### HEALTHCARE

# Politiques de Santé

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



# Volume 1 + Number 3

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Data Matters • Discussion and Debate Linkage and Exchange

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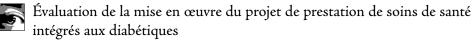
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Examen par les pairs

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# Peer Review in a Small Pond

In the world of Academic Publishing, the Peer Review Process Carries heavy freight, serving as the prime instrument for quality control, adjudication of importance, quality improvement and safeguarding academic integrity. These high stakes underline the need for fair and unbiased assessment – a special challenge for *Healthcare Policy* because of its emphasis on the Canadian context and the still small pool of Canadian health services and policy researchers.

Many of these researchers are well known to one another as colleagues, collaborators, competitors, friends and foes. And as health services and policy researchers increasingly engage with decision-makers – integral players in the journal's review process – the web of relationships becomes even more complex. Under these circumstances, how does the journal attempt to ensure a fair process?

The editor-in-chief or a senior editor assesses each submitted manuscript with authors' names removed to determine whether it will undergo formal peer review. When an editor nevertheless recognizes the author(s) and feels uncertain about his or her ability to make an unbiased decision, the editor removes him- or herself from the review process and another editor takes over. Rejection without peer review is based either on content that lies outside the journal's declared scope or reflects major reservations about study design or execution. Any manuscript that is being considered for rejection without peer review is further assessed by a second editor before a decision is made.

Having cleared the initial hurdle, the manuscript is assigned to an editor who shepherds it through the peer review process, assigning academic and decision-maker reviewers, reviewing their assessments and drafting a letter to the authors. A minimum of two academic reviews and one decision-maker review are required. The reviewers are blinded to the identity of the authors, although there are undoubtedly times when they recognize or suspect who they are. Reviewers are advised that they "must disclose … any conflicts of interest that could bias their opinions of the manuscript" and "disqualify themselves … if such a conflict exists." The editor-in-chief vets the reviews and the draft letter to the author, sometimes adding comments, suggestions or requests.

Throughout this process, we emphasize the quality-improvement dimension of peer review, encouraging our reviewers (and editors) to be what Taylor (2003) describes as "big R" reviewers – respectful, constructive and considerate. Reviewers are requested to provide "constructive comments and suggestions," to "include strengths and limitations" and to "indicate specific areas that might be improved." In our editors' let-

#### Editorial

ters, we try to assist the authors to strengthen both the substance and the presentation of their research or commentary - to help them produce a publishable manuscript.

Ultimately, the success of these efforts depends on the ability, integrity and generosity of our editors and reviewers. So far, we think, so good.

"Thank you so much ... to the reviewers for such thorough and insightful comments."

"Please thank [two of the journal's editors] for their letter and comments they have provided. ... I found the comments extremely helpful. ..."

"I found the quality of the reviewers' comments ... to be extremely good. They had great insight into the issues, had clearly read the paper closely and made some excellent suggestions. Thanks to these reviewers, I believe the manuscript is much improved."

#### REFERENCES

Taylor, S. 2003. "Big R (versus Little r) Reviewers: The Anonymous Coauthor." Journal of the Academy of Marketing Science 31(3): 341–43.

> BRIAN HUTCHISON, MD, MSC, FCFP Editor-in-chief

# L'examen par les pairs « dans un petit bocal »

ANS LE MONDE DE L'ÉDITION SAVANTE, LE PROCESSUS D'EXAMEN PAR LES pairs vaut son pesant d'or puisqu'il constitue le principal instrument de contrôle de la qualité, d'attribution d'importance, d'amélioration de la qualité et de préservation de l'intégrité disciplinaire. Ces enjeux de taille soulignent le besoin d'une évaluation juste et objective — un défi spécial pour *Politiques de santé* en raison de l'accent qu'elle met sur le contexte canadien et du bassin encore restreint de chercheurs en politiques et en services de santé canadiens.

Plusieurs de ces chercheurs se connaissent bien entre eux, que ce soit comme collègues, collaborateurs, rivaux, amis ou ennemis. En outre, étant donné que les chercheurs en politiques et en services de santé interagissent de plus en plus avec les décideurs – qui font partie intégrante du processus d'examen de la Revue – le réseau de relations devient encore plus complexe. Dans ces circonstances, comment les rédacteurs de la Revue essaient-ils d'assurer un processus équitable?

Le rédacteur en chef ou un rédacteur principal évalue – sans connaître les noms des auteurs – chaque manuscrit reçu en vue de déterminer s'il sera soumis au processus d'examen par les pairs. Toutefois, quand un rédacteur reconnaît l'auteur ou les auteurs et doute de pouvoir prendre une décision objective, il doit se retirer du processus et se faire remplacer par un autre rédacteur. Les articles rejetés sans être soumis à l'examen par les pairs ont un contenu qui est en dehors de la portée de la revue ou soulèvent, chez les examinateurs, d'importants doutes quant à la conception ou l'exécution de l'étude. Tout manuscrit qu'on envisage de rejeter sans le soumettre à l'examen par les pairs fait l'objet d'une seconde évaluation par un autre rédacteur avant qu'une décision finale soit prise.

Une fois la première étape franchie, le manuscrit est confié à un rédacteur qui le suit tout au long du processus d'examen par les pairs, notamment en sélectionnant les examinateurs et les décideurs qui évalueront l'article, en passant leurs évaluations en revue et en préparant une lettre à l'intention de l'auteur ou des auteurs. Chaque article doit être évalué par au moins deux examinateurs provenant du milieu universitaire et par au moins un décideur. Les examinateurs ne connaissent pas l'identité des auteurs, bien qu'il n'y a pas à douter qu'ils reconnaissent ou soupçonnent parfois qui ils sont. Les examinateurs sont tenus de « divulguer ... tout conflit d'intérêts susceptible d'influencer leur opinion du manuscrit » et « se récuser ... si un tel conflit existe. » Le rédacteur en chef examine les évaluations et la lettre préparée à l'intention de l'auteur ou des auteurs et peut, à l'occasion, y ajouter ses propres commentaires, suggestions ou demandes.

#### Éditorial

Tout au long de ce processus d'examen, nous mettons l'accent sur l'amélioration de la qualité et nous encourageons nos examinateurs (et nos rédacteurs) à démontrer les trois qualités d'un grand examinateur, à savoir, respectueux, constructif et plein d'égards (Taylor, 2003). On demande aux examinateurs de fournir des « commentaires et suggestions constructifs, » d'« inclure les points forts et les faiblesses du manuscrit, » ainsi que « les aspects qui auraient besoin d'être améliorés. » Dans les lettres que la rédaction envoie aux auteurs, nous encourageons ces derniers à renforcer à la fois le contenu et la présentation de leur recherche ou commentaire afin de les aider à produire un manuscrit digne d'être publié.

En fin de compte, le succès de ces efforts dépend des compétences, de l'intégrité et de la générosité de nos rédacteurs et de nos examinateurs. Jusqu'ici, tout va bien selon nous.

- « Un gros merci ... aux examinateurs pour leurs commentaires détaillés et réfléchis. »
- « Je remercie [deux des rédacteurs de la Revue] pour la lettre et les commentaires qu'ils m'ont envoyés ... J'ai trouvé leurs suggestions extrêmement utiles ... »
- « J'ai trouvé les commentaires des examinateurs ... extrêmement pertinents. Ils comprennent bien les enjeux; ils ont clairement lu l'article de façon très attentive et ont fait d'excellentes suggestions. Grâce à eux, le manuscrit est, à mon avis, grandement amélioré. »

#### RÉFÉRENCES

Taylor, S. 2003. "Big R (versus Little r) Reviewers: The Anonymous Coauthor." *Journal of the Academy of Marketing Science* 31(3): 341–43.

BRIAN HUTCHISON, MD, MSC, FCFP

Rédacteur en chef

# The Blind Men, the Elephant and the CT Scanner

# Les aveugles, l'éléphant et le tomodensitomètre

by ROBERT G. EVANS
Professor of Economics
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# Abstract

The parable of the blind men and the elephant suggests that disputes among scholars arise not so much from errors of fact and argument as from differences of perspective – incomplete perceptions, each from a different angle of view, of a more complex reality. The CT scanner offers an analogy, taking two-dimensional images from multiple points of view. The heart of the device is the computational process integrating these images into a three-dimensional view consistent with each. Effective interdisciplinary research requires the institutional equivalent of the CT scanner's integrative capacity. The normal dynamics of university-based research, however, pull instead toward disciplinary solitudes. Our new journal is a step in the right direction, but there is still a distance to go.

## Résumé

La parabole des aveugles et de l'éléphant laisse entendre que les conflits entre savants sont dus non pas tant aux erreurs de fait et d'argument qu'aux différences de perspective – des perceptions incomplètes, chacune vue sous un angle différent – d'une réalité plus complexe. Le tomodensitomètre offre une analogie en montrant des images bidimensionnelles sous des angles multiples. Au cœur du dispositif se trouve un processus computationnel qui intègre ces images en une vue tridimensionnelle conforme à chacune. La recherche interdisciplinaire efficace exige l'équivalent institutionnel de la capacité d'intégration du tomodensitomètre. Toutefois, la dynamique normale de la recherche universitaire tend plutôt à créer des solitudes disciplinaires. Notre nouvelle revue constitue un pas dans la bonne direction, mais il reste encore beaucoup de chemin à faire.

IX BLIND MEN OF HINDUSTAN, WE ARE TOLD, ONCE WENT IN SEARCH OF that wonderful creature, the elephant. Or, perhaps there were only three blind men, in Han China. Yet again, there were anywhere between three and eight, somewhere in the Middle East. In the Buddhist original (?) the number is unspecified.

From there, however, the stories are similar. Each man encountered a different aspect of the elephant and drew a different inference as to its essential nature. One walked into its side, concluding that an elephant is like a wall. Another, prodded by the tusk, declared that an elephant is like a spear. The chap hanging onto the tail was convinced that he had found a sort of rope. And so on.

Asked for a description of the elephant, each firmly and confidently gave his opinion, solidly grounded in empirical experience and all radically different. In the Buddha's tale:

Then they began to quarrel, shouting, "Yes, it is!" "No, it is not!" "An elephant is not that!" "Yes, it's like that!" and so on, till they came to blows over the matter.

Brethren, the raja [who in this version had presented the elephant] was delighted with the scene.

Just so are these preachers and scholars holding various views blind and unseeing. ... In their ignorance they are by nature quarrelsome, wrangling and disputatious, each maintaining reality is thus and thus.

Then the Exalted One rendered this meaning by uttering this verse of uplift:

"O how they cling and wrangle, some who claim For preacher and monk the honoured name! For, quarrelling, each to his view they cling. Such folk see only one side of a thing." (Udana 68–69)

Rarely does an economist have a chance to offer a verse of uplift. Not to be missed; it may not come again.

Disputes among scholars are not new (nor, indeed, is that observation). But the parable of the elephant suggests that the disagreements are rooted not so much in "errors of fact and argument" as in differences in perspective, in the angle from which the subject matter is approached. If so, then they will not be resolved through further collection of facts or refinement of arguments so long as the contrasting perspectives remain unchanged. What the scholars needed, to grasp (figuratively) the elephant in its full elephant-ness, was some means of integrating and reconciling their (perfectly valid, but radically incomplete) individual observations.

The CT scanner offers a natural analogy. That device records a set of two-dimensional images, each taken from a different point on a circle around the object being scanned. The trick is then to construct, using a complex computational process, a three-dimensional representation of the scanned object that incorporates and is consistent with each of the two-dimensional visual "slices."

Finding a way to synthesize the individual perspectives was the crucial problem that the inventors of the CT scanner solved, and the students of the elephant did not. And it is a matter of explicit procedure or mechanism. Simply laying the various two-dimensional images on top of or beside one another would be no more informative than having the blind men expound their conclusions simultaneously or in some particular sequence or pattern. Aggregation is not synthesis.

Healthcare Policy is one response to a widely held conviction among students of healthcare. Comprehending the complex structures and processes that make up a healthcare system requires integrating perspectives from a number of disciplines and backgrounds, in and outside the academy. The journal provides a shared space, a "watering hole," to shift the metaphor yet again, where we can each bring observations and conclusions drawn from our own individual perspectives and present them side by side. But contiguity is not necessarily communication; it is at best an improved opportunity for communication. You can lead a horse to water, but can you make him think?

As it happens, there is quite a bit known about the procedures and processes that promote the integration of differing intellectual perspectives. Both psychology and political science can contribute insights from experiment and experience – as, indeed, can any thoughtful observation of small-group behaviour. The first and most critical step is recognition of mutual interdependence. External threats are particularly effective.

Joe Di Stefano from the University of Western Ontario gives the example of the late Red Adair, the famous leader of a team specializing in putting out oilwell fires.

While they are sitting on the sand, discussing how best to tackle a particular fire, the team members are, Di Stefano says, textbook models of how to elicit and synthesize differing points of view so as to maximize the value of their collective information. The incentives are strong: if they make a mistake, they all go together to Kingdom Come.

The stakes are not quite so high in health services research – at least, not for the researchers themselves. But the point is the same. Few of us will make the effort to understand another's perspective out of mere intellectual curiosity. Genuine interdisciplinary work requires that a group be, for whatever reason, collectively seized of a task or problem that defeats solution within the conceptual framework of a single discipline. (It probably helps if rewards or penalties are involved.)

If the members of a group can reach the point of recognizing that each possesses only a piece of the puzzle, the next step is to understand that reiteration and elaboration of one's own perspective is generally futile, if not actively counterproductive. Digging in, like the blind men in the tale, goes nowhere. Somehow, one has to learn to see the world from a different perspective, or several. ("Why on earth would he think this obvious spear is actually a rope? So, tell me more about the rope. I just don't see it.") This takes time and effort, and a fair amount of mutual respect, goodwill and patience. You have to get inside the other's way of thinking and identify the basic assumptions, typically so basic as to be unspoken. But it can work if all involved want it to – which brings us back to the incentives.

The incentives governing the academic enterprise can be, from this perspective, quite perverse. The disciplines have evolved powerfully to discourage cross-border communication. (I have heard that the exigencies of day-to-day managerial, clinical or policy responsibilities, what with firefighting and alligators, are also pretty effective for this purpose.)

Why would anyone waste time talking to people in the next department over? Those turkeys can't tell a spear from a rope! The proper focus of research should be on the shape and size of spears, their mechanical properties, their chemical composition. Abstract notions of "elephant-ness," some alleged "emergent properties" arising from the combination of insights from different disciplines, are too fuzzy and ill-defined to be worth engaging the time of a serious scholar. They do not fit into the conceptual categories that we are all particularly adept at manipulating, or respond to the research methods in which we are expert and others, typically, are not. We have all spent a lot of time and effort acquiring certain types of specialized intellectual capital; these tools then dictate the way we see the world.

So we do not shout at one another, like the blind men, much less come to blows. (Could they actually have landed many punches?) Instead, we draw apart into separate departments, conferences, journals, with little cross-communication. The results of our studies can be published in prestigious journals like *Spear: The Journal of Elephantology*, where papers are published only after review by "peers" who share the

same narrow focus and pointed convictions. Otherwise, they would not be peers. And we cannot relax the standards of peer reviews, the guardians and enforcers of disciplinary conformity. Without them, how can we maintain intellectual rigour, identify excellence and allocate research grants to the right people (people like us)?

What, in this context, might serve as an institutional analogue to the CT scanner, a mechanism for synthesizing competing perspectives on complex realities? As it happens, we have a working example, apparently unique to Canada, in the Canadian Institute for Advanced Research (CIAR). The genesis of the Institute's most recent research program, launched last September (at the same time as *Healthcare Policy*), illustrates the process.

Economic models of human behaviour typically incorporate jejune and implausible psychological assumptions chosen for computational convenience and justified by intradisciplinary convention. No psychologist would take them seriously for 30 seconds. A decade ago, George Akerlof (1995) pointed out that relatively minor changes in the direction of greater realism would yield predictions that were not only richer but also more consistent with sociologists' observations of actual group behaviour.

Akerlof and John Helliwell are now leading a new CIAR Program in Social Interactions, Identity and Well-Being, and are in the process of assembling a team of economists, sociologists and psychologists for a long-term, intensely collaborative enterprise to study the social determinants of individual well-being. (But doesn't happiness just depend upon your net worth? That sounds hard; let's go shopping.) The program's website is very encouraging:

Economists have so far neglected to take into account this considerable body of ... empirical research in other social sciences, especially sociology and psychology ... thereby limiting their analysis of well-being. This narrow focus has probably led to incorrect models of economic behaviour and prescriptive policy.

Amen. A health economist would wish only to expand the list of relevant disciplines and would delete the word "probably."

This writer can hardly claim to be a disinterested observer of the CIAR and its programs. But he can speak from very direct personal experience about their transformative effects. Whatever else they did, the CIAR programs in Population Health and in Human Development changed the way their participants viewed the world. "We have seen the elephant."

The members of the new program may set out to build better economic models; they may find they have produced better economists – and sociologists, and psychologists, and ... Intellectual hybrids, like Kipling's armadillo, are comfortable in a wider range of environments.

The new program – like previous ones – is an exciting venture full of promise. But it may be some time before we see the standard economics textbooks being rewritten by multidisciplinary teams – if, in fact, we ever do.

The CT scanner was a breakthrough in imaging, where there was and is a strong demand for improved pictures (almost independent of therapeutic benefit). There is no similar demand for synthesis of intellectual perspectives. Disciplinary separation, specialization and exclusivity have deep roots in the academy. As Yale political scientist Ted Marmor says, "Nothing that is regular is stupid." Such behaviour may not lead to the advancement of learning, but it certainly leads to the advancement of the learner, and of the discipline.2

Academic careers are made by publications in leading disciplinary journals like Spear and Rope, where methodologies are rigorous, highly technical and difficult for outsiders to understand, rather than in broad-based and widely accessible journals like Elephant. It is only partly a joke that the prestige of a paper is inversely proportional to the number of people who will (or can) read it. When deans of faculties – and I know of more than one – declare unapologetically that "excellence" is defined by, and only by, publications in the leading disciplinary journals (in economics, all American), the message is clear enough to those early in their careers: Stay in the groove!

In this environment, embedding institutional mechanisms to support cross-disciplinary research is a dubious battle, uncertain of long-term success. There is no clear career track for hybrid scholars in single-discipline departments, so that recruitment to a cross-disciplinary enterprise depends upon the random accident of particular individuals, well established in their careers, somehow coming to understand the limitations of a narrow disciplinary perspective and having the intelligence and energy to break new ground.

Akerlof and Helliwell, for example, are both outstanding scholars. But they are also toward the end of their respective careers. They will undoubtedly inspire younger colleagues who will do excellent and highly original work, but where will these hybrids fit in the standard university structure? CIAR programs, while typically long-term relative to other research projects, are nonetheless time-limited.

This is precisely the challenge faced in the field of health services research and policy. Our community has come a very long way in Canada, with the formation of the Canadian Association for Health Services and Policy Research and the launch of this new journal, and those who have done the heavy lifting are to be gratefully congratulated. We are developing the mechanisms for synthesis of perspectives, and the people who can see the elephant as well as the rope. But the challenge remains of developing the institutionally embedded career tracks to keep the whole process going, to ensure a future. We are not there yet.

#### NOTES

- 1 All generalizations are false. What follows may have more relevance to the social than to the true sciences, and institutional cultures certainly vary. But the general characterization is, I think, reasonably accurate.
- 2 Other disciplines probably have other terms, but to a habitual economist disciplinary behaviour looks like product differentiation and barriers to entry. These behaviours seem to be as effective competitive strategies in the market for ideas as they are in commodity markets.

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# Complementary and Alternative Medicine: A Rising Healthcare Issue

# Médecines alternatives et complémentaires : une question de plus en plus importante dans les soins de santé



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# **Abstract**

More than half of all Canadians use some form of complementary and alternative medicine (CAM) every year. The way CAM is being used, the magnitude of its use and the lack of clarity on standards of evidence make CAM a rising healthcare issue.

A recent research priority-setting exercise by the Canadian Interdisciplinary Network for CAM Research (IN-CAM) identified three research priority areas: (1) health-care delivery and policy research, including (a) exploring if and how CAM should be regulated, (b) defining what constitutes acceptable evidence of safety and efficacy, (c) investigating the organization and delivery of integrative healthcare; (2) methodological research, including exploring how best to assess whole systems of care and how to choose patient-, practitioner- and policy-relevant outcome measures; and (3) knowledge transfer, including formal education strategies, the provision of information and dialogue with those who use information in decision-making. The high use of CAM products and therapies leads to many questions from patients, practitioners and policy makers. The research agenda presented here provides a guide to begin programs of research that will answer these questions.

## Résumé

Plus de la moitié des Canadiens utilisent une forme quelconque de médecine alternative ou complémentaire (MAC) chaque année. La façon dont les MAC sont utilisées, l'ampleur de leur utilisation et le manque de clarté quant aux normes de preuve font qu'elles deviennent une question de plus en plus importante dans le domaine des soins de santé. Un récent exercice d'établissement de priorités effectué par le Réseau interdisciplinaire canadien de recherche sur les médecines alternatives et complémentaires (IN-CAM) a permis de cerner trois domaines de recherche prioritaires : (1) la recherche sur la prestation des soins de santé et les politiques connexes, notamment, (a) examiner si les MAC devraient être réglementées et comment, (b) définir ce qui constitue des preuves acceptables d'innocuité et d'efficacité, (c) mener des enquêtes sur l'organisation et la prestation de soins de santé intégrés; (2) la recherche méthodologique, notamment, déterminer quelle est la meilleure façon d'évaluer des systèmes tout entiers de soins, et comment choisir des mesures d'impact pertinentes pour les patients, les praticiens et les politiques; et (3) le transfert des connaissances, y compris des stratégies de formation, la communication de renseignements et le dialogue avec ceux qui utilisent ces renseignements. La grande popularité des produits et des traitements alternatifs et complémentaires soulève beaucoup de questions chez les patients, les praticiens et les décideurs. Les suggestions présentées ici offrent un guide pour la mise en place de programmes de recherche qui permettront de répondre à ces questions.

 $\P$  omplementary and alternative medicine (CAM) is often described as a group of diverse medical and healthcare systems, practices and products I that are *not* presently considered part of conventional medicine (National Center for Complementary and Alternative Medicine [NCCAM] 2005). CAM therapies can be classified into five categories or domains: (1) alternative medical systems (e.g., homeopathy, naturopathy and traditional Chinese medicine), (2) mind-body interventions, (3) biologically based therapies (e.g., foods, vitamins, herbs), (4) manipulative and body-based methods (e.g., chiropractic, massage) and (5) energy therapies (e.g., Therapeutic Touch, Qigong) (NCCAM 2005). According to Health Canada (2005), more than 70% of Canadians use natural health products (including vitamins, herbal medicines, homeopathic medicines and others) each year, and Park (2005) reports that 20% of Canadians visited CAM providers (e.g., chiropractors, acupuncturists, naturopathic practitioners) in 2003. Estimates vary widely, but Canadians appear to be spending more than \$1 billion annually on CAM-related products and therapies (Ramsay et al. 1999). CAM is clearly more than a fringe phenomenon, and this dramatic increase in its use over the past 10 years cannot be overlooked by conventional healthcare practitioners, researchers and decision-makers.

