2005. <http://sdiprod2.inac.gc.ca/FNProfiles/FNProfiles_home.htm>.

Indian and Northern Affairs Canada (INAC). 2000. *Band Classification Manual*. Retrieved September 25, 2008. <http://www.ainc-inac.gc.ca/pr/pub/fnnrg/2000/bcm_e.pdf>.

Keen, J. and T. Packwood. 1995 (August 12). "Qualitative Research: Case Study Evaluation." *British Medical Journal* 311: 444–46.

Lavoie, J.G., J. O'Neil, L. Sanderson, B. Elias, J. Mignone, J. Bartlett, E. Forget, R. Burton, C. Schmeichel and D. MacNeil. 2005. *The National Evaluation of the Health Transfer Policy. Final Report*. Winnipeg: Manitoba First Nations Centre for Aboriginal Health Research.

Lemchuk-Favel, L. 1999. *Financing a First Nations and Inuit Integrated Health System*. Ottawa: First Nations and Inuit Health Branch, Health Canada.

National Health and Welfare and Treasury Board of Canada. 1989. *Memorandum of Understanding between the Minister of National Health and Welfare and the Treasury Board Concerning the Transfer of Health Services to Indian Control*. Ottawa: Government of Canada.

O'Neil, J.D. 1993. *Aboriginal Health in Canada: A Discussion Paper for the Royal Commission on Aboriginal Peoples*. Ottawa: Library of Parliament.

Royal Commission on Aboriginal Peoples. 1996. *Report of the Royal Commission on Aboriginal Peoples. Vol. 3. Gathering Strength*. Chap. 3: "Health and Healing." Ottawa: Public Works Canada.

Sommerfeld, M. and H. Payne. 2004. *Entrenched Incapacity and the Rights of Small Independent First Nations in the Delivery of Community Health Services.* Nanaimo, BC: Inter-Tribal Health Authority.

Waldram, J.B., D.A. Herring and T.K. Young. 2006. *Aboriginal Health in Canada: Historical, Cultural and Epidemiological Perspectives* (2nd ed.). Toronto: University of Toronto Press.

Warry, W. 1998. *Unfinished Dreams: Community Healing and the Reality of Aboriginal Self-Government*. Toronto: University of Toronto Press.

RESEARCH PAPER

Online Exclusives

Using Operations Research to Plan the British Columbia Registered Nurses' Workforce

La recherche opérationnelle comme outil de planification de la main-d'œuvre infirmière en Colombie-Britannique

MARIEL S. LAVIERI, SANDRA REGAN, MARTIN L. PUTERMAN AND PAMELA A. RATNER

Abstract

The authors explore the power and flexibility of using an operations research methodology known as *linear programming* to support health human resources (HHR) planning. The model takes as input estimates of the future need for healthcare providers and, in contrast to simulation, compares all feasible strategies to identify a long-term plan for achieving a balance between supply and demand at the least cost to the system. The approach is illustrated by using it to plan the British Columbia registered nurse (RN) workforce over a 20-year horizon. The authors show how the model can be used for scenario analysis by investigating the impact of decreasing attrition from educational programs, changing RN-to-manager ratios in direct care and exploring how other changes might alter planning recommendations. In addition to HHR policy recommendations, their analysis also points to new research opportunities.

Résumé

Les auteurs examinent le potentiel et la souplesse d'une méthodologie de recherche opérationnelle, soit la *programmation linéair*e, pour faciliter la planification des ressources humaines dans le domaine de la santé. Le modèle utilise, comme données d'analyse, les estimations des besoins à venir des fournisseurs de services de santé et, contrairement à la méthode de la simulation, il compare entre elles toutes les stratégies réalisables afin de déterminer un plan à long terme qui assure l'équilibre entre l'offre et la demande, et ce, aux coûts les plus bas pour le système. Les auteurs montrent le fonctionnement de cette approche en procédant à la planification de la main-d'œuvre des infirmières autorisées en Colombie-Britannique sur une période de 20 ans. Ils font voir comment le modèle peut servir à analyser différents scénarios, en évaluant l'impact d'une baisse de l'attrition dans les programmes de formation ou d'une modification du ratio infirmières-gestionnaires dans les soins directs. Ils examinent également d'autres types de changements qui pourraient affecter les recommandations en matière de planification. En plus de recommandations sur les politiques des ressources humaines de la santé, leur analyse propose de nouvelles opportunités de recherche dans ce domaine.

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RESEARCH PAPER

Online Exclusives

Evaluation of the Executive Training for Research Application (EXTRA) Program: Design and Early Findings

Évaluation du programme Formation en utilisation de la recherche pour cadres qui exercent dans la santé (FORCES) : conception et résultats préliminaires

MALCOLM ANDERSON AND MÉLANIE LAVOIE-TREMBLAY

Abstract

The authors of this paper describe the EXTRA Program, its intended outcomes, the approach they used to evaluate the program and some initial findings regarding the program's effects on the EXTRA fellows after the initial two-year period. The program's mission is to develop capacity and leadership to optimize the use of research-based evidence in Canadian healthcare organizations. Using Kirkpatrick's four-level model for evaluating training effectiveness, the authors conclude that after two years the program appears to be having the desired effects on the fellows. There is now a need to develop a richer understanding of the effects within the host organizations and to consider ways of transferring the new knowledge to other healthcare organizations outside the EXTRA Program umbrella.

Résumé

Les auteurs de cet article font la description du programme FORCES, de ses résultats escomptés, de la méthode employée pour son évaluation ainsi que de certains résultats préliminaires de ses effets sur les boursiers après les deux années initiales du programme. FORCES a comme mission de renforcer les capacités et de développer le leadership afin d'optimiser l'utilisation des données probantes issues de la recherche dans les organismes de services de santé au Canada. L'emploi du modèle de Kirkpatrick à quatre niveaux permet aux auteurs de conclure qu'après deux ans, le programme semble avoir les effets escomptés quant aux boursiers. Il est cependant nécessaire de comprendre plus en profondeur ses effets au sein des organismes et de penser aux moyens de diffuser les nouvelles connaissances aux autres organismes de santé en dehors du cadre du programme FORCES.

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RESEARCH PAPER

Online Exclusives

Previous Out-of-Pocket Drug Expenditures and Patterns of Antidepressant Use among Workers Receiving Depression-Related Disability Benefits

Dépenses remboursables pour médicaments et schémas d'utilisation d'antidépresseurs chez les salariés qui reçoivent des prestations d'invalidité liées à la dépression

CAROLYN S. DEWA, JEFFREY S. HOCH AND PAULA GOERING

Abstract

This study explored the effects of out-of-pocket expenditures on antidepressant use among workers receiving depression-related short-term disability benefits. The authors examine the association between workers' out-of-pocket expenditures prior to their disability episode and their use, or delay in use, of antidepressants during the episode.

The results indicate that higher out-of-pocket expenditures for antidepressants prior to the disability episode were associated with higher odds of using an antidepressant during the episode. However, results also suggested that higher out-of-pocket expenditures for other prescriptions were associated with significantly lower odds of an antidepressant claim during the episode.

Greater prior out-of-pocket expenditures for other prescription drugs may serve as a barrier to accessing antidepressant treatment. Workers receiving short-term disability benefits who have previously purchased prescriptions for other conditions may be more sensitive to out-of-pocket expenditures for antidepressant prescriptions.

Résumé

Cette étude se penche sur les effets des dépenses remboursables pour les antidépresseurs au sein des salariés recevant des prestations d'invalidité de courte durée pour des problèmes de dépression. Les auteurs examinent la relation entre les dépenses remboursables préalables aux périodes d'invalidité des salariés et l'utilisation, ou les délais d'utilisation, des antidépresseurs pendant ces périodes.

Les résultats indiquent que des dépenses remboursables plus élevées pour antidépresseurs préalables aux périodes d'invalidité sont associées à de plus grandes proba-

bilités d'utilisation d'antidépresseurs pendant ces périodes. Toutefois, les résultats portent à croire que des dépenses remboursables plus élevées pour d'autres types d'ordonnances sont associées à des probabilités significativement plus faibles de demandes de prestations pour des antidépresseurs pendant les périodes d'invalidité.

Des dépenses remboursables anticipées plus élevées pour d'autres types d'ordonnances peuvent freiner l'accès aux traitements antidépresseurs. Les salariés qui reçoivent des prestations d'invalidité à court terme et qui ont préalablement acheté des médicaments prescrits pour d'autres états de santé sont peut-être plus enclins aux dépenses remboursables liées aux ordonnances pour antidépresseurs.

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RESEARCH PAPER

Using Operations Research to Plan the British Columbia Registered Nurses' Workforce

La recherche opérationnelle comme outil de planification de la main-d'œuvre infirmière en Colombie-Britannique

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Abstract

The authors explore the power and flexibility of using an operations research methodology known as *linear programming* to support health human resources (HHR) planning. The model takes as input estimates of the future need for healthcare providers and, in contrast to simulation, compares all feasible strategies to identify a long-term plan for achieving a balance between supply and demand at the least cost to the system. The approach is illustrated by using it to plan the British Columbia registered nurse (RN) workforce over a 20-year horizon. The authors show how the model can be used for scenario analysis by investigating the impact of decreasing attrition from educational programs, changing RN-to-manager ratios in direct care and exploring how other changes might alter planning recommendations. In addition to HHR policy recommendations, their analysis also points to new research opportunities.

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Les auteurs examinent le potentiel et la souplesse d'une méthodologie de recherche opérationnelle, soit la *programmation linéaire*, pour faciliter la planification des ressources humaines dans le domaine de la santé. Le modèle utilise, comme données d'analyse, les estimations des besoins à venir des fournisseurs de services de santé et, contrairement à la méthode de la simulation, il compare entre elles toutes les stratégies réalisables afin de déterminer un plan à long terme qui assure l'équilibre entre l'offre et la demande, et ce, aux coûts les plus bas possible pour le système analysé. Les auteurs montrent le fonctionnement de cette approche en procédant à la planification de la main-d'œuvre des infirmières enregistrées en Colombie-Britannique sur une période de 20 ans. Ils font voir comment le modèle peut servir à analyser différents scénarios, en évaluant l'impact d'une baisse de l'attrition dans les programmes de formation ou d'une modification du ratio infirmières-gestionnaires dans les soins directs. Ils examinent également d'autres types de changements qui pourraient affecter les recommandations en matière de planification. En plus de recommandations sur les politiques des ressources humaines de la santé, leur analyse propose de nouvelles opportunités de recherche dans ce domaine.

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Registered nurses (RNs) represent the largest group of healthcare providers and are among the 10 occupations with the largest expected number of employment openings in British Columbia (BC) over the next 10 years (BC Statistics 2003). Canada, like many countries, is experiencing a shortage of RNs that is projected to worsen over the next decade. This projected shortage is due, in part, to the growth in need for healthcare services by the Canadian population

as well as the increased attrition of an aging workforce (Basu and Halliwell 2004). British Columbia's RNs are the oldest RNs, on average, in the country, and the province has the largest percentage of over-45-year-old nurses (CIHI 2006). The large number of RNs expected to retire in the next decade, along with the repercussions of reductions in education seats in the 1990s, have created a significant imbalance between those entering the profession and those leaving (HRSDC and BC Ministry of Advanced Education 2005; O'Brien-Pallas et al. 2003).

Various approaches have been used to estimate the supply of RNs required to meet future demand. However, most approaches rely heavily on supply-side projections, assume current patterns of utilization and seldom include the impact of policy decisions on supply (O'Brien-Pallas et al. 2001). Estimates based on a cohort analysis conducted by the Canadian Nurses Association predict that Canada will be short between 78,000 and 113,000 RNs in the next decade (CNA 2002). Given this projected deficit, strategies addressed specifically to those entering the profession and those who will be retiring from the profession are particularly important. Increasing education seats is considered a key strategy to address the shortage; "governments must be engaged immediately with schools and employers, educating health professionals to put in place the human and physical resources to accommodate more students" (Villeneuve and MacDonald 2006: 101). Yet the number of students that should or could be accommodated is an open question.

Education seats are not the only consideration in planning human resources. Multiple factors influence the supply of, and demand for, RNs, including attrition (short-term leaves, premature leave from the profession and retirement), changes in the workplace (e.g., availability of employment positions and contractual requirements such as hours worked), the availability of personnel in leadership or management roles, the skill mix and task delegation of all healthcare providers, how demand is defined (whether based on current utilization patterns or population healthcare needs) and productivity (availability of support staff and other aids).

Governmental and employers' policies also play an important role in planning human resources. The need to examine how policy decisions made in one sector of the healthcare system can influence other sectors is an issue that is rarely considered. For example, a decision to increase education seats should be commensurate with the availability of employment positions. Studies have indicated that the availability of full-time employment is a factor in whether recently graduated RNs remain in the province (CRNBC 2006).

Recruitment and retention strategies are another key feature of planning human resources. A growing body of literature has identified the significance of workplace characteristics for RN retention. In their synthesis of research and other literature on nursing and work, Baumann and colleagues (2001) identified features of the work environment related to perceived quality, including the availability of personnel in

leadership or management positions and an emphasis on promoting recruitment and retention. Examining the influence of various strategies on the overall supply of RNs is an important element of planning (Kephart et al. 2004).

We developed a comprehensive model that compares feasible strategies and identifies the optimum long-term plan of achieving a supply–demand balance at the least cost to the system based on the estimated need for RNs. We apply this modelling approach to planning British Columbia's RN workforce.

The Problem

Most modelling approaches tend to be static – one-time – projections of future supply. However, policy decisions are constantly influencing changes in the supply of and demand for RNs, and those decisions can have significant effects on planning. Modelling approaches that can unify supply and demand variables and that are further enhanced by adding contextual factors – such as the costs associated with proposed strategies – may further enrich the models and provide important evidence to evaluate decisions about human resources.

Nursing in British Columbia

There are 18 educational institutions offering basic or entry-level registered nursing education programs in universities and colleges in British Columbia (CRNBC 2007). With the exception of one program that requires advanced standing (i.e., it admits only students who already hold a degree or who have completed a specified number of credits towards the third year of a baccalaureate program), the educational programs are four years in length.

A small percentage of students discontinue their education before graduation – yearly attrition rates depend on the year of enrolment. A small percentage of those who complete their education leave the province or do not register with the provincial regulatory body. Graduates must pass the Canadian Registered Nurse Examination to be eligible for registration. After acquiring relevant experience, and possibly additional education, direct care RNs may choose to work in entry-level management positions (e.g., clinical resource nurses, assistant managers, managers or supervisors) and later in senior-level management positions (e.g., directors, assistant directors, associate directors or executives). Some RNs may leave the profession permanently or for a period of time (parental leaves are a common reason); attrition rates are highly dependent on age (Kazanjian et al. 1986).

In addition to the graduates of British Columbia's schools of nursing, RNs migrate from other provinces and countries. BC is considered a destination province (net importer) and, historically, RNs from other provinces or countries have accounted for

between 40% and 50% of new RNs (CRNBC 2006). We assume that the province will continue to attract RNs from outside for the foreseeable future, although the actual number of RNs may decrease with the global shortage of nurses. In the case of an insufficient supply of RNs in British Columbia, our model assumes that it is possible to recruit RNs from elsewhere. This is constrained by the availability of RNs willing to move to the province and the high costs of recruitment, such as the payment of recruitment bonuses or relocation expenses and orientation costs (Weber 2005). Table 1 provides additional information about British Columbia's RN workforce and population.