There is evidence that CAM is increasingly being seen as an important issue for healthcare systems. For example, a recent health research priority-setting exercise (Canadian Health Services Research Foundation [CHSRF] 2004) identified CAM as a rising health issue. Similarly, Trachtenberg (2002: 1566) argues that the "imperative for the study of these health practices [CAM] is their sheer prevalence ...."

The high rates of CAM use have led to growing health services and policy concerns, including (1) how to regulate CAM professions and natural health products, (2) how to incorporate safe CAM treatments into mainstream care plans and (3) how best to protect the public from a wide range of possible CAM-conventional medicine interactions (Ernst 2000; Fugh-Berman 2000; Fugh-Berman and Ernst 2001; Miller 1998). The last point is important, given consumers' widespread perception that CAM is safe because it is "natural."

The healthcare system is slowly responding to the increase in CAM use. Many physicians are referring to CAM practitioners or are practising forms of CAM themselves (Hirschkorn and Bourgeault 2005; Kaczorowski et al. 2002; Silversides 2002; Verhoef et al. 2002; Verhoef et al. 2004; Wong and Neill 2001), and new models of integrative healthcare that combine CAM and conventional medicine are developing (Boon et al. 2004; Coates and Jobst 1998; Schroeder 1999; Tataryn and Verhoef 2001). However, it is necessary to investigate whether these changes are safe and effective and how they will affect Canadian healthcare. The purpose of this commentary is to present a relevant, practical research agenda that will answer the most pressing questions currently facing healthcare policy makers.

# The Canadian Interdisciplinary Network for CAM Research (IN-CAM)

One of the contexts in which the need for a focused CAM research agenda has been extensively discussed is IN-CAM (Canadian Interdisciplinary Network for CAM Research 2003). IN-CAM is an interdisciplinary research network of over 1,000 members, funded by the Canadian Institutes of Health Research (CIHR) and the Natural Health Products Directorate of Health Canada (Health Canada 2005), with the mission to create a sustainable, well-connected, highly trained Canadian CAM research community. It has two primary objectives: to build research capacity and to facilitate high-quality CAM health services and policy research in Canada. In order to provide direction for the development of high-quality CAM research, IN-CAM has engaged in a strategic planning process to (1) identify unanswered questions, (2) identify the most important/relevant questions and (3) develop a plan of action to answer those questions. This strategic planning process consisted of three stages:

- Modified Delphi Process to obtain consensus from those interested and involved in CAM research across Canada regarding priority research areas. The more than 400 individuals who were IN-CAM members at the time were asked for their input.
- 2. Consultations with Advisory Board<sup>1</sup> members to determine which topics identified through the Delphi Process should become IN-CAM priorities, based on perceived importance to Canadian health services and policy.
- 3. Strategic planning sessions: two one-day meetings of established researchers, practitioners, policy makers and funders to identify and prioritize specific research questions and projects within the identified priority research areas and to develop a plan to begin answering those questions based on the interest and expertise available in the Network.

Three priority research areas were identified: CAM healthcare delivery and policy; the development of methods to study the safety, efficacy and effectiveness of CAM; and knowledge transfer/translation as it relates to these two areas. (See Table 1.) A research agenda within each of these areas is described in more detail below.

# CAM healthcare delivery and policy

Canada has new natural health product regulations, and several provinces are currently debating the possible regulation of CAM practitioner groups. Thus, research in the area of CAM regulation is needed immediately to help guide new policy development. Most CAM practices are not currently regulated in Canada, a situation that has led to a proliferation of practitioners — only some of whom have extensive knowledge

TABLE 1. CAM research priority areas identified in IN-CAM Delphi Consultation			
TOPIC	SUB-TOPICS	EXAMPLE RESEARCH QUESTIONS	RELEVANCE TO POLICY MAKERS
CAM Healthcare Delivery and Policy	Regulation     Organization/     Delivery     Risk/Safety     Self-care/     Wellness	<ul> <li>Which (if any) CAM practitioners should be regulated?</li> <li>What is integrative healthcare and how is it related to primary healthcare reform?</li> <li>Who is practising CAM?</li> <li>Who has access to CAM?</li> <li>Is CAM cost-effective?</li> <li>What is the relationship between CAM and public health?</li> <li>Should provincial healthcare plans pay for CAM products and therapies?</li> </ul>	Several Canadian provinces are currently making decisions about whether (and how) to regulate traditional Chinese medicine, naturopathic medicine and homeopathic medicine. Research is needed to guide these decisions.
Developing Methods to Study Safety, Efficacy and Effectiveness of CAM	<ul> <li>Outcomes</li> <li>Healing environment</li> <li>Whole systems</li> <li>Effectiveness</li> <li>Safety</li> </ul>	<ul> <li>How should complex         CAM interventions (e.g.,         traditional Chinese medicine) be assessed?</li> <li>Can acupuncture trials be blinded?</li> <li>Is it possible to randomize patients with strong beliefs in specific CAM therapies?</li> <li>How does belief affect trial outcomes?</li> </ul>	Accurate knowledge of the safety, efficacy and effectiveness of CAM should form the basis for decisions about whether CAM products and services should be funded under provincial health insurance plans. Safety issues are also the basis for decisions about the need for regulation to protect the public from harm.
Knowledge Transfer	Education     Information     provision     Dialogue	<ul> <li>What should physicians, pharmacists and other conventional healthcare practitioners know about CAM?</li> <li>Where can consumers go to find accurate information about the risks and benefits of CAM?</li> </ul>	The health of Canadians depends on policies and practices that are based on the best information available.

and expertise – who offer a variety of services, including acupuncture,<sup>2</sup> advice about the medicinal use of herbs and homeopathy.<sup>3</sup> It appears that many practitioners offer advice with little or no training, raising concerns about potential interactions between these therapies and conventional treatments and delays in individuals' seeking appropriate medical care for serious conditions. Regulation changes being undertaken by individual jurisdictions can serve as case studies that provide a unique opportunity for Canadian researchers to address CAM policy questions. For example, British Columbia is in the process of implementing regulation for traditional Chinese medicine (TCM) and acupuncture (the first Canadian province to do so). Lessons learned from this experience would be very instructive for the rest of the country (especially Ontario, where the Ministry of Health has pledged to regulate TCM and acupuncture as early as 2006), yet little research appears to be under way.

While evidence is a very complex concept, there is no doubt that healthcare decisions should be based on evidence of some sort. Determining what constitutes acceptable evidence of safety, efficacy and quality of CAM practice, and establishing that evidence base, are crucial for rational policy development. For example, Health Canada (2005) has developed "standards of evidence" for deciding which health claims (e.g., "product X treats symptom Y") will be accepted on labels of licensed natural health products. Although these standards were developed as part of a national consultation process, they remain controversial. For example, there is ongoing debate about the role of historical "evidence" and the need for randomized controlled trials. Healthy debate in this area should be encouraged; as new standards of evidence are implemented, their impact needs to be assessed to inform future policy development.

With the large number of innovative healthcare initiatives that are emerging, process and outcome evaluation of the organization and delivery of "integrative" healthcare is essential. As provinces increasingly move to more interdisciplinary models of care, especially in the field of primary care, questions are being asked about who should be part of the care team. Canadians are increasingly seeking the services of chiropractors, massage therapists, naturopaths and others who are primary-contact healthcare practitioners. Whether CAM providers should be integrated into emerging models of team-based primary care, and the impact such integration would have on insurers and the health of Canadians, are just two issues that need to be addressed. At least three different demonstration projects funded by the Primary Healthcare Transition Fund<sup>5</sup> are beginning to provide preliminary answers to some of these questions using chiropractic care as an example service, but much more work is needed in other disciplines. The new natural health product regulations and the expanding regulation of CAM practices in some provinces are likely to spark renewed efforts by users to have these products and services declared "medical expenses" and to seek compensation from public and private insurers. Proponents of such coverage argue that CAM, with its

minimally invasive focus on preventive care, is a cost-effective option, yet little research has been done in this area to inform policy decisions.

# Developing methods to study the safety, efficacy and effectiveness of CAM

Evidence of the safety and efficacy of CAM is needed to underpin policy and treatment decisions. Yet, the complexity and individualized nature of many CAM interventions make obtaining this evidence challenging. For example, the patient-practitioner relationship and the healing environment are often integral components of the healing process; the patient is usually an active participant in the treatment and treatment decision-making; treatments are individualized; and expected and intended outcomes extend beyond the relief of disease-based symptoms. This complexity has led to the need to develop and study methods to assess complex interventions or "whole systems" of healthcare. Assessment methods used in biomedicine may be useful but do not always transfer easily to the study of CAM products and therapies. It is generally agreed that no single method will suffice and that interdisciplinary teams employing multimethod programs of research (including both qualitative and quantitative methods) are needed (Verhoef et al. 2005). The same applies to the evaluation of new models of delivering care in both CAM and conventional medicine. Interdisciplinary stroke units, diabetes clinics and integrative medicine clinics, where CAM and conventional practitioners work together in teams, present the same methodological challenges.

One of the most important issues when designing methods of evaluation is choosing outcomes that are relevant to patients, practitioners and policy makers. Capturing patients' experiences means not only assessing disease-specific signs and symptoms such as blood pressure, tumour growth, perceptions of pain and range of motion, but also information about the severity of the disease condition, overall mental, emotional and spiritual well-being and treatment experiences. In most cases, traditional qualityof-life measures do not capture the wide range of changes and experiences that patients report in qualitative interviews. Practitioners need to know how the CAM intervention affects traditional disease markers, but also the ways in which it changes how people feel and cope with their disease process. A given intervention may not decrease the size of a tumour or increase survival rates, but it may decrease feelings of depression or the amount of sleeping medication a patient needs and may enhance patients' abilities to interact and connect with family and friends. Appropriate outcome measures will capture this wide range of patient-driven outcomes so that the full potential of CAM may be realized, while at the same time recognizing the need for objective endpoints to underpin policy decisions. Finally, policy makers need to weigh the wide range of potential benefits of CAM interventions against their costs, a task that can be challenging when dealing with intangible benefits such as personal transformation (Mulkins and Verhoef 2004) compared to, say, reduced need for pain medication.

# Knowledge transfer

The transfer of CAM research knowledge to key stakeholders, including CAM and conventional practitioners, consumers and decision-makers, is of paramount importance for evidence-based practice, informed decision-making and rational policy development. In order to encourage evidence-based CAM practice, education and training of CAM practitioners is of paramount importance. CAM practitioners must understand how to appraise CAM research and how to apply that knowledge effectively in their practice. Further, because CAM practitioners may be the most appropriate individuals to conduct culturally appropriate CAM research, research is required to understand how best to teach busy practitioners the necessary research skills.

At the same time, conventional practitioners need to be educated about CAM: many patients ask them about CAM alternatives, and these practitioners may recognize potential CAM-conventional medicine interactions. Research is needed to evaluate different models of integrating CAM education into already-packed conventional medical training programs.

Last, the provision of research-based information to the public, practitioners and policy makers must be a priority. Research is needed to understand the types and formats of information that each group prefers and to develop and evaluate information provision strategies.

However, knowledge transfer is more than simply the dissemination of research findings. It should also include dialogue with the users of knowledge (i.e., patients, practitioners and policy makers) to ensure that the questions researchers ask are relevant to real-world problems and that programs of research are designed to provide the information needed for decision-making. For example, information from research projects designed to assess the rate and types of adverse events associated with acupuncture in an unregulated jurisdiction, compared to those in a jurisdiction where acupuncture practice is regulated, would be very useful to policy makers trying to decide whether to regulate acupuncture. IN-CAM provides a forum for policy makers, decision-makers and practitioners to share research questions and results. It is the opportunity for dialogue, and for connecting people asking questions to people who may have answers (or at least the skills to find answers), that makes a research network so important.

# Discussion

Clearly, there is a wealth of CAM research questions waiting to be answered. Several groups of IN-CAM researchers have begun some of this much-needed work. For example, to address the methodology priority research area, one group of IN-CAM researchers is leading a team to develop an outcome measures database (funded by the Lotte and John Hecht Memorial Foundation) that may be used to identify and

assess CAM benefits reported by patients and practitioners. This database will capture conventional physical outcome measures such as pain, nausea, sweats and fatigue, but also others that appear to be more CAM intervention—specific, such as global sense of well-being (e.g., Arizona Integrated Outcomes Scale) (Bell et al. 2004), emotional well-being, personal transformation (Mulkins and Verhoef 2004) and social outcomes (i.e., feeling of connectedness). It is hoped that researchers around the world will be able to use this outcomes database to compare outcomes of CAM interventions and design more relevant ones. Then, debate on the best use of public funds for CAM can proceed in an informed manner.

Another group of Canadian researchers is involved in an ongoing CAM knowledge transfer project called the "CAM in Undergraduate Medical Education (UME) Project" (University of Calgary 2006). The broad objective of this project is to develop and maintain a curriculum addressing CAM that is appropriate for introduction into Canadian UME programs. The curriculum will address CAM-related issues of greatest relevance to physicians practising in Canada, and will be sufficiently flexible to accommodate the differing needs and circumstances of individual Canadian medical schools.

Other initiatives focusing on the transfer of (free) CAM knowledge include CAMline (2005), the Canadian Health Network (Public Health Agency of Canada 2006) and PasseportSanté.net (2006), which offer evidence-based information about CAM products and therapies to healthcare practitioners and the public in English and French, respectively. By summarizing and categorizing the evidence, these services can be used by patients and practitioners alike in decision-making about CAM.

These are just some examples of CAM research undertaken in Canada to address the most pressing and relevant research questions for policy makers. It is hoped that through targeted initiatives such as IN-CAM, more interdisciplinary research teams may be formed to address other questions outlined in the proposed research agenda.

The research agenda presented here focuses on the need to inform healthcare system development and policy issues. To fulfil this research agenda, it will be important for CAM researchers and practitioners to work together with conventional health researchers and practitioners.

# Conclusion

CAM is no longer particularly "alternative," given that at least half of all Canadians are using it. How can CAM products and therapies, including their unique philosophical underpinnings, be harnessed to increase the health of individuals and communities? How can CAM be integrated with healthcare initiatives such as the reorganization of primary care that is ongoing in many provinces? These are questions that require our attention as researchers, clinicians, policy makers and Canadians. The Canadian CAM research community, through targeted initiatives such as IN-CAM, has developed a

socially, culturally and economically sensitive CAM research agenda that will address these and many other questions, in order to enable an accountable, integrated and sustainable healthcare system.

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#### NOTES

- 1. IN-CAM's Advisory Board is composed of researchers and healthcare practitioners (both CAM and conventional).
- 2. The practice of acupuncture is regulated only in British Columbia, Alberta and Quebec.
- 3. Herbal medicine and homeopathy are not currently regulated in any Canadian jurisdictions.
- 4. Integrative healthcare has many definitions; we define it as the combination of the "best" of both conventional and CAM care guided by a patient-centred approach.
- 5. See http://www.hc-sc.gc.ca/hcs-sss/prim/phctf-fassp/index\_e.html.
- 6. "Whole systems of care" have been defined as "approaches to health care in which practitioners apply bodies of knowledge and associated practices in order to maximize the patients' capacity to achieve mental and physical balance and restore their own health, using individualized, non-reductionist approaches to diagnosis and treatment. In whole systems the practitioner—patient relationship plays an important role and continues to evolve over time. Examples of whole systems of healthcare include: Traditional Oriental (or East Asian) Medicine, Naturopathic Medicine, Homeopathy, Integrative Medicine, Ayurveda, various Indigenous Health systems and many others. Biomedicine may also be considered as a whole system of care" (Ritenbaugh et al. 2003: 33).

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# 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

## Discussion et débat

La section « Discussion et débat » 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 2000 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 Rebecca Hart, Managing Editor at rhart@longwoods.com.

# When Leaders Talk to Leaders

# Quand les leaders s'adressent aux leaders

by ANTON HART
Publisher, Healthcare Policy

# **Abstract**

Presentations by three Canadian executives who influence healthcare policy and practice were reviewed to identify the kinds of sources these leaders use to draw their conclusions. All three speakers examined policies, practices and outcomes. Presentations were selected to cover activities in three provinces in three different calendar years, to avoid duplication or undue influence of a particular event or release of information. All three speakers drew heavily on data from government sources, especially the Canadian Institute for Health Information (CIHI).

# Résumé

Les présentations de trois dirigeants canadiens qui ont de l'influence sur les politiques et pratiques en matière de soins de santé sont passées en revue pour définir le genre de sources sur lesquelles ces leaders se fondent pour tirer leurs conclusions. Ils se penchent tous les trois sur les politiques, les pratiques et les résultats. Les présentations sélectionnées couvrent des activités ayant eu lieu dans trois provinces différentes et au cours de trois années civiles différentes de sorte à éviter qu'un événement ou communiqué d'information particulier soit en double ou dominant. Les données

utilisées par ces trois conférenciers sont tirées largement de diverses sources gouvernementales, dont l'Institut canadien d'information sur la santé (ICIS).

THEN LEADERS IN HEALTHCARE PRACTICE, RESEARCH, EDUCATION AND administration come to listen and learn about policy and best practices, what resources do their mentors of the moment use? This summary identifies source materials used by three leaders in their respective health services domains in presentations made to an assembly of peers. All three – Dr. Penny Ballem, BC Deputy Minister of Health; Dr. Michael Guerriere, healthcare strategist and Chair of Ryerson University in Toronto; and Ms. Sheila Weatherill, CEO of Capital Health, Edmonton – speak persuasively and often. All influence people, policy and practice.

This review is intended as only one measure of the issues that these decision-makers believe are important, and of the data that influence their views. Since the presenters have attached value to this information, it is fair to assume that they believe it can contribute to solutions. It does not necessarily reflect the priorities of the researchers who compiled the data but, in fact, presents an opportunity for researchers to see how and when their work is or could be considered.

The purpose of this summary is to identify the bases for these leaders' views and decisions. On reflecting on Dr. Robert Evan's column in this journal, this also offers an opportunity to assess possible influences by strong economic interests that might block or distort the messages from research, or encourage the substitution of self-serving myths in place of data. That should prove to be an interesting conversation for a future issue.

# Dr. Penny Ballem, Deputy Minister of Health, British Columbia

Dr. Ballem is the longest-serving deputy minister of health in Canada in office today; she is also on the board of the Canadian Institute for Health Information (CIHI). Previously, she was a Vice-President of the Children's and Women's Health Centre and a Clinical Professor at the University of British Columbia's Faculty of Medicine.

A woman who wears her disposition on her sleeve. Dr. Ballem was invited (by the publishers of this journal) to speak to a crowd of 200 CEOs, directors and frontline managers on any topic she wished. Her day started typically at about six in the morning with media calls about the latest pressing issue — one that (she shared with us) would surely throw her schedule into complete disarray. The day before she addressed a healthcare research group, had a new budget to contend with and was preparing her premier for a fact-finding trip to Europe. Yet she spoke for 40 minutes with clarity,

#### When Leaders Talk to Leaders

passion and humour about health status in British Columbia. She shared comparisons, challenges, budgets and priorities for change including access, waiting times, quality of care, sustainability and affordability. That's a schedule and a persona to consider when planning knowledge transfer.

- Presentation title: Advancing Healthcare in British Columbia<sup>2</sup>
- Date presented: February 22, 2006 in Vancouver
- Listed sources: BC government sources<sup>3</sup> (15 references in total, including Medical Services Plan [2 references]; Ministry of Community, Aboriginal and Women's Services; Ministry of Health [7 references]; Ministry of Management Services; BC Stats Population Data [2 references]; Vital Statistics Agency [2 references]); CIHI (4 references); Canadian Medical Association Journal (2 references); Cancer Advocacy Coalition of Canada Report Card; Centre for Health Services and Policy; Conference Board of Canada; Health Council of Canada; OECD Health Project (2 references); Statistics Canada Canadian Community Health Survey; Vancouver General Hospital ICU Report

# Dr. Michael Guerriere, Managing Partner, The Courtyard Group

Dr. Guerriere holds a business degree as well as a degree in medicine. He has served at both St. Michael's Hospital and the University Health Network, most recently as Executive Vice-President, and has sat on the boards of CIHI and Infoway. With considerable expertise in health informatics and healthcare efficiencies, Dr. Guerriere holds strong and well-thought-out opinions: he insists that published research, ideas and policies have value to the reader and reflect real data that is actionable. He is prepared to take risks if they are carefully calculated and measured. Healthcare experts, CEOs and ministers across the country listen to him. He is not without a story or two at the beginning of his presentations but they will apply to the topic and settle the audience in for the next 40 minutes. He has your attention. This too was a presentation made to senior administrators, policy makers and researchers at a Longwoods breakfast event.

- Presentation title: Annual Review in IM/IT in Healthcare: The Unvarnished
- Date presented: February 21, 2005 in Toronto
- Listed sources: Annals of Internal Medicine (2 references); Canada Health Infoway; CIHI (5 references); Canadian Medical Association Journal; Capital Health, Edmonton; Danish Health Data Network; The Gartner Group; The Globe and Mail; Eli Lily, Inc., Hospital Pharmacy in Canada Survey; Massachusetts Technology Collaborative; Medcom; New England Journal of Medicine; Statistics

Canada (3 references); OECD (3 references); Rand Corporation; US Institute of Medicine; US National Highway Transportation Safety Administration

# Sheila Weatherill, CEO, Capital Health, Edmonton

Capital Health is one of the largest integrated health regions in Canada (serving a population of 1.6 million, with some 20,000 employees) and, according to CIHI and *Maclean's* magazine, it is the country's best. A leader among leaders, Ms. Weatherill heads an organization that is developing a strong national mandate. Adept at consensus building, she typifies balance. She has led the Association of Canadian Academic Healthcare Organizations, sits on numerous other boards, including the Conference Board of Canada and the Institute for Health Economics, and is currently Vice-Chair of CIHI. Ms. Weatherill has also lent her voice to local boards, including the YMCA. When she made the presentation reviewed here to a full house of leaders in healthcare practice, research, education and administration, Ms. Weatherill was well briefed, sharp in her comments and thoughtful in her responses. Yet she too had come from a very full schedule in Edmonton and arrived in Toronto on the "red-eye" demonstrating that promises are made and commitments are kept both at home and on the road.

- Presentation title: Improving Productivity: An Alberta Perspective on Health Reform<sup>5</sup>
- · Date presented: October 19, 2004 in Toronto
- Listed sources: Canadian Cardiovascular Outcomes Research Team; CIHI (6 references); Canadian Journal of Neurological Sciences; Capital Health (extensive references, including data from netCare, Capital's electronic health record); Conference Board of Canada; Environics; Maclean's; Ottawa Health Research Institute; Southam Medical Database; Statistics Canada

# Summary

All three presentations made heavy use of data from provincial and other government sources, especially the Canadian Institute for Health Information. Given the influence that these three senior executives wield among leaders in healthcare practice, research, education and administration, researchers who have something to share with them would do well to take note of their personalities, their style, their focus on issues and their resources. In future issues we can explore their use of these resources and the basis for their policy and practice decisions.

## When Leaders Talk to Leaders

## NOTES

- 1. See Dr. Bob Evans's commentary, "Kafka, New Orleans, the OARs and the KT Boundary," Healthcare Policy 1(2): 14-20.
- 2. See <a href="http://longwoods.com/website/jobsite/BC06BallemBC.pdf">http://longwoods.com/website/jobsite/BC06BallemBC.pdf</a>>.
- 3. Dr. Ballem also presented the following list of reports and publications that she is expected to read:

Annual Report on Health Authority Performance Agreement

Auditor General of BC Reports

Budget Transparency and Accountability Act

Canadian Institute for Health Information Reports

Conference Board of Canada Reports

First Ministers Agreements Reports

Government of BC Progress Board Report

Health Authority Performance Agreements

Ministry Annual Report on Service Plans

Ministry Service Plans

National Health Council Reports

National Performance Indicator Reports

Provincial Health Officer Reports

Statistics Canada Annual Access Survey

Vital Statistics

- 4. See <a href="http://longwoods.com/pages.php?pageid=70">http://longwoods.com/pages.php?pageid=70</a>.
- 5. See <a href="http://www.longwoods.com/website/events/breakfast/BC04Weatherill/index.html">http://www.longwoods.com/website/events/breakfast/BC04Weatherill/index.html</a>.



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## Obesity and Joint Replacement Surgery in Canada: Findings from the Canadian Joint Replacement Registry (CJRR)

L'obésité et la chirurgie de remplacement articulaire au Canada : constatations du Registre canadien des remplacements articulaires (RCRA)



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## Obesity and Joint Replacement Surgery in Canada: Findings from the Canadian Joint Replacement Registry (CJRR)

## **Abstract**

Obesity has been strongly implicated as a risk factor for knee osteoarthritis and, in some studies, for osteoarthritis of the hip. Osteoarthritis is the most commonly reported diagnosis for joint replacement patients. In this study, we conducted analyses based on data from the Canadian Joint Replacement Registry (CJRR) to estimate the relationships between overweight and obesity and rates of joint replacement surgery in Canada. Obese persons were over three times as likely and overweight persons were one and a half times more likely to undergo joint replacement surgery, compared to those in the acceptable weight category in 2003–04. This study provides evidence of a clinically relevant association between obesity and joint replacement surgery.

## Résumé

L'obésité est souvent citée comme un facteur de risque pour l'ostéoarthrite du genou et, selon certaines études, pour celle de la hanche. L'ostéoarthrite est le diagnostic le plus fréquemment posé chez les patients auxquels on recommande un remplacement articulaire. Dans cette étude, nous analysons des données tirées du Registre canadien des remplacements articulaires (RCRA) pour évaluer les relations entre l'excédent de poids et l'obésité et les taux de chirurgie de remplacement articulaire au Canada. En 2003–04, les personnes obèses étaient trois fois plus susceptibles de subir un remplacement articulaire et celles ayant un excédent de poids étaient une fois et demie plus susceptibles d'en subir une, comparativement aux personnes ayant un poids acceptable. Cette étude fournit des preuves à l'effet qu'il existe une association clinique pertinente entre l'obésité et la chirurgie de remplacement articulaire.

BESITY HAS BEEN CONSISTENTLY IDENTIFIED AS A RISK FACTOR FOR osteoarthritis, particularly of the knee (Felson et al. 1988). The link between obesity and hip osteoarthritis is not as well delineated but has been found in some studies (e.g., Cooper et al. 1998; Marks and Allegrante 2002), including a large prospective cohort study (Karlson et al. 2003). Osteoarthritis is the most commonly reported diagnosis for joint replacement patients (CIHI 2005a).

A large-scale, national survey, which included measurements of the height and weight of Canadians in 2004, classified 23% of the adult population as obese according to international standards, compared to 14% a quarter century ago (Tjepkema 2005). In parallel, joint replacement rates have increased significantly over time. Knee replacement rates increased by 50% in the period from 1994–95 to 2002–03, while hip replacement rates increased by 11% (CIHI 2005a).

In this study, we provide quantitative estimates of the relationships between overweight and obesity and the rates of joint replacement surgery using Canadian data.

## Methods

## Data source and study population

Patients were identified from the Canadian Joint Replacement Registry (CJRR), which collects demographic, surgical and implant data on hip and knee replacement procedures in Canada. CJRR is managed by the Canadian Institute for Health Information

A large-scale, national survey, which included measurements of the height and weight of Canadians in 2004, classified 23% of the adult population as obese according to international standards, compared to 14% a quarter century ago. In parallel, joint replacement rates have increased significantly ...

(CIHI). Orthopedic surgeons submit data to the CJRR on a voluntary basis for patients who provide consent to participate. Annually, CJRR includes approximately 54% of all joint replacement surgeries in acute care hospitals (CIHI 2005b).

Approximately 65% (*n* = 17,244) of patients in the CJRR 2003–04 database were included in this study. These patients had valid height and weight values

recorded at the time of surgery and a surgery date between April 1, 2003 and March 31, 2004. Body mass index (BMI) was calculated using weight in kilograms divided by height in metres squared. Patients were assigned to the following internationally accepted BMI categories: less than 18.5 (underweight); 18.5–24.9 (acceptable); 25.0–29.9 (overweight); 30.0 or higher (obese) (Tjepkema 2005; World Health Organization 1995). Data were available for all provinces and territories, with the exception of Yukon and Nunavut, where joint replacement surgery is not routinely performed. Included in the study were total and partial hip and knee replacement surgeries, both primary and revision procedures, as defined by the submitting orthopedic surgeon. Comparative BMI data based on measured height and weight were obtained for a representative sample of the Canadian adult population (by age group and sex) from the Canadian Community Health Survey (Statistics Canada 2005).

## Data analysis

In order to characterize CJRR patients, data were analyzed by sex and age group according to the joint on which the procedure was performed. Significance testing was performed at the 0.05 level using the chi-square test. Characteristics of the CJRR sample by BMI category were compared with those of the Canadian adult population based on the Canadian Community Health Survey (Statistics Canada 2005).

In order to estimate the relative risk of obesity as an independent factor for joint replacement surgery, calculations using age-sex standardization were performed. Age and sex distributions were found to be significantly different among BMI groups. Therefore, direct age-sex standardization was employed using Statistics Canada 2004 adult population BMI estimates by age and sex (Statistics Canada 2005) as the standard population. Age-sex-specific joint replacement rates for the study sample were calculated and then multiplied by their respective weights generated from the standard population. The products were summed to total the age-sex standardized rate for each BMI group. The underweight group and cases under the age of 20 were excluded owing to small numbers.

The age-sex standardized rate for the obese group was divided by the age-sex standardized rate for the acceptable weight group in order to derive a rate ratio (RR).

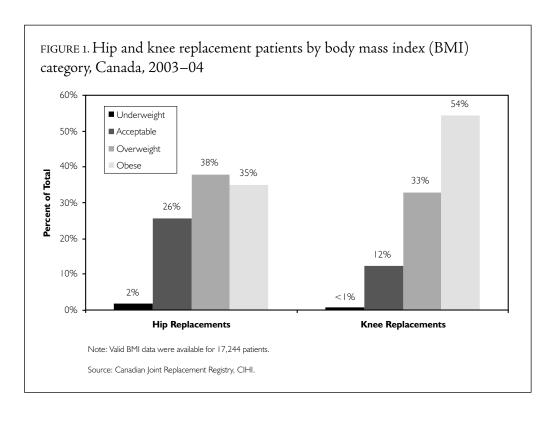


TABLE 1. Joint replacement patients and Canadian population by BMI category, age group and sex

		ACEMENT PATI (2003–04)	ENTS	CANADIAN ADULT POPULATION (2004)		
	ACCEPTABLE %	OVER- WEIGHT %	OBESE %	ACCEPTABLE %	OVER- WEIGHT %	OBESE %
Total	18.1	35.0	46.0	38.9	36.1	23.1
Female	20.2	31.4	47.2	44.1	30.2	23.2
Male	15.0	40.4	44.1	33.6	42.0	22.9
Age						
20–44	30.6	32.0	33.7	45.5	33.2	18.6
Female	34.9	26.1	34.1	52.7	26.2	17.8
Male	26.1	38.2	33.3	38.7	39.9	19.4
45–74	14.2	32.8	52.3	30.5	39.8	28.9
Female	16.5	28.7	54.0	35.5	34.1	29.2
Male	11.2	38.4	49.9	25.4	45.6	28.6
75+	25.2	40.2	33.3	33.0	41.2	23.6
Female	26.3	37.1	35.0	34.7	36.1	26.5
Male	23.2	45.9	30.3	30.5	49.0	19.3

Source: Canadian Joint Replacement Registry, CIHI; Canadian Community Health Survey, Statistics Canada.

A similar rate ratio was derived for the overweight group compared to the acceptable weight group. The 95% confidence intervals (CI) were calculated for each of the rate ratios.

## Results

Among hip replacement patients (n = 7,538), 73% were classified as overweight or obese at the time of surgery, compared to 87% of knee replacement patients (n = 9,706) (Figure 1). Females made up 59% of the patients undergoing total hip replacement and 61% of those undergoing total knee replacement. Male patients were more likely to be overweight or obese (85% combined) compared to females (79% combined). Joint replacement patients aged 45 to 74 were more likely to be obese or overweight (85% combined) compared to the other two age groups (66% for those under the age of 45 and 74% for those aged 75 and over).

When compared to the 2004 Canadian adult population (Table 1), 46% of the joint replacement patients (hip and knee) were classified as obese, compared to 23% for Canadian adults in this category. Roughly the same percentage of joint replacement

## Obesity and Joint Replacement Surgery in Canada: Findings from the Canadian Joint Replacement Registry (CJRR)

patients and the Canadian adult population were considered overweight – 35% and 36%, respectively. While only 18% of joint replacement patients were considered to have acceptable weights, the Canadian adult population rate for this category was 39%.

When we used direct age-sex standardization to determine risk ratios, we found that persons in the obese category were over three times (RR = 3.12, 95% CI, 2.99-3.25) as likely to undergo joint replacement surgery, and persons in the overweight category were one and a half times (RR = 1.53, 95% CI, 1.46-1.60) more likely, compared to those in the acceptable weight category.

## Discussion

Using Canadian data, our study demonstrates a strong cross-sectional relationship between rates of overweight and obesity and joint replacement surgery. This association has also been established in a large, frequency-matched case-control study in the United States (Wendelboe et al. 2003).

... hip replacement patients with BMI ≥ 40 experienced longer operating times and higher blood loss compared to other BMI groups, but did not differ in terms of functional recovery or hospital resource use.

To date, however, there is inconclusive evidence available from scientific investigation regarding the influence of obesity on the success of joint replacement surgery from a perioperative or postoperative perspective. For instance, Foran et al. (2004) found that obese knee replacement patients

(BMI  $\geq$  30) had lower Knee Society scores (Insall et al. 1989) postoperatively compared to non-obese patients and those with BMI  $\geq$  40 had higher revision rates after a minimum follow-up period of five years. Jibodh et al. (2004) found that hip replacement patients with BMI  $\geq$  40 experienced longer operating times and higher blood loss compared to other BMI groups, but did not differ in terms of functional recovery or hospital resource use. In contrast, Spicer et al. (2001) found no difference in the Knee Society scores of knee replacement patients in differing BMI groups. A 10-year survival analysis (using revision of any component as an endpoint) found that obese and non-obese groups were similar in outcome.

A limitation of this study is the possible bias arising from underreporting of joint replacement procedures, given the voluntary nature of the CJRR (BMI data were available for approximately 35% of all joint replacement procedures performed in Canada). The rate ratios presented in this report are based on the assumption that underreporting in the sample was similar across BMI categories. When we compared our joint

replacement sample with the Canadian adult population data, overall geographical BMI patterns were found to be similar and consistent (data not shown).

## Conclusion

Unhealthy weights present a complex and challenging problem for individual Canadians and for public health and healthcare delivery practitioners and systems. Based on the knowledge that the determinants of healthy weights encompass a wide range of social, cultural, physical and economic factors, recent Canadian reports suggest that unhealthy weights are best addressed from prevention or treatment perspectives that utilize a multifaceted approach (CIHI 2006; Raine 2004). Our study suggests a relationship between joint replacement and overweight and obesity that is of increasing policy relevance in Canada and other countries. For example, because of financial considerations, NHS trusts in Suffolk in the United Kingdom recently made the decision to deny funding for joint replacement surgery for obese patients (Coombes 2005). Other policy- and decision-makers are endeavouring to understand the relationship between obesity trends and the need for health services in order to facilitate planning and program development.

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## Call to Authors

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## Linkage and Exchange

THE CASE STUDY PRESENTED HERE is drawn from a new publication from the Canadian Institutes of Health Research, Institute of Health Services and Policy Research. Evidence in Action, Acting on Evidence – A Casebook of Health Services and Knowledge Translation Stories highlights original submissions from across Canada that focus on lessons learned from both successful, and less than successful, knowledge translation activities. Designed as a means for both researchers and decision-makers to share and recognize their experiences, the casebook also demonstrates the impact that such research can have in shaping policy, program and practice changes.

Evidence in Action, Acting on Evidence was published in early 2006. Please visit CIHR's website at www.cihr-irsc.gc.ca for more details.

LA CAS PRÉSENTÉ ICI SONT tirés d'une nouvelle revue publiée par l'Institut des services et des politiques de la santé des Instituts de recherche en santé du Canada. Evidence in Action, Acting on Evidence – A Casebook of Health Services and Knowledge Translation Stories présente des articles originaux provenant de partout au Canada et qui mettent l'accent sur les leçons apprises dans le cadre d'activités d'application des connaissances – dont certaines ont été fructueuses et d'autres, moins. Se voulant un outil pour permettre aux chercheurs et aux décideurs de partager et de reconnaître leurs expériences, le recueil démontre également l'incidence que ces travaux de recherche peuvent avoir sur l'élaboration des politiques, les changements apportés aux programmes et la pratique.

Les preuves comme moteurs d'initiatives a été publié en 2006. Visitez le site Web des IRSC à www.cihr-irsc.gc.ca pour plus de détails.

# Knowledge Translation and Patient Safety: The Canadian Adverse Events Study

Application des connaissances et la sécurité des patients : L'étude canadienne sur les événements indésirables

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## **Abstract**

The Canadian Adverse Events Study was the first national study of adverse events in Canadian hospitals. Learning from the controversy surrounding similar studies in other countries, the team engaged in extensive knowledge translation activities throughout the life of the project. Using meetings, Web-based communication and other tools, the team successfully prepared most Canadian stakeholders for the study's release, allowing them to develop anticipatory patient safety initiatives. However, upon publication of the study, the policy spotlight quickly shifted to other issues, and the long-term commitment needed to create safer healthcare is still uncertain.

## Résumé

L'Étude canadienne sur les événements indésirables constituait la première étude nationale du genre à être effectuée dans les hôpitaux canadiens. Tirant des leçons de la controverse entourant des études semblables réalisées dans d'autres pays, l'équipe s'est livrée à de nombreuses activités d'application des connaissances tout au long du projet. Au moyen de réunions, de communications par Internet et d'autres outils, l'équipe a réussi à préparer la plupart des intervenants canadiens à la publication de l'étude, leur permettant ainsi d'élaborer des initiatives de prévention en matière de sécurité des patients. Toutefois, après publication du rapport d'étude, les projecteurs politiques se sont rapidement tournés vers d'autres questions, et l'engagement à long terme nécessaire pour créer des soins de santé plus sûrs demeure encore incertain.

In the spring of 2002, a group of researchers from seven universities across Canada received funding for the Canadian Adverse Events Study (Baker et al. 2004), the first national study of adverse events in Canadian hospitals. Adverse events are unintended injuries or complications that result in disability, death or prolonged hospital stay and are caused by the care that patients receive, not an underlying disease or condition.

Studies of adverse events in other countries have uncovered unanticipated levels of injury – and have often had unexpected effects. Premature announcement of the results of the Australian study by the federal minister of health soured relationships between the medical association and the federal government for several years. In the United States, the Harvard Medical Practice Study had little policy impact when it was released in 1991. But data from this and other studies became a major news story in 1999, when they were used to create the headline-grabbing press release of a report from the Institute of Medicine (IOM) that stated between "44,000 to 98,000 Americans die in hospitals each year as a result of medical errors."

Recognizing that the Canadian study would likely have a major impact on healthcare organizations and professionals, the funders – the Canadian Institute for Health Information (CIHI) and the Canadian Institutes of Health Research (CIHR) – worked with the research team to develop a knowledge translation (KT) strategy designed to prepare Canadian stakeholders for the release of the study.

## The KT Initiative

The goal of our knowledge translation strategy was to ensure that decision-makers, representatives of the health professions, health system managers and, through them, the general public would be informed of the study and its progress on an ongoing

basis. Bringing these groups together would also stimulate each organization's efforts to develop appropriate responses to the study and anticipatory initiatives.

Our activities began with the distribution of a media release to over 1,500 media sources in French and English Canada shortly after funding for the study was awarded. In June 2002, an invitational forum was held in Ottawa for national stakeholders, with a focus on sharing knowledge from similar studies carried out in other jurisdictions, and on defining issues that the study might generate for each organization. CIHI also opened an interactive website, which was maintained during the entire project, to update stakeholders on the progress of the research.

The rate of adverse events for patients in Canadian hospitals was 7.5%, higher than that found in similar US studies but lower than the rate reported in the Australian study.

A year later, in May 2003, a second forum for the same group of stakeholders was held to provide an update. Participants were also given an opportunity to work in small groups to share information about

their patient safety policy planning and intended responses to the upcoming publication of the study. By this time, a number of organizations had already begun policy and educational initiatives designed to improve the knowledge and skills of practitioners, managers and policy makers about patient safety.

On January 12, 2004, the principal investigators of the study, Ross Baker and Peter Norton, held a webcast to update the stakeholders on progress. Discussions were already under way at this time with the editors of the Canadian Medical Association Journal (CMAJ) to secure an agreement for expedited review and publication of the study.

By mid-April 2004, the study's publication date had been set for May 25, 2004. CMAJ policy was to provide the media with embargoed copies of articles appearing in the journal one week prior to publication. So on May 20, members of the research team and representatives from CIHI and CIHR briefed the press and key stakeholders on the results. The rate of adverse events for patients in Canadian hospitals was 7.5%, higher than that found in similar US studies but lower than the rate reported in the Australian study. Just as important was the level of disability and death associated with adverse events, which indicated a considerable illness burden.

The paper appeared as scheduled on May 25 in CMAI, but news of the results were leaked three days earlier when journalists from the Edmonton Journal and the National Post broke the embargo. Because these papers had published the key results of the study, reporters from other media outlets had to scramble to write stories on different aspects of the findings. Despite this, the study generated significant media

coverage. Drs. Norton and Baker each gave approximately 20 interviews, and more than 28 newspaper stories, 47 radio items and 19 TV news items were written or broadcast about the study. However, the announcement of the federal election that weekend truncated the news coverage. An analysis by CIHI of the perceptions of major news events in that period discovered that despite the large number of media stories across the country, few Canadians knew much about the adverse events study and its results.

## Results of the KT Experience

The success of the knowledge translation efforts linked to the Canadian Adverse Events Study must be judged by the extent to which key stakeholders were aware of the study results, and by the short- and long-term impacts on patient safety policy initiatives.

In terms of the first question, the level of stakeholder knowledge about the study, the KT efforts were largely successful. Representatives from more than 35 ministries of heath, national professional organizations, regulatory and policy authorities and nongovernmental organizations attended the two stakeholder forums in 2002 and 2003. A large number also participated in the 2004 webcast. Feedback from the early events was used to improve the interaction between stakeholders and researchers in later meetings and communications.

A count by *CMAJ* showed that the paper was downloaded from its website more than 25,000 times in the first four days after its publication, a level of activity never before seen at the journal. In the year following publication, the study team authors gave more than 50 presentations at meetings of professional groups and healthcare organizations, and many more presentations to smaller groups of researchers, managers and practitioners. However, while practitioners and policy makers were clearly aware of the study and its results, the abbreviated press coverage meant that the public was largely uninformed.

Work by many organizations in the two years between the first stakeholder forum and the release of the study helped advance patient safety efforts across Canada. Policy initiatives and educational programs were developed by many professional organizations, including the Canadian Medical Association, the Canadian Nurses Association and the Canadian Healthcare Association. Following the study's release, the Canadian Council on Health Services Accreditation (CCHSA) created a Patient Safety Advisory Group (which includes both Drs. Norton and Baker, along with other researchers and decision-makers). This group has helped CCHSA develop a set of patient safety goals and required organizational practices that will be implemented in accreditation surveys beginning in 2006. Some observers have also speculated that the launch of the Canadian Patient Safety Institute, recommended by the National

Steering Committee on Patient Safety in 2002, was pushed forward in late 2003 because of the need to show a federal government commitment to patient safety prior to the release of the study.

## Lessons Learned

While the study has clearly contributed to the awareness and engagement of many organizations, professional groups and individual practitioners and managers, there is also the possibility that our knowledge translation efforts had the paradoxical effect of desensitizing some parts of our audience.

Patient Safety Advisory Group ... has helped CCHSA develop a set of patient safety goals and required organizational practices that will be implemented in accreditation surveys beginning in 2006.

Many organizations worked hard in 2002 and 2003 to develop policies, inform their members and create media strategies that demonstrated understanding of the issue. In the aftermath of the study's release, and the success of these organizations in their anticipatory efforts, the policy

spotlight may have shifted to other issues. In addition, the federal election was called in the same week as the study's publication, and the issues of waiting times and access were chosen as the key healthcare platform for the federal Liberal Party's campaign.

Did some organizations believe that they had achieved what was needed (or what was possible) for patient safety by May 2004? Did the emergence of waiting times and access as the key healthcare issues, and the funding that was promised to address them, cut short the focus on patient safety? Did the early involvement of the stakeholder groups in patient safety consultations lead to a waning of enthusiasm for further initiatives once the study results were released?

These questions are difficult to answer. However, recent discussions of the mixed success of the United States in improving patient safety, prompted by the five-year anniversary of the IOM report, suggest that patient safety issues will require continued attention.

## Conclusions and Implications

The knowledge translation efforts centred on the Canadian Adverse Events Study led to a major shift in policy for many Canadian governments and healthcare organizations. But knowledge translation alone has been insufficient to ensure the necessary

investment in new resources needed to create safer healthcare. Other efforts, including the development of the Safer Healthcare Now campaign, which targets the reduction of mortality and morbidity from infections and adverse drug events, will be needed to demonstrate and help reduce the gap between current performance and the potential for high-reliability healthcare.

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## Call to Authors

Linkage and Exchange provides a forum for knowledge translation (KT) case studies. Submissions should include an abstract of no more than 100 words, a brief statement of background and context, a description of the KT initiative, a presentation of results (including challenges that arose and how they were addressed) and a discussion of lessons learned, highlighting those that are potentially transferable to other topics and settings. Manuscripts should be a maximum of 2,000 words, excluding the abstract and references.

## Appel aux auteurs

« Liens et échanges » fournit un forum pour des études de cas en application des connaissances (AC). Les articles soumis doivent comporter un résumé d'au plus 100 mots, une brève mise en contexte, une description de l'initiative d'AC, une présentation des résultats (y compris les défis qui se sont présentés et comment ils ont été relevés), ainsi qu'une discussion des leçons apprises, surtout celles qui sont potentiellement transférables à d'autres sujets et à d'autres cadres. Les manuscrits doivent être d'au plus 2 000 mots, excluant le résumé et les références.

For more information contact Rebecca Hart, Managing Editor at rhart@longwoods.com.

## Learning from Other Sites

## Apprendre d'autres sites

by LESLIE L. ROOS

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## **Abstract**

What should Canadian healthcare researchers pay attention to on the World Wide Web? What might be done to magnify the Canadian footprint on the Internet? This commentary discusses two very successful sites — OpenCourseWare from the Massachusetts Institute of Technology and the Epidemiology Supercourse from the University of Pittsburgh. The Mythbuster series (from the Canadian Health Services Research Foundation) and the Regional Training Centres have Web presences that might benefit from applying the techniques used by OpenCourseWare and the Supercourse. For a relatively small investment, Canadian efforts to improve dissemination and teaching in the health policy/health services research area might reach a larger national and international audience.