TABLE 1. BC's employed registered nurses' demographics and population statistics, 1997–2005

	1997	**2001**	**2005**
Demographics of employed registered nurses*	**(N=27,964)**	**(N=27,375)**	**(N=27,814)**
Number per 10,000 population	70.2	66.7	65.3
Average age (national average)	43.3 (42.4)	44.8 (43.7)	46.4 (44.7)
Area of responsibility (Number [%])			
Direct care	25,723 (92.0)	24,568 (89.7)	24,956 (89.7)
Administration	998 (3.6)	1,135 (4.1)	1,162 (4.2)
Education	1,010 (3.6)	1,148 (4.2)	1,386 (5.0)
Research	146 (0.5)	194 (0.7)	235 (0.8)
Not stated	87 (0.3)	330 (1.2)	75 (0.3)
Position (Number [%])			
Staff nurse/Community health nurse	22,770 (81.4)	21,819 (79.7)	21,965 (79.0)
Management	2,124 (7.6)	2,010 (7.3)	2,119 (7.6)
Other/Not stated	3,070 (11.0)	3,546 (13.0)	3,730 (13.4)
Place of work (Number [%])			
Hospital	18,156 (64.9)	17,599 (64.3)	17,336 (62.3)
Community	3,013 (10.8)	3,273 (12.0)	3,971 (14.3)
Nursing home	2,333 (8.3)	3,653 (13.0)	3,371 (12.1)
Other/Not stated	4,462 (16.0)	2,940 (10.7)	3,136 (11.3)
Source of new RN's[+] (Number [%])			
BC schools of nursing	670 (46.9)	572 (46.7)	857 (55.0)
Other provinces	601 (42.1)	371 (30.3)	405 (26.0)
Other countries	158 (11.1)	282 (23.0)	297 (19.1)
BC population estimates[#]			
Total population	3,948,544	4,078,447	4,257,833

* Canadian Institute for Health Information, based on the number in the registry actively employed in nursing (2002, 2006).
+ College of Registered Nurses of British Columbia.
# Statistics Canada.

The Approach

Our approach was to formulate the planning problem as a linear program (LP), a powerful mathematical tool that enables "the planning of activities to obtain an optimal result, i.e., a result that reaches the specified goal best among all feasible alternatives" (Hillier and Lieberman 2001: 24).

A linear program has three main components: decision variables, an objective function and a set of constraints. Solving it determines values for the decision variables so that the objective function is as high or as low as possible (depending on whether the decision-maker seeks to minimize or maximize the objective) while simultaneously ensuring that all constraints are satisfied. Linear programming is different from simulation in that, rather than relying on a lengthy search for a strategy that will both meet a set of requirements and be as good as possible, the mathematical structure of the linear program ensures that this happens. We have provided details of the mathematical formulation of the model elsewhere (Lavieri and Puterman 2008).

Linear programming models can be formulated in MS Excel. Problems as large as those necessary for workforce planning require add-ons. We used the Frontline solver add-on to obtain solutions (Frontline Systems 2007). Finding an optional solution required a few seconds on a personal computer.

The goal of the proposed model is to determine for each year in a specified planning horizon (we used 20), while achieving target staffing levels, (a) the number of first- and third-year nursing students to admit to educational programs, (b) the number of direct care RNs and entry-level managers to recruit from outside the province and (c) the number of RNs to promote each year to minimize the total cost of education, recruitment and annual salary.

The yearly costs that are part of the objective function were calculated as follows. *Education cost* was the sum of the annual cost of educating each student multiplied by the number of students enrolled in each year after taking into account the number of students accepted and the assumed attrition rates. Furthermore, students admitted into the advanced standing program incur an initial fixed cost per student in addition to their yearly education cost (owing to the prior cost associated with earning the minimum number of completed credits required for admission to the program). We also assumed that a cost is incurred when RNs are promoted into managerial positions (calculated as the total number of RNs promoted multiplied by the promotion cost). *Yearly recruitment costs* were the product of the number of RNs promoted and the recruitment cost. Lastly, we calculated *annual salaries* by multiplying the average annual salaries at each position by the number of RNs in each position each year. *Total costs* were the sum of all these costs over the planning horizon. We acknowledge that this figure only approximates the total costs incurred by the system, and stress that this function is used only to ensure that no more RNs are educated, promoted or recruited than are needed in the long erm. It is possible to analyze the role that these cost assumptions play in the solution.

The length of the horizon was determined in consideration of policy needs, the availability and reliability of the data and the desire to provide a solution over a sufficient period to incorporate the future implications of current decisions. However, the model should be updated as new data become available.

TABLE 2. Model inputs

Health human resource element	Input	Description	Source
Production	Education costs	Annual cost of funding an RN education program seat	BC Ministry of Advanced Education (MAE)
Production	Probability of continuing to completion of education	Fraction of students that continue in the program each year	UBC School of Nursing; Pringle and Green (2005)
Supply	Probability of passing the CRNE examination	Fraction of BC graduates that pass the national examination	CRNBC (2005)
Supply	Probability of leaving BC after graduation	Fraction of RNs that do not remain in the province after graduation	CRNBC (2005)
Supply	Attrition rates	Annual probability of permanently leaving the workforce in the province	Kazanjian (1986); O'Brien-Pallas et al. (2003)
Supply	Age distribution	Current demographics of students and RNs	UBC School of Nursing (2006); CRNBC (2005); CIHI (2005)
Deployment	Workforce ratios	Managerial ratios	CIHI (2005)
Deployment	FTE	Full-time equivalents of each RN	CIHI (2005); Statistics Canada (2004)
Financial Resources	Annual salary	Average annual salaries paid in BC	BC Nurses' Union
Financial Resources	Recruitment and turnover cost	Incentives, orientation and other recruitment costs incurred per recruited RN	Weber (2005)
Financial resources	Management education cost	Cost of training to promote a direct care RN to a managerial position	MAE
Need/Demand	Ratio of number of RNs to population	Used as an estimate of the minimum number of RNs needed in the province per year (should be replaced by a more elaborate needs-based model)	CIHI (2005)
Need/Demand	Projected BC population		BC Stats (2006)

The model is constrained by targets (i.e., the minimum number of RN full-time equivalents [FTEs] needed to meet the health needs of the population), the number of RNs that can be recruited each year, the maximum yearly growth of nursing educational programs and the belief that RNs are likely to be assigned to managerial positions only after they have been in a direct care position for a certain number of years. The model also keeps track of the aggregate number of students and RNs in the prov-

ince by age and by year. These constraints can be adjusted to reflect current and future realities. The key inputs to the model are summarized in Table 2.

Given the limitations of data access and the lack of integrated sources, we encountered various challenges in obtaining the necessary data. Proxies for actual data were used when necessary.

We view our analyses below as an illustration of how this modelling approach can be used to provide policy guidelines, investigate assumptions and set targets. However, the specific numerical values of decision variables are highly sensitive to the model inputs. Using this model in practice would require additional verification of inputs and assumptions, but we strongly believe this approach can provide the answers that policy makers need.

Scenario Analysis

There are many possible policy changes that could be made to the system. Rather than putting them into practice and later analyzing the impact that they have on the size and age composition of the workforce, we show how our modelling approach can be used on a "What if?" basis to determine the optimal human resources strategy in each case. Five scenarios are analyzed herein. They have been chosen to address current policy concerns and to illustrate how the model could be used for setting policy. In each case, we make the appropriate changes to the model inputs and solve it to find an optimal education, recruitment and promotion policy. We then compare the model output graphically.

Scenario 1 – A baseline scenario

The first scenario assumes:

- The goal is to maintain current provider-to-population ratios subject to increasing populations.
- In the first 10 years of the model, the percentage increase in the number of students admitted to university programs is constrained to be the same as the maximum increase that has been observed in the past.
- After entering the workforce, RNs who have completed the advanced standing program have the same attrition rates, by age, as RNs that have completed a standard program.
- When RNs are initially employed, they require time for adjustment to the position (i.e., in their first year of a new position they work 0.8 FTEs to accommodate orientation, mentorship and learning).
- A minimum of 500 direct care RNs move to British Columbia each year.
- There are no restrictions on the maximum number of RNs that can be recruited

from other provinces and countries in the first year. However, we impose an increased cost associated with bringing new direct care RNs to the province.

Scenario 2 – Changes in educational program attrition rates

The second scenario addresses the impact of changes in the proportion of students who continue in their educational program after each year of study. The attrition rates are the ratio of students in two consecutive years of schooling.

Reported attrition rates from nursing educational programs vary widely and have been noted to range between 3% and 44% (Pringle and Green 2005). We tested a range of possible attrition rate scenarios. At baseline (Scenario 1), attrition rates of 10% in the first year and 2% and 5% in the second and third years, respectively, were used. In this scenario, we investigated how the optimal policy would change if there were no attrition. Such a scenario might not be realistic, but it shows the impact of reducing educational program attrition rates on other decision variables.

Scenario 3 – Simultaneously change the direct care RN-to-manager ratio and the practising RN attrition rate

The baseline scenario assumes a direct care RN-to-manager ratio that follows the national average of approximately 50 direct care RNs and four entry-level managers per senior-level manager (CIHI 2006). We chose to investigate the impact of two simultaneous changes to the baseline scenario: reducing the direct care RN-to-manager ratio by 10% while assuming that the change would reduce the attrition rates of all RNs by 10%. We caution the reader that the effect of reducing RN-to-manager ratios on attrition rates has not been widely studied. Although many researchers acknowledge the importance of managers for direct care RN retention (Kramer et al. 2004), they do not report the ideal ratio. Therefore, empirical research is needed to determine whether reductions in RN attrition could be achieved by altering direct care RN-to-manager ratios.

Scenario 4 – Change the length of parental leave

The length of parental leave entitlement is a controversial topic. Although we do not advocate for longer or shorter parental leaves, we used the model to investigate the impact on recruitment, promotion and training of shortening parental leaves to six months from the 12 months assumed in the baseline scenario. We assumed that the annual fertility rate of RNs was the same as the population average fertility rate, by age, of all women in British Columbia in 2004 (Statistics Canada 2004). This approach fails to recognize the rate at which male RNs and adoptive parents exercise their parental leave provisions.

Scenario 5 – Change the RN-to-population ratio

In the absence of demand variables for the model, we used the RN-to-population ratio as a proxy for demand. There is no consensus, however, on what the "proper" ratio ought to be. As mentioned previously, the model allows for demand to be defined by the decision-maker. For example, if demand is defined by rates of hospital utilization or population healthcare needs, then these variables could be entered. We therefore believe that the model is a complement to a demand-based model that provides more informed estimations of the minimum number of RNs needed to meet the population's health needs in a given year.

Suppose a needs-based model suggested that a reasonable target was to have five fewer people per RN than the baseline, and that in such a case, the attrition rate of RNs was reduced by 15%. Under these assumptions, not only would the total number of direct care RNs increase in the long term, but the increase could be achieved with a lower yearly recruitment rate. Other possible scenarios include a change in the ratio over the planning horizon (which might be associated with changes in the age distribution of the population) or the direct input of the minimum number of RNs needed based on the population's health status or other characteristics.

Results

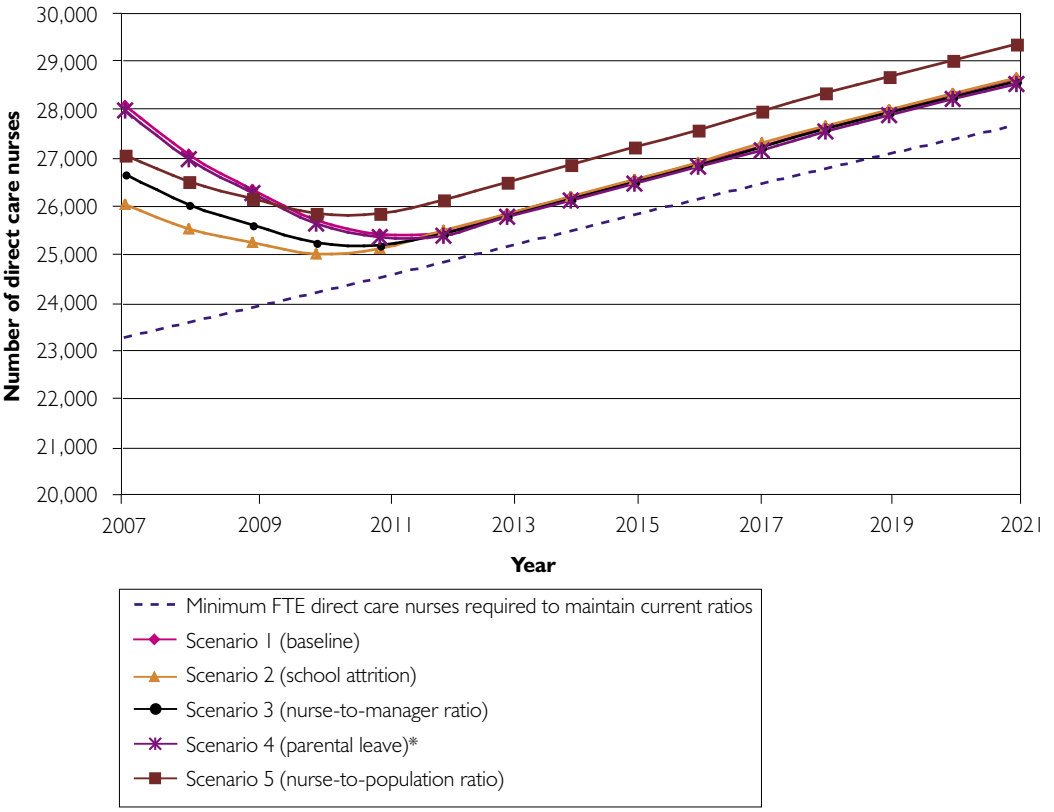
Optimal values for the policy variables under the five scenarios are represented in Figures 1 through 4.

Figure 1 shows the total number of direct care RNs available each year in British Columbia under each of the scenarios. The minimum number of RNs required to maintain the current RN-to-population ratio has also been included. Note that in none of the scenarios does the model suggest having exactly the targeted number of RNs in the first years. This is because planning decisions this year will have long-term implications and consequently affect planning decisions in the future. Note also that in all the scenarios, the rate of increase in the total number of direct care RNs stabilizes after a few years. Also, as the current workforce is older than is optimal, adding RNs early on is necessary to meet future needs for RNs and managers.

Even with an increase of entry-level managers and senior-level managers (Scenario 3), the total number of new RNs that would be needed is lower than if such an increase were accompanied by a reduction in attrition. Furthermore, note that the reduction in duration of parental leave did not have a significant effect on the solution. We also tested a scenario with no parental leave (an extreme scenario acknowledged not to be feasible) and noticed no major difference in the number of students admitted to educational programs or recruitment requirements. This finding may be related to the low fertility rates in the province. However, if it were true that radically reducing parental leave would not reduce the need to educate or recruit new RNs, and if by

having such a benefit, attrition rates for RNs could be reduced, Scenario 4 supports a decision to increase parental leave from six to 12 months, as was recently done in Canada. We emphasize that to make a decision based on this scenario, other factors involving parental leave (such as the possible association with the fertility rate) would need to be considered.

FIGURE 1. Number of direct care registered nurses per year

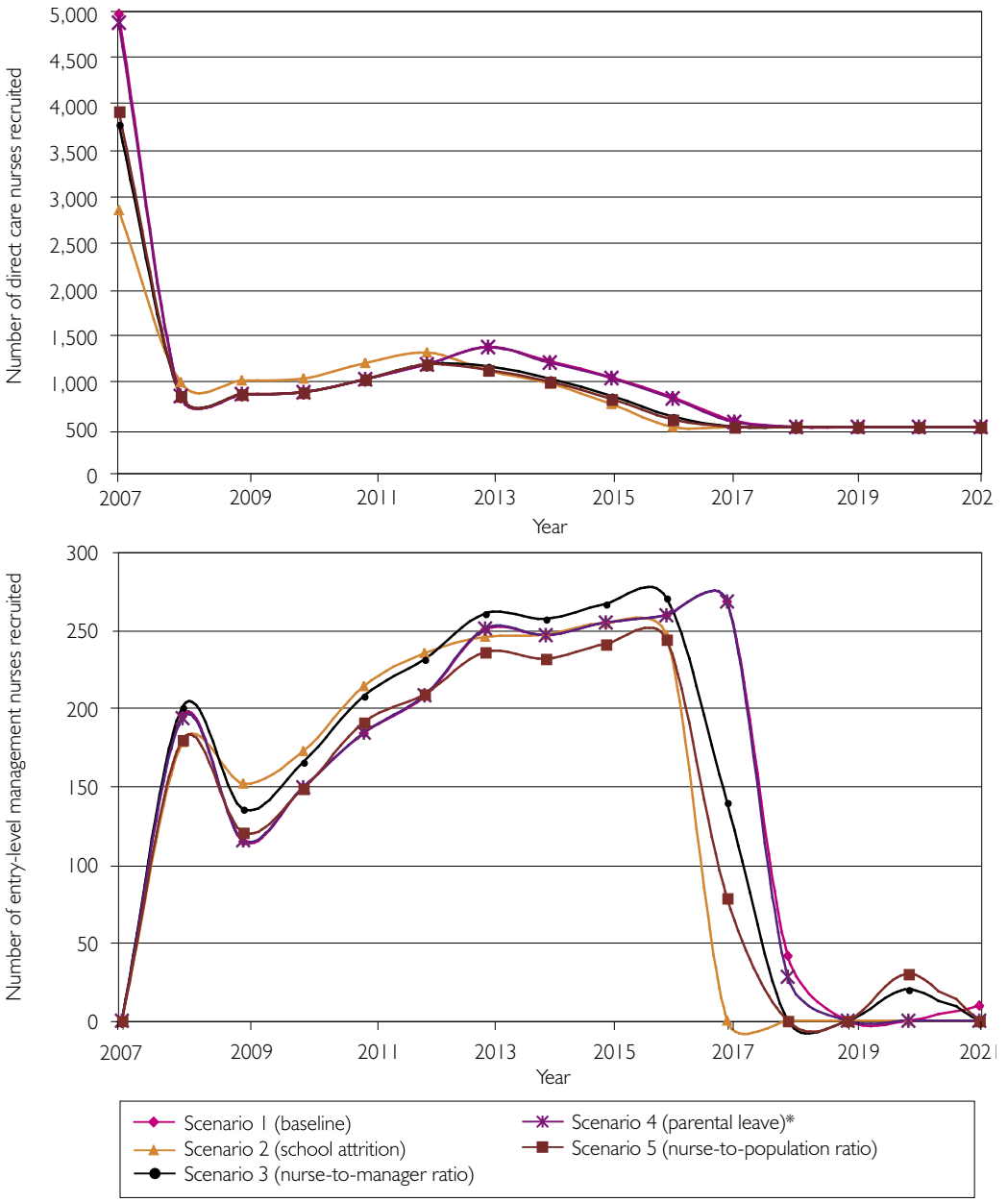


* Scenario 4 (parental leave) is superimposed on Scenario 1 (baseline).