## Résumé

Quels éléments du World Wide Web devraient retenir l'attention des chercheurs canadiens du domaine des soins de santé? Que peut-on faire pour rehausser la visibilité du Canada sur Internet? Ce commentaire traite de deux sites très populaires –

OpenCourse Ware du Massachusetts Institute of Technology et le Epidemiology Supercourse de l'Université de Pittsburgh. La série À bas les mythes (de la Fondation canadienne de la recherche sur les services de santé) et les Centres régionaux de formation ont une présence sur Internet qui pourrait bénéficier de l'application des techniques utilisées par OpenCourse Ware et le Supercourse. Moyennant un investissement relativement modeste, les initiatives canadiennes visant à améliorer la diffusion et l'enseignement dans le domaine de la recherche sur les politiques et les services de santé pourraient atteindre un auditoire national et international plus vaste.

What should it be? Some excellent material is available. At the same time, important approaches have been developed outside Canada. These efforts should challenge us to better highlight some aspects of Canadian teaching and research. I will state my bias up front: individuals and departments should provide as much of their teaching materials as possible without cost to the user. This will enhance their impact locally, nationally and internationally.

Two sites serve as a great source of ideas for Canadian work: the Massachusetts Institute of Technology's OpenCourseWare and the Epidemiology Supercourse (based at the University of Pittsburgh, with heavy international participation). MIT's innovative move in providing a large amount of material from each of its undergraduate and graduate courses has earned plaudits from many sources (including the Havana Agricultural University!). Intellectual property issues (professors' "ownership" of their course materials) appear to have been resolved. A standard format has been imposed so that reading lists, course outlines, lecture PowerPoint presentations and so forth are freely available for each course. Special materials (such as videos of demonstrations) are included where appropriate. Although MIT's large-scale efforts were aided by substantial foundation funding, Canadian departments in any field could follow its example. How much do most of us gain by safeguarding our course material through password-protected university accounts? Having a wider intellectual impact through dissemination of this material is a real advantage.

The Epidemiology Supercourse serves as a very successful, low-budget model for dissemination. According to its website, the Supercourse "is designed to provide an overview on epidemiology and the Internet for medical and health related students around the world." Following the work of Ron LaPorte and many others, professors have volunteered their best lectures to this effort to facilitate the teaching of epidemiology, public health, health services research and population health. Approximately 2,500 lectures in PowerPoint format (as well as other teaching materials using different formats) have been disseminated on 45 servers around the world. My experi-

## Learning from Other Sites

ence with developing several lectures for the Supercourse has convinced me that they help draw interested students to the website of the Manitoba Centre for Health Policy. Schools of public health based on the material presented in the Epidemiology Supercourse have now been proposed.

Canada has made some interesting efforts - but they could and should be having a larger impact. The Canadian Health Services Research Foundation (CHSRF) has developed its valuable series, Mythbusters & EvidenceBoosts, to summarize evidence about important Canadian policy issues. This material is available on the CHSRF website and has been distributed using more traditional methods (mailouts, academic journals). It would be easy to reorganize the material in Mythbusters & EvidenceBoosts as lectures in the Epidemiology Supercourse. Perhaps the lectures could be combined to provide a course on policy issues in Canadian healthcare. Although many Canadian academics are familiar with this material, I imagine few professors outside Canada are.

The issue of effective dissemination is highlighted by perusal of websites associated with Canada's Regional Training Centres (funded by the CHSRF, the Canadian Institutes for Health Research and other organizations). How many of us teaching in this field know anything about centres other than the ones with which we are affiliated? Have we been able to draw on others' material for our own teaching and training? Several centres note an interest in distance education, but no materials are posted. What might give them a larger national or international footprint? No doubt some great lectures should be dual-listed on Regional sites and with the Supercourse. Are there some existing Supercourse lectures (by Canadians or others) that should be noted back at the Regional sites? Canadian material would fill niches in the Supercourse dealing with health policy, health services research and population health that are currently underserved. Another approach might be a centralized posting of relevant course outlines being used at one or more universities; MIT's OpenCourseWare provides a template that can easily be followed. Even more modestly, an inventory of Canadian teaching material, available free of charge on the Internet, could be compiled and posted at the CHSRF site (preferably with links to the material itself).

Adoption of any (or all!) of these suggestions would highlight Canadian efforts and prove helpful for teachers and students.

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## The Public Endorses Collection of Ethnicity Information in Hospital: Implications for Routine Data Capture in Canadian Health Systems

Le public approuve la collecte de renseignements sur l'origine ethnique dans les hôpitaux : répercussions sur la saisie systématique de données dans les systèmes de soins de santé canadiens



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## **Abstract**

A telephone survey was conducted in Calgary, Alberta to assess public opinion on collection of ethnicity information in hospitals. Of the 2,799 respondents, 84.8% felt comfortable about recording their ethnicity in hospital charts. This rate held across respondents' age, marital status and ethnic origin. These findings suggest that Canadian health systems should explore the feasibility and ethical suitability of collecting ethnicity data, as this information could contribute to the evaluation and subsequent reduction of ethnic disparities in health and health services access.

## Résumé

Un sondage par téléphone a été mené à Calgary, en Alberta, afin d'évaluer l'opinion publique relativement à la collecte de renseignements sur l'origine ethnique dans les hôpitaux. Des 2 799 répondants, 84,8 p. cent ont dit ne pas avoir d'objection à ce que leur origine ethnique soit inscrite dans leur dossier de patient. Ce pourcentage s'est maintenu chez tous les répondants, quel que soit leur âge, leur état civil et leur origine ethnique. Ces résultats suggèrent que les responsables des systèmes de santé canadiens devraient explorer la faisabilité et le bien-fondé éthique de la collecte de renseignements sur l'origine ethnique, puisque de tels renseignements pourraient aider à évaluer et, subséquemment, à réduire les disparités ethniques dans l'accès aux soins et aux services de santé.

BOUT FOUR MILLION CANADIANS CONSIDER THEMSELVES VISIBLE MINORIties, and ethnic minority populations continue to grow in numbers due to
immigration (Statistics Canada 2004a). Because of this continuing growth,
understanding and reducing health disparities and promoting equality for ethnic
minority populations have become top priorities in Canadian research and public
policy (Canadian Institute of Health Research 2004). However, ethnic variation in
population health, health services utilization and outcomes is little studied in Canada,
largely because hospital charts and most routinely compiled health databases do not
record information on ethnicity. We conducted a random survey of residents in a large
Canadian city to assess how the general public feels about the routine collection and
compilation of individual-level data on ethnicity in hospital records.

## Methods

Data for this study were collected through a cross-sectional telephone survey using a structured questionnaire in the city of Calgary, Alberta between September and

December 2003. We randomly selected only primary phone numbers from the 2003 Calgary telephone directory for the survey. Information on the type of telephone number - whether it is a primary or secondary residential number - is flagged in the directory. We interviewed one respondent, aged 18 or over, at each telephone number in either English, two major Chinese dialects (Mandarin and Cantonese) or four South Asian dialects (Hindi, Urdu, Punjabi and Gujarati). These languages were chosen because Chinese and South Asian Canadians are the two largest visible minority populations in Calgary (Statistics Canada 2004a).

Our survey questionnaire was developed in English. Forward and backward translations were performed to ensure that the meanings in the translated versions were consistent. A different translator performed each translation. The survey collected data on age, sex, marital status, birthplace, ethnicity and respondents' opinions regarding the routine collection (in hospital records) of information on ethnicity. Self-perception of ancestry of origin was determined by the following question: "People living in Canada come from many different cultural and racial backgrounds. Would you describe your ethnic origins as ..." Following the question, various ethnicities were listed for selection. We also asked respondents to describe their ethnicity in their own words. The respondent's opinion on providing ethnicity information to hospitals was collected by asking: "If you were admitted to a hospital, would you feel comfortable having your ethnic or cultural background recorded in hospital charts?" Respondents were given a choice of "Yes," "No" or "Don't Know." Simple descriptive and chi-square statistics were used to describe our findings.

## Results

Of 6,585 telephone numbers dialled, 5,124 people were contacted and 3,021 were surveyed, among whom 2,799 had complete data amenable to analysis (55% of the 5,124 individuals contacted). Among these 2,799 respondents with complete data, 84.8% (95% confidence interval: 83.4% to 86.1%) felt comfortable recording their ethnicity in hospital records. This proportion did not vary by age, marital status or race/ethnicity (Table 1). Persons born in Canada (86.2%) were more supportive than immigrants (80.3%).

## Discussion

Our study demonstrates that a majority of Calgarians support the collection of ethnicity information in hospital records. This finding suggests that the collection of data on ethnicity in health system databases should be further explored, given the clear importance of this personal variable as a determinant of health and healthcare delivery. Our study did find that about 15% of respondents reject the concept of recording ethnicity in medical records. Indeed, it must be acknowledged that some consider ethnicity a sensitive and private matter, and when that is the perception among some

CHARACTERISTICS	n (%)	p-VALUE*
Total	2,373 (84.8%)**	
Age		
18 to 34	841 (86.2%)	0.283
35 to 64	1,276 (83.8%)	
65 or over	256 (85.1%)	
Sex		
Male	876 (83.0%)	0.036
Female	1,497 (85.9%)	
Marital Status		
Married	1,262 (84.5%)	0.909
Common-law	165 (84.6%)	
Separated	79 (82.3%)	
Divorced	189 (87.1%)	
Widowed	123 (84.3%)	
Never married	555 (85.1%)	
Birthplace		
Canada	1,818 (86.2%)	< 0.00 l
Other countries	555 (80.3%)	
Ethnicity		
White	2,048 (85.3%)	0.207
Asian	262 (80.9%)	
Chinese	126 (81.3%)	
South-Asian	80 (74.8%)	
Arab/West Asian	29 (93.6%)	
Other Asians	28 (87.5%)	
Aboriginal	23 (88.5%)	
Others	40 (85.1%)	

individuals, a case could be made against the widespread collection of such information. In Canada, however, the collection of private or sensitive information is not new. Statistics Canada started to collect ethnicity information as early as its first national census in 1871 (Statistics Canada 2005). Two recent national health surveys - the National Population Health Survey (Statistics Canada 2004b) and the Canadian Community Health Survey (Statistics Canada 2003) – also collect ethnicity data. Furthermore, hospital charts and their accompanying administrative databases routinely record patient names and, in some instances, religion, which some would argue is at least as sensitive and personal as ethnicity.

To overcome the lack of ethnicity information in many databases, researchers have recently proposed the use of patient surnames as a proxy for defining ethnicity (Quan et al. 2004; Lauderdale and Kestenbaum 2000). Paradoxically, however, this amounts to using names, arguably the *most* sensitive personal variable in health databases, as a proxy for the perhaps less sensitive variable of ethnicity. Indeed, we anticipate that many individuals would object to having their names used to define ethnicity because a truly personal variable is being used, and also because of the potential for misclassifying ethnicity (e.g., as could occur with the existing name-ethnicity algorithms when a person's last name is "Lee").

A case can indeed be made for the merit of collecting individual-level information on ethnicity in health records and accompanying health system databases. Such information would facilitate research into the health of ethnic minority populations and their access to health services. Health systems in the United States have routinely collected information on race in health records and administrative data, and this information has permitted the compilation of a considerable body of knowledge on racial disparities in health and health system access (Long et al. 2004). Such a body of knowledge provides a foundation for interventions to reduce disparities. Canada, meanwhile, has maintained a commitment to focusing on ethnicity rather than race, as ethnicity more comprehensively represents the cultural factors (beyond skin colour) that are passed through families from generation to generation and that may influence health and health services access and quality.

The validity of ethnicity information has been questioned because of ambiguity surrounding the definition and meaning of ethnicity to patients. The concept of ethnicity is complex. Definitions are multidimensional and may include language, culture, physical appearance, religion, nationality, self-perception and ancestors' place(s) of origin. In our survey, when we asked respondents to describe their ethnicity in their own words, a majority reported a single ethnic origin. However, some described their ethnicity from various perspectives, for example, "Canadian," "Catholic," "Islamic," "Christian," "Diverse," "Caucasian Black," "mixed Norwegian, English and Native American," "Spanish, Chinese and American" and "mixed nationalities."

In the literature, ethnicity is often defined by self-perceived ethnic identity,

ancestral origin or both. The terms "race" and "ethnicity" are frequently used interchangeably in the classification of race/ethnicity although they are not synonymous. Race mainly refers to differences of biology, and ethnicity to differences of culture and geographic origin (Caldwell and Popenoe 1995). In hospital administrative data, the United States has employed a single category of race/ethnicity that includes six groups: American Indian, Asian, Black, Hispanic, White and Unknown or Missing (Moy et al. 2005). The United Kingdom has used the categories White, Black, Caribbean, Black African, Black Other, Indian, Pakistani, Bangladeshi, Chinese and Other (National Statistics 2001). New Zealand has used New Zealand European, Maori, Samoan, Cook Island Maori, Tongan, Niuean, Chinese, Indian and Other (such as Dutch, Japanese, Tokelauan) (Statistics New Zealand 2002).

Statistics Canada defines ethnicity in the Census as

the ethnic or cultural group(s) to which the respondent's ancestor belongs. An ancestor is someone from whom a person is descended, and is usually more distant than a grandparent. Ethnic origin pertains to the ancestral "roots" or background of the population and should not be confused with citizenship or nationality. (Statistics Canada 1998)

Even though the definition in the Census has not changed through the years, the classification of ethnicity has been updated several times. In the 1991 Census, 15 of the most frequent origins were listed under the question: "To which ethnic or cultural group(s) did this person's ancestors belong?" and respondents were asked to mark as many as were applicable (see Table 2). In addition, two blank spaces were provided for respondents to write other responses that might have been applicable. In the 1996 Census, four blank spaces were provided for respondents to write in their origins, and 24 categories of such origins were provided as illustrations. In addition, "Canadian" was included for the first time as one of the categories because it was the fifth most frequently reported origin in 1991. The 2001 Census provided four blank spaces for respondents to write in their origins and provided 25 categories, the first 21 of which were based on the frequency of single ethnic origin counts from the 1996 Census. The National Population Health Survey (Statistics Canada 2004b) and Canadian Community Health Survey (Statistics Canada 2003) collected ethnicity information on cultural/racial background using 13 categories and ethnic/cultural ancestry using 19 categories.

Validity of ethnicity information is also related to the process of collection. The information should be recorded based on self-report. However, hospital clerks or clinicians may hesitate to ask for information on ethnicity because they may feel that such questions are discriminatory and offensive to patients (Caldwell and Popenoe 1995; Moscou et al. 2003). This scenario could result in some staff's guessing a patient's

The Public Endorses Collection of Ethnicity Information in Hospital: Implications for Routine Data Capture in Canadian Health Systems

ethnicity from name or appearance, or copying the ethnicity from previous records without confirming or updating it. Nevertheless, several studies have shown that the agreement between self-report and administrative data is high for Asian, Black or African American and White race/ethnicity, and relatively low for American Indian and Hispanic race/ethnicity (Moscou et al. 2003; Gomez et al. 2005; Kressin et al. 2003; Boehmer et al. 2002; Swallen et al. 1997).

This study has limitations. Because the survey was conducted in one Canadian city (Calgary), generalizability of the study findings to other regions is unknown. However, we believe the rate of agreeing to record ethnicity in hospital charts is likely to be high in Canada, as nearly all respondents in the CCHS survey answer ethnicity questions. Our non-response rate was 45%, which may bias our findings. In the introduction to the telephone survey in the community, we stated that the survey was being conducted for research purposes. However, recording information on ethnicity in hospitals or clinics would have many purposes beyond research, such

TABLE 2. Survey question and classification of ethnicity in the Canadian Census, the National Population Health Survey (NPHS) and the Canadian Community Health Survey (CCHS)

	CENSUS 1991	CENSUS 1996	CENSUS 2001	NPHS/CCHS		
Question	"To which ethnic or cultural group(s) did this person's ancestors belong?"			"To which eth- nic or cultural group(s) did your ancestors belong? (For example: French, Scottish, Chinese).	"People living in Canada come from many dif- ferent cultural and racial back- grounds. Are/is you/he/she?"	
Format	Respondents were required to choose one or more from the 15 categories provided and/or to write answers in two write-in spaces.	Respondents were required to write in their ethnic origins in four write-in spaces and not required to choose from the 24 ethnic categories in 1996 census and 25 categories in 2001 census. These categories were provided as examples for consideration only.		Respondents were required to provide an answer from the race/ethnic categories.		

continued

## continued

TABLE 2. Survey question and classification of ethnicity in the Canadian Census, the National Population Health Survey (NPHS) and the Canadian Community Health Survey (CCHS)

	CENSUS 1991	CENSUS 1996	CENSUS 2001	NPHS/	CCHS
Ethnic categories provided	<ul> <li>French</li> <li>English</li> <li>German</li> <li>Scottish</li> <li>Italian</li> <li>Irish</li> <li>Ukrainian</li> <li>Chinese</li> <li>Dutch (Netherlands)</li> <li>Jewish</li> <li>Polish</li> <li>Black</li> <li>North American Indian</li> <li>Métis</li> <li>Inuit/Eskimo</li> </ul>	<ul> <li>French</li> <li>English</li> <li>German</li> <li>Scottish</li> <li>Canadian</li> <li>Italian</li> <li>Irish</li> <li>Chinese</li> <li>Cree</li> <li>Micmac</li> <li>Métis</li> <li>Inuit (Eskimo)</li> <li>Ukrainian</li> <li>Dutch</li> <li>East Indian</li> <li>Polish</li> <li>Portuguese</li> <li>Jewish</li> <li>Haitian</li> <li>Jamaican</li> <li>Vietnamese</li> <li>Lebanese</li> <li>Chilean</li> <li>Somali</li> </ul>	<ul> <li>Canadian</li> <li>French</li> <li>English</li> <li>Chinese</li> <li>Italian</li> <li>German</li> <li>Scottish</li> <li>Irish</li> <li>Cree</li> <li>Micmac</li> <li>Métis</li> <li>Inuit (Eskimo)</li> <li>East Indian</li> <li>Ukrainian</li> <li>Dutch</li> <li>Polish</li> <li>Portuguese</li> <li>Filipino</li> <li>Jewish</li> <li>Greek</li> <li>Jamaican</li> <li>Vietnamese</li> <li>Lebanese</li> <li>Chilean</li> <li>Somali</li> </ul>	<ul> <li>Canadian</li> <li>French</li> <li>English</li> <li>German</li> <li>Scottish</li> <li>Irish</li> <li>Italian</li> <li>Ukrainian</li> <li>Dutch (Netherlands)</li> <li>Chinese</li> <li>Jewish</li> <li>Polish</li> <li>Portuguese</li> <li>South Asian (e.g. East Indian, Pakistani, Punjabi, Sri Lankan),</li> <li>Black</li> <li>North American Indian</li> <li>Métis</li> <li>Inuit/Eskimo</li> <li>Other  — Specify</li> </ul>	<ul> <li>White</li> <li>Chinese</li> <li>South Asian (e.g. East Indian, Pakistani, Sri Lankan, etc.)</li> <li>Black</li> <li>Filipino</li> <li>Latin American</li> <li>Southeast Asian (e.g., Cambodian, Indonesian, Laotian, Vietnamese, etc.)</li> <li>Arab</li> <li>West Asian (e.g., Afghan Iranian, etc.)</li> <li>Japanese</li> <li>Korean</li> <li>Aboriginal Peoples of North America (North American Indian, Métis Inuit/Eskimo)</li> <li>Other — Specify</li> </ul>

as administration, healthcare quality improvement and provision of culturally sensitive services. It is possible that respondents would have viewed the collection of information on ethnicity even more favourably had they been explicitly informed of such potential uses of ethnicity data. Future research, perhaps using qualitative methods, would be required to clarify respondents' perspectives on these nuances.

We hope that this simple study will encourage hospitals, health regions, the Canadian Institute for Health Information and the general public to engage in dialogue regarding the feasibility and ethics of beginning to collect ethnicity data at an individual level. The collection of such information has considerable potential to enhance our understanding of disparities in health and health system access and quality, so that interventions can be designed and implemented to contribute to the health of ethnic minority populations. A consistent format of gathering race/ethnicity information should be considered to achieve comparability among Canadian databases.

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## Where Are Nurses Working? Employment Patterns by Sub-sector in Ontario, Canada

Où les infirmières travaillent-elles? Tendances en matière d'emploi par sous-secteur en Ontario, Canada



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## Abstract

**Objective:** As care shifts to home and community, have nursing jobs followed? We examined changes in the absolute and relative size of the nursing workforce by sector/sub-sectors in Ontario, Canada.

**Methods:** All nurses registered with the Ontario College of Nurses over the 11 years from 1993 to 2003 were categorized as Active, Eligible or Not Eligible. Active nurses were then categorized by sector (Hospital, Community, Other) and sub-sector. The analysis was repeated by age group and for registered nurses and registered practical nurses.

**Results:** The decline in Active and Eligible nurses was particularly pronounced for younger workers. Both the absolute number and proportion of nurses working in the hospital sub-sector has dropped. In the community sector, growth was evident in the use of nurses as case managers (in the CCAC sub-sector), community agencies and community mental health (representing a shift from hospital-based workers). However, the steady growth in the number and proportion of nurses working in home care agencies was reversed in 1999, with this sub-sector shedding 19% of its nurses by 2003.

**Conclusion:** Despite considerable rhetoric to the contrary, nurses still tend to work within institutions (hospitals and long-term-care facilities). However, compared to their numbers in 1993, there were fewer nurses providing direct patient care in Ontario in both the hospital and community sectors, and a higher proportion of older nurses.

## Résumé

**Objectif :** De plus en plus, les soins de santé sont dispensés à domicile et dans la communauté; observe-t-on la même tendance dans les emplois en soins infirmiers? Nous avons examiné la taille absolue et relative de la main-d'œuvre infirmière par secteur et par sous-secteur en Ontario, au Canada.

**Méthodes :** Toutes les infirmières autorisées par l'Ordre des infirmières et infirmiers de l'Ontario de 1993 à 2003 inclusivement ont été répertoriées en trois catégories : actives, admissibles ou non admissibles. Nous avons ensuite répertorié les infirmières actives par secteur (hospitalier, communautaire, autre) et par sous-secteur. L'analyse a été répétée par groupe d'âge et pour les IA et les IAA.

Résultats: La baisse du nombre d'infirmières actives et admissibles était particulièrement prononcée chez les infirmières plus jeunes. On a également observé une baisse tant dans le nombre absolu que dans la proportion d'infirmières travaillant dans le sous-secteur hospitalier. Le secteur communautaire affiche une hausse dans le recours aux infirmières comme gestionnaires de cas (dans le sous-secteur du CCAC), les organismes communautaires et la santé mentale communautaire (signe d'un délaissement progressif du milieu hospitalier). Cependant, la croissance soutenue du nombre et de la proportion d'infirmières travaillant pour des agences de soins à domicile s'est renversée en 1999 et, en 2003, ce sous-secteur avait perdu 19 % de ses infirmières.