Figure 2 summarizes yearly recruitment requirements. Observe that a large recruitment of direct care RNs from outside the province is required in all the scenarios, especially in the first year. While the number of direct care RNs recruited is much lower after the first year, note that the recruitment number of direct care RNs is still elevated up to the year 2016. This situation occurs because the current workforce is not sufficient to meet short-term needs given the current RN age distribution and attrition rates. Although we assume that a higher cost is associated with the recruitment of RNs from outside the province compared with the education of new RNs within the province, recruiting RNs externally provides a "quick fix" to the shortage

problem. That is, changing the number of students that are admitted to nursing educational programs will have an impact only once those students have completed their programs (either two or four years after their admission to the program). However, with a lower attrition from the programs (Scenario 2), we also observe a lower initial recruitment of direct care RNs and senior-level managers from out of province.

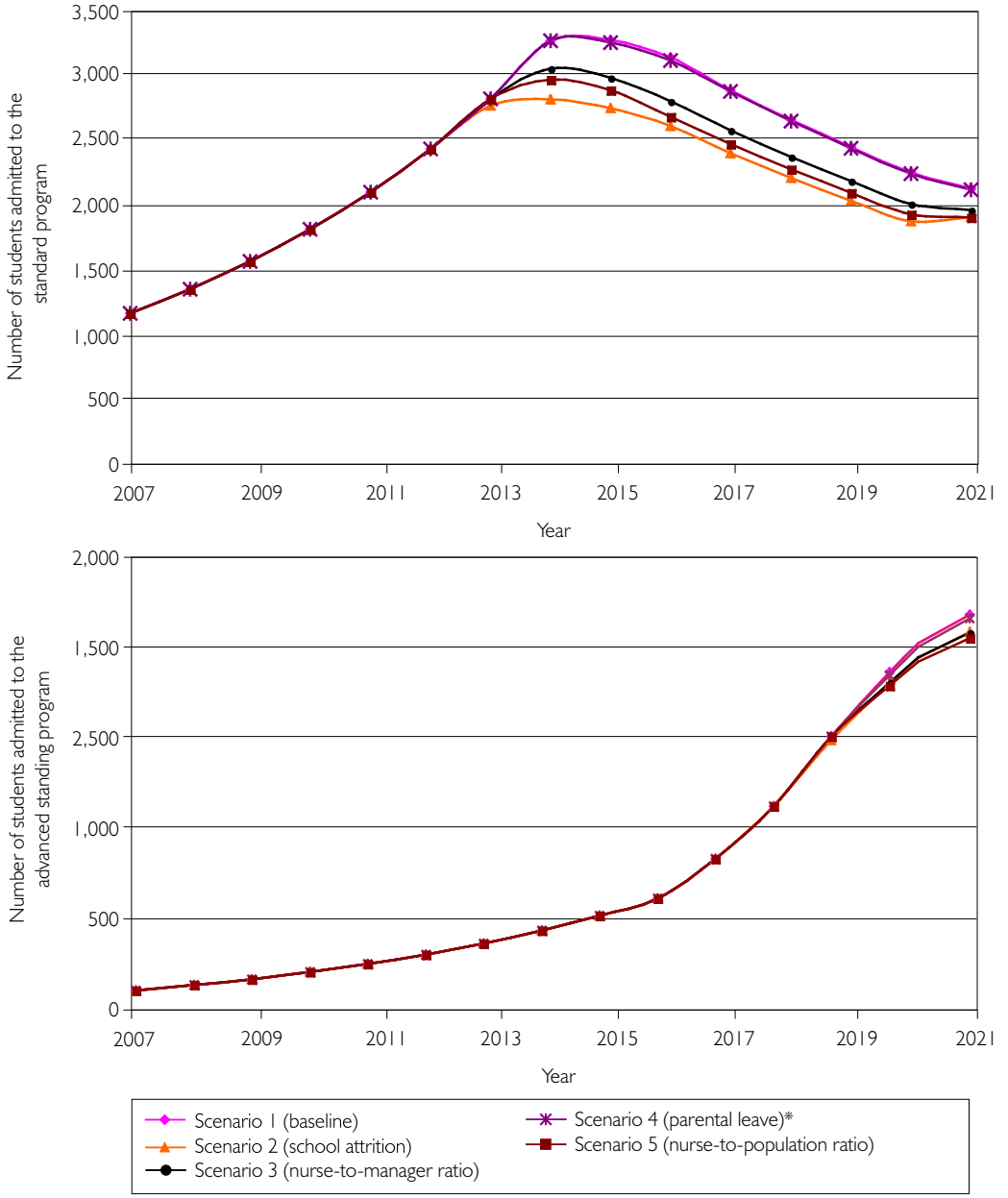
FIGURE 2. Recruitment policies for various scenarios



* Scenario 4 (parental leave) is superimposed on Scenario 1 (baseline).

In addition, the model is highly sensitive to the attrition rates of direct care RNs. While Scenario 5 leads to a greater RN population (as seen in Figure 1), from Figure 2 we note that the higher targets are achieved with lower recruitment needs. This finding is due to our assumption that an increase in the number of RNs per population will decrease attrition rates of direct care RNs.

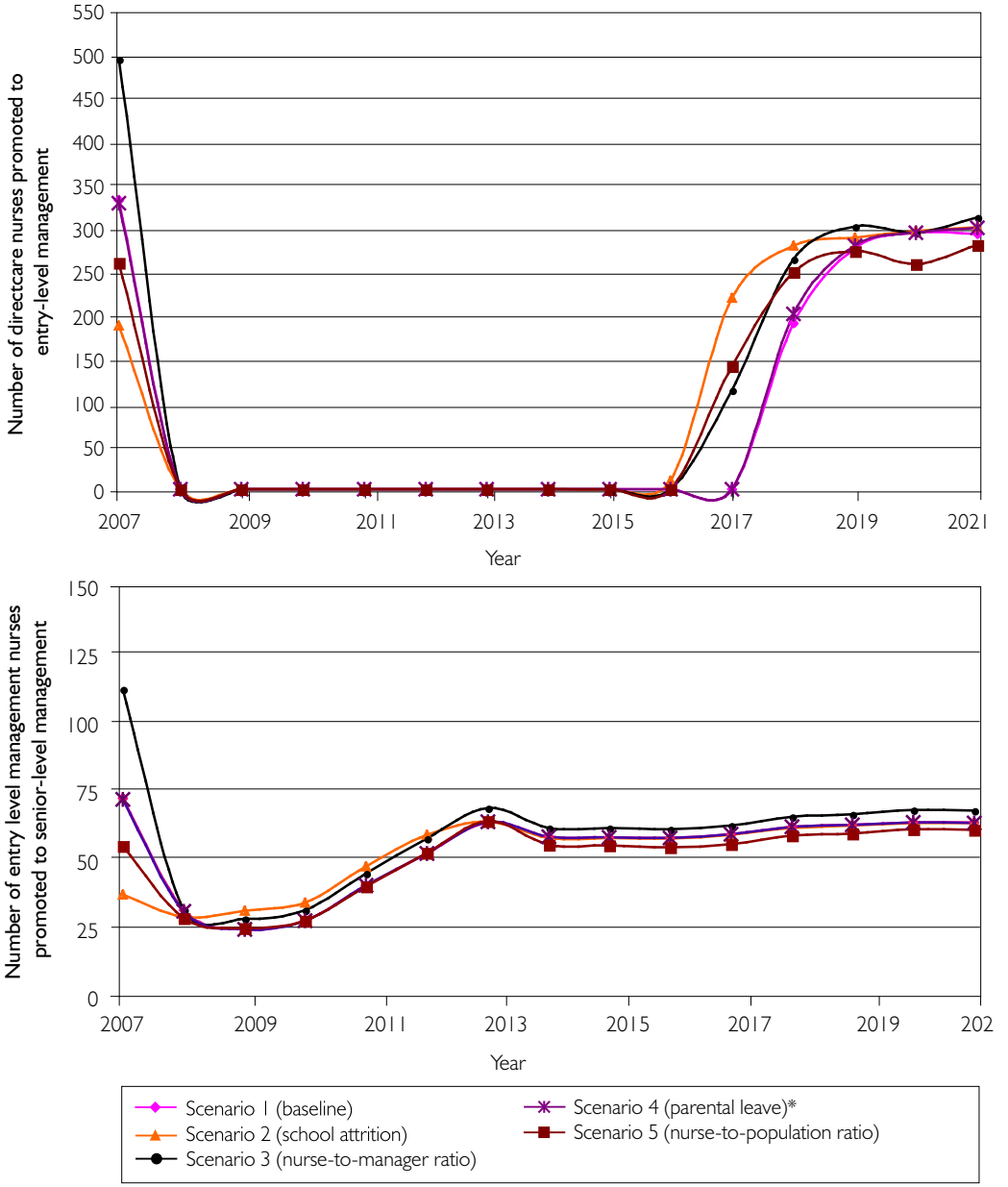
FIGURE 3. Admission policies for various scenarios



* Scenario 4 (parental leave) is superimposed on Scenario 1 (baseline).

We stress that we are not advocating a massive recruitment of RNs from outside the province in the near future (a measure that would have social and ethical implications), but instead are using the model to show that to achieve desired target nurse–population ratios this is necessary. Alternatives could be identified by adding a constraint on the number of RNs recruited early on and relaxing short-term RN-to-population ratios.

FIGURE 4. Promotion policies for various scenarios



* Scenario 4 (parental leave) is superimposed on Scenario 1 (baseline).

Figure 3 summarizes the total number of students admitted into BC nursing educational programs. Note that the number of students admitted in the first years of the model is not greatly affected by the parameters analyzed in the scenarios. This low impact occurs because the capacity of the schools – as represented by physical space, availability of preceptors, clinical placements for students and number of faculty – is a limiting factor in our current system (Pringle et al. 2004). Although the number of students admitted into both types of educational programs must first increase – given that the current programs are not sufficient to meet the assumed demand for RNs, and that a limit on the yearly increase of both types of programs is imposed – after a certain point, the number of students to be admitted into standard programs starts to decrease (up to a certain point) while the number of students to be admitted into the advanced standing program keeps increasing. This situation arises despite our assumption that students admitted to the advanced standing program are older than those students admitted to standard programs, and that a fixed cost equivalent to two years of education in a nursing program (in addition to their nursing education costs) is accrued by every student admitted to the advanced standing program. An explanation of this result might be the lower attrition rates of third-year students in relation to first-year students or the end effects of a 20-year planning horizon.

Figure 4 displays promotion patterns under each scenario. Although the number of RNs promoted from entry-level to senior-level management appears stable, that is not the case for the promotion of direct care RNs to entry-level management. An explanation for the behaviour of the model might be that no limits were imposed on the minimum number of RNs to be promoted. Therefore, because of the insufficient current supply of direct care RNs in the province, the model suggests keeping as many direct care RNs as possible and recruiting to fill entry-level management positions in the first few years.

Discussion

The analysis above shows that one potential solution to the long-term RN shortage is to increase the number of students admitted to an advanced standing educational program while increasing the number of students admitted to standard educational programs at first, but only to a certain point. Although we assumed that students admitted to the advanced standing program are older than those students admitted to standard programs, we also assumed that once they graduate, their attrition from the profession will depend only on their age and not on their type of education. Empirical evidence should be collected to verify this assumption. Furthermore, a large initial recruitment of RNs from outside the province is required under all scenarios. A possible expansion to the model would consequently be to include a limit on the minimum number of direct care RNs to be promoted, or to increase attrition rates of RNs if no

such limits are available.

In the first few years, the required number of direct care RNs promoted to entry-level management is small given the expected shortage of direct care RNs. Research has indicated that a sufficient supply of managers is necessary and beneficial for recruitment and retention of direct care RNs (Kramer and Schmalenberg 2002). We could not find research evidence that would point to the "optimal" direct care RN-to-manager ratio. We used national average ratios of direct care RNs to managers. Further research in this area might be useful to assist decision-makers in developing succession plans for managers and senior-level administrators.

Attrition rates vary across nursing education programs (Pringle and Green 2005). In the model, we applied a conservative attrition rate for the nursing educational programs. The model indicated that attrition plays a significant role in the supply of new graduate RNs. An examination of the predictors of successful completion (Patrick 2001; Wharrad et al. 2003), along with the possible reasons for attrition and strategies to reduce it (Pringle and Green 2005; Scott 2004), may have a significant impact on the entire RN workforce population.

Among the challenges we experienced in applying the model were the limited availability and accessibility of data about the current workforce and the lack of a comprehensive and coordinated data repository or single database on RNs. Romanow (2002: xxix) highlighted that "we cannot expect to keep improving the health care system if we do not have the necessary information to measure and track results." Although data about RNs and physicians are relatively accessible when compared with information about the other health professions, there continue to be significant limitations in the data collected and their availability. Many recent reports have recognized these difficulties and offered recommendations for improved data collection on health human resources (Romanow 2002; Dault et al. 2004; Kephart et al. 2004; Task Force Two 2005). We made various assumptions about the model parameters such as direct care RN-to-manager ratios, the minimum number of RNs required in the province per year and so forth. Future research would help establish a better empirical basis for the assumptions.

Although the model provides directions, other changes must occur in the system so that model recommendations can be implemented. For example, constraints that limit the capacity of nursing educational programs to expand, such as the shortage of nursing faculty, need to be addressed.

This model could also be used to analyze the impact of policy initiatives, such as changes in the composition of multidisciplinary teams and the expanding scope of practice of RNs and licensed practical nurses. Assuming that workforce skill mix will have an impact on the total demand for RNs, this scenario could be accommodated by changing the demand parameters over the years (which are an input to our model) in a similar way as discussed in Scenario 5. Another possibility would be to incorporate other categories (such as physicians or other nursing groups) in our model. This pro-

jection would require access to the necessary data to populate such a model.

Conclusions

We acknowledge that our approach has various limitations, given the assumptions highlighted in this paper and the challenges encountered in gathering the necessary data. Nonetheless, we believe that our approach is useful to decision-makers. We recommend that greater emphasis be placed on accurate collection and calculation of the parameters that have the greatest effect on the decision-making process. Using the model, we have shown that attrition rates from educational programs and from the profession have significant effects on recruitment and training. Consequently, decision-makers should consider initiatives that promote better estimation of and reductions in such attrition, such as changes in nurse–manager ratios. Further, we have identified several promising new research questions. With the movement towards needs-based models, our approach provides a systematic way to determine how best to meet the identified needs and how changing conditions affect the workforce plan over the long term.