Conclusion: Malgré tous les arguments contraires, la plupart des infirmières évoluent encore en milieu institutionnel (hôpitaux et établissements de soins de longue durée). Toutefois, comparativement aux chiffres de 1993, moins d'infirmières et une plus grande proportion d'infirmières plus âgées prodiguaient des soins directs aux patients en Ontario dans les secteurs hospitalier et communautaire.

Turses are globally acknowledged as the linchpin of the healthcare system, delivering a high proportion of the care given in hospitals. However, in recent years the tendency has been to deemphasize hospitals and shift care to home and community (Home Care Sector Study Corporation 2003; MacAdam 2000; Motiwala et al. 2005; Penning et al. 2002). To assess the impact of these hospital downsizing initiatives on the size and distribution of the nursing workforce across various employment settings, we analyzed employment patterns in the province of Ontario, Canada, which employs 36.4% of all Canadian nurses (Canadian Institute for Health Information [CIHI] 2004a, b).

## The Policy Backdrop

Researchers and policy analysts have continued to urge a shift of emphasis away from

hospital care, reinforced by national reviews of healthcare (Kirby 2002; Romanow 2002) and endorsed by statements by the federal government (Health Canada 2004a,b) and by provincial governments (Ontario Ministry of Health and Long-Term Care 2004). In Ontario, the period between 1993 and 2003 witnessed severe constraints on hospital budgets, an active process intended to restructure and downsize the hospital sector, and a shift of patient care from hospitals to the community (Hospital Report Research Collaborative 2001; Heitlinger 2003; Ontario Health Coalition 1999). Indeed, despite persistent concerns by government about the size of hospital budgets, the Ontario Hospital Association (2005) has estimated that Ontario's per capita 2005 hospital spending, adjusting for inflation, was lower than in 1993. The emphasis on controlling hospital budgets forced the closure of some hospitals and thousands of hospital beds (Heitlinger 2003). In addition, provincial government policy has been closing provincial psychiatric hospitals and attempting to move mental healthcare to not-for-profit public hospitals and to the community (Health Services Restructuring Committee 2000). There have also been significant reductions in length of stay – from 7.0 and 211 days for acute and chronic hospitals, respectively, in 1993 to 6.5 and 100 days in 2003 (Ontario Hospital Association 2005), much of this predicated on the assumption that follow-up care would be offered by home and community services (Baranek et al. 2004).

At the same time as hospital budgets were being constrained, home and community healthcare services were being strengthened by significant governmental investments (Canadian Union of Public Employees 2005; MacAdam 2000; Romanow 2002). These investments were made in anticipation of an increased demand for community and home care services due to population aging, technological and pharmacological advances and a decreasing number of informal caregivers (MacAdam 2000; Motiwala et al. 2005; O'Brien-Pallas et al. 2000), coupled with complaints about a shortage of nurses in the community (Canadian Home Care Human Resources Study Steering Committee 2002; Heitlinger 2003; MacAdam 2000; Ontario Association of Community Care Access Centres [OACCAC] 2000).

To the extent that nurses have historically worked primarily in hospitals, this ongoing restructuring suggests two plausible scenarios. Nurses affected by hospital restructuring may be removed from the healthcare workforce; alternatively, the shrinkage of some sub-sectors may be compensated for by the growth of others. In addition, these trends may differentially affect registered nurses and registered practical nurses.

## Differences between RNs and RPNs

In Ontario, nursing is one profession with two categories, registered nurse (RN) and registered practical nurse (RPN). Although both categories share a legislated scope of practice, critical practice differences exist. RNs in Ontario graduate with a baccalaure-

ate degree in nursing, while RPNs graduate with a two-year practical nursing diploma. Differences between the two categories also exist in the depth and breadth of knowledge that is covered, in the competencies that are developed and in the expectations for clinical performance. RNs enjoy a higher level of autonomy in practice and are expected to deal with patients of higher acuity and complexity (College of Nurses of Ontario [CNO] 2004a).

## Research Questions

The study aimed to answer the following questions:

- Over the period from 1993–2003, how have the numbers and proportion of nurses actively working in Ontario, and of those who are "eligible" but not currently working as a nurse in Ontario, changed? Are the patterns different for different age groups? For RNs and RPNs?
- How has the proportion of nurses working in various sectors and sub-sectors employing nurses in Ontario changed? Are these patterns different for RNs and RPNs?
- Has the rhetoric about deemphasizing hospital care translated into a decrease in the number of nurses working in institutions?

## Methods

In order to answer these questions and to observe the fluctuations in the aggregate number and percentage of nurses working in a particular sector, we carried out an analysis of 11 years (1993 to 2003) of the College of Nurses of Ontario (CNO) registration database. Access to the anonymized CNO database was made available for this study via the Nursing Health Services Research Unit (NHSRU), a collaborative project of the University of Toronto Faculty of Nursing and McMaster University School of Nursing as part of the larger Health Human Resources Project. The CNO reviewed the proposal and gave permission to the Unit to provide the database for analysis.

## The database

Registration with the CNO is a prerequisite for RNs and RPNs to practise nursing in Ontario. Upon registration, each nurse is assigned a unique registration number; afterwards, nurses are required to fill out and submit an annual membership renewal to CNO in order to be eligible to work. Nurses who fail to renew their registration within the first six months of the current practice year have their memberships suspended and thus may not practise as a nurse in Ontario; nor do they have the right to use the protected title RN or RPN in the province. Nurses have an incentive to keep their registration active even if they are temporarily out of work to avoid the requirements involved in reinstating their registration (which involves both paperwork and the possible need to pass competency examinations or take refresher courses).

For each year, a subset of the data was created containing a specified set of variables for all nurses registered in that year. The research team checked the data for consistency. This involved examining the CNO registration forms for the period of the analysis (1993-2003) to ensure consistency of the definition of sub-sectors across years; some collapsing of subcategories was required. Data analysis was performed in SAS-PC, using PROC FREQ and PROC MEANS. The key variables used in the analysis were employment status, employment place, registration type (RN/RPN) and age. Frequencies for each year were generated.

Over time, nurses can enter and exit a series of work settings. For each nurse and each year, we first categorized work status into Active, Eligible, Not Eligible and Unknown, as shown in Table 1. For the purpose of this analysis, we classified nurses over age 65 as retired and the small numbers of nurses working at more than one job, where at least one was in Ontario, as part of the pool of active Ontario nurses.

TABLE 1.	l )et	11111101	า ot	nurses	work	status

WORK STATUS INCLUDES NURSES WHO ARE

Active Registered and working in nursing in Ontario

Eligible Registered in Ontario, not employed;

Registered in Ontario, but working in nursing outside the province; and

Registered in Ontario, but working in non-nursing jobs

Not eligible Retired or over age 65

Missing/Unknown Work status and employment place unknown

The Eligible category includes nurses who are actively seeking employment, as well as those more loosely attached to the potential nursing workforce (e.g., those under age 65 but not seeking employment, those working outside the province). Some of these absences may be temporary (e.g., family obligations) and others more permanent. However, all have chosen to maintain their registration. The eligible category thus reflects the "first line" of available nurses who might be readily available should jobs appear. However, it is not known how many of this category, given an opportunity, would make themselves available to work.

For all nurses in the Active category, work settings were categorized into three aggregate sectors, each containing a series of sub-sectors (Table 2). Note that this aggregate categorization differs slightly from that reported annually by CNO in that it includes Long-Term Care (LTC) facilities and agency nurses (who tend to work in hospitals) within the hospital/LTC sector. However, these distinctions are preserved in the analysis of sub-sectors. Appendix A provides the most recent definition of these sub-sectors (CNO 2005).

TABLE 2. Nursing sectors and sub-sectors of employment							
SECTOR	SUB-SECTORS						
Hospital/LTC sector	Acute, Chronic, LTC, Rehabilitation, Psychiatric, Agency Nursing, Other Hospitals						
Community sector	Community Care Access Centres (CCAC), Community Health Centres (CHC), Community Mental Health, Community Home Care, Community Agencies, Public Health						
Other	Education, Business, Government, Nursing Station, Physician Office, Self-employed, Miscellaneous						
Not specified	Working as nurses but failed to provide workplace information Working as nurses but did not specify whether in or outside Ontario						

# Results

# Employment trends

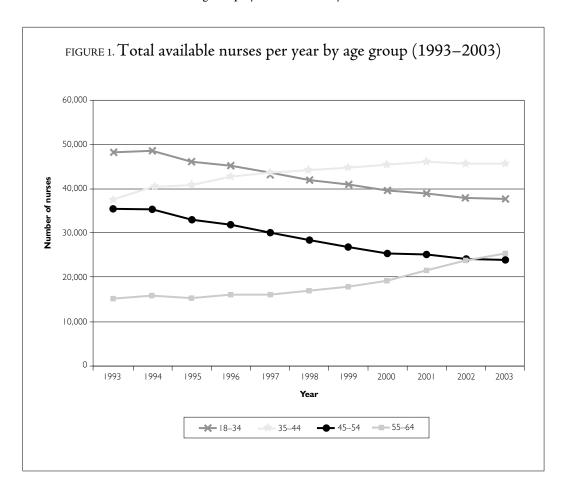
Table 3 displays the number of nurses working as a nurse (Active) and those Eligible to work; the Not Eligible category is omitted, since such nurses by definition would not readily be available to work in the province. We defined "total available" nurses as the sum of Actives and Eligibles. The pool of active nurses for RNs decreased from 1993 to 1999 but began to recover afterwards. In 2003, enough new RNs were hired that the active pool surpassed the 1993 value. The number and percentage of active RPNs decreased through the period of the analysis (–538/–2%). Examining the number of total available nurses, we note that by 1999, a net loss of 5,765 RNs and 1,510 RPNs had occurred; even by 2003, despite the entry of newly trained nurses, there were 1,211 fewer RNs and 1,964 fewer RPNs than at the start of the decade. We next examined the total available nurses by age group (Figure 1). Results show

that the available pool of younger nurses in both the 18–33 and 34–43 age groups has been steadily shrinking. On the other hand, the available pool of older nurses, aged 44–53 and 54–64, has grown steadily. This finding confirms reports that suggest an aging nursing workforce (O'Brien-Pallas et al. 2003; CIHI 2004a, b; Canadian Nurses Association 2003). This steady decrease in younger nurses also suggests that the increases in the pool of active RNs reported since 2000 (Table 3) may be less a reflection of new trainees than of older nurses rejoining the active workforce.

YEAR/WORK STATUS	AC	ΓΙνΈ	ELIC	IBLE	TOTAL A	VAILABLE
	RNs	RPNs	RNs	RPNs	RNs	RPNs
1993	84,941	26,351	20,378	6,407	105,319	32,758
1994	83,902	26,825	23,521	7,599	107,423	34,424
1995	80,763	25,352	22,771	7,611	103,534	32,963
1996	81,629	25,771	22,363	7,208	103,992	32,979
1997	80,242	25,703	21,604	6,701	101,846	32,404
1998	79,038	25,599	21,396	6,185	100,434	31,784
1999	77,872	25,189	21,682	6,059	99,554	31,248
2000	82,426	26,177	17,268	4,563	99,694	30,740
2001	83,503	26,591	18,521	4,598	102,024	31,189
2002	83,154	25,766	19,065	5,034	102,219	30,800
2003	85,056	25,817	19,052	4,977	104,108	30,794

# Employment by sector

Table 4 displays the employment of RNs and RPNs in Ontario by aggregate sector between 1993 and 2003. Results show a reduction in both RNs (-5,339/-8.4%) and RPNs (-3223/-14.3%) working in the hospital/LTC sector. In contrast, the community sector has shown an increase in the number of RNs (+2,286/+24.5%) and a large percentage increase in the number of RPNs (+1,213/+76.9%). The number for both nursing categories increased steadily up till 2001 before decreasing afterwards. The "other" sector has also witnessed an increase in the number and percentage of both RNs (+952/+8.1%) and RPNs (+303/+14.8%). Finally, the sharp increase in the number of "not specified" settings starting in 2002 can be directly attributed to



a change in the processing of membership renewal forms that occurred at that time. Prior to 2002, nurses' employment information from the previous year was preprinted and nurses were asked to correct it if needed; otherwise, they were to leave it blank. However, beginning in 2002, the prior information was no longer provided, and nurses were required to fill in their employment information each year. In 2003, 3.1% of RNs and 5.1% of RPNs working in Ontario fell into this category.

A closer analysis reveals that this pattern of growth/contraction of the workforce is not uniform across the various sub-sectors within these sectors. Tables 5 through 7 display employment of RNs and RPNs by sub-sector within each sector.

# Employment within hospital/LTC sub-sectors

As Table 5 shows, the decrease in the number of active RNs applies to all hospital/LTC sub-sectors except the use of agency nurses. Similarly, the decrease of RPNs applies to all sub-sectors except long-term-care institutions and the use of agency nurses. The acute hospital sub-sector, although it remained the largest employer,

TABLE 4. Employment of nurses by sector and registration type (1993–2003)

YEAR/WORK STATUS		PITAL/ TC	COMM	IUNITY	OTI	HER		OT IFIED		TAL TIVE
REGISTRATION TYPE	RNs	RPNs	RNs	RPNs	RNs	RPNs	RNs	RPNs	RNs	RPNs
1993	63,469	22,577	9,336	1,578	11,723	2,053	413	143	84,941	26,351
1994	61,741	22,473	9,157	1,808	12,422	2,282	582	262	83,902	26,825
1995	59,689	21,181	9,653	2,103	10,613	1,755	808	313	80,763	25,352
1996	59,285	21,221	9,538	2,054	11,520	1,827	1,286	669	81,629	25,771
1997	57,056	21,027	10,298	2,202	12,398	2,111	490	363	80,242	25,703
1998	54,182	19,981	10,430	2,301	13,199	2,476	1,227	841	79,038	25,599
1999	53,404	19,803	11,292	2,581	12,733	2,592	443	213	77,872	25,189
2000	56,612	20,675	12,195	2,757	13,360	2,572	259	173	82,426	26,177
2001	57,398	20,551	12,552	2,981	13,209	2,889	344	170	83,503	26,591
2002	55,549	19,072	11,905	2,844	12,480	2,410	3,220	1,440	83,154	25,766
2003	58,130	19,354	11,622	2,791	12,675	2,356	2,629	1,316	85,056	25,817
# change 93–03	-5,339	-3,223	+2,286	+1,213	+952	+303	+2,216	+1,173	+115	-534
% change 93–03	-8.4	-14.3	+24.5	+76.9	+8.1	+14.8	+536.6	+820.3	+0.1	-2.0

unsurprisingly showed the heaviest loss; this sector shed around one-third of its RPNs (-3,357) and 6.2% of its RNs (-3,015). Closures, mergers, a shift in site of care to the community and cuts to hospital services also drove a decrease of nearly 30% of both the RN and the RPN workforce in psychiatric, chronic and rehabilitation hospitals. The two nursing groups differ with respect to employment in LTC facilities, with an increase in employment for RPNs (+1,623/+28.3%) and a decrease for RNs (-312/-4.7%). Finally, there was an increase in the number and percentage of both RNs (+107/+12.2%) and RPNs (+79/+21.2%) employed by nursing agencies. By the end of the decade, RPNs were less likely to be employed in hospitals and more likely to work in long-term care.

# Employment within community sub-sectors

Table 6 shows that contrary to the hospital sector, there has been an increase in all community sub-sectors except for home care for RNs and public health for both nursing categories. There are certain community sectors that employ both RNs and RPNs (e.g., community health centres [CHCs], mental health and home care) and other sectors that largely employ RNs (e.g., community care access centres [CCACs] and public health).

The most significant increase for both RNs and RPNs was in the newly formed sub-sectors: community mental health, CCACs and community agencies. The increases in these sub-sectors were more pronounced for RPNs over the period of the

TABLE 5. Number of RNs and RPNs working in the hospital/LTC sub-sectors (1993-2003)

REGISTERED		CHRONIC/					
NURSES SUB- SECTOR/YEAR	ACUTE	REHAB	OTHER	PSYCHIATRIC	LTC	AGENCY	TOTAL
1993	48,364	3,399	1,598	2,593	6,640	875	63,469
1994	47,223	3,415	1,145	2,492	6,462	1,004	61,741
1995	45,500	3,193	1,512	2,440	6,423	621	59,689
1996	45,169	2,948	1,221	2,461	6,770	716	59,285
1997	43,156	2,764	1,094	2,362	6,940	740	57,056
1998	40,928	2,525	1,096	2,316	6,616	701	54,182
1999	40,448	2,493	1,065	2,206	6,499	693	53,404
2000	43,245	2,576	1,139	2,227	6,812	613	56,612
2001	45,069	1,980	1,142	2,175	6,467	565	57,398
2002	43,077	2,447	1,293	1,790	5,999	943	55,549
2003	45,349	2,349	1,292	1,830	6,328	982	58,130
# change 93–03	-3,015	-1,050	-306	<del>-7</del> 63	-312	+107	-5,339
% change 93–03	-6.2	-30.9	-19.1	-29.4	-4.7	+12.2	-8.4
REGISTERED PRACTICAL NURSES SUB- SECTOR/YEAR	ACUTE	CHRONIC/ REHAB	OTHER	PSYCHIATRIC	LTC	AGENCY	TOTAL
1993	11,110	3,263	241	1,858	5,733	372	22,577
1994	10,691	3,449	204	1,814	5,788	527	22,473
1995	10,113	3,321	178	1,702	5,644	223	21,181
1996	9,995	3,143	153	1,731	5,956	243	21,221
1997	9,692	3,027	138	1,671	6,244	255	21,027
1998	8,859	2,896	159	1,621	6,176	270	19,981
1999	8,425	2,840	151	1,603	6,473	311	19,803
2000	8,740	2,872	155	1,634	6,944	330	20,675
2001	8,910	2,387	174	1,640	7,117	323	20,551
2002	7,751	2,324	195	1,343	6,954	505	19,072
2003	7,753	2,316	161	1,317	7,356	451	19,354
# change 93–03	-3,357	<b>-947</b>	-80	<b>-541</b>	+1,623	+79	-3,223
% change 93–03	-30.2	-29.0	-33.2	-29. l	+28.3	+21.2	-14.3

 ${\tt TABLE\,6.}$  Number of RNs and RPNs working in community sub-sectors (1993–2003)

REGISTERED NURSES SUB-SECTOR/ NUMBER	HOME CARE	PUBLIC HEALTH	CHC	MENTAL HEALTH	CCAC	COMM. AGENCY	TOTAL
1993	5,336	3,375	625	NA	NA	NA	9,336
1994	5,335	3,253	569	NA	NA	NA	9,157
1995	5,714	3,361	578	NA	NA	NA	9,653
1996	6,282	2,750	506	NA	NA	NA	9,538
1997	6,669	2,941	568	120	NA	NA	10,298
1998	6,645	3,021	597	167	NA	NA	10,430
1999	5,683	2,777	594	278	1,628	332	11,292
2000	5,438	3,013	643	381	2,226	494	12,195
2001	4,943	3,199	744	578	2,474	614	12,552
2002	4,001	3,253	797	684	2,500	670	11,905
2003	3,701	3,285	817	724	2,483	612	11,622
# change 1993*–2003 % change	-1,635	-90	+192	+604*	+855*	+280*	+2,286
1993*–2003	-30.6	-2.7	+30.7	+503.3	+52.5	+84.3	+24.5
REGISTERED							
PRACTI- CAL NURSES SUB-SECTOR/ NUMBER	HOME CARE	PUBLIC HEALTH	CHC	MENTAL HEALTH	CCAC	COMM. AGENCY	TOTAL
PRACTI- CAL NURSES SUB-SECTOR/	HOME CARE		CHC		CCAC NA		TOTAL
PRACTI- CAL NURSES SUB-SECTOR/ NUMBER		HEALTH		HEALTH		AGENCY	
PRACTI- CAL NURSES SUB-SECTOR/ NUMBER	1,121	HEALTH 315	142	HEALTH NA	NA	AGENCY NA	1,578
PRACTI- CAL NURSES SUB-SECTOR/ NUMBER	1,121 1,334	315 339	142 135	nealth Na Na	NA NA	AGENCY NA NA	1,578 1,808
PRACTI- CAL NURSES SUB-SECTOR/ NUMBER 1993 1994 1995	1,121 1,334 1,548	315 339 416	142 135 139	NA NA NA	NA NA NA	NA NA NA	1,578 1,808 2,103
PRACTI- CAL NURSES SUB-SECTOR/ NUMBER  1993 1994 1995 1996	1,121 1,334 1,548 1,663	315 339 416 281	142 135 139 110	NA NA NA NA	NA NA NA	NA NA NA NA	1,578 1,808 2,103 2,054
PRACTI- CAL NURSES SUB-SECTOR/ NUMBER 1993 1994 1995 1996	1,121 1,334 1,548 1,663 1,714	315 339 416 281 323	142 135 139 110	NA NA NA NA NA S4	NA NA NA NA	NA NA NA NA NA	1,578 1,808 2,103 2,054 2,202
PRACTI- CAL NURSES SUB-SECTOR/ NUMBER 1993 1994 1995 1996 1997 1998	1,121 1,334 1,548 1,663 1,714 1,778	315 339 416 281 323 318	142 135 139 110 111	NA NA NA NA NA 54 70	NA NA NA NA NA	NA NA NA NA NA NA	1,578 1,808 2,103 2,054 2,202 2,301
PRACTI- CAL NURSES SUB-SECTOR/ NUMBER  1993 1994 1995 1996 1997 1998 1999	1,121 1,334 1,548 1,663 1,714 1,778	315 339 416 281 323 318 251	142 135 139 110 111 135 169	NA NA NA NA 54 70 137	NA NA NA NA NA NA 35	NA NA NA NA NA NA NA	1,578 1,808 2,103 2,054 2,202 2,301 2,581
PRACTI- CAL NURSES SUB-SECTOR/ NUMBER  1993 1994 1995 1996 1997 1998 1999 2000	1,121 1,334 1,548 1,663 1,714 1,778 1,851 1,894	315 339 416 281 323 318 251 216	142 135 139 110 111 135 169 200	NA NA NA NA 54 70 137 171	NA NA NA NA NA NA NA 35	NA NA NA NA NA NA NA 138 222	1,578 1,808 2,103 2,054 2,202 2,301 2,581 2,757
PRACTI- CAL NURSES SUB-SECTOR/ NUMBER  1993 1994 1995 1996 1997 1998 1999 2000 2001	1,121 1,334 1,548 1,663 1,714 1,778 1,851 1,894 1,916	315 339 416 281 323 318 251 216 200	142 135 139 110 111 135 169 200 243	NA NA NA NA 54 70 137 171 289	NA NA NA NA NA 35 54 72	NA NA NA NA NA NA 138 222 261	1,578 1,808 2,103 2,054 2,202 2,301 2,581 2,757 2,981
PRACTI- CAL NURSES SUB-SECTOR/ NUMBER  1993 1994 1995 1996 1997 1998 1999 2000 2001 2002	1,121 1,334 1,548 1,663 1,714 1,778 1,851 1,894 1,916 1,583	315 339 416 281 323 318 251 216 200 151	142 135 139 110 111 135 169 200 243 260	NA NA NA NA 54 70 137 171 289 422	NA NA NA NA NA 35 54 72 90	NA NA NA NA NA NA 222 261 338	1,578 1,808 2,103 2,054 2,202 2,301 2,581 2,757 2,981 2,844

analysis. The increase in community mental health (+604 RNs and +439 RPNs) is close to the decrease recorded in the psychiatric hospital sub-sector (-763 RNs and -541 RPNs), suggesting a transfer of the mental health workforce from hospitals to community. The number of RNs providing direct patient care through the provincial home care program (e.g., those working in the home care agencies sub-sector) increased steadily between 1993 and 1998 but gradually decreased afterwards. Indeed, that sub-sector lost close to one-third of its RNs between 1999 and 2003 (-1,635/ -30.6%). In contrast, the period of the analysis witnessed increased employment of RPNs in home care agencies up until 2001 (+795/+70.9%), followed by a decrease in employment afterwards. The number of nurses working in the public health sub-sector remained steady for RNs and decreased substantially for RPNs (-206/-65.4%).