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REFERENCES

Basu, K. and K. Halliwell. 2004 (May 4). "Projecting the HHR Impacts of Demographic Change." *Health Policy Research Bulletin* 8: 17–21.

Baumann, A., L. O'Brien-Pallas, M. Armstrong-Stassen, J. Blythe, R. Bourbonnais, S. Cameron, D. Irvine Doran, M. Kerr, L. McGillis Hall, M. Vezina, M. Butt and L. Ryan. 2001. "Commitment and Care: The Benefits of a Healthy Workplace for Nurses, Their Patients and the System. A Policy Synthesis." Ottawa: Canadian Health Services Research Foundation.

BC Statistics. 2003 (June 6). "BC Occupational Employment Projections, 2001–2011." Labour Force Statistics.

BC Statistics. 2006. "Projections – Total Age Group – Query Results." Population Projections – BC and Regional. Retrieved September 25, 2008. <http://www.bcstats.gov.bc.ca/data/pop/pop/popproj.asp#admin>.

Canadian Institute for Health Information (CIHI). 2002. "Supply and Distribution of Registered Nurses in Canada, 2001." Ottawa: Author

Canadian Institute for Health Information (CIHI). 2005. "Workforce Trends of Registered Nurses in Canada, 2004." Ottawa: Author.

Canadian Institute for Health Information (CIHI). 2006. "Workforce Trends of Registered Nurses in Canada, 2005." Ottawa: Author.

Canadian Nurses Association (CNA). 2002. "Planning for the Future: Nursing Human Resource Projections." Ottawa: Author.

College of Registered Nurses of British Columbia (CRNBC). 2006. "New Graduate Registered Nurse Study – 2005." Vancouver: Author.

College of Registered Nurses of British Columbia (CRNBC). 2007. "Nursing Schools." Retrieved September 25, 2008. <http://www.crnbc.ca/LearningCentre/NursingEd_FinancialResources/NursingSchools.aspx>.

Dault, M., J. Lomas and M. Barer, on behalf of the Listening for Direction II Partners. 2004. "Listening for Direction II: National Consultation on Health Services and Policy Issues for 2004–2007: Final Report." Ottawa: Canadian Health Services Research Foundation. Retrieved September 25, 2008. <http://www.chsrf.ca/other_documents/listening/index2_e.php>.

Frontline Systems, Inc. 2007. Optimization Software for Excel, .NET, Java, MATLAB. Incline Village, USA. Retrieved September 25, 2008. <http://www.solver.com>.

Hillier, F.S. and G.J. Lieberman. 2001. *Introduction to Operations Research* (7th ed.). Boston: McGraw-Hill.

Human Resources and Skills Development Canada (HRSDC) BC/Yukon Region and BC Ministry of Advanced Education. 2005. "Work Futures BC Occupational Outlooks: Registered Nurses (NOC 3152)." Retrieved September 25, 2008. <http://www.workfutures.bc.ca/profiles/profile.cfm?noc=3152&lang=en&site=graphic>.

Kazanjian, A., K. Brothers and G. Wong. 1986. "Modeling the Supply of Nurse Labour. Life-Cycle Activity Patterns of Registered Nurses in One Canadian Delivery System." *Medical Care* 24(12): 1067–83.

Kephart, G., S. Maaten, L. O'Brien-Pallas, G. Tomblin Murphy and B. Milburn. 2004 (September). *Building the Future: An Integrated Strategy for Nursing Human Resources in Canada. Simulation Analysis Report*. Ottawa: The Nursing Sector Study Corporation. Retrieved September

25, 2008. <http://www.cna-aiic.ca/CNA/documents/pdf/publications/simulation_analysis_report_e.pdf>.

Kramer, M. and C. Schmalenberg. 2002. "Staff Nurses Identify Essentials of Magnetism." In M. McClure and A. Hinshaw, eds., *Magnet Hospitals Revisited: Attraction and Retention of Professional Nurses*. Washington, DC: American Nurses Publishing.

Kramer, M., C. Schmalenberg and P. Maguire. 2004. "Essentials of a Magnetic Work Environment. Part 3." *Nursing* 34(8): 44-47.

Lavieri, M.S. and M.L. Puterman. 2008. "Optimizing Nursing Human Resource Planning in British Columbia." Manuscript submitted for publication.

O'Brien-Pallas, L., C. Alksnis and S. Wang. 2003. *Bringing the Future into Focus. Projecting RN Retirement in Canada*. Ottawa: Canadian Institute for Health Information.

O'Brien-Pallas, L., A. Baumann, G. Donner, G. Tomblin Murphy, J. Lochhaas-Gerlach and M. Luba. 2001. "Forecasting Models for Human Resources in Health Care." *Journal of Advanced Nursing* 33(1): 120–29.

Patrick, W.J. 2001. "Estimating First-Year Student Attrition Rates: An Application of Multilevel Modeling Using Categorical Variables." *Research in Higher Education* 42(2): 151–70.

Pringle, D. and L. Green. 2005. "The Pulse of Renewal: A Focus on Nursing Human Resources. Examining the Causes of Attrition from Schools of Nursing in Canada." *Canadian Journal of Nursing Leadership*. Retrieved September 25, 2008. <http://www.longwoods.com/product.php?productid=17477&page=1>.

Pringle, D., L. Green and S. Johnson. 2004 (December). *Building the Future: An Integrated Strategy for Nursing Human Resources in Canada. Nursing Education in Canada: Historical Review and Current Capacity*. Ottawa: The Nursing Sector Study Corporation. Retrieved September 25, 2008. <http://www.cna-aiic.ca/CNA/documents/pdf/publications/nursing_education_canada_e.pdf>.

Romanow, R.J. 2002. *Building on Values: The Future of Health Care in Canada. Final Report.* Saskatoon: Commission on the Future of Health Care in Canada. Retrieved September 25, 2008. <http://www.cbc.ca/healthcare/final_report.pdf>.

Scott, G. 2004. "Fines for High Student Attrition Rates." *Nursing Standard* 19(9): 5.

Statistics Canada. 2004. "Provinces and Territories. Live Birth Rate, Age-Specific, per 1000 Females in Age Range." Ottawa: Author.

Task Force Two. 2005. "A Physician Human Resource Strategy for Canada: Innovation Service Models in Canada Database." Ottawa: Author. Retrieved September 25, 2008. <http://www.physicianhr.ca/about/default-e.php>.

Villeneuve, M. and J. MacDonald. 2006. *Towards 2020: Visions for Nursing. Ottawa*: Canadian Nurses Association.

Weber, N. 2005. The Hidden Costs of RN Turnover. New York State Nurses Association. Retrieved September 25, 2008. <http://www.nysna.org/publications/report/2005/feb/turnover.htm>.

Wharrad, H.J., M. Chapple and N. Price. 2003. "Predictors of Academic Success in a Bachelor of Nursing Course." *Nurse Education Today* 23(4): 246–54.

RESEARCH PAPER

Evaluation of the Executive Training for Research Application (EXTRA) Program: Design and Early Findings

Évaluation du programme Formation en utilisation de la recherche pour cadres qui exercent dans la santé (FORCES) : conception et résultats préliminaires

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Abstract

The authors of this paper describe the EXTRA Program, its intended outcomes, the approach they used to evaluate the program and some initial findings regarding the program's effects on the EXTRA fellows after the initial two-year period. The program's mission is to develop capacity and leadership to optimize the use of research-based evidence in Canadian healthcare organizations. Using Kirkpatrick's four-level model for evaluating training effectiveness, the authors conclude that after two years

the program appears to be having the desired effects on the fellows. There is now a need to develop a richer understanding of the effects within the host organizations and to consider ways of transferring the new knowledge to other healthcare organizations outside the EXTRA Program umbrella.

Résumé

Les auteurs de cet article font la description du programme FORCES, de ses résultats escomptés, de la méthode employée pour son évaluation ainsi que de certains résultats préliminaires de ses effets sur les boursiers après les deux années initiales du programme. FORCES a comme mission de renforcer les capacités et de développer le leadership afin d'optimiser l'utilisation des données probantes issues de la recherche dans les organismes de services de santé au Canada. L'emploi du modèle de Kirkpatrick à quatre niveaux permet aux auteurs de conclure qu'après deux ans, le programme semble avoir les effets escomptés quant aux boursiers. Il est cependant nécessaire de comprendre plus en profondeur ses effets au sein des organismes et de penser aux moyens de diffuser les nouvelles connaissances aux autres organismes de santé en dehors du cadre du programme FORCES.

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In 2004, a new national training program was introduced for Canadian health services executives to enhance evidence-based decision-making in the healthcare system. Funding for the Executive Training for Research Application (EXTRA) Program is for up to 10 years and comes from the Canadian federal government. The specific populations targeted are health services professionals in senior management positions – nurse executives, physician executives and other health administration executives. Successful applicants – approximately 24 fellows each year – join the program for a two-year period, engaging in several residency training sessions as well as mentoring, project development and networking outside the sessions.

The partners who developed the program include:

- Canadian Health Services Research Foundation (CHSRF), where the program is operationally housed;
- Canadian College of Health Service Executives (CCHSE);
- Canadian Nurses Association (CNA);
- Canadian Medical Association (CMA); and
- AETMIS, a consortium of Quebec partners represented by the Agence d'évaluation des technologies et des modes d'intervention en santé (AETMIS).

The underlying assumption is that the model of learning provided to the fellows will lead to improved use of research evidence that will inform decision-making in the fellows' host organizations. Increased use of research will lead to improved ways of providing healthcare, which will improve health outcomes.

The purpose of this paper is threefold:

1. To describe the EXTRA Program;
2. To describe the evaluation design used to evaluate the program; and
3. To present early findings of the program's effects on the first cohort of fellows.

The EXTRA Program[1]

The overall mission of the program is "to support evidence-informed decision-making in the organization, management and delivery of health services through funding research, building capacity and transferring knowledge" (CHSRF n.d.).

The program has three major expected outcomes:

- Fellows apply the skills learned and use research-based evidence to bring about organizational change;
- The skills needed for improved use of research in management are spread beyond those formally enrolled as fellows in EXTRA;
- Fellows improve their capacity to collaborate in evidence-based decision-making across professional streams.

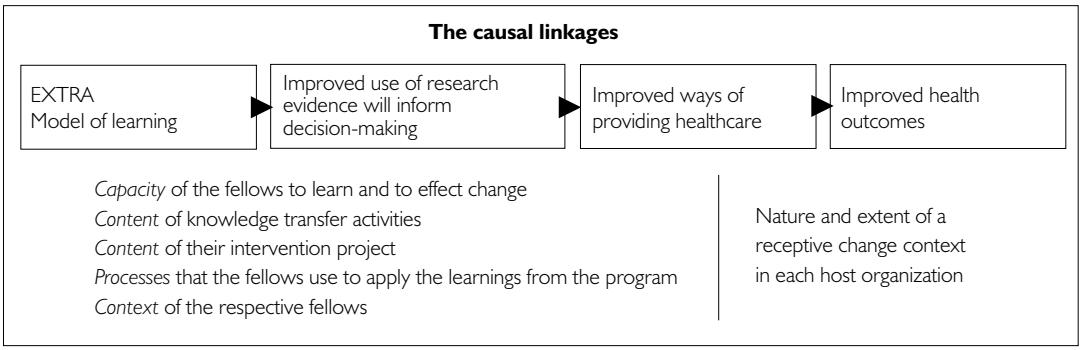
TABLE 1. Residency modules

1. Promoting the use of research-based evidence in healthcare organizations
2. Demystifying the research world
3. Becoming a leader for the use of research-based evidence in healthcare organizations
4. Using research-based evidence to create and manage change
5. Sustaining change in the organizational context
6. Synthesis seminar, building a community of practice and presenting intervention projects

To facilitate these outcomes, four residency sessions are held over the fellowship period, during which six educational modules are covered (Table 1). An intervention project, designed to apply research-based evidence to effect change in the fellows' respective organizations, is ongoing. This project is complemented by networking and a mentoring component involving academic and decision-making mentors. Information technology and desktop support are provided to fellows by the Centre for Health Evidence in Alberta. At any given time after the program's first year, two cohorts are actively enrolled in the program, following a well-defined and detailed program timeline. The fellows receive continuing support from EXTRA following their two-year fellowship.

The expectation is that individual capacity building will lead to organizational change, whereby research evidence informs decision-making. The causal linkages among EXTRA program activities and expected outcomes are depicted in Figures 1 and 2.

FIGURE 1. Causal linkages of the EXTRA Program



Evaluation Design

Our overall design employs a longitudinal, multiple-method approach (Anderson et al. 2004). It is based on utilization-focused evaluation (Patton 1997), responsive evaluation (Stake 2004) and theory-driven evaluation (Donaldson 2003).

Theoretical framework

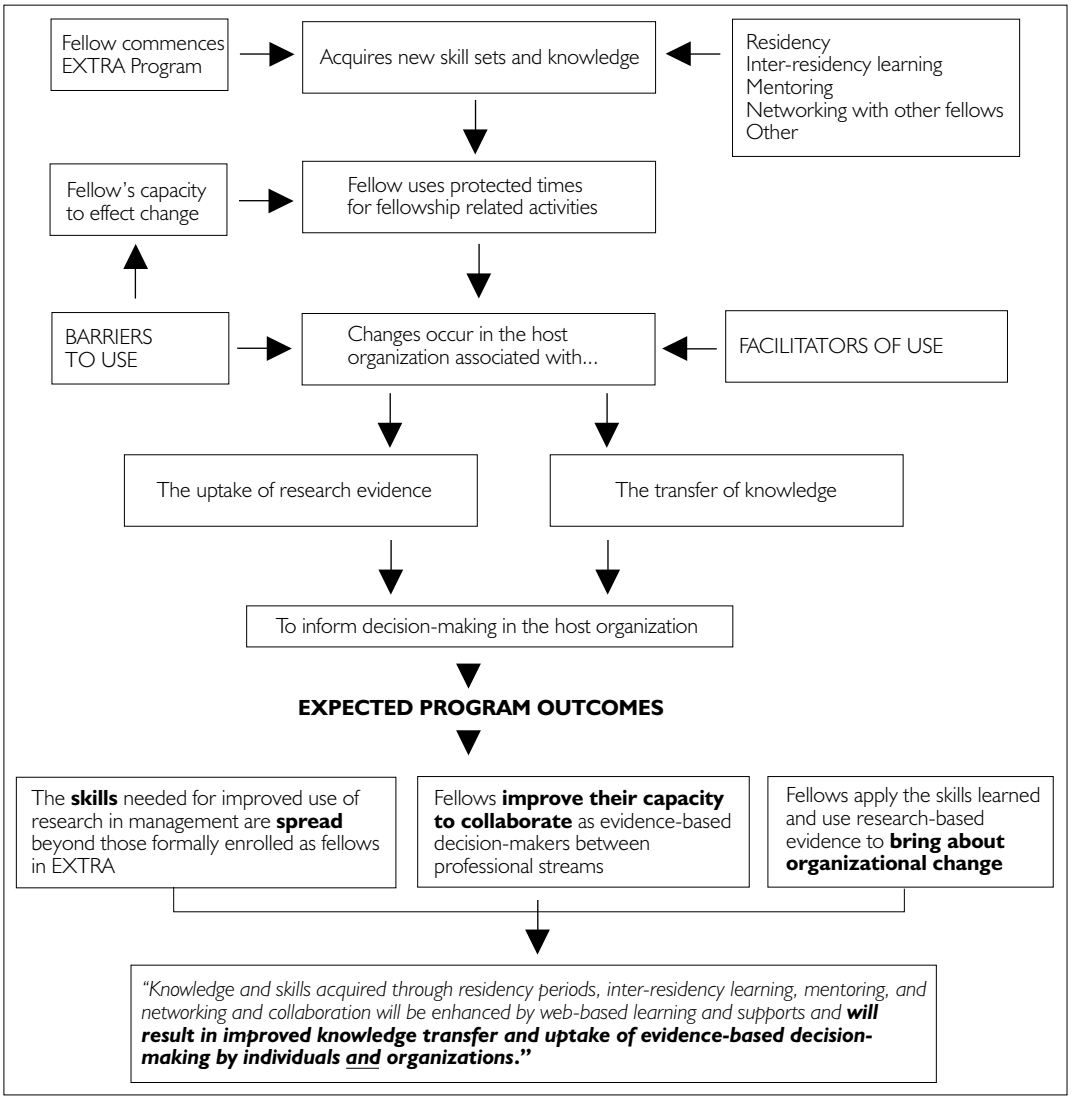
The framework we use is the model devised by Pettigrew and colleagues (1992), which situates change in an organization based on three core components: *Context*, *Content* and the *Process of change*. Any changes introduced into healthcare organizations will be understood in terms of the *context* in which they are introduced (i.e., internal and external environments), the *content* (the focus of the changes) and the *process(es)* by which the changes are introduced (Anderson 2006; Pettigrew et al. 1992).