# Employment within "other" sub-sectors

Table 7 compares the numbers of nurses working in the "other" sub-sectors for the years 1993 to 2003. A similar variability across sub-sectors is evident. There are fewer RNs and RPNs employed in physicians' offices, by business and within education. More RNs and RPNs are claiming to be self-employed – a category that may or may not hide the absence of regular work – or are working in the newer sub-sectors encompassed in the "miscellaneous" category (e.g., cancer centres, blood services). Note that some of these may reflect transfer and recategorization of formerly hospital-based activities now being provided in ambulatory clinics. The employment trends for the two nursing categories differ with respect to governments/associations and nursing stations. There has been a growth in the number of RNs working in these two sectors and a decrease in RPNs. It must be noted, though, that most of the other sub-sectors employing RPNs exhibit high rates of change, but account for minimal employment.

# Discussion

The healthcare restructuring process that took place in the 1990s led to a decrease in the pool of available nurses in Ontario. Unsurprisingly, hospitals suffered the heaviest loss of staff, with RPNs bearing the brunt of staff cuts. One reason is that shorter lengths of stay increased the acuity and complexity of patients remaining in hospitals (Canadian Nursing Advisory Committee [CNAC] 2002). Managers may have concluded that they needed the skill of RNs to care for these patients (CNO 2004a). The need for specialized care and legal requirements could also explain why certain sub-sectors largely employ RNs, for example, public health, CCACs, government and nursing stations.

TABLE 7. Number of RNs and RPNs working in the "other" sub-sectors (1993-2003)

REGISTERED NURSES SECTOR/ NUMBER	MD OFFICE	BUSINESS	EDUCATION	GOV'T/ ASSOC.	NSG. STATION	SELF- EMPLOYED	MISC.	TOTAL
1993	3,129	1,319	2,640	1,085	129	555	2,866	11,723
1994	3,221	1,334	2,357	1,076	142	629	3,663	12,422
1995	3,082	1,285	2,033	972	153	561	2,527	10,613
1996	3,071	1,287	1,949	1,122	143	594	3,354	11,520
1997	3,133	1,338	1,787	1,048	172	778	4,142	12,398
1998	3,068	1,321	1,706	1,098	140	814	5,052	13,199
1999	2,956	1,305	1,621	1,175	151	887	4,638	12,733
2000	3,060	1,385	1,760	1,306	144	1,011	4,694	13,360
2001	2,973	1,405	1,804	1,361	200	1,052	4,414	13,209
2002	2,717	962	2,042	1,246	179	893	4,441	12,480
2003	2,621	912	2,113	1,210	196	908	4,715	12,675
# change 1993–2003 % change	-508	-407	-527	+125	+67	+353	+1,849	+952
1993–2003	-16.2	-30.9	-20.0	+11.5	+51.9	+63.6	+64.5	+8.1
REGISTERED PRACTICAL NURSES SEC- TOR/NUMBER	MD OFFICE	BUSINESS	EDUCATION	GOV"T/ ASSOC.	NSG. STATION	SELF- EMPLOYED	MISC.	TOTAL
PRACTICAL NURSES SEC-		BUSINESS	EDUCATION	ASSOC.			MISC.	TOTAL 2,053
PRACTICAL NURSES SEC- TOR/NUMBER 1993 1994	810 830	116 125	158 153	ASSOC.	STATION  12 25	EMPLOYED	686 843	2,053 2,282
PRACTICAL NURSES SEC- TOR/NUMBER 1993 1994 1995	810 830 766	6   125     12	158 153 97	ASSOC.  141 151 106	12   25   12	EMPLOYED	686	2,053 2,282 1,755
PRACTICAL NURSES SEC- TOR/NUMBER 1993 1994 1995	810 830 766 742	116 125	158 153	ASSOC.	12 25 12 5	130   155	686 843 526 627	2,053 2,282
PRACTICAL NURSES SEC- TOR/NUMBER 1993 1994 1995	810 830 766	6   125     12	158 153 97	ASSOC.  141 151 106	12 25 12 5 7	130   155   136	686 843 526	2,053 2,282 1,755 1,827 2,111
PRACTICAL NURSES SEC- TOR/NUMBER 1993 1994 1995 1996 1997	810 830 766 742 710 666	116 125 112 108 98 102	158 153 97 89 91 85	ASSOC.  141 151 106 121	12 25 12 5 7 7	130   155   136   135   189   169	686 843 526 627	2,053 2,282 1,755 1,827
PRACTICAL NURSES SEC- TOR/NUMBER 1993 1994 1995 1996	810 830 766 742 710	116 125 112 108 98	158 153 97 89 91	ASSOC.  141 151 106 121 114	12 25 12 5 7 7	130   155   136   135   189	686 843 526 627 902	2,053 2,282 1,755 1,827 2,111
PRACTICAL NURSES SEC- TOR/NUMBER 1993 1994 1995 1996 1997 1998 1999 2000	810 830 766 742 710 666 726 771	116 125 112 108 98 102	158 153 97 89 91 85	ASSOC.  141 151 106 121 114 112 114 133	12 25 12 5 7 7	130   155   136   135   189   169   204   233	686 843 526 627 902 1,335 1,357 1,197	2,053 2,282 1,755 1,827 2,111 2,476 2,592 2,572
PRACTICAL NURSES SEC- TOR/NUMBER 1993 1994 1995 1996 1997 1998 1999 2000 2001	810 830 766 742 710 666 726 771 807	116 125 112 108 98 102 91 101	158 153 97 89 91 85 91 128	ASSOC.  141 151 106 121 114 112 114 133 146	5 12 25 12 5 7 7 9 9 2 1	130   155   136   135   189   169   204   233   266	686 843 526 627 902 1,335 1,357 1,197 1,395	2,053 2,282 1,755 1,827 2,111 2,476 2,592 2,572 2,889
PRACTICAL NURSES SEC- TOR/NUMBER 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002	810 830 766 742 710 666 726 771 807 811	116 125 112 108 98 102 91 101 106 95	158 153 97 89 91 85 91 128 148	ASSOC.  141 151 106 121 114 112 114 133 146 103	STATION  12 25 12 5 7 7 9 9 21 14	I30 I55 I36 I35 I89 I69 204 233 266 252	686 843 526 627 902 1,335 1,357 1,197 1,395	2,053 2,282 1,755 1,827 2,111 2,476 2,592 2,572 2,889 2,410
PRACTICAL NURSES SEC- TOR/NUMBER 1993 1994 1995 1996 1997 1998 1999 2000 2001	810 830 766 742 710 666 726 771 807	116 125 112 108 98 102 91 101	158 153 97 89 91 85 91 128	ASSOC.  141 151 106 121 114 112 114 133 146	5 12 25 12 5 7 7 9 9 2 1	130   155   136   135   189   169   204   233   266	686 843 526 627 902 1,335 1,357 1,197 1,395	2,053 2,282 1,755 1,827 2,111 2,476 2,592 2,572 2,889
PRACTICAL NURSES SEC- TOR/NUMBER 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002	810 830 766 742 710 666 726 771 807 811	116 125 112 108 98 102 91 101 106 95	158 153 97 89 91 85 91 128 148	ASSOC.  141 151 106 121 114 112 114 133 146 103	STATION  12 25 12 5 7 7 9 9 21 14	I30 I55 I36 I35 I89 I69 204 233 266 252	686 843 526 627 902 1,335 1,357 1,197 1,395	2,053 2,282 1,755 1,827 2,111 2,476 2,592 2,572 2,889 2,410

However, although the number of nurses currently employed in hospitals has been decreasing, and despite the rhetoric about a shift of nurses from hospitals to home and community, in 2003, most Ontario nurses were still working within institutions. This pattern persists; in 2004, the College of Nurses of Ontario reported that hospitals and long-term-care facilities employed 72.7% of RNs and 78.8% of RPNs practising in Ontario (CNO 2004b).

... the trend toward "managed competition" may have reduced services provided through home care (e.g., through service maxima) and that many of the agencies providing home care services may have chosen to compete for contracts by managing wages and benefits, reducing costs and providing care by lowercost healthcare workers ...

Any workplace has both advantages and disadvantages. In comparison to the home care sector, hospitalbased employment may offer relative job stability, higher salaries and benefits, more defined job scope and better prospects for career development (Caplan 2005; Heitlinger 2003; Home Care Sector Corporation 2003); however, it also offers shift work, more stress associated with higher workload,

a more hierarchical workplace and decreased autonomy (Baumann et al. 2001; CNAC 2002; Decter and Villeneuve 2001). The continued prominence of hospital-based employment thus requires careful analysis of whether this prominence reflects the net attractiveness of this sub-sector, the relative unattractiveness of alternative jobs, government funding policies or some combination of factors. For example, it would be useful to compare these findings to patterns in jurisdictions where there are not differences in wages and benefits across sub-sectors.

The results suggest that, in aggregate, the nurses displaced by hospital restructuring (-5,339 RNs and -3,223 RPNs) were not absorbed by the community sector (+2,286 RNs and +1,213 RPNs). In a future analysis, we will be examining the career trajectory of individual nurses once employed within hospitals in an attempt to understand the balance between moving to other sub-sectors and leaving the profession.

Similarly, the decrease in the number of RNs working in home care agencies providing direct services (-1,635) represents an abrupt drop in the previous trend line (1993 to 1998) and coincides with the establishment of the competitive bidding process for home care services by CCACs in 1997. These results suggest that the trend toward "managed competition" may have reduced services provided through home care (e.g., through service maxima) and that many of the agencies providing home care services may have chosen to compete for contracts by managing wages and benefits,

reducing costs and providing care by lower-cost healthcare workers – for example, by replacing RNs with RPNs or RPNs with unregulated care providers (Shapiro 1997; Aronson et al. 2004; Caplan 2005).

To the extent that home care RNs were also doing case management in the home care programs that preceded CCACs, the reduction in 1999 could be partially attributed to the reclassification of these nurses. However, there is also evidence that fewer nurses were providing care to post-acute home care patients with higher acuity levels and more complex care needs (Parent and Anderson 2001). The drop in nursing employment in the home care sub-sector is also consistent with the reported decrease in the volume of nursing services provided by these agencies – from 7,892,685 visits in 2001/2002 to 6,468,563 in 2002/2003 (OACCAC 2004). Although more RPNs were employed in home care agencies during the period of the analysis, this increase (+403) did not make up for the decrease in the number of RNs (-1,635). In addition, it is noteworthy that RPN employment in home care agencies fell sharply after 2001 (-392 RPNs). While some home-based nursing services may be provided in other ways, such as purchase of private services by patients and families or informal caregiver involvement in providing care, concern has been raised about the increase of such arrangements (Home Care Sector Study Corporation 2003; McAdam 2000; Motiwala et al. 2005). The implications of these trends for home care patients and the system warrant further investigation.

Within the home care sector, a major growth area has been the "administration of care" versus the "provision of care." RNs have been largely employed by CCACs as case managers, clinical nurse specialists, nurse practitioners and clinical educators. Although these skilled nurses may perform initial assessment, their ongoing role is focused on consultation, and they are often expected to hand off care to the nursing agencies that have won contracts from CCACs. From an educational/training perspective, this implies some need to examine the scope of practice of the community-based nurses and the role that they are playing. Particularly given this shrinking supply, the impact of such trends as role substitution and increased use of unregulated caregivers warrants close monitoring in order to create public policy frameworks that ensure adequate provision of high-quality care (Baumann et al. 2001; CNAC 2002).

# Conclusion

Compared to their number in 1993, by 2003 there were fewer RNs and RPNs providing direct patient care in Ontario in both the hospital and community sectors. There were also fewer nurses, especially RPNs, available for work, should public policy decide that more are needed. Given the length of time needed to train a nurse, and the aging of the nursing resource pool, the time available for policy makers to act would appear short if cries of "crisis" are not to become reality.

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# Appendix A

# **Employment Sub-sector Definitions**

The sub-sector definitions come from the Instruction Guide for the College of Nurses of Ontario Annual Membership Renewal (CNO 2005). The section "CNO Practice and Employment Definitions" provides definitions "to assist members to make appropriate choices when answering the Annual Membership Renewal questions related to practice and employment" (CNO 2005). Note that because categorization for certain sub-sectors varied over time, we have preserved or merged sub-sectors as required. For example, we have distinguished between "agency nurses" providing services primarily in hospitals and nurses working in "community agencies" providing services in the community. On the other hand, we merged long-term-care subcategories into one category (LTC). Although the definitions have not changed, the way they are aggregated has. For example, the 2005 definition combines the Home Care/Visiting Care Agencies and the Employment Agency/Private Duty categories, adds some new sub-sectors (e.g., hospice) and deletes others (e.g., nursing stations). To minimize confusion we renamed the other "Other" subcategory "Miscellaneous."

# Acute Care Hospital

A category of healthcare facility that is staffed and equipped to deliver care to patients in the acute phase of illness. Acute care hospitals are characterized by having medical, surgical, nursing and allied health professionals available at all times to provide rapid, intensive interventions. These hospitals commonly provide diagnostic services utilizing high technology. An acute care hospital may also provide other non-acute services such as rehabilitation or chronic care.

# Addiction and Mental Health Centre/Psychiatric Hospital

A healthcare facility that specializes in treating persons with mental health or addiction problems, or both. Psychiatric hospitals that are part of a larger organization and short-term treatment programs are included in this group.

# Complex Continuing Care Hospital (Chronic Hospital)

A hospital that provides care to patients who are unstable and require 24-hour nursing care for chronic or fluctuating serious illness.

# Rehabilitation Hospital

A hospital that provides primarily the continuing assessment and treatment of patients whose condition is expected to improve significantly through the provision of physical medicine and other rehabilitative services. Complex continuing care/rehabilitation hospitals that are part of a larger organization are included in this group.

# Other Hospital

Any other hospital excluding teaching hospitals, community hospitals, addiction and mental health centres/psychiatric hospitals and complex continuing care/rehabilitation hospitals.

# Community Care Access Centre

An organization providing simplified service access to visiting professional and personal support health services at home and in schools, long-term-care placement, service planning and case management, and information and referrals to other long-term-care services, including volunteer-based community services.

# Community Health Centre

A not-for-profit, community-governed organization that provides primary healthcare, health promotion and community development services, using multidisciplinary teams of health providers.

# Community Mental Health Program

A community program that is not hospital bed-based and that serves people with mental health or addiction problems, or both.

# Hospice

An organization whose mission is to help people with life-threatening illnesses live at home or in a home-like setting.

# Nursing/Staffing Agency

An agency that provides a range of nursing services to support client care in the community and in healthcare facilities. Services are delivered in homes, hospitals and other settings such as schools and retirement homes.

# Physician's Office/Family Practice Unit

A group or solo practice that provides episodic or continuing, comprehensive primary care.

# Public Health Unit/Department

An official health agency established by a group of urban or rural municipalities to develop and provide comprehensive community healthcare programs.

# Other Community

Other community sector employers not listed above (e.g., independent health facilities, telehealth, Canadian Blood Services, Workplace Safety and Insurance Board).

# Long-Term-Care Facility

A facility for people who are not able to live independently or in their own homes and who require 24-hour nursing service to meet their personal care needs (e.g., longterm-care centre, nursing home, home for the aged).

### Retirement Home

A residential complex that is occupied by persons who are primarily 65 years of age or older, for the purpose of receiving care services, whether or not receipt of such services is the primary purpose of occupancy (e.g., care home, rest home, lodge, manor, assisted living).

# Other Long-Term-Care Facility

Long-term-care facilities not listed in the definitions (e.g., group home, respite care centre, home for special care).

# Colleges/Universities

Postsecondary educational organizations offering nursing programs.

# Government/Association/Regulatory/Union

This category includes the provincial and federal governments, the various associations involved in supporting professions and organizations, and the bodies charged with regulating health professions recognized under the Regulated Health Professions Act.

# Industry (Business)

A commercial or industrial enterprise involved in the production, manufacturing, processing or sales of goods or services.

### Schools

Elementary and secondary schools, public or private.

# Self-Employed

An individual earning income directly from one's own business or profession rather than from a specified salary or wages from an employer (e.g., private practice).

# Other (Miscellaneous)

Employers not listed in other definitions.

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# Turning 65 in Ontario: The Impact of Public Drug Benefit Coverage on Hospitalizations for Acute and Chronic Disease

Atteindre l'âge de 65 ans en Ontario : Répercussions d'un régime public d'assurancemédicaments sur les hospitalisations pour maladies aiguës et chroniques



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### **Abstract**

Ongoing access to medication is required for the management of many chronic diseases. We sought to examine the health impact of entering the provincial drug benefit plan at age 65 years. We constructed cohorts of same-aged individuals with incident heart failure, with diabetes and from the whole population using administrative data. The hazard of hospitalization at a given age compared to one year younger for ages 63 to 67 years was determined. On turning age 65, persons were more rather than less likely to be hospitalized for diabetes and acute infection when compared to the prior year. Among residents of low-income neighbourhoods these effects were no longer significant, but the risk of hospitalization for heart failure was increased. A similar effect was not observed for the paired cohorts at the transition from age 63 to 64 years. A health benefit of obtaining drug insurance was not observed in this study; however, the relationship may have been confounded by the effects of retirement and other changes occurring at age 65. Moreover, a benefit experienced by only a small proportion of the population may not be apparent in this analysis, which included many individuals unaffected by the policy.

# Résumé

L'accès continu à des médicaments est nécessaire pour contrôler de nombreuses maladies chroniques. Nous avons cherché à examiner les répercussions qu'aura, sur la santé, l'adhésion à un régime provincial d'assurance-médicaments à partir de l'âge de 65 ans. En utilisant des données administratives, nous avons établi des cohortes d'individus de même âge ayant déjà présenté un épisode d'insuffisance cardiaque, souffrant de diabète et provenant de l'ensemble de la population. Nous avons comparé les dangers liés à l'hospitalisation à un âge donné et à un an de moins pour les sujets âgés de 63 à 67 ans. À l'atteinte de l'âge de 65 ans, les sujets étaient davantage susceptibles d'être hospitalisés pour cause de diabète et d'infection aiguë qu'ils ne l'étaient un an plus tôt. Parmi les résidents de quartiers défavorisés, ces effets n'étaient plus significatifs, mais il y avait un risque accru d'hospitalisation pour insuffisance cardiaque. On n'a pas observé d'effet semblable pour les cohortes jumelées représentant la transition entre 63 et 64 ans. Cette étude n'a révélé aucun avantage découlant de l'adhésion à un régime d'assurance-médicaments; cependant, la relation peut avoir été diluée dans les effets de la retraite et autres changements survenant à l'âge de 65 ans. En outre, un avantage dont bénéficie seulement un faible pourcentage de la population peut ne pas être apparent dans cette étude puisque celle-ci englobait de nombreux sujets non touchés par la politique.

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HARMACOTHERAPY HAS BECOME THE MAINSTAY IN THE MANAGEMENT OF many chronic diseases, and access to appropriate drugs can have an impact on disease-related morbidity and mortality. For example, patients who do not receive optimal drug therapy for congestive heart failure have higher rates of mortality and morbidity, including elevated rates of hospitalizations (Garg and Yusuf 1995; Luzier et al. 1998; Digitalis Investigation Group 1997; Pitt et al. 1999). Cost barriers in acquiring necessary medications may be one important factor limiting patients' ability to adhere to therapy (Heisler et al. 2004; Jackson et al. 2004).

The relationship between drug benefit coverage and the utilization of essential medications has been the subject of much study (Adams et al. 2001; Blustein 2000; Federman et al. 2001; Fortess et al. 2001; Gianfrancesco et al. 1994; Goldman et al. 2004; Grootendorst et al. 1997; Harten and Ballentyne 2004; Kozyrskyj et al. 2001; Lilliard et al. 1999; Shulman et al. 1986; Soumerai et al. 1987; Soumerai and Ross-Degnan 1990; Soumerai et al. 1994; Martin and McMillan 1996). Most work has been limited to natural experiments in the setting of policy changes where the effects of restricting drug coverage on medication use were studied. Strategies that have been employed include deductibles where benefits apply only after the patient has paid an initial fixed portion of the annual costs, co-payments where patients bear a proportion of the cost of each prescription and capping of the total number of prescriptions reimbursed in a period. These approaches have the effect of reducing the payer's expenditures through cost sharing but also through creating an effective incentive for reduced utilization. Reductions in drug use have been reported to occur in essential therapy such as insulin for diabetes mellitus and antipsychotics for mental illness (Soumerai et al. 1987), as well as for more discretionary medications such as analgesics and cough remedies (Harris and Custer 1991; Soumerai et al. 1987; Reeder and Nelson 1985).

A limited number of studies have reported the effect of introducing or extending drug coverage on medication use (Blustein 2000; Adams et al. 2001; Grootendorst et al. 1997). Elderly Americans newly enrolled in the prescription drug coverage program offered by the United Mine Workers of America Health and Retirement Funds increased their prescription drug use by 18% (Gianfrancesco et al. 1994). Similarly, the introduction of the RAND Elderly Health Supplement, a prescription drug coverage expansion to the Medicare program, increased the probability of use among those to whom drugs were prescribed (Lilliard et al. 1999). None of these studies, however, explored the impact of drug utilization on health outcomes.

For those Ontarians without comprehensive private drug insurance, turning 65 and thereby qualifying for coverage under the provincial drug benefit plan may represent an opportunity for improved health. That is, increased access to medication at age 65 by removal of financial barriers should be associated with a decrease in hospitalizations for certain chronic conditions. The effect should be most pronounced in those with low incomes and most easily detected in cases where hospitalizations can

be averted by chronic drug therapy or prompt acute drug therapy. This study examines the impact of insured access to drugs on outcomes by comparing hospitalizations among cohorts of individuals who are either 64 or 65 years old (the latter qualifying for Ontario Drug Benefits [ODB] coverage) and who are vulnerable to financial barriers because of low socioeconomic status.

# Methods

# Study design

We conducted a population-based retrospective cohort study by linking administrative healthcare databases covering nearly one million individuals 60 to 70 years of age in Ontario, Canada, from April 1, 1997 through September 30, 2000. Ontario residents age 65 years and older have prescription drug coverage through a comprehensive provincial drug formulary. This study was approved by the Research Ethics Board of Sunnybrook and Women's College Health Sciences Centre.

### Data sources

The administrative healthcare databases in Ontario allowed for cohort identification, co-morbidity assessment and endpoint ascertainment. These databases contain unique patient identifiers that permit deterministic linkage of patient level records between databases and over time. Hospital discharge abstracts were obtained from the Canadian Institute for Health Information. Each abstract contains up to 16 diagnostic codes classified as most responsible, preexisting co-morbidity or complications arising in hospital (Lee et al. 2005). Claims to the Ontario Health Insurance Plan (OHIP) describe service delivery by physicians working in a fee-for-service environment (Wilchensky et al. 2004). Claims to the ODB describe drugs dispensed and charges to the program; the database includes eligibility information for the various program subtypes (Levy et al. 2003). Population-wide coverage is available only to persons over 65 years of age, while a range of program subtypes apply to persons under age 65 in vulnerable circumstances, such as being on social assistance or long-term disability. The program reimburses all drugs from a broadly inclusive formulary. Of relevance to the current study, covered medications include routine treatments for heart failure (ACE inhibitors, diuretics and beta blockers) for hyperglycaemia (insulins, sufonlyureas and metformin with thiazoladinediones on restricted access) and oral antibiotics. Seniors with an income over \$16,018 for singles or \$24,175 for couples have an annual deductible of \$100 and a co-payment of \$6.11 on each prescription, while lowerincome individuals have no deductible and a co-payment of \$2. For persons with

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supplementary private insurance, the ODB is still the first payer, restricting private coverage to reimbursement for non-formulary drugs and co-payments. The Ontario Diabetes Database (ODD) is a validated administrative data-derived registry of persons in Ontario with diagnosed diabetes (Hux et al. 2002). The Registered Persons Database (RPDB) provides demographic data on all persons eligible for health insurance coverage in the province. All these databases are available at the Institute for Clinical Evaluative Sciences and can be linked through a reproducibly scrambled numeric identifier.

### Cohort definitions

Individuals were eligible for study if they turned 60–70 years of age between April 1, 1997 and September 30, 2000. The index date was set as the patient's first birthday within that window. For each individual, disease status was defined in the six years prior to the index date. Three study groups were defined on the basis of clinical diagnoses, namely, congestive heart failure (CHF), diabetes mellitus (DM) and acute infection. These three groups were analyzed separately, and patient pools in each diagnostic group were not mutually exclusive. These conditions were selected on the assumption that effective outpatient pharmacotherapy may avert the need for acute hospitalizations.

For patients in the CHF group, individuals having any hospitalization with a primary or most responsible diagnosis of CHF (ICD-9 428) in the three-year diagnostic window prior to the index date were identified from records of the Canadian Institute for Health Information (CIHI 2005). They were verified to be incident cases of CHF by excluding any who had hospitalizations or physician claims with a diagnosis of CHF in the three years prior to that three-year diagnostic window. The diabetes cohort was defined from the Ontario Diabetes Database by selecting incident cases in the three years prior to the index date. Within the ODD, incident cases are defined as those who met the case definition in that year but had not met criteria for entry to the ODD for at least three consecutive previous years. By selecting cases matched for disease duration, confounding related to disease progression is reduced. For the acute infection analysis, all persons who met the age criteria described above were eligible.

For each analysis, paired cohorts of patients were selected by one-year age differences (60–61 years, 61–62 years, 62–63 years, etc.) within each diagnostic category. Patients were then followed up for one year to examine disease-specific endpoints.

# Study endpoints

For the CHF cohort, the outcome was an emergency department (ED) visit or hospitalization for CHF. ED visits were identified using a previously defined algorithm and

were considered to have been for CHF when the diagnosis on the OHIP claim was CHF (ICD-9 428). Admissions to hospital for CHF were defined when CHF was listed as the primary or most responsible diagnosis.

For the DM cohort, the primary endpoint was an ED visit or hospitalization for DM. Admissions to hospital for DM were defined when one of the diagnostic codes shown in Table 1 was listed as the primary or most responsible diagnosis.

TABLE 1. Diagnostic c	oaes usea to	o define outcomes	

OUTCOME CONDITION (ICD-9 CODE)

Congestive heart failure Congestive heart failure (428)

(Hospitalization or ED visit)

Diabetes mellitus (250.0)

(Hospitalization or ED visit) Diabetic ketoacidosis (250.1)

Diabetic hyperosmolar coma (250.2)

Diabetes coma NEC (250.3) Hypoglycemic coma (251.0)

Acute infection Pneumococcal pneumonia (481)
(Hospitalization) Various bacterial pneumonias (482.x)

Acute cystitis (595)

Acute pyelonephritis (590.1)

Septicemia (038.x)

For the acute infection cohort, the outcome was hospitalizations for respiratory and urinary tract infections or sepsis defined when one of the codes listed in Table 1 was reported as the primary or most responsible diagnosis. ED visits were not included, as they may represent the initial presentation of the acute infection rather than a treatment failure.

### Socioeconomic status

A secondary analysis stratified by socioeconomic status was conducted, since it is expected that patients of low socioeconomic status would be at greatest risk of being affected by the availability of drug coverage. Such persons may work part-time or in settings without insurance and, at the same time, have inadequate financial resources to cover drug costs out of pocket. While some high-income individuals may also be

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without private insurance, they may not face the same barriers to purchasing necessary medications. Income level for individuals in the study was estimated from neighbourhood-level data collected in the 1996 census, using a validated algorithm (Roos and Mustard 1997; Demissie 2000). The neighbourhoods in Ontario, each representing a census enumeration area (median population ≈ 700), were divided into five categories based on median household income quintile within each census metropolitan area (CMA) or census agglomeration (CA). Income quintiles are then assigned to individual patients by linking on the patient's postal code from the RPDB as a common identifier. Individuals living in enumeration areas (1.4% of individuals in the sample) that lack income data were excluded.

For this subgroup analysis, patients in the lowest two quintiles were defined as "low socioeconomic status" and the patients in the highest three quintiles were defined as "high socioeconomic status." Individuals age 65 years and younger who received drug coverage through provincial social assistance programs in the one year prior to the index date (8.8% of individuals in the sample) were excluded from the analysis.

# Statistical analysis

For each group of patients in each diagnostic category, time-to-event analysis using Cox proportional hazards models was conducted to estimate the relative risk of an event in the one-year follow-up period for a total of 10 comparisons in each diagnostic group. Patients were censored at reaching one of the pre-specified endpoints or death, or at one year following their index date. In each of these models, age was the primary independent variable and event status was the dependent variable. The 10 relative hazard estimates in each diagnostic group were then compared to determine which age groupings resulted in statistically significant changes in health outcomes. Theoretically, the 64-65 year group or 65-66 year group would reveal statistically significant associations with health outcomes as a function of drug coverage. These analyses were repeated for low and high socioeconomic status groups.

# Results

Table 2 shows the hazard ratio for hospitalization for the three target conditions when compared in cohorts separated in age by one year and matched for disease duration (for chronic diseases). For residents of low-income neighbourhoods, the risk of hospitalization for congestive heart failure was increased on turning 65. In the case of diabetes, a trend in the same direction was observed; however, the effect was not statistically significant. For the full cohort, the risk of hospitalization was increased at age 65 years for diabetes and acute infection. In no case did we observe the hypothesized effect of access to provincial drug benefits on turning 65 leading to a decrease in

hospitalizations for target conditions. The effects seen in the low socioeconomic status subgroup were not statistically different from those seen in the population as a whole. In the other cohort years, for many comparisons the point estimates of the risk of hospitalization approached or exceeded unity, as would be expected given the effects of aging. However, the effects were much more modest than in the case of turning 65.

TABLE 2. Hazard of ac	lverse outcome in 1	paired cohorts dif	fering one
CONDITION	COMPARISON AGES IN YEARS	LOW-INCOME HAZARD RATIO, 95% CI	FULL COHORT HAZARD RATIO, 95% CI
Congestive heart failure	64 vs. 63	0.78 (0.53, 1.13)	0.92 (0.73, 1.16)
	65 vs. 64	1.48 (1.04, 2.10)	1.14 (0.91, 1.42)
	66 vs. 65	1.26 (0.95, 1.66)	1.36 (1.13, 1.64)
	67 vs. 66	0.97 (0.77, 1.23)	0.94 (0.80, 1.10)
Diabetes mellitus	64 vs. 63	0.94 (0.58, 1.53)	0.90 (0.67, 1.21)
	65 vs. 64	1.52 (0.97, 2.38)	1.43 (1.08, 1.89)
	66 vs. 65	1.07 (0.73, 1.56)	1.01 (0.79, 1.30)
	67 vs. 66	1.21 (0.86, 1.70)	1.09 (0.87, 1.38)
Acute infection	64 vs. 63	1.01 (0.76, 1.34)	0.97 (0.81, 1.16)
	65 vs. 64	1.14 (0.87, 1.50)	1.45 (1.23, 1.72)
	66 vs. 65	1.39 (1.09, 1.77)	1.28 (1.10, 1.47)
	67 vs. 66	1.20 (0.97, 1.48)	1.03 (0.90, 1.18)

# Discussion

We examined rates of hospitalization for conditions in which secure access to necessary medications would be expected to lead to reduced rates of admission to hospital, in order to examine the impact of initiating coverage in the ODB Program. We hypothesized that turning 65 years of age and thereby qualifying for access under the ODB Program should lead to reduced hospitalizations for these conditions and that the effects would be most apparent in individuals living in low-income neighbourhoods who, prior to turning 65, might have lacked both private drug insurance and resources to pay for medications out of pocket. This hypothesized effect was not observed; in fact, there was a trend toward increased rates of hospitalization for the

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target conditions in persons reaching retirement age. Our failure to observe health benefits when secure drug access was provided to persons with chronic disease may be due to the complex interplay of health, social, psychological and economic factors that attend retirement from the workforce, or they may be due to insensitivity of the source data to subtle clinical effects.

The fact that poor health outcomes were observed in the entire study population gaining provincial drug benefit coverage, and were not restricted to those whose lowincome status might impair access prior to coverage, suggests that these adverse outcomes are unlikely to result from increased drug access. Other studies have examined the health effects of retirement, which for many individuals coincides with turning 65. While retirement from paid employment has anecdotally been associated with deterioration in health status, evidence from studies designed to address this question does not consistently support the notion (Kremer 1985; Ekerdt and Bosse 1982; Ekerdt et al. 1983; Midanik et al. 1995; Mein et al. 2003). A recent report using prospectively collected longitudinal data from the Whitehall study of civil servants suggests that retirement is associated with an improvement in mental health, particularly for those in the highest job class, and no change in physical health functioning (Mein et al. 2003). Similarly, a study of members of the Kaiser health maintenance organization suggested that retirement was associated with decreased stress levels, reduced reporting of alcohol problems among women and more participation in regular exercise (Midanik et al. 1995). None of these studies examined the impact of retirement on cohorts of persons with chronic diseases, nor did they examine the effects of socioeconomic status and drug benefit coverage changes at retirement.

Limitations of our source data may have biased the observed findings. In particular, we used age 65 years as a surrogate for retirement and used residents of neighbourhoods in the two lowest-income quintiles yet not on social assistance as a surrogate for persons lacking adequate private insurance prior to retirement. Both assumptions may have led to substantial misclassification. Persons with chronic diseases at an advanced stage, where missed medication may precipitate hospitalization, may have retired early and qualified for benefits prior to age 65 years. Even in cases where persons have retired at age 65 years, they may not seek out drug benefits under the ODB Program immediately on qualifying, and this may lead to discontinuity in drug coverage. As with other observational studies using healthcare administrative data, there are difficulties in measuring co-morbidities that might confound outcome assessments. However, since the comparison cohorts in this study were defined on the basis of age rather than disease status or treatment, systematic differences in co-morbidity are less likely.

More importantly, we lacked a sensitive indicator for persons without private drug insurance at age 64 years. While such individuals may be more likely to live in lowerincome neighbourhoods, they may still be a minority of the population and the health benefits to them, if any, may not be detected when they are analyzed as part of a larger population. This dilution of benefit is problematic in the research context; however, it also represents the reality of policy initiatives applied at the population level. If the group likely to benefit from an initiative is small but the program is applied to the entire population, then the health gains in those at risk must be substantial in order to be detected as a measured benefit in the whole population.

The present findings suggest that access to drug benefit coverage at age 65 years for persons with selected chronic diseases is not associated with a reduction in hospitalizations for those conditions. These observations should not be interpreted as showing that public drug benefit coverage provides no benefit to patients. Further study is required to elucidate the impact of retirement on health status among retirees from a broad range of socioeconomic backgrounds and the influence of insurance coverage on those changes. The current study also serves as a cautionary note regarding the challenges of using administrative data to evaluate the health impact of policy interventions. The use of linked data sources and thoughtful study design can mitigate a number of confounding influences in such studies but can never eliminate them.

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# Implementation Evaluation of an Integrated Healthcare Delivery Initiative for Diabetic Patients

Évaluation de la mise en œuvre du projet de prestation de soins de santé intégrés aux diabétiques



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# **Abstract**

The aim of this in-depth, longitudinal, qualitative case study was to understand and explain the dynamics of implementing a pilot project to deliver integrated healthcare for type 2 diabetic patients. Data gathering included in-depth, face-to-face interviews with family physicians, nurses and other healthcare providers, managers and policy makers (n = 25) at various points during the research period, and focus groups (n =3) with patients. These data were complemented by onsite observations of numerous committee meetings, and analysis of project documentation. Benson's (1975) political economy perspective provided a valuable conceptual framework for tracking the complex dynamics of implementing service integration. Manipulative strategies (continuing medical education, new information technology) did not engage physicians. Of the cooperative strategies attempted (disease management, patient education, community mobilization), only patient education appears to have succeeded: patients acknowledged that project educational activities enabled them to improve self-management of their disease. However, the project's emphasis on patient education effectively increased nurses' bargaining power within the healthcare team, to the detriment of the focus on integrated care. Integrating care is a laborious process that takes time to reach fruition. This one-year pilot project was insufficient for mobilizing health professionals away from fragmented practices toward integrated ones. New resources mostly allowed them to maintain or increase their power positions within the network of care providers. Nevertheless, this initiative raised physicians' awareness and appreciation of the care that other health professionals provided to their patients.

# Résumé

La présente étude de cas longitudinale et qualitative visait à comprendre et à expliquer la dynamique nécessaire à la mise en œuvre d'un projet pilote en matière de prestation de soins de santé aux personnes souffrant de diabète de type 2. Les données ont été recueillies, entre autres, auprès de médecins de famille, de personnel infirmier et autres prestataires de soins, gestionnaires et responsables des politiques dans le domaine des soins de santé (n=25) qui ont été interviewés en personne à différents moments au cours de la période d'étude, et auprès de patients à l'occasion de groupes de discussions (n=3). Des observations faites sur place par les participants et responsables et une analyse de la documentation du projet ont permis de complémenter ces données. Le concept d'économie politique de Benson (1975) a permis de disposer d'un cadre conceptuel précieux pour suivre la dynamique complexe de l'intégration des services. Les stratégies de manipulation (formation médicale permanente, nouvelle technologie de l'information) n'ont pas attiré les médecins. Parmi les stratégies de coopération mises en œuvre (gestion thérapeutique, éducation des patients, mobilisation de la communauté), seule l'éducation des patients semble avoir été un succès : les patients

ont reconnu en effet que les activités visant à les informer sur leur maladie leur avaient permis de mieux gérer eux-mêmes cette maladie. Cependant, l'accent mis par le projet sur l'éducation des patients a augmenté en réalité le pouvoir de négociation du personnel infirmier au sein de l'équipe soignante au détriment de l'attention à porter sur les soins intégrés. L'intégration des soins est un processus laborieux qui ne porte pas ses fruits du jour au lendemain. Le projet pilote, qui a duré un an, n'a pas réussi à détourner les professionnels de la santé de pratiques fragmentées vers des pratiques intégrées. Les nouvelles ressources leur ont principalement permis de conserver ou d'augmenter leur autorité au sein du réseau des prestataires de soins. Ce projet a quand même permis aux médecins de prendre conscience des soins offerts par d'autres professionnels de la santé à leurs patients et d'en apprécier la valeur.

HIS EVALUATION WAS CONDUCTED WITH THE AIM OF EXPLORING IMPLEmentation of a new model of integrated care delivery for patients with type 2 diabetes in the Côte-des-Neiges area, Montreal, Quebec, Canada. Diabetes mellitus has become an important public health problem owing to the disease's high prevalence, its short- and long-term morbidity effects, its complex management and the considerable health expenditures, for both patients and society, entailed in its treatment (Greenlink 1992; Harris 1993; Wagner 1995; Meltzer et al. 1998; Rosnick 1998; Weiss 1998; Gerber and Stewart 1998; McKinlay and Marceau 2000; O'Brien et al. 2003; Jiang et al. 2003; Safran et al. 2003; Centers for Disease Control and Prevention, Primary Prevention Working Group 2004). Among the different types of diabetes, type 2 is the most prevalent, accounting for about 90% of diagnosed diabetes cases (American Diabetes Association 1998).

It has been noted that the more healthcare for diabetic patients is provided by a multidisciplinary cooperative and coordinated clinical team, the higher the chances of adequate control of the disease (Hiss 1996; Meltzer et al. 1998; American Diabetic Association 1998; Bayless and Martin 1998; Larsen et al. 2003). However, healthcare systems in Western countries have typically been developed around acute health problems (Wagner et al. 1996; Etzweiler 1997), an evolution that has led to autonomous clinical practices, organizational independence and fragmentation of care delivery. The complexity and rising prevalence of chronic diseases such as diabetes are among the factors that call into question the traditional lack of collaboration among healthcare providers and organizations (Contandriopoulos 2000). Chronic disease treatment challenges, such as those posed by diabetes, foster the collaborative trend that, since the early 1990s, has swept the healthcare industry in North America under the label "integrated delivery systems" (Shortell et al. 1996; Leatt et al. 2000).

The sponsors of the Côte-des-Neiges pilot project1 established their initiative

with a twofold purpose: (1) to understand and explain the emergence of integrative processes of healthcare delivery to chronic patients in a traditionally fragmented healthcare system and (2) to generate evidence about the added value for individuals and the healthcare system of providing integrated care for diabetic patients. This paper focuses particularly on the first of these aims.

The remainder of the paper is structured as follows. First, we briefly describe the Quebec healthcare delivery system and the integrated model of care elaborated by the Côte-des-Neiges sponsors. Next, we present the key conceptual elements that underpin the implementation analysis, based on Benson's (1975) view of the interorganizational network as a political economy. Then, we describe the research methods used for the implementation evaluation. Next, we present the findings from our investigation. The paper ends with an interpretation and explanation of these findings and a discussion of their implications.

# The Quebec Healthcare Delivery System

Healthcare systems have experienced profound upheavals over the last two decades. Despite their differences in funding, organization and management, all have been affected by budgetary constraints, older populations and technological innovation. These trends hold true for the Canadian and Quebec healthcare systems (National Forum on Health 1997). Given the challenges of maintaining quality of care while improving cost control, numerous studies have recommended the reinforcement of primary care across the country.<sup>2</sup>

The Quebec healthcare system, which is publicly funded, is organized across 18 health regions. In all these regions, particularly in urban areas, primary medical care is practised in a variety of settings, which include primary care facilities, emergency rooms, ambulatory hospital clinics and long-term-care institutions. Most physicians have a mixed practice profile, and work in more than one milieu (Demers and Brunelle 2000). That said, primary care is mainly delivered in two kinds of facilities: local community health centres (CLSCs) and medical clinics. Twenty-two percent of physicians work in CLSCs, mostly on a salary basis (Demers and Brunelle 2000). Hence, family physicians working in fee-for-service private practices provide the bulk of primary medical care.

This dual/parallel primary care network has contributed to the fragmentation of healthcare delivery. Fragmentation has been intensified by the historically difficult relationship between the CLSCs and private medical clinics (Lemieux and Labrie 1979; Commission of Study on Health Services and Social Services of Quebec 2000).

The Côte-des-Neiges community health centre is one of 29 such facilities on Montreal Island. It is located in a densely populated multiethnic area – more than 130,000 inhabitants from 127 different ethnic groups – with significant inequality in

socioeconomic status. Besides the community health centre, the healthcare network in the Côte-des-Neiges area comprises 12 medical clinics, more than 50 solo practitioners' clinics, three acute care hospitals and one public long-term-care facility. All these organizations have been delivering care in silo fashion, with negative consequences particularly for such clients as the elderly and patients with chronic diseases (Bergman et al. 1997).

# The Côte-des-Neiges Integrated Model of Healthcare Delivery for Type 2 Diabetic Patients

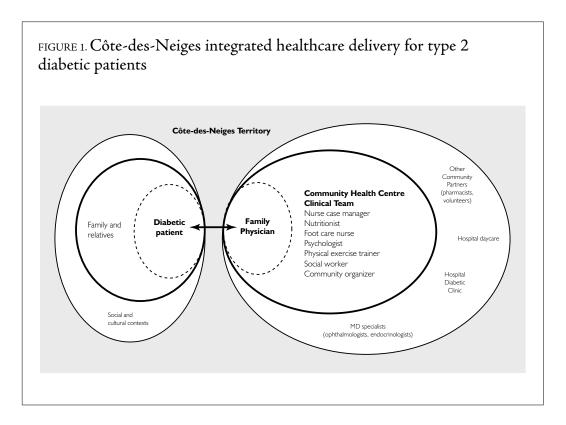
In 1997, the sponsors of the Côte-des-Neiges project began a process of reflection on integrated medical services. Their working sessions over the next year were held against a backdrop of informal exchanges, informative seminars and nominal groups with physicians from the community health centre and private clinics in the area (Nasmith et al. 2001). These meetings resulted in the identification of type 2 diabetes as the health problem most likely to engage healthcare providers in implementing integrated service delivery. In 1999, the sponsors established an inventory of all health resources in the area, wrote a literature review on the topic of integrated care and diabetes and successfully applied for financial support from the Canadian Health Transition Fund.

Working groups were established to address three main themes on integrated care for diabetics: patient education, family physician practices and communication among healthcare providers. The deliberations of these groups informed construction of the model of healthcare delivery to be implemented, as well as the strategies of change to be adopted in fostering integration.

The model of healthcare delivery finally adopted (Figure 1) was based on the assumption that diabetic patients' clinical responsibility had to be shared by a multidisciplinary team composed of the family physician (in the facility where he or she delivers care), a clinical team located at the community health centre (nurse case manager, nutritionist, foot care nurse, psychologist, physical exercise trainer, social worker and community organizer<sup>3</sup>) and the patients themselves.

To promote clinical integration, five different levers of change were employed:

- 1. adoption of a disease management approach for patient follow-up (González and Crane 1995; Sylvestry and Marro 1996; Ellrodt et al. 1997);
- 2. development of *patient educational activities* inspired by the Prochaska model (Prochaska and DiClemente 1982; Prochaska 1994) to promote patient empowerment (Greenfield et al. 1988; D'Eramo-Melkus et al. 1992; Redhead et al. 1993; Anderson et al. 1995; Day et al. 1997);



- 3. organization of *continuing medical education* (CME) activities on diabetes to increase family physicians' clinical expertise (Greenlink 1992; Borgiel et al. 1999);
- 4. adoption of a *computerized clinical information system* that links healthcare providers beyond organizational boundaries to facilitate transmission of patients' clinical information and improve effectiveness and cost containment (Leape et al. 1995; Pestotnik et al. 1996; Bates et al. 1998; Hunt et al. 1998);
- 5. *mobilization of community resources* beyond the healthcare system to involve the Côte-des-Neiges community at large in improving its diabetic patients' quality of life (Baker et al. 1994; Glasgow et al. 1999) and simultaneously reinforce community social capital.<sup>4</sup>

Together, these interventions constituted the Côte-des-Neiges project. To determine their impact on the dynamics of healthcare integration, we decided to adopt Benson's (1975) political economy perspective as a conceptual framework.