A receptive organizational context for change is crucial for the effective transfer of knowledge, but this is a major challenge for organizations (Anderson 2006; Bate et al. 2002; Greenhalgh et al. 2004; Huy 1999; Iles and Cranfield 2004; Pettigrew et al. 1992). The social context in which any organizational intervention occurs will influence the intervention's effectiveness (Dopson and Fitzgerald 2005).

Evaluation questions

The overarching question guiding the evaluative research is: Does the EXTRA Program result in improved knowledge transfer and uptake of evidence-based decision-making by individuals *and* organizations?

FIGURE 2. The causality chain



There are four subquestions that also guide research:

1. Do fellows acquire the necessary skills to use research-based evidence to bring about organizational change?
2. Do fellows apply the skills learned and use research-based evidence to bring about organizational change?
3. Are the skills needed for improved use of research in management spread beyond those formally enrolled as fellows in EXTRA?
4. Do fellows improve their capacity to collaborate in evidence-based decision-making across professional streams?

There are some obvious parallels with Kirkpatrick's (1994, 1998) four-level model for evaluating training effectiveness. Briefly, Kirkpatrick identified four levels of evaluation: *Reaction* – responses of the participants (in this case, the fellows) to the training (did they like it, was it relevant and so on); *Learning* – assessment of the amount of learning gained; *Transfer* – assessment of how much of the new skills and knowledge is being applied by the participants; and *Results* – the outcomes.

The focus of the latter part of this paper is Question 1 and the first two levels of Kirkpatrick's model – *Reaction* and *Learning*.

Methods

Our multiple-method approach enables triangulation of the data to strengthen the validity of the findings. We employed a combination of predominantly qualitative methods combined with administrative data review, content analysis of intervention project material and the ongoing collection of survey data. The methods are summarized in Table 2.

The methods are currently focused on the fellows themselves. They are the conduits for the knowledge exchange – the change agents being trained in the application of research evidence to inform decision-making. We will also examine the host organizations to fully understand how context mediates the potential changes, and how, indeed, the process of implementation and knowledge transfer ensues.

Given fixed resources for the evaluation, we decided to focus first on examining the extent to which new skills and knowledge were acquired by fellows before committing to more in-depth investigations within the organizations to see the nature of the new knowledge and the extent to which it was transferred.

TABLE 2. Multiple methods used in the EXTRA evaluation

Methods	Year 1	Year 2	Post-program
Surveys of fellows	**x 2**	**x 2**	**X**
Interviews with fellows		**x**	**X**
Focus groups with fellows		**x**	
Content analysis of intervention projects		**x**	**X**
Ongoing review of program component data: Use of IT desktop support, organizational liaison reports and training module, mentoring and regional mentoring centre evaluations	**x**	**x**	
Case studies in host organizations	**Currently being developed**		

The first cohort

Eleven fellows were based in acute care hospital settings (many were also affiliated with academic health science centres). Six fellows were with regional health authori-

ties. One was from public health and two were from community-based organizations. Four fellows were from long-term care or rehabilitation organizations. Nine were senior executives in their organizations. Twelve were directors, and a further three held managerial positions. Four fellows had been with their organization for over 20 years, while seven others were with their organization for between 11 and 19 years. Eight fellows were with their organization for between 4 and 10 years.

The fellows were highly educated. Nineteen of the 24 fellows held master's degrees; two of these also had doctoral degrees, and several held medical degrees. The regional distribution is shown in Table 3.

TABLE 3. Regional distribution of Cohort 1 fellows across Canada

Region	Number	Per cent	Region	Number	Per cent
Alberta	1	4.2	Ontario	9	37.5
British Columbia	2	8.3	Prince Edward Island	1	4.2
Manitoba	1	4.2	Quebec	6	25.0
New Brunswick	0	0	NWT, Yukon, Nunavut	0	0
Newfoundland and Labrador	1	4.2			
Nova Scotia	3	12.5	**Total**		**100**

Findings from the first cohort

Each new cohort of fellows was surveyed four times during their fellowship (Table 2). The data presented here are from four rounds of surveys with the first cohort (n=24): August 2004, February 2005, August 2005 and February 2006. The survey items cover a range of topics related to various program components, with a number of items related to the acquisition of skills and knowledge repeated in each survey.

Paper-based surveys were given to the fellows during each of their four residency sessions. The response rate was almost 100% over the course of the four rounds.[2] Data were entered into SPSS for analysis. It is beyond the scope of this paper to report on all the findings collected from other sources, but it is worth noting that the triangulation supports the survey results provided here.

The first level of Kirkpatrick's model is *Reaction* – in our context, what were the fellows' perceptions of the training? Table 4 identifies the survey responses given by the fellows regarding their training experience with the six modules of the program.

Overall, the fellows' assessment of the training was favourable. Four of the modules were rated *Excellent* to *Very good* by over 70% of the fellows, and there was general satisfaction with the modules' length. Networking opportunities received very high scores, as did the ability of the fellows to participate in their language of choice (French or English). Similar high scores were attained for the contact and engagement with faculty members and EXTRA staff.

TABLE 4. Assessment of the training modules

	Module 1	Module 2	Module 3	Module 4	Module 5	Module 6
Overall assessment of module						
Excellent to Very good	92%	74%	59%	91%	44%	72%
Length of module						
Neither too long nor short	50%	13%	90%	83%	50%	70%
Networking opportunities						
Excellent to Very good	87%	100%	95%	96%	61%	80%
Could participate in all module activities in my official language of choice?						
Strongly agree to Moderately agree	96%	100%	100%	96%	94%	100%
Easy to contact and get feedback from faculty and staff?						
Strongly agree to Moderately agree	100%	91%	95%	100%	78%	90%

Note: Likert scales used were: Excellent, Very good, Good, Average, Barely acceptable, Poor and Very poor; Way too long, Too long, Long, Neither long nor short, Short, Too short, Way too short; and Strongly agree, Moderately agree, Slightly agree, Neither agree nor disagree, Slightly disagree, Moderately agree and Strongly disagree.

Interviews and focus groups conducted with the first cohort of fellows reaffirmed the above data and reinforced what was known anecdotally. Program staff were highly responsive to the fellows' concerns and suggestions regarding improvements to the program.

The first critical step in understanding whether involvement in the program led to organizational change (the underlying assumption) was to establish the efficacy of the training (i.e., Kirkpatrick's Learning level). We asked a number of questions repeatedly in the four rounds of surveys. The fellows' knowledge of research-based evidence increased between Round 1 (August 2004) and Round 4 (February 2006). While just 25% of fellows rated their knowledge as Very good or Excellent at the beginning of the program, this figure increased to 85% near the completion of the two-year fellowship (Figure 3).

The fellows' skill set for assessing the quality of evidence also increased. Twenty-five per cent of fellows felt their skill set was *Very good* or *Excellent* at the beginning of the program. This figure doubled to 50% near the completion of their fellowship (Figure 4). Similarly, while 37% felt their skill set was *Poor* or *Fair* at the beginning, this rating changed to just 10% near completion.

While only 37% of fellows rated their knowledge of change management as *Very good* or *Excellent* at the beginning of the program, this number increased to 95% near the completion (Figure 5).

There are also encouraging signs in the data that the fellows were able to improve their own organizations' context for informed decision-making based on research evidence. At the beginning, only 8% rated their ability to create a more evidence-based decision environment in their organization as *Very good* or *Excellent*. Near completion, however, this rating had increased to 65%. Similarly, while 51% felt their ability was *Poor* or *Fair* at the beginning, only one fellow felt this way near completion of the program (Figure 6).

FIGURE 3. Knowledge of research-based evidence

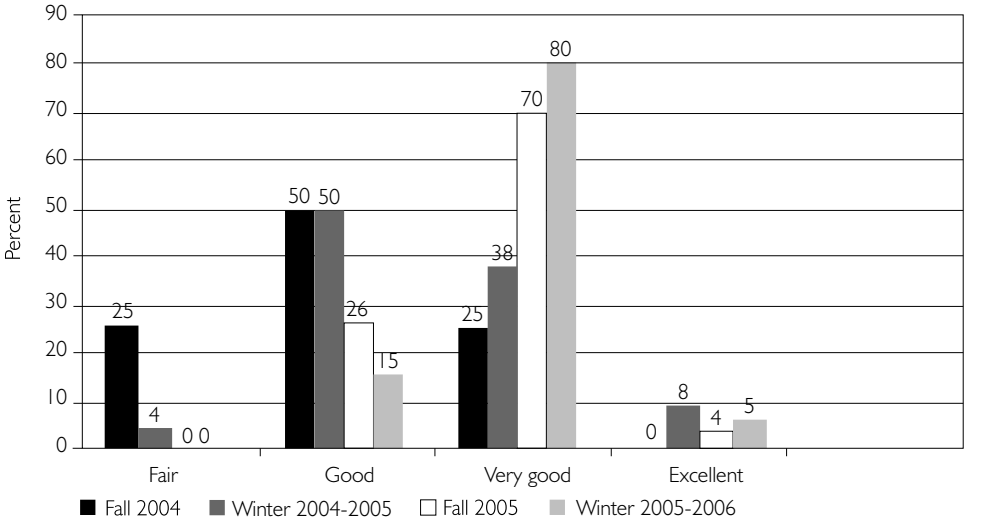


FIGURE 4. Skill set for assessing the quality of evidence

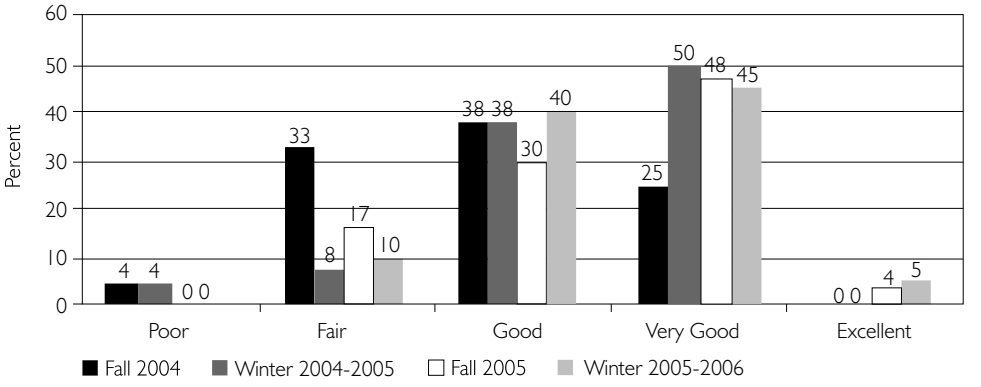
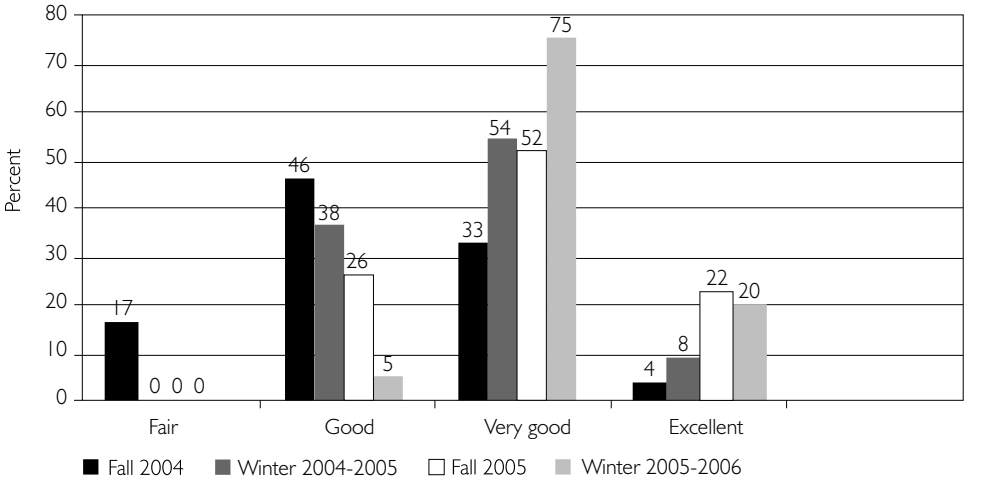


FIGURE 5. Knowledge of change management



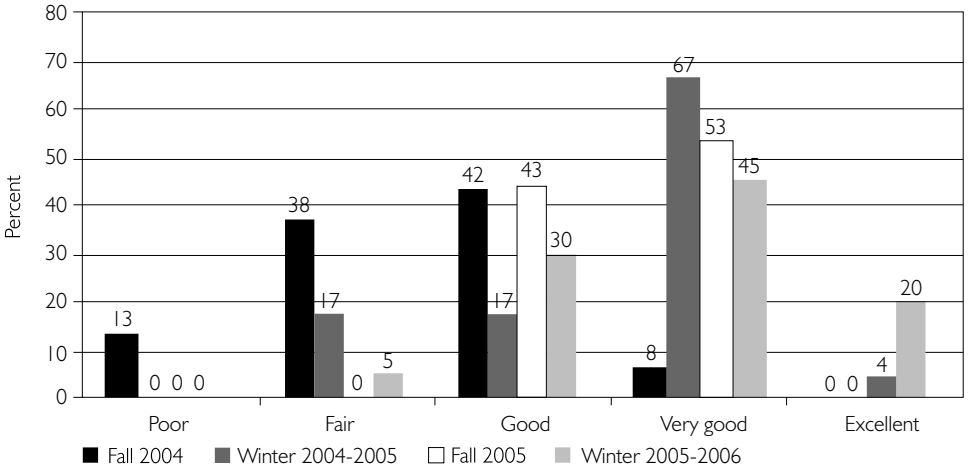
The fellows increased their use of research evidence with other professionals in their own organization. While 42% of fellows reported that their collaboration in this regard was either *Frequently*, *Most of the time* or *All the time* at the beginning, this number increased to 80% near completion. Similarly, 46% of fellows initially noted that their use of evidence when collaborating with professionals in other organizations was *Frequently* or *Most of the time*; this figure increased near completion to 80%.

In the Round 1 survey, fellows were asked to list the three main objectives they hoped to achieve by participating in the two-year EXTRA Program. The clustering of the top 10 objectives is shown in Table 5.

TABLE 5. Top 10 objectives identified by the Cohort 1 fellows for participating in the EXTRA Program (N=24)

Objectives	Number of times cited by fellows
1. Apply research evidence to their work environment	10
2. Apply skills learned to conduct a successful intervention project	10
3. Acquire new knowledge	9
4. Establish contacts and networking opportunities	8
5. Develop an evidence-supported decision culture in their organization	7
6. Improve leadership and management skills through utilizing evidence	5
7. Improve organizational outcomes and delivery of services	5
8. Share use of research evidence knowledge with colleagues	4
9. Enhance awareness and understanding of evidence-based healthcare	3
10. Be a role model and inspire colleagues in use of research evidence	3

FIGURE 6. Ability to create a more evidence-based decision environment



In the Round 2 survey, 92% of fellows (n=22) stated that the program was helping

them in the way they anticipated, while the remaining said *Yes, but only sometimes*. All fellows stated they were able to assist colleagues in the use of research-based evidence.

Discussion

It appears that the program has had the desired effect of improving the knowledge base of the Cohort 1 fellows. But there are layers of complexity to consider further. The ability to transfer knowledge gained from the program through structured residency sessions, mentoring and networking will always be mediated by the complexity of the various organizational contexts, the nature of the intervention projects and the diverse intuitive and responsive social actions of the fellows and their colleagues in the organization. Moreover, we need to consider the differences between transferring *codified* and *tacit* knowledge within organizations.