# Theoretical Background

In 1975, J. Kenneth Benson developed a theoretical scheme of the interorganizational

network as a political economy. For Benson, an interorganizational network was an "emergent entity" compounded by a number of "distinguishable organizations" that interact over time. These interactions may take place at two different levels: (1) service delivery and (2) resource acquisition. Building on the resource-dependence approach (Yutchtman and Seashore 1967), Benson argued that the interactive pattern of service delivery is ultimately conditioned by interactions at the level of resource acquisition.

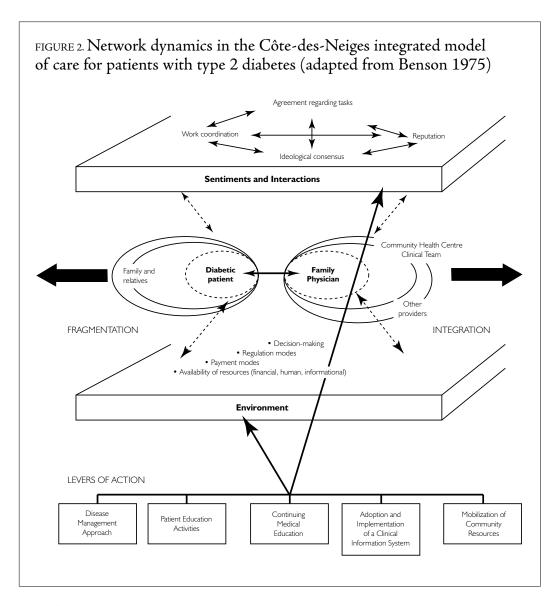
Benson's political economy of interorganizational networks requires two essential and interrelated resources: money and authority. Money is necessary for the adequate supply of resources, and authority is crucial for legitimating decision-making and actions. These economic and political forces would underpin the "superstructure" of sentiments and cooperative interactions among the members of the network.

According to Benson (1975: 235), an interorganizational network achieves equilibrium "to the extent that participant organizations are engaged in highly coordinated, cooperative interactions based on normative consensus and mutual respect." The four essential dimensions of this equilibrium are domains, ideologies, positive reciprocal evaluations and work coordination.

Interorganizational networks do not emerge in a vacuum; they are intimately linked to the environment within which the actors negotiate their interactions. In other words, in order for agents to work together, they must be surrounded by the symbolic and material conditions that favour collaboration. Those aspects of the social context that most significantly affect the political and economic forces of the network are, according to Benson, (1) the supply of money and authority and (2) the distribution of power within the network.

Benson also suggests that change in the dynamics of the interorganizational network may be driven by a variety of strategies. He notes four in particular: (1) cooperative strategies, which involve agreements and joint planning; (2) disruptive strategies, by which change is generated through activities that threaten an organization's capacity to acquire resources; (3) manipulative strategies, by which the environmental constraints that affect resource acquisition are purposively altered; and (4) authoritative strategies, by which interorganizational relationships are mandated by a legitimated administrative or legislative governance structure.

In summary, based on Benson's conceptualization, healthcare provider clinical practices and patient behaviour (i.e., the level of service delivery) are influenced by two sets of forces: the superstructure of sentiments and interactions and the healthcare system's environment. In our case, and thanks to the supply of new money from its sponsors (i.e., the level of resource acquisition), the Côte-des-Neiges project was viewed as a valuable opportunity for acting on those two levels. Through implementation of a number of cooperative and manipulative strategies aimed at triggering change, the project promoted the transformation of clinical practice for type 2 diabetic patients from a fragmented to an integrated model (Figure 2).



# Methodology

# Research strategy and design

In this evaluation, we adopted a qualitative case study strategy. As Patton (2002: 162) notes: "If a process of ongoing adaptation to local conditions characterizes program implementation, then the methods used to study implementation should correspondingly be open-ended, discovery oriented and capable of describing developmental processes and program changes. Qualitative methods are ideally suited to the task of describing such program implementation."

Because of its considerable size and the richness and variety of its health and community resources, the Côte-des-Neiges area offered an exceptional context for experimentation with new forms of organizing. Because longitudinal research appears crucial for attaining a rich understanding of organizational change (Pettigrew 1990; Orlikowski 1996; Armenakis and Bedeian 1999), we conducted an *in-depth*, *longitudinal*, *qualitative case study*, the case being the implementation of integrated health services delivery for type 2 diabetic patients.

### Data gathering and analysis

The pilot project – and thus data gathering – was carried out over 31 months, from June 1998 to December 2000. The main method for collecting data was *qualitative interviewing* (Rubin and Rubin 1995). Face-to-face, one-to-one, semi-structured interviews were carried out mostly over the last six months of the intervention. Owing to the number and variety of actors involved in the project, the selection of individuals to be interviewed (Table 1) had to be undertaken with care. A list of participants other than patients was drawn up, and 36 were selected according to their estimated capacity to provide information useful to the project's development. In the case of physicians, steps were taken to ensure representation of all clinical settings involved in the initiative. These individuals were invited for a voluntary interview, to which 25 agreed. Interviews were tape-recorded and lasted an average of 45 minutes.

A second method of data collection was the *focus group* (Krueger and Casey 2000). Our intention was to engage patients in in-depth discussions about their opinions and experiences related to the project. To be eligible, patients had to have received more than one service from the clinical team at the community health centre, and they had to speak French or English. Again, an effort was made to ensure that all clinical settings were represented. Of 34 diabetic patients invited to participate in the focus groups, 16 agreed. Three group sessions were held in the fall of 2000. Group discussions were also tape-recorded. Careful listening to the recordings helped identify the most important points for discussion in successive sessions.

On-site participant and non-participant observations over the 18-month research period complemented the interviews. Observations were recorded mainly in sponsors' work sessions and meetings of the project Advisory and Steering committees. Finally, archival materials (proceedings and minutes, e-mails exchanged between family physicians and nurse case managers, and other project documents) and extensive diary research notes complete the list of methods used to generate empirical material over the 31-month period of inquiry.

Transcripts of semi-structured interviews and focus groups were subjected to sequential thematic analysis (Paillé 1996) guided by the dimensions of the theoretical framework and supported by the software package N-Vivo 2.0. In combination with

TABLE 1. Côte-des-Neiges project: participant sample composition			
PROJECT STAKEHOLDERS	п	INITIAL n	FINAL n
Type 2 diabetic patients	325	34	16
Family physicians	44	12	12
Community centre	5	2	2
Polyclinic	37	8	8
Solo	2	2	2
Providers at community centre	8	8	5
Providers from specialized services	4	4	1
Managers	11	4	2
Advisory committee	20	3	
Steering committee	7	5	4
TOTAL	419	70	41

observations, documentary analysis and field notes, this technique facilitated the elaboration of a detailed narrative of the intervention (Langley 1999). The preparation of tables was helpful for condensing information and identifying patterns of interaction (Miles and Huberman 1994; Langley 1999).

# Results: Working for Integration – Implementing the Côtedes-Neiges Diabetes Project

The implementation phase of the Côte-des-Neiges project spanned January to December 2000. Forty-four physicians were recruited from 10 different medical practices representing the variety of practice settings in the area, and 345 patients received services according to their identified needs. The five different strategies for change included in the new model of care (disease management, patient education, continuing medical education, computerized clinical information system and community mobilization) were put in place at the beginning of the implementation phase.

# Sub-process 1: Adopting a disease management approach

Our disease management approach for diabetic patients assumed that the central role in diagnosis and treatment would be played by the family physician. Nursing roles would be enhanced through new activities developed by two nurse case managers specifically hired for this project. After medical referral, the nurses provided patient

education services and coordinated these services with those provided by other members of the clinical team at the community health centre.

Nurses were based at the community health centre, and e-mail was the preferred method of communication with physicians. In this way, the nurses aimed to keep physicians informed about the intervention plans adopted for their patients, the results of follow-ups and any operational difficulties concerning the implementation of integrated care.

Such organization of service delivery, however, failed to promote clinical integration; each professional continued to provide care in parallel. As one physician in solo practice observed:

I am looking at this project as a physician who is sitting in my office. My patients go away to this place and different things are happening there in this place. I'm given the general outline, my patients told me the general outline a little bit, but all of the little details, the logistics and all of those things that I'm not really involved in, my involvement is my own logistics with filling out the forms, encouraging the patients to go, following the patients medically. ... It's more clinical, so I don't really have a tremendous amount to say about the logistics of what's happening at the community health centre.

The lack of physician involvement was also noted by members of the clinical team:

There is the aspect of communication between physicians and the other providers via the computer. ... In fact, what we have seen is that there are not many links between general practitioners and us. There are very few contacts. But they have access to all the services we provide. For myself, I have no contact with physicians.

As a result, the pilot project was perceived as *an addition of new services* for diabetic patients. In other words, the supply of new money did not promote integrated delivery as expected, but allowed the main professionals involved in disease management to maintain (in the case of physicians) or increase (in the case of nurses) their bargaining power within the multidisciplinary team. As a result, the network superstructure did not change; rather, new fragmented services for diabetic patients were provided.

# Sub-process 2: Empowering diabetic patients

To promote behavioural changes in patients, encourage empowerment and ultimately foster self-care, the clinical team from the community health centre created an assessment tool based on the Stages of Change model of behaviour acquisition (Prochaska

and DiClemente 1984; Prochaska 1994). Upon entry into the project, each patient was evaluated in six different spheres pertinent to diabetes: general knowledge about

As physicians questioned the utility of the Stages of Change model adopted by the nurse case managers, and expected more concrete and speedy results than were observed in their patients, nurses advocated for effective triggering of patients' lifestyle modifications, ...

the disease, nutrition, physical activity, foot care, medication use and emotional stress. According to this first evaluation – which was very time-consuming, lasting about 90 minutes on average – an individualized service plan was elaborated, detailing provision of services in response to identified patient needs. Such a plan could include either individual or group sessions that provided direct care,

such as foot care or nutrition counselling, or education in one of the six spheres. The evolution of diabetic patients through the different stages of diabetes-related health behaviours was monitored and assessed periodically by the nurse case managers. However, fragmentation in service delivery prevailed. According to one physician from the community health centre:

Probably what I was expecting was a call from the nurse saying: "Listen, we have elaborated our plan of services, now how would you like to proceed? Could we discuss this together? Would you like me to send it to you? What can we do with this? Could we schedule periodic meetings? Do you want to speak with the nutritionist?" I think I expected some initiative from them. Perhaps they were waiting for some initiative from me. I do not know.

Furthermore, implementation of the patient education strategy highlighted a lack of understanding and consensus among healthcare providers regarding the philosophy of the intervention. As physicians questioned the utility of the Stages of Change model adopted by the nurse case managers, and expected more concrete and speedy results than were observed in their patients, nurses advocated for effective triggering of patients' lifestyle modifications, a process that required time and appropriate adjustment to individuals' personal characteristics. The infusion of new money, therefore, mainly served to reinforce the power positions of health professionals within the network, and the multidisciplinary team working with diabetic patients was unable to attain a clear consensus regarding delivery (Figure 1).

Despite the professionals' lack of consensus, most patients described improved knowledge of diabetes and its management as the most important benefit of their participation in the project. Improved comprehension of their disease and of the effects of adequate diet and medication helped them modify their diet, physical exercise and stress control. Such modifications were also reported by their family physicians. As one doctor in solo practice stated: "... they started coming back to me and telling me how they are going to exercise classes, how they are seeing the dietician and they are going to the foot care clinics, and that all of these things have been done, and my patients are so happy with it."

## Sub-process 3: Updating medical knowledge on diabetes

The Côte-des-Neiges project intended to improve family physicians' clinical expertise on diabetes through continuing medical education, easier access to consultation with specialists, availability of a CD-ROM developed by the Canadian Diabetes Association (CDA) and elaboration of a flow sheet that updated knowledge on diabetes according to CDA guidelines. The College of Family Physicians of Canada offered CME credits to participating physicians, which provided an incentive for their involvement in these activities.

However, implementation of these manipulative strategies for integration had limited success. Physician involvement in CME sessions was rare, typically due to agenda incompatibilities. A physician from a medical clinic stated: "I didn't participate in any CME stuff. There were scheduling conflicts." The CD-ROM was also poorly received. One physician in solo practice said: "I received the CD-ROM. I did not find it very useful. It was fairly elementary. I saw no disadvantage about receiving the same thing on paper." In contrast, the flow sheet was accepted by 35 out of 44 physicians (79.55%) participating in the project. Some physicians even incorporated it into the medical record of their non-diabetic patients.

# Sub-process 4: Adopting a computerized information system

In order to introduce new mechanisms of communication, sponsors of the Côte-des-Neiges pilot project invested considerable resources in the acquisition of a computerized information system. This purchase was intended to facilitate feedback among healthcare providers via patient records.

Implementation of the system was problematic. First, the installation of workstations and medical training sessions stretched out over six months of the 12-month pilot project. Hence, physicians had only a few months to integrate the new system into their practice. Second, the lack of interface between the project system and suppliers (e.g., the laboratory) hindered adoption of the new technology. Third, barriers to data

entry (e.g., physicians in solo practice had to enter patient data themselves) discouraged more widespread use of the innovation. One physician from the community health centre stated: "I have found [the new system] less useful because of time constraints. I am here part-time. So when I am here, I am booked with patients and so, unless I book specific time so I can sit at the computer we have in the hallway ...." Finally, ini-

... physicians recognized the usefulness of a computerized system, particularly for quick feedback among members of the multidisciplinary team and for scheduling visits with specialists.

tial technical problems discouraged utilization of the system afterwards. As one physician in solo practice remarked: "There is a bug in the program. It will not save the flow sheet. So after trying a couple of times, I have not tried again. They tried to fix it once and it was not successful. But maybe it has

been fixed by now." As a result, most care settings maintained a double patient record (electronic and paper) during the pilot project period.

Despite these difficulties, physicians recognized the usefulness of a computerized system, particularly for quick feedback among members of the multidisciplinary team and for scheduling visits with specialists. As one physician from a medical clinic stated:

This is coming. We're all learning it. But it is a great problem for this group here. However, in a certain sense, ... this is stimulating us. It is really an advantage for the unit. I see it as very positive. It is difficult. It is difficult for me, for the others, but it is an advantage. In the long term, it is a great advantage.

# Sub-process 5: Mobilizing the local community

The Côte-des-Neiges pilot project included the strategy of mobilizing community resources beyond those provided by the local healthcare system to generate activities that would enhance diabetic patients' quality of life. To this effect, links were established with various community agencies, including a variety of ethnic patient groups, health resources such as pharmacists, sports centres and supervised housing for the elderly. Unfortunately, several circumstances hindered community mobilization, including (1) the emphasis nurses placed on individual interventions, resulting in underutilization of other team experts in community intervention, (2) lack of clarity regarding the project's community actions and (3) the limited period of time available for the pilot project. The lack of community mobilization was noted by a member of the clinical team:

So I think that there are a lot of clinical interventions. ... There is a lot of information available for the client to be able to know his or her disease and to take care of himself or herself as best as possible. Up to now, I've considered that there is absolutely nothing regarding the community in this project. It is a shame, but it is not tragic either.

# Discussion: Political Economy of the Côte-des-Neiges Project

This initiative was one of 140 projects funded by the federal government through Health Canada between 1997 and 2001, in order to test and evaluate new ways of organizing healthcare delivery. The sponsors of the Côte-des-Neiges project saw this federal program as a valuable opportunity for integrating care for type 2 diabetic patients. The program provided access to the two essential resources of Benson's political economy of interorganizational networks – money (CAN\$1.0 million from the government for project development, implementation and evaluation) and authority (credibility and legitimacy of the project's sponsors for decision-making and action).

Despite their credibility and legitimacy in academia, research, public health and healthcare delivery, none of the project sponsors had any formal authority over physicians, who participated on a totally voluntary basis, nor over the other health professionals involved in the team, who were contractually linked to the community health centre. In addition, despite the number of project sponsors, none could be identified as its key leader. This lack of leadership hampered implementation, as described by one member of the Steering Committee:

Our management from the beginning was quite participative, and there were many leaders, not one from the outset. And what needs to happen is ... there has to be one leader who has power that says: "This is what you have to do." An organizational chart should have been drawn up from the beginning, outlining the communications that should occur. And I think it was not clear from the beginning that there was one key leader; there was a day-to-day manager, but not a key leader.

Most of the funds were used to pay for the salaries of the clinical team at the community health centre and the acquisition of the information system and hardware, which were given to the physicians in appreciation for their participation in the project. In Benson's terms, these resources were used to develop both cooperative strategies (disease management, patient education, community mobilization) and manipulative strategies (CME and information technology). At the context level, these strategies directly altered the availability of resources during the year-long project. Initially, sponsors also intended to provide a financial incentive (payment mode) to

physicians to encourage their participation, but this proposition was not accepted by the funding agency (the federal government).

The combination of cooperative and manipulative strategies seemed appropriate for supporting integrated care. However, as Benson notes, cooperative strategies succeed only when partners have strong bargaining power, each holding something of value to the others. This was not the situation in the Côte-des-Neiges pilot project – at least, not at the beginning. The manipulative strategies – which favoured the most powerful team members, i.e., physicians – were not as effective as expected: the physicians did not participate in CME and made little use of the information system. This lack of efficacy of manipulative strategies was compounded by the impossibility of remunerating the physicians for their participation. As a result, the pilot project would succeed or fail based on cooperative strategies that were set up under difficult conditions. Indeed, the three cooperative strategies were practically reduced to one – patient education. This unintended shift in emphasis increased the nurses' bargaining power within the network to the detriment of the focus on integrated care, a drawback noted by one member of the Steering Committee:

My own feeling is that the use of the Prochaska model actually side-tracked the main emphasis of the project, which should be, and I believe was, integration of care. Now, people would say the Prochaska model enabled the provision of better care for the patients, but in reality the Prochaska model is a model that has yet to be proven, is a model that is being developed; and I do not think our goal was to develop the model, but rather it was to develop services, appropriate services, and integrated care. So my feeling was that there was too much emphasis put on that, too much resources and effort put on the Prochaska model and not enough effort put into the concept of integration and provision of services.

The issue here is not the appropriateness of the Prochaska model for framing patient educational activities. What is at issue is how the Prochaska model, which initially was an assessment tool for planning the project, became over time the sole focus of the initiative instead of the integration of healthcare services delivery.

At the level of sentiments and cooperative interactions (i.e., Benson's "superstructure"), domain and ideological consensus were poorly developed owing to the physicians' lack of awareness of the interventions to be implemented, and disagreement among members of the clinical team at the community health centre regarding the tasks to be accomplished. A lack of adequate clinical leadership was noted by one member:

The biggest challenge or the biggest problem ..., according to what I have seen – I really summarize in general – it is at the time of the group's meetings, we

did not understand each other. We, the providers, we ran on in one way, and the model ran on another one. And this was frustrating as providers. Then if there is no consensus, if we do not start together, if we do not agree, then we lock up everyone together in a room, for three hours, but we leave and we all do not agree.

Work coordination mostly consisted of referrals from physicians to the community health centre, with services being delivered in parallel by each of the care providers involved. Professionals also tended not to value the work done by one another's organizations. In addition to the historic separation among disciplines, most particularly between physicians and other health professionals, difficult relationships among members of the clinical team at the community health centre were heightened by the hierarchical manner in which the model was implemented. According to one team member:

If we talk about the group's meetings, we always reviewed nursing first. One can see the hierarchy. The nurse is the first part, the most important. He or she is the link with the physician, the medical part. Then, the dietician. Everyone wanted to see the dietician. This runs together: diet and control. Then, we had foot care. And then, we reviewed social work at the end. ... It would have been good to address things more globally.

In summary, a combination of inadequate authority, moderate flow of resources and relatively successful implementation of patient education activities resulted in what Benson would classify as a "low-equilibrium system." In other words, after one year, the healthcare network retained its balance of fragmentation.

Yet, something beneficial happened at the level of network superstructure. The feedback that physicians received from their patients regarding the services provided at the community health centre, and the observable effects on patients who had adopted healthier lifestyles and gained better control of their disease, convinced physicians that they could no longer work alone when caring for patients with chronic diseases. In Benson's terms, for the sake of their patients, this initiative mobilized physicians to place greater value on services provided by other health professionals in the local network.

Integrated models of healthcare delivery have attracted attention from researchers and decision-makers for at least the last 15 years. Much work published on the topic concerns theoretical models and expected benefits attributed to integration (in the Canadian context, see, e.g., Leatt et al. 2000; Marriot and Mable 2000). However, as noted by Fleury and Mercier (2002: 69): "The beneficial effects of service integration in the healthcare system are only demonstrated on the basis of a few empirical studies whose findings are mostly contradictory or inconclusive." Furthermore, empirical research on integration has been dominated by its focus on results, both at a systemic

level (e.g., Gillies et al. 1993; Shortell et al. 1996) and at a program level for specific clienteles (see, e.g., Johri et al. 2003 for a review of projects testing integrated models of care for the elderly).

The feedback that physicians received from their patients regarding the services provided at the community health centre, and the observable effects on patients who had adopted healthier lifestyles and gained better control of their disease, convinced physicians that they could no longer work alone when caring for patients with chronic diseases. Given such a research context, our work makes a twofold contribution. On the one hand, it departs from the dominant research paradigm – which typically assumes a functional perspective and variance approaches – by adopting Benson's political economy as a theoretical framework. This framework appears particularly appropriate

in this investigation for at least three reasons. First, it constitutes a *process* theoretical approach, i.e., it helps explain how a phenomenon evolves over time and how it does so in a particular way, whereas a variance theory aims at explaining relationships between dependent and independent variables (Langley 1999); second, it concerns emergent interorganizational networks; and finally, it draws on an empirical study of relationships among human service agencies.

Further, as in any implementation evaluation, this study seeks to provide a comprehensive understanding of the process by which an "ideal" model of integrated care is effectively implemented. As such, and aside from the specific local scope of the project, this investigation provides four intertwined insights to those who seek to integrate primary care networks. First, the supply of new resources appears a necessary but insufficient condition for promoting integration. The great investment that the project's sponsors made in information technology, with very poor or no results, properly illustrates this point. Second, the lack of adequate clinical leadership and consensus regarding the philosophy of intervention hindered the construction of a truly cooperative interprofessional relationship between physicians and nurses, and precluded the elaboration of a joint disease management plan. Third, implementing integration is an evolutionary process that requires an adequate temporal frame to succeed; stopping the project after only one year constituted a waste of resources and energy. Finally, the project suggests that healthcare integration, whatever form it takes, requires the health professionals involved to give sense to the conceived plan in order to be able to implement it. Put differently, a process of "sensemaking" (Weick 1995) is needed for practitioners to reach an adequate fit between the conceived plan - the vision - and the realized project.

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#### NOTES

- 1. Project sponsors included researchers and practitioners from the McGill Department of Family Medicine, the Côte-des-Neiges community health centre, the Montreal Public Health Division and the Multidisciplinary Research Group of Health (GRIS) from the Université de Montréal.
- 2. See, for example, the conclusions of the Sinclair Commission in Ontario (December 1999); the Premier's Health Quality Council in New Brunswick (in progress as of January 2000); the Clair Commission in Quebec (December 2000); the Fyke Commission in Saskatchewan (April 2001); or the federal Romanow Commission (November 2002).
- 3. A community organizer is an agent who facilitates social dynamics related to health within a CLSC's scope of action.
- 4. Social capital is the capacity of a collectivity to create and maintain links among its members (see, e.g., Kabanoff 1991; Putnam 1993; Kawachi et al. 1997).

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