For these reasons, our evaluation has moved more significantly into examining the organizational context. Our desire is to learn more from the fellows' experiences by delving more deeply into the organizations to gain a comprehensive understanding of *how* the changes are occurring (and if not, why not) and identifying the *key attributes* of organizations that are receptive to change. For example, what knowledge transfer strategies are successful and, importantly, why?

We need to use the knowledge of how certain approaches work in some organizations and not in others so that we can expand upon the effective approaches, or seriously rethink those that are less effective. This point is critical if we are to take the learnings – the experiences of the program fellows – and be able to apply these in other healthcare contexts.

There are challenges with the evaluative research. One challenge is to unpack the extreme heterogeneity of the variables that affect the nature and extent of change, such as the fellows' varied backgrounds, personalities and so on, their external and internal organizational contexts and the various ways in which the knowledge may be transferred within and beyond their organizations; there is no prescribed method of enhancing the use of evidence that the fellows are expected to follow. A second challenge is the simple fact that the use of evidence to inform decision-making has become an increasingly popular strategy for organizations as they recognize that high-quality care demands the best evidence possible, balanced against the pragmatics of fiscal constraints. Evidence seems more essential now than ever before.

As currently designed, the ultimate success of the program will depend on factors over which program staff have little control – the organizational context. As evaluators, we need to tease out the causal connections between the fellows and the program, and subsequent changes occurring in the host organizations.

Summary

The purpose of this paper has been to describe the EXTRA Program and its evaluation design, and to present some early findings. Our ongoing research continues with the methods described, but we are also developing a deeper, richer understanding of the host organizational context. Our early findings are encouraging, for they suggest the program is achieving the positive effects that were anticipated.

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Notes

1. The French acronym for EXTRA is FORCES – Formation en utilisation de la recherche pour cadres qui exercent dans la santé. For the purpose of this paper, we use just the English acronym.
2. In the Round 4, 83.3% (n=20) fellows completed the survey.

REFERENCES

Anderson, M. 2006. *The Evolution of Innovations in Health Care Organizations: Empirical Evidence from Innovations Funded by The Change Foundation*. Research manuscript prepared for The Change Foundation, Toronto.

Anderson, M., L. Atack, S. Donaldson, D. Forbes, M. Lavoie-Tremblay, M. Lemonde, L. Romilly, L. Shulha, I. Sketris, R. Thornley and S. Tomblin. 2004. *The EXTRA/FORCES Program Evaluation Design*. Working document. Kingston, ON: Queen's University.

Bate, S.P., G. Robert and H. MacLeod. 2002. *Report on the "Breakthrough" Collaborative Approach to Quality and Service Improvement in Four Regions of the NHS. A Research-Based Evaluation of the Orthopaedic Services Collaborative within the Eastern, South and West, South East, and Trent Regions*. Birmingham, UK: Health Services Management Centre, University of Birmingham.

Canadian Health Services Research Foundation (CHSRF). n.d. "Statement of Institutional Purpose." Retrieved September 25, 2008. <http://www.chsrf.ca/about/do_statement_purpose_e.php>.

Donaldson, S.I. 2003. "Theory-Driven Program Evaluation in the New Millennium." In S.I. Donaldson and M. Scriven, eds., *Evaluating Social Programs and Problems: Visions for the New Millennium* (pp. 109–41).

Dopson, S. and L. Fitzgerald. 2005. "The Active Role of Context." In S. Dopson and L. Fitzgerald, eds., *Knowledge to Action? Evidence-Based Health Care in Context*. Oxford: Oxford University Press, 79–103.

Greenhalgh, T., G. Robert, P. Bate, O. Kyriakidou, F. Macfarlane and R. Peacock. 2004. *How to Spread Good Ideas. A Systematic Review of the Literature on Diffusion, Dissemination and Sustainability of Innovations in Health Service Delivery and Organization*. London, UK: National

Coordinating Centre for NHS Service Delivery and Organisation Research and Development Programme.

Huy, Q.N. 1999. "Emotional Capability, Emotional Intelligence and Radical Change." *Academy of Management Review* 24: 325–45.

Iles, V. and S. Cranfield. 2004. *Developing Change Management Skills. A Resource for Health Care Professionals and Managers*. London, UK: NHS Service Delivery and Organisation Research and Development Programme.

Kirkpatrick, D.L. 1994. *Evaluating Training Programs: The Four Levels*. San Francisco: Berrett-Koehler.

Kirkpatrick, D.L. 1998. *Another Look at Evaluating Training Programs*. Alexandria, VA: American Society for Training and Development.

Patton, M. 1997. *Utilization-Focused Evaluation.* Thousand Oaks, CA: Sage Publications.

Pettigrew, A.M., E. Ferlie and L. McKee. 1992. *Shaping Strategic Change: Making Change in Large Organizations. The Case of the National Health Service*. Thousand Oaks, CA: Sage Publications.

Stake, R.E. 2004. *Standards-Based and Responsive Evaluation*. Thousand Oaks, CA: Sage Publications.

RESEARCH PAPER

Previous Out-of-Pocket Drug Expenditures and Patterns of Antidepressant Use among Workers Receiving Depression-Related Disability Benefits

Dépenses remboursables pour médicaments et schémas d'utilisation d'antidépresseurs chez les salariés qui reçoivent des prestations d'invalidité liées à la dépression

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Abstract

This study explored the effects of out-of-pocket expenditures on antidepressant use among workers receiving depression-related short-term disability benefits. The authors examine the association between workers' out-of-pocket expenditures prior to their disability episode and their use, or delay in use, of antidepressants during the episode.

The results indicate that higher out-of-pocket expenditures for antidepressants prior to the disability episode were associated with higher odds of using an antidepressant during the episode. However, results also suggested that higher out-of-pocket expenditures for other prescriptions were associated with significantly lower odds of an antidepressant claim during the episode.

Greater prior out-of-pocket expenditures for other prescription drugs may serve as a barrier to accessing antidepressant treatment. Workers receiving short-term disability benefits who have previously purchased prescriptions for other conditions may be more sensitive to out-of-pocket expenditures for antidepressant prescriptions.

Résumé

Cette étude se penche sur les effets des dépenses remboursables pour les antidépresseurs au sein des salariés recevant des prestations d'invalidité de courte durée pour des problèmes de dépression. Les auteurs examinent la relation entre les dépenses remboursables préalables aux périodes d'invalidité des salariés et l'utilisation, ou les délais d'utilisation, des antidépresseurs pendant ces périodes.

Les résultats indiquent que des dépenses remboursables plus élevées pour antidépresseurs préalables aux périodes d'invalidité sont associées à de plus grandes probabilités d'utilisation d'antidépresseurs pendant ces périodes. Toutefois, les résultats portent à croire que des dépenses remboursables plus élevées pour d'autres types d'ordonnances sont associées à des probabilités significativement plus faibles de demandes de prestations pour des antidépresseurs pendant les périodes d'invalidité.

Des dépenses remboursables anticipées plus élevées pour d'autres types d'ordonnances peuvent freiner l'accès aux traitements antidépresseurs. Les salariés qui reçoivent des prestations d'invalidité à court terme et qui ont préalablement acheté des médicaments prescrits pour d'autres états de santé sont peut-être plus enclins aux dépenses remboursables liées aux ordonnances pour antidépresseurs.

Compared to the rest of the working population, individuals with a mental disorder have greater numbers of days during which they are either unproductive or unable to function at full capacity (Dewa and Lin 2000;

Lim et al. 2000). About one-third of society's depression-related productivity losses can be attributed to these work disruptions (Greenberg et al. 2003).

This study builds on previous work in which we observed that timely antidepressant use was associated with significant decreases in disability for workers on depression-related, short-term disability leave (SDIS) (Dewa et al. 2003). In this analysis, we examine the association between prior out-of-pocket drug expenditures and timely antidepressant use. We look at three outcomes in relation to previous annual out-of-pocket expenditures: (a) the likelihood of filling an antidepressant prescription during SDIS, (b) the likelihood of starting an antidepressant after SDIS begins and (c) the length of time before starting an antidepressant after SDIS begins.

Background

Treatment guidelines for depression and rising prescription drug costs

Depression treatment guidelines recommend antidepressants as an effective treatment modality (AHCPR 1993; APA 1993; CANMAT 1999). Recommended use of antidepressants is associated with increased productivity and decreased disability (Berndt et al. 1998; Dewa et al. 2003).

At the same time, antidepressants have played a prominent role in the rise of prescription drug expenditures (Foote and Etheredge 2000; Dewa and Goering 2001). Since the newer generation of antidepressants were introduced in the 1980s, antidepressant use has grown significantly (Olfson et al. 2002). Between 1998 and 2004, Canadian per capita expenditures on psychotherapeutics increased by 106% (Morgan et al. 2005). In 2004 in Canada, psychotherapeutics was the second largest category of prescription drugs used (Morgan et al. 2005). More than half the spending on psychotherapeutics was related to the use of selective serotonin reuptake inhibitors (SSRIs) (Morgan et al. 2005). Depression guidelines identify SSRIs as first-line agents (AHCPR 1993; APA 1993; CANMAT 1999).

Co-occurring chronic physical disorders

Depression treatment is often complicated by co-occurring physical disorders requiring prescription drug treatment (Elinson et al. 2004). Treatments for certain chronic and acute physical conditions may contribute to or predate depression (Miranda et al. 1994), and people with depression tend to have high rates of chronic medical conditions (Miranda et al. 1994). Thus, employees whose private drug benefits plan includes cost-sharing arrangements may already be spending a significant amount for prescription drugs prior to their depression-related disability.

Short-term disability benefits

The purpose of disability income insurance is "to provide income protection for workers during temporary absences from work due to illnesses or injury" (Roberts 1994). Typically, short-term disability benefits cover a portion of the worker's salary as determined by the company. In Australia, typical benefits provide a salary continuance of 75% (Archibald et al. 2007). In the United States, typical coverage is for 50% to 100% of income; in Canada, it is between 60% and 100% of coverage for salaried employees but only 55% to 77% for hourly employees (Archibald et al. 2007).

Demand for psychotropic drugs and cost-sharing

A number of studies have reported that the use of psychotropic prescription drugs is characterized by high sensitivity to out-of-pocket costs (Tamblyn et al. 2001; Piette et al. 2004) among the elderly and financially disadvantaged populations.

Few studies have looked specifically at the working population in terms of disability. Because workers generally receive only a proportion of their wages during a disability episode, they may be particularly sensitive to cost-sharing. In combination, the decreased income and drug cost-sharing may act as barriers to accessing optimal antidepressant treatment.

Methods

Data sources and study population

The study protocol was reviewed and approved by the University of Toronto/Centre for Addiction and Mental Health Research Ethics Board. Administrative data were provided by three major Canadian financial/insurance sector employers with a combined workforce of approximately 63,000 employees nationwide, representing approximately 12% of their sector's workforce (Statistics Canada 2003). The primary information sources were company short-term disability claims, prescription drug claims and occupational health department records. Because of its relatively smaller size, claims from one company were taken for short-term disability episodes beginning between January 1996 and December 1998. For the remaining two companies, data were abstracted for claims beginning in 1997 or 1998.

Employees included in our analysis met two criteria. First, subjects were on depression-related, short-term disability leave from work. This meant they had depression-related absences from work for at least 10 consecutive work days prior to their disability leave. This cut-off was based on the study companies' SDIS criteria. The second criterion required subjects to have used their prescription drug benefits at least once during the study period for any type of prescription.

Prescription drugs are currently not covered under the *Canada Health Act* unless they are dispensed during an inpatient stay. However, certain provinces such as Alberta, British Columbia, Manitoba, Quebec and Saskatchewan offer prescription drug insurance to their residents. Each of these provincial plans has either a premium, co-payment or out-of-pocket limit attached to them. The other provinces offer coverage to specific segments of the population, such as the elderly and financially disadvantaged (Dewa et al. 2005). As result, prescription drug benefits are often offered by employers under supplemental private medical insurance plans (all other essential medical services and treatments, including physician visits and hospitalizations, are covered in full through the public system).

Subjects were excluded if, based on the drug claims data, we could not ascertain whether their lack of antidepressant claims (during the disability period) was due to not filling a prescription or using another drug benefits plan.

Dependent variables

Two dependent variables were created to reflect antidepressant use:

- FILLED = 1 if a worker filled an antidepressant prescription between the start and end of the SDIS. Otherwise, FILLED = 0.
- DAYS = the number of days before filling an antidepressant prescription for workers who had not filled an antidepressant prescription before the start of the SDIS episode. DAYS is undefined for workers filling antidepressant prescriptions before the SDIS episode. DAYS = the length of the SDIS episode for workers who went their entire SDIS episode without filling an antidepressant prescription.

Independent variables

Six categories of variables were created for the purpose of these analyses: socio-demographic characteristics, employment characteristics, severity-of-course indicators, co-occurring chronic physical disorders, prior out-of-pocket spending on prescription drugs and company and province fixed effects.

SOCIO-DEMOGRAPHIC CHARACTERISTICS

The socio-demographic variables were age and sex. The age variable was calculated as the number of years between the worker's date of birth and the starting date of the disability episode.

EMPLOYMENT CHARACTERISTICS

We created variables to describe employment characteristics. The first variable indicated whether the subject was in a management position (i.e., supervisor/manager). The second variable was the subject's tenure with the company. Tenure was calculated as the difference between the worker's hire date and the starting date of the disability episode.

SEVERTY-OF-COURSE INDICATORS

We posited that antidepressant use might be influenced by the severity of the episode. Using the number of symptoms as a proxy for severity, we abstracted information from occupational health records using a checklist covering the major DSM-IV depressive symptom categories (APA 2000). Results of previous analyses with this population indicated that the number of reported symptoms was significantly related to length of disability and return to work; additional symptoms were associated with longer disability episodes and lower likelihood of return to work (Dewa et al. 2003).

We also created a variable to indicate whether the SDIS was attributed to depression only or to depression co-morbid with either another mental or a physical problem. Finally, as another proxy for severity, we developed a variable to indicate whether a worker had a prior SDIS episode during the past 12 months.

CO-OCCURRING CHRONIC PHYSICAL DISORDERS

We created variables to indicate the presence of chronic physical disorders using Von Korff and colleagues' algorithm (1992), which utilizes claims data on the types of medications that the individual filled.

PRIOR OUT-OF-POCKET EXPENDITURES

We created two out-of-pocket expenditure variables based on drug claims one year prior to the start of the short-term disability episode. One of the variables captured total prior out-of-pocket expenditures on antidepressants. The other variable reflected total prior out-of-pocket expenditures on all other types of prescription medications.

COMPANY FIXED EFFECTS

Because non-random, company-specific factors associated with antidepressant use may exist, we included company-specific fixed effects in all the models.

PROVINCE FIXED EFFECTS

To control for possible regional culture effects, we included province indicator variables in the models.

Analyses

The analysis plan is framed along the lines of a two-part model, a strategy commonly employed to study characteristics associated with prescription drug use patterns (Manning 1981; Duan et al. 1983; Leibowitz et al. 1985; Hillman et al. 1999).

Part 1: Any antidepressant claim?

The first part of the model focused on the relationship between previous out-of-pocket expenditures and the odds that a worker had any antidepressant drug benefits claim during the SDIS episode. Using a multiple logistic regression model, we estimated the odds of having an antidepressant drug claim as a function of the subject's age, job tenure with the firm, severity, sex, management status, co-morbid physical disorders, prior 12-month mental illness-related SDIS, province, firm and cumulative out-of-pocket expenditures (for both antidepressant and non-antidepressant drugs). Cumulative previous out-of-pocket expenditures were separated into antidepressant and non-antidepressant categories to allow for differential effects.

Part 2: How long before starting an antidepressant after SDIS begins?

Part 2 of the model focused on estimating the relationship between out-of-pocket expenditures and delay in the first use of antidepressants. The analysis included only workers who had not filled an antidepressant prescription before their depression-related SDIS started. Thus, total previous out-of-pocket expenditures were not split into antidepressant and non-antidepressant categories, since for this sample total out-of-pocket expenditures exactly equalled non-antidepressant expenditures.

Initially, we estimated the delay in filling a first antidepressant prescription using ordinary least squares (OLS) regression (results available from the authors); however, more complex survival models seemed better suited for the task. With survival analysis, we were able to use the data both from employees with a first antidepressant claim during the SDIS period (n=197) and from employees with no antidepressant claim during the SDIS period (n=164). Employees who started filling antidepressant prescriptions before the SDIS period were not included in this analysis as they did not inform the study question (n=345). As a sensitivity analysis, we compare results from non-parametric (Kaplan-Meier analysis), semi-parametric (Cox regression) and parametric survival models (Weibull regression).

Results

Demographic characteristics, depression severity, presence of co-occurring chronic disorders and out-of-pocket expenditures prior to the SDIS episode are shown in

Table 1. An in-depth analysis of the demographic characteristics of this population can be found elsewhere (Dewa et al. 2002). In this sample, a large proportion was female with a mean age of 40.7 years (SD=9.06). About 25% of the sample held management positions and had worked for their companies an average of 13.3 years (SD=8.86).

TABLE 1. Study population descriptive characteristics (standard deviations in parentheses)

VARIABLES	%	n
TOTAL	**100%**	**706**
Demographic		
Sex		
Male	14.0	99
Female	86.0	607
Mean Age	40.7	(9.06)
Employment characteristics		
Management position	24.2	171
Average length of employment w/company (in yrs)	13.31	(8.86)
Symptom and complexity		
Prior episode within past 12 months	15.6	110
Depression only	52.7	372
Average no. of reported symptoms	4.76	(2.75)
Co-occurring chronic physical disorders	49.0	346
Heart disease	8.01	57
Respiratory disease	9.4	66
Hypertension	14.2	100
Asthma	7.8	55
Ulcers	20.8	147
High cholesterol	3.5	25
Neurological disorders	9.9	70
Other chronic disorders	2.6	18
Province		
British Columbia	13.9	98
Alberta	12.0	85
Saskatchewan	2.6	18
Manitoba	3.4	27
Ontario	53.4	377
Quebec	8.6	61
Smaller provinces (Atlantic and territories)	5.5	39

Table 1. Continued

Sites		
Site 1	5.1	36
Site 2	44.3	313
Site 3	50.6	357

For 15.6% of this sample, the disability episode was a recurrent one. On average, 4.8 symptoms (SD=2.75) were reported. More than half (52.7%) reported having depression only.

Almost 21% filled a prescription for ulcer medications; 14% were using hypertension medications. About 10% used a neurological disorder drug; 8% took medication for heart disease and 9% for respiratory disease.

About 74% used an antidepressant during their SDIS episode (Table 2). For those who waited until the start of their disability episode, the mean days until their first fill was 26.6 days (SD= 29.62).

TABLE 2. Antidepressant use patterns (standard deviations in parentheses)

Variables	**%**	**n**
% with no antidepressant claim before or during SDIS	25.8	182
% with an antidepressant claim after the start of SDIS	74.2	524
% with first claim before the start of SDIS	62.4	327
% with first claim during SDIS	37.6	197
Total	100	706
Mean out-of-pocket expenditures for prescription drugs prior to SDIS		
Antidepressants	$21.64	(51.48)
Other drugs	$72.15	(107.30)

The mean out-of-pocket expenditure for antidepressants prior to the disability episode was $21.64 (SD=51.48). For other prescription drugs it was $72.15 (SD=107.30).

In the first regression model, we examined the association between out-of-pocket expenditures and the odds that a worker filled an antidepressant prescription between the start and end of the SDIS episode, controlling for demographic characteristics, severity, work status, chronic physical disorders and company and provincial dummy variables (Table 3). The results suggest that the odds of a worker filling an antidepressant prescription increase with prior out-of-pocket antidepressant expenditures (for every $10 spent, odds ratio [OR] = 1.478, 95% confidence interval [CI] = 1.271, 1.715). At the same time, the odds decrease as prior non-antidepressant out-of-pocket expenditures increase (for every $10 spent, OR = 0.954, 95% CI = 0.933, 0.975).

Figures 1 and 2 illustrate these two main findings. The graph in Figure 1 indicates that if prior out-of-pocket expenditures on non-antidepressants equalled $0, the probability of a worker's filling an antidepressant prescription was almost 90%. But if past-year expenditures were $100, the probability of a worker's filling an antidepressant prescription dropped to 70%. It decreased to 40% if expenditures were $500.

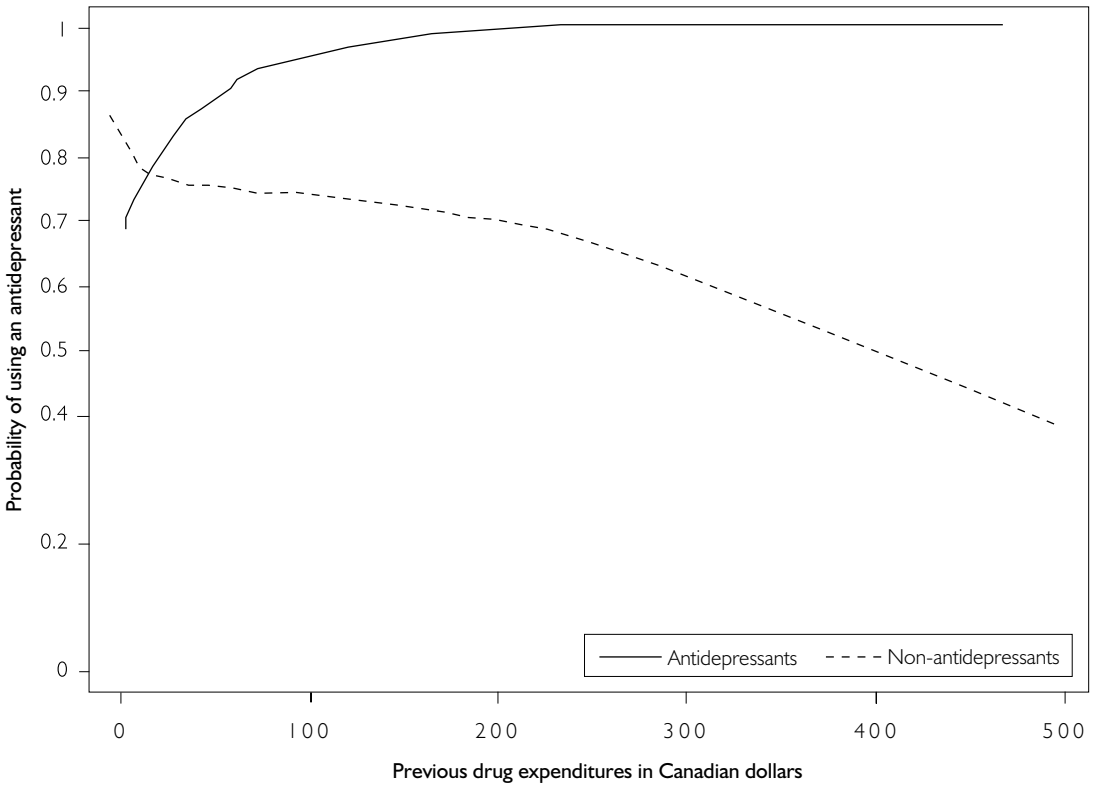
TABLE 3. Selected logistic regression results predicting whether an employee had an antidepressant claim (adjusted for provincial fixed effects)

	Had an antidepressant claim	
Variables	**Odds Ratio**	**95% CI**
Demographic variables		
Female	1.032	(0.586, 1.818)
Age	1.008	(0.980, 1.037)
Employment characteristics		
Management	1.217	(0.752, 1.967)
Length of employment	1.034	(1.002, 1.067)
Company 1	0.634	(0.228, 1.764)
Company 2	0.509	(0.326, 0.795)
Symptom and complexity variables		
Number of symptoms	1.207	(1.112, 1.311)
Prior episode in past 12-months	0.806	(0.447, 1.455)
Depression only	2.402	(1.705, 2.517)
Co-occurring chronic physical disorders		
Heart disease	0.753	(0.345, 1.640)
Respiratory disease	3.172	(1.395, 7.210)
Hypertension	1.408	(0.720, 2.752)
Asthma	0.814	(0.398, 1.663)
Ulcers	1.399	(0.843, 2.322)
High cholesterol	2.730	(0.764, 9.749)
Neurological disorders	1.522	(0.739, 3.134)
Other chronic disorders	1.983	(0.417, 9.459)
Out-of-pocket expenditures prior to SDIS (in $10 increments)		
For antidepressant	1.478	(1.271, 1.715)
For other drugs	0.954	(0.933, 0.975)
Hosmer-Lemeshow $\chi^2_{(8)}$ (p-value)	8.22	(0.4121)
Pseudo-R^2	0.1891 (n=706)	

In contrast, workers with no prior out-of-pocket expenditures on antidepressants had a 70% probability of filling an antidepressant prescription. With more prior antidepressant use (as indicated by increased prior out-of-pocket antidepressant expenditures), the probability of workers' filling an antidepressant prescription increased.

In the second model, we controlled for the same characteristics as in the first model while examining the association between out-of-pocket expenditures and the number of days before filling an antidepressant prescription. To facilitate the interpretation of the regression results, we created a new indicator variable equalling 1 (equalling 0) when out-of-pocket expenditures were above (below) the median of $43.50. A log-rank test rejected the equality of the survivor functions (probability of not filling an antidepressant prescription after time t) by whether out-of-pocket expenditures were above (below) the median ($\chi^2_{(1)}$=7.25, p=0.0071). Figure 2, showing the Kaplan-Meier survival estimates by whether out-of-pocket expenditures were above (below) the median, provides visual confirmation of the difference between workers with high and low out-of-pocket expenditures.

FIGURE 1. Predicted probability of using an antidepressant as a function of previous drug expenditures by type of drug (antidepressants vs. non-antidepressants)

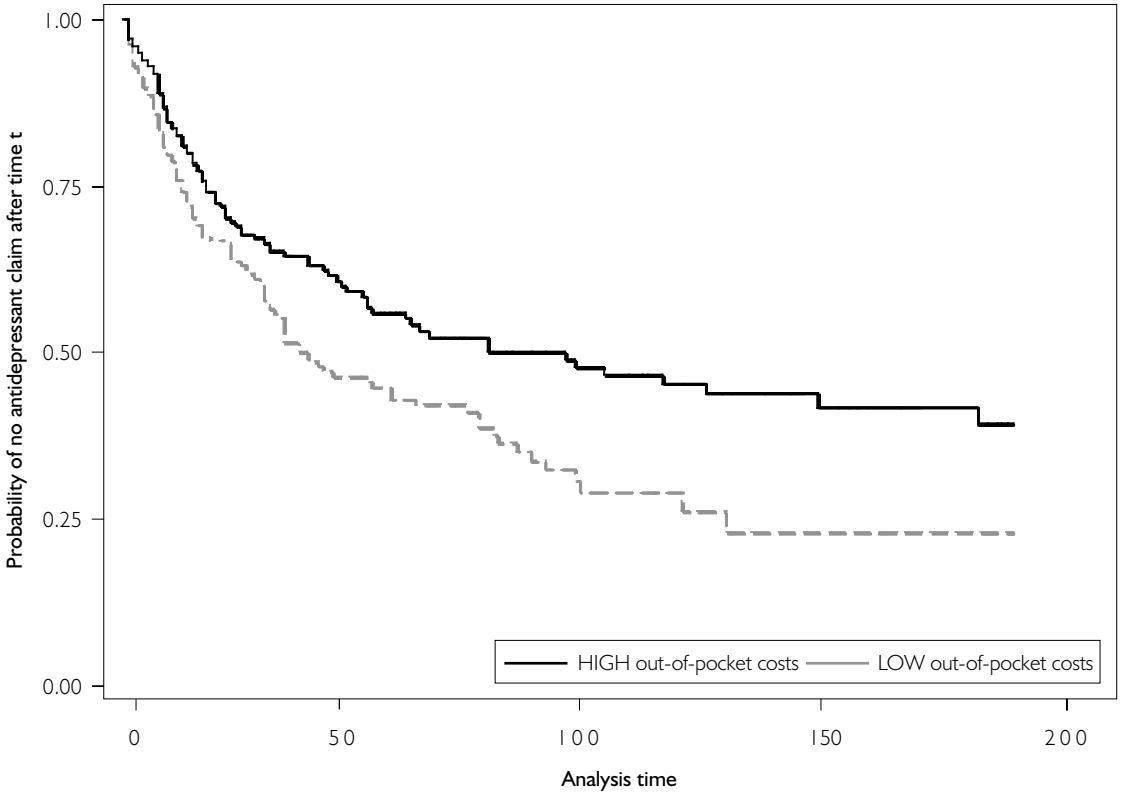


Note: Figure 1 shows the results from a logistic regression predicting an antidepressant claim during the SDIS episode. The complete regression results are reported in Table 3.

Table 4 contains the results from two types of survival analysis models. Using the Cox model, we estimated the hazard ratio for out-of-pocket expenditures above (below) the median to be 0.617 (z=–2.89, p=0.004) and 0.579 using Weibull regression

(z=−3.26, p=.001). The estimated hazard ratio less than 1.000 for the indicator variable means that workers with high out-of-pocket expenditures were less likely to fill an antidepressant prescription during the SDIS episode (technically speaking, the hazard for workers with out-of-pocket expenditures above the median was about 60% of that for workers with out-of-pocket expenditures below the median). The difference in median time before filling a first antidepressant prescription was estimated to be approximately 36 more days when out-of-pocket expenditures were above the median.

FIGURE 2. Probability of no antidepressant claim as a function of time by level of out-of-pocket costs (e.g., high vs. low out-of-pocket costs)



Note: Figure 2 shows Kaplan-Meier survivor curves from the analysis of time (days) until a first antidepressant prescription during the SDIS episode. Employees returning from SDIS without having filled an antidepressant prescription during the SDIS episode have "censored" data. The complete regression results are reported in Table 4. The group with high out-of-pocket costs was those with expenditures that were above the median. The group with low out-of-pocket expense was those with expenditures that were below the median.

TABLE 4. Selected survival analysis regression results for first antidepressant use (adjusted for provincial fixed effects)

	Cox Proportional Hazard		Weibull Regression	
Variables	**Hazard Ratio**	**95% CI**	**Hazard Ratio**	**95% CI**
Demographic Variables				
Female	1.039	(0.662, 1.632)	1.004	(0.638, 1.580)
Age	0.998	(0.977, 1.020)	0.996	(0.975, 1.018)
Employment characteristics				
Management	0.997	(0.709, 1.402)	0.960	(0.681, 1.353)
Length of employment	1.032	(1.009, 1.056)	1.035	(1.011, 1.059)
Company 1	1.278	(0.644, 2.537)	1.398	(0.708, 2.761)
Company 2	0.587	(0.418, 0.823)	0.583	(0.416, 0.818)
Symptom and complexity variables				
Number of symptoms	1.055	(0.992, 1.122)	1.044	(0.982, 1.111)
Prior episode in past 12 months	0.518	(0.297, 0.903)	0.465	(0.266, 0.812)
Depression only	1.307	(0.973, 1.756)	1.336	(0.994, 1.797)
Co-occurring chronic physical disorders				
Heart disease	0.654	(0.370, 1.156)	0.622	(0.352, 1.100)
Respiratory disease	2.060	(1.211, 3.505)	2.244	(1.318, 3.822)
Hypertension	1.064	(0.671, 1.688)	1.163	(0.733, 1.845)
Asthma	1.317	(0.786, 2.205)	1.324	(0.788, 2.223)
Ulcers	1.228	(0.837, 1.801)	1.222	(0.832, 1.797)
High cholesterol	1.779	(0.841, 3.763)	1.966	(0.931, 4.150)
Neurological disorders	1.027	(0.621, 1.700)	1.037	(0.625, 1.721)
Other chronic disorders	2.082	(0.916, 4.729)	2.107	(0.927, 4.790)
Out-of-pocket expenditures prior to SDIS (for non-antidepressant drugs)				
Above the median cost of $43.50	0.617	(1.271, 1.715)	0.579	(0.417, 0.804)
LR $\chi^2_{(24)}$ (p-value)	62.38	(<0.001)	70.52	(<0.001)
Sample size	n=379		n=379	

Discussion

The results appear to indicate two primary use patterns. First, the positive association between prior antidepressant spending and the higher likelihood of subsequent spending suggests that if workers have experience with antidepressants, they may be more likely to view them as non-discretionary drugs. This is a positive finding if it suggests adherence to antidepressant use, an issue that is frequently of concern in depression treatment (Simon et al. 1993; Katon et al. 1995). At the same time, it raises the question of what the impact would be on other prescriptions for chronic physical conditions.

About 50% of these workers with depression-related SDIS had a co-morbid chronic physical disorder for which they were receiving prescription drug treatment. Our results indicate that greater prior out-of-pocket expenditures for other prescription drugs may serve as a barrier to accessing antidepressant treatment. These results are congruent with findings reported by Motheral and Fairman (1997) and Goldman et al. (2000). Individuals who had previously purchased prescriptions for other conditions might have been more sensitive to the out-of-pocket expenditure of an antidepressant prescription. If this sensitivity results in a delay in use, it could be problematic. For example, a delay in antidepressant use during the first 30 days of an SDIS episode has been associated with a longer leave of 24 days (Dewa et al. 2003). The average hourly wage for a worker between 25 and 55 years is $21.66 (Statistics Canada 2007). Based on a 7.5-hour workday and the loss of 18 workdays (excluding six weekend days), the delay in antidepressant use would cost an average of $2,924 extra per worker on SDIS.

This finding highlights the dilemma faced by many employers. On the one hand, there is the desire to control the rising cost of prescription drug benefits caused by the decreased sensitivity to costs associated with insurance benefits; on the other hand, it is important not to create a barrier to access to these treatments.

More research is needed to evaluate whether cost-sharing mechanisms should be altered for workers on disability leave, especially those with chronic physical conditions (Elinson et al. 2004).

Limitations

Our results should be considered in light of several limitations. First, our sample contained a high proportion of women. Two main factors likely contributed to this finding: (a) the sector we are studying is female dominated – approximately 30% of all Canadian women are employed in business, finance and administrative occupations (Statistics Canada 2003) and (b) the prevalence of depression is higher among women than men (Kessler et al. 1996; Offord et al. 1996). An important question is whether our findings hold true in other sectors, especially those that are male dominated.

Second, our reliance on administrative data constrains our ability to comment on actual use (Edgell et al. 1999). It is assumed that workers who filled prescriptions also took their medications. To the extent that this assumption is valid, our measure of use reflects a combination of use and physician prescribing patterns.

Third, as with most administrative database studies, our results are limited by the accuracy of the diagnosis on the claims forms (Browne et al. 1998). Ideally, we would have conducted clinical assessments for cases to verify the cause of the SDIS. But in the interests of feasibility and maintaining worker anonymity, we chose to study the population identified with depression rather than those confirmed with depression.

Finally, this study focused on previous annual out-of-pocket expenditures. It is possible that something related to out-of-pocket drug expenditures but not captured in the administrative data could explain our results.

Technically, an individual's prior spending on drugs is a choice variable that may be correlated with unobserved determinants of current antidepressant use. The nature of our non-randomized administrative data does not allow us to pinpoint the causal reason for our findings. Along those same lines, it would have been ideal had we understood the motivations underlying worker behaviour. Specifically, an estimate of the sensitivity of the workers' demand to the price of prescription drugs would have been useful. With current data limitations, an alternative explanation for the significant positive relationship between past experience with antidepressants and current use would be that workers are insensitive to all prescription drug prices and are willing to purchase any prescription drug without regard for price. On the other hand, if this were the case, we would expect to see a positive association between prior out-of-pocket spending for other drugs and antidepressant use.

Our research represents a first step towards understanding disabled employees' sensitivities to costs; it examines questions about the association between expenditures and antidepressant use. Further research should focus on identifying the mechanisms that underlie the observed association.

Conclusions

In previous work, we found an association between timely antidepressant use and decreased length of depression-related disability leave (Dewa et al. 2003). Results from this study suggest another potential link in the chain between employee out-of-pocket expenditures and employer productivity losses associated with depression-related disability claims. In light of antidepressants' contribution to return to work, it might be worthwhile for companies and benefits managers to examine their drug benefits plan structures (e.g., deductible limits). While moral hazard may be a valid general concern, if out-of-pocket expenditures reduce access to prescription drugs, it may be important to consider cost-containment strategies that take into account disability and chronic conditions. Nevertheless, more research is needed to confirm and explore the exact process by which costs and antidepressant use are related.

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REFERENCES

Agency for Health Care Policy and Research (AHCPR). 1993. *Depression in Primary Care: Volume 2. Treatment of Major Depression*. Washington, DC: US Government Printing Office.

American Psychiatric Association (APA). 1993. "American Psychiatric Association Practice Guideline for Major Depressive Disorder in Adults." *American Journal of Psychiatry* 150: iii–26.

American Psychiatric Association (APA). 2000. *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.). Washington, DC: Author.

Archibald, G., G. Williams et al. 2007. *Introduction to Benefit Plans Around the World: A Guide for Multinational Employers*. New York: Mercer Human Resource Consulting.

Berndt, E.R., S. Finkelstein, P. Greenberg, R.H. Howland, A. Keith, A.J. Rush, J. Russell and M.B. Keller. 1998. "Workplace Performance Effects from Chronic Depression and Its Treatment." *Journal of Health Economics* 17(5): 511–35.

Browne, R.A., C.A. Melfi, T.W. Crogan, R.L. Obenchain, L. Morris, J. Smith, J. Gerlach, K. Copeland and R.L. Robinson. 1998. "Issues to Consider When Conducting Research Using Physician-Reported Antidepressant Claims." *Drug Benefit Trends* 10(5): 33, 37–42.

Canadian Network for Mood and Anxiety Treatment (CANMAT). 1999. *Guidelines for the Diagnosis and Pharmacological Treatment of Depression*. Toronto: Centre for Addiction and Mental Health.

Dewa, C.S., P. Goering, E. Lin and M. Paterson. 2002. "Depression-Related Short-Term Disability in an Employed Population." *Journal of Occupational and Environmental Medicine* 44(7): 628–33.

Dewa, C.S., J.S. Hoch, E. Lin, M. Paterson and P. Goering. 2003. "Pattern of Antidepressant Use and Duration of Depression-Related Absence from Work." *British Journal of Psychiatry* 183: 507–13.

Dewa, C.S., J.S. Hoch and L. Steele. 2005. "Prescription Drug Benefits and Canada's Uninsured." *International Journal of Law and Psychiatry* 28(5): 496–513.

Dewa, C.S. and E. Lin. 2000. "Chronic Physical Illness, Psychiatric Disorder and Disability in the Workplace." *Social Science & Medicine* 51(1): 41–50.

Duan, N., W.G. Manning, C.N. Morris and J.P. Newhouse. 1983. "A Comparison of Alternative Models of the Demand for Medical Care." *Journal of Business and Economic Statistics* 1(2): 115–26.

Edgell, E.T., K.H. Summers, T.R. Hylan, J. Ober and J.L. Bootman. 1999. "A Framework for Drug Utilization Evaluation in Depression: Insights from Outcomes Research." *Medical Care* 37(4 Suppl. Lilly): AS67–76.

Elinson, L., P. Houck, S.C. Marcus and H.A. Pincus. 2004. "Depression and the Ability to Work." *Psychiatric Services* 55(1): 29–34.

Foote, S. and L. Etheridge. 2000. "Increasing Use of New Prescription Drugs: A Case Study." *Health Affairs* 19(4):165–70.

Goldman, D. P., G. F. Joyce, J.J. Escarce, J.E. Pace, M.D. Solomon, M. Laouri, P.B. Landsman and S. M. Teutsch. 2004. "Pharmacy benefits and the use of drugs by the chronically ill." *Journal of the American Medical Association* 291(19): 2344-50.

Greenberg, P.E., R. Kessler, H.G. Birnbaum, S.A. Leong, S.W. Lowe, P.A. Berglund and P.K. Corey-Lisle. 2003. "The Economic Burden of Depression in the United States: How Did It Change between 1990 and 2000?" *Journal of Clinical Psychiatry* 64(12): 1465–75.

Hillman, A.L., M.V. Pauly, J.J. Escarce, K. Ripley, M. Gaynor, J. Clouse and R. Ross. 1999. "Financial Incentives and Drug Spending in Managed Care." *Health Affairs (Millwood)* 18(2): 189–200.

Katon, W., M. Von Korff, E. Lin, E. Walker, G.E. Simon, T. Bush, P. Robinson and J. Russo. 1995. "Collaborative Management to Achieve Treatment Guidelines. Impact on Depression in Primary Care." *Journal of the American Medical Association* 273(13): 1026–31.

Kessler, R.C., C.B. Nelson, K.A. McGonagle, J. Liu, M. Swartz and D.G. Blazer. 1996. "Comorbidity of DSM-III-R Major Depressive Disorder in the General Population: Results from the US National Comorbidity Survey." *British Journal of Psychiatry* (Suppl.) 30: 17–30.

Leibowitz, A., W.G. Manning Jr. and J.P. Newhouse. 1985. "The demand for prescription drugs as a function of cost-sharing." *Social Science and Medicine* 21(10): 1063-9.

Lim, D., K. Sanderson and G. Andrews. 2000. "Lost Productivity among Full-Time Workers with Mental Disorders." *Journal of Mental Health Policy and Economics* 3(3): 139–46.

Manning, W. G., C.N. Morris, J.P. Newhouse, L.L. Orr, N. Duan, E.B. Keeler, A. Leibowitz, K. H. Marquis, M.S. Marquis, and C.E. Phelps. 1981. "A Two-Part Model of the Demand for Medical Care: Preliminary Results from the Health Insurance Study." in J. van der Gaag and M. Perlman, eds. *Health, Economics and Health Economics* (pp. 103-23). Amsterdam, North Holland: Elsevier Science, Ltd.

Miranda, J., P.A. Arean and R.L. Rickman. 1994. "Relationship of Mental and Medical Disorders in Primary Care." In J. Miranda, A. Hohmann, C. Attkisson and D. Larson, eds., *Mental Disorders in Primary Care* (pp. 93–108). San Francisco: Jossey Bass.

Morgan, S., M. McMahon, J. Lam, D. Mooney and C. Raymond. 2005. *The Canadian Rx Atlas.* Vancouver: Centre for Health Services and Policy Research, University of British Columbia.

Motheral, B.R. and K.A. Fairman. 1997. "The Use of Claims Databases for Outcomes Research: Rationale, Challenges, and Strategies." *Clinical Therapeutics* 19(2): 346–66.

Offord, D.R., M.H. Boyle, D. Campbell, P. Goering, E. Lin, M. Wong and Y.A. Racine. 1996. "One-Year Prevalence of Psychiatric Disorder in Ontarians 15 to 64 Years of Age." *Canadian Journal of Psychiatry* 41(9): 559 63.

Olfson, M., S.C. Marcus, B. Druss and H.A. Pincus. 2002. "National Trends in the Use of Psychotropic Medications by Children." *Journal of the American Academy of Child and Adolescent Psychiatry* 41(5): 514–21.

Piette, J.D., M. Heisler and T.H. Wagner. 2004. "Cost-Related Medication Underuse among Chronically Ill Adults: The Treatments People Forgo, How Often, and Who Is at Risk." *American Journal of Public Health* 94(10): 1782–87.

Roberts, H.S. 1994. *Roberts' Dictionary of Industrial Relations* (4th ed.) (p. 173). Arlington, VA: BNA Books.

Salkever, D.S., H. Goldman, M. Purushothaman and J. Shinogle. 2000. "Disability Management, Employee Health and Fringe Benefits, and Long-Term Disability Claims for Mental Disorders: An Empirical Exploration." *Milbank Quarterly* 78(1): 79–113.

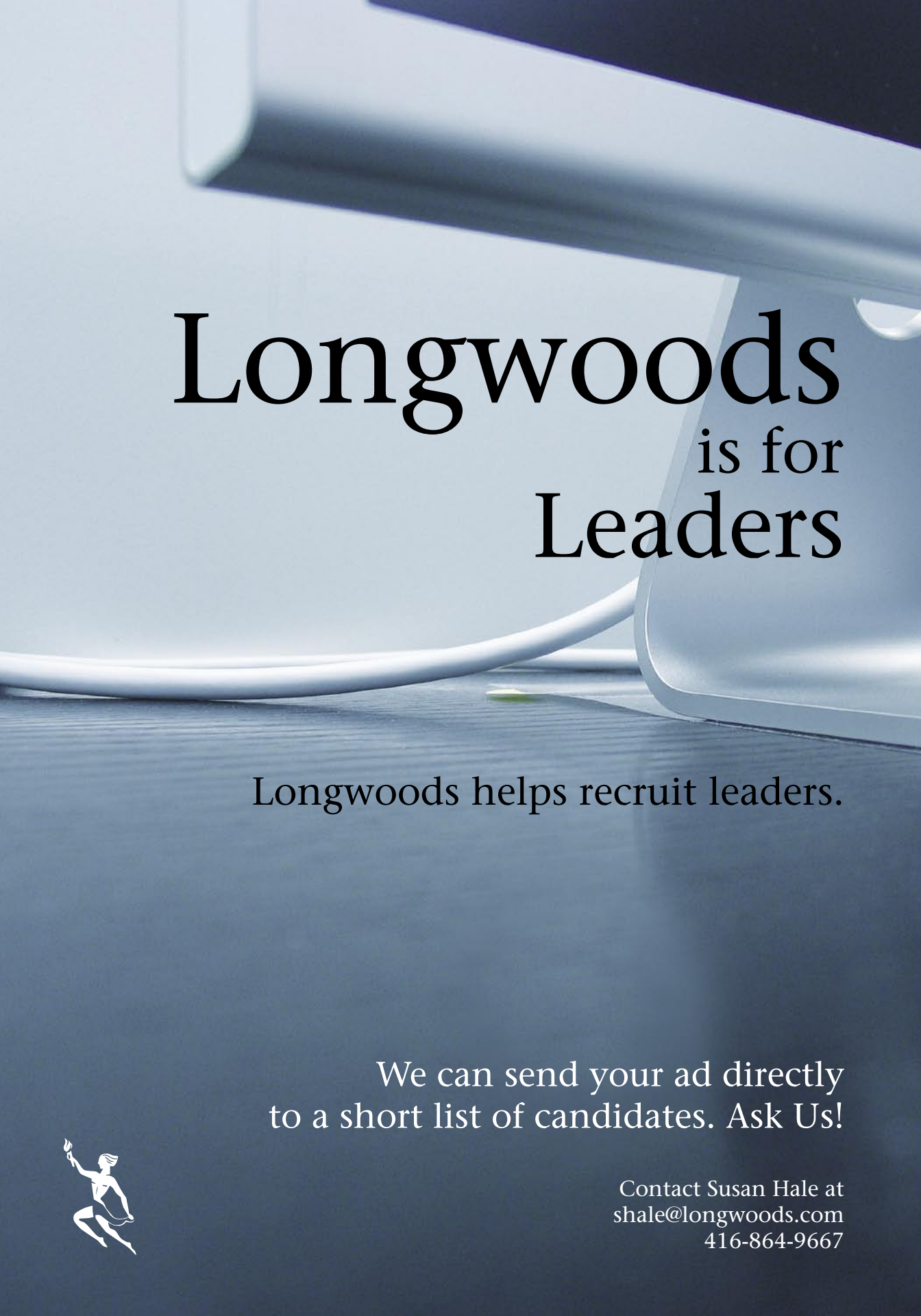
Simon, G.E., M. Von Korff, E.H. Wagner and W. Barlow. 1993. "Patterns of Antidepressant Use in Community Practice." *General Hospital Psychiatry* 15(6): 399–408.

Statistics Canada. 2003. "Labour Force Survey." FAQ. Retrieved September 26, 2008. <http://www.statcan.ca/english/survey/labour/labour.htm>.

Statistics Canada. 2007. "Average Hourly Wages of Employees by Selected Characteristics and Profession, Unadjusted Data, by Province (Monthly) (Canada)." Retrieved September 26, 2008. <http://www40.statcan.ca/l01/cst01/labr69a.htm>.

Tamblyn, R., R. Laprise, J.A. Hanley, M. Abrahamowicz, S. Scott, N. Mayo, J. Hurley, R. Grad, E. Latimer, R. Perreault, P. McLeod, A. Huang, P. Larochelle and L. Mallet. 2001. "Adverse Events Associated with Prescription Drug Cost-Sharing among Poor and Elderly Persons." *Journal of the American Medical Association* 285(4): 421–29.

Von Korff, M., E.H. Wagner and K. Saunders. 1992. "A Chronic Disease Score from Automated Pharmacy Data." *Journal of Clinical Epidemiology* 45(2): 197–203.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