HEALTHCARE

POLICY

Politiques de Santé

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

Volume 6 ✦ Number 1

Health Reform and the Obama Administration: Reflections in Mid-2010
THEODORE R. MARMOR

Fire, Aim… Ready? Alberta's Big Bang Approach to Healthcare Disintegration
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Does It Matter What You Measure? Neighbourhood Effects in a Canadian Setting
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Knowledge Translation, Linkage and Exchange

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

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

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

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

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

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

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Examen par les pairs

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EDITORIAL

How Do We Know? Evidence-Based Research and Knowledge Transfer

How do we know what we know? This question, asked by philosophers for more than two thousand years, has been in my mind recently.[1]

A few weeks ago, I was asked to name five health systems that are recognized for their capacity to use data to drive improvement. The criteria were open; the scope was global. It was not so much the question that surprised me as the fact that I almost dashed off an immediate list by return e-mail. Fortunately, my fingers paused before they hit "send."

On the one hand, that approach would be fair. After all, I was being asked to name systems that were "recognized" for their achievements. A few organizations are acknowledged globally for their successes in this domain, and draw visitors from around the world who wish to study their achievements. These were the organizations on my initial list. On the other hand, how do I know that these top-of-mind organizations are truly superior to others whose results are not so widely celebrated? After thinking again about the evidence of improvement that actually exists, I crossed off two organizations from my original list, but the process was still necessarily somewhat arbitrary.

In contrast, in this journal's pages, we are fortunate to have information from authors about the questions that they asked and the approaches that they took to answering them – covering both what we now know because of the research and also how the results were reached. This clarity is particularly important because of the complexity of the issues that our authors address. In this issue, for example, you will find new research on the extent to which neighbourhood characteristics influence health, whether men who have heart attacks are more likely to receive cardiac interventions than their female counterparts and the types of services that patients who are waiting for long-term care placements need. Cam Donaldson and Theodore Marmor also weigh in on thorny health policy debates, drawing on recent experience in Alberta and the United States, respectively. In addition, Steve Morgan and his colleagues look ahead to help us understand the attributes that future graduates of health services and policy research programs need in order to address these and other challenging questions.

I hope that you will find this issue of *Healthcare Policy/Politiques de Santé* insightful and useful. In an effort to continue to improve the journal, both for contributors and for readers, our editorial team has recently updated the guidelines for authors and reviewers. These new guidelines highlight the factors that we take into account when considering papers for inclusion. For example, we think about the fit with the journal's mandate, the unique contributions made to advancing knowledge, meeting the high-

priority information needs of health sector decision-makers and the robustness and relevance of the methods chosen and conclusions drawn. Given the diversity of the journal's audience, we also encourage authors to highlight key messages and clarify the context of their research to make interpreting the study's results easier.

If you have not already done so, I encourage you to visit the journal's website to review the latest guidelines and to submit manuscripts that share your latest research findings or evidence-informed policy commentary with others.

NOTE

[1] For example, Aristotle (ca. 330 BCE) said of Thales, a philosopher who preceded him by about 200 years, that "to Thales, the primary question was not 'what do we know' but 'how do we know it.'" (Aristotle, *Metaphysics Alpha*, 983b)

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

Comment le savons-nous? Recherche et transfert de connaissances fondées sur les données probantes

Comment savons-nous ce que nous savons? Cette question, posée par les philosophes depuis plus de deux mille ans, m'est récemment venue à l'esprit.[1]

Il y a quelques semaines, on m'a demandé de nommer cinq systèmes de santé reconnus pour leur capacité d'utiliser les données pour favoriser l'amélioration. Les critères étaient ouverts; l'envergure, mondiale. J'ai été surprise par ma rapidité à dresser une liste presque immédiatement dans mon courriel de réponse. Heureusement, avant d'appuyer sur le bouton « envoyer », je me suis retenue.

D'un côté, ma réponse rapide aurait, en soi, été juste. Après tout, on m'avait demandé de nommer des systèmes « reconnus » pour leurs réalisations. Quelques organisations sont généralement reconnues pour leur succès dans ce domaine et attirent des visiteurs du monde entier qui viennent étudier leur réussite. Ces organisations figuraient donc sur ma liste initiale. Mais comment puis-je être certaine qu'elles sont réellement supérieures aux autres organisations dont les résultats ne font pas l'éloge d'une façon aussi générale? Après avoir repensé aux données qui indiquent réel-

lement qu'une amélioration a eu lieu, j'ai rayé deux organisations de ma liste, mais le processus demeurait d'une certaine façon arbitraire.

À l'opposé, dans la présente revue, les auteurs fournissent heureusement des informations sur les questions qu'ils se sont posées et sur la démarche qu'ils ont adoptée pour y répondre – indiquant ainsi ce que nous connaissons grâce à la recherche et la façon dont les résultats ont été obtenus. Cette clarté revêt une grande importance en raison de la complexité des enjeux abordés. Dans ce numéro, par exemple, nous vous proposons de nouvelles recherches sur les questions suivantes : le degré d'influence des caractéristiques du quartier sur la santé, la probabilité de subir une intervention cardiaque chez les hommes qui ont eu une crise cardiaque par rapport à leurs homologues féminins et le type de services dont ont besoin les patients qui attendent une place en établissement de soins de longue durée. Cam Donaldson et Theodore Marmor abordent d'importants débats sur les politiques de santé en Alberta et aux États-Unis, respectivement. De plus, Steve Morgan et ses collègues nous aident à mieux connaître les caractéristiques nécessaires aux prochains diplômés des programmes de recherche sur les politiques et les services de santé, afin qu'ils puissent répondre aux épineuses questions du domaine.

J'espère que ce numéro de *Politiques de Santé/Healthcare Policy* vous donnera des pistes utiles. Afin de continuer à améliorer la revue, tant pour les collaborateurs que pour les lecteurs, notre équipe de rédaction a récemment mis à jour les lignes directrices pour les auteurs et les réviseurs. Ces nouvelles directives soulignent les facteurs dont nous tenons compte pour accepter les articles. Par exemple, nous considérons l'adéquation de l'article avec le mandat de la revue, les contributions originales pour l'avancement des connaissances, l'information hautement prioritaire requise par les décideurs du secteur de la santé ainsi que la solidité et la pertinence des méthodologies choisies et des conclusions tirées. Étant donné la diversité du lectorat, nous incitons les auteurs à dresser des messages clés et à clarifier le contexte de leur recherche, afin de faciliter l'interprétation des résultats.

Si vous ne l'avez pas encore fait, je vous incite à visiter le site Web de la revue pour consulter les nouvelles directives et pour soumettre vos manuscrits afin de partager avec d'autres vos résultats de recherche ou vos commentaires éclairés par les données probantes.

NOTE

[1] Par exemple, Aristote (v. 330 av. J.-C.) disait que, pour Thalès, un philosophe qui l'avait précédé de près de 200 ans, « la question fondamentale n'était pas "que savons-nous" mais bien "comment le savons-nous" ». (Aristote, *Le livre Alpha de la Métaphysique*, 983b)

JENNIFER ZELMER, BSC, MA, PHD
Rédactrice en chef

Letters to the Editor-in-Chief

Re: "Cost Shifting and Timeliness of Drug Formulary Recommendations in Atlantic Canada," Healthcare Policy, Vol. 5, No. 3, 2010

May 20, 2010

We wish to commend the authors of the above article on tackling an interesting subject. We would also like to address some inaccuracies regarding CADTH's Common Drug Review (CDR) program and note some recent changes.

The article misleadingly indicates in several places that CDR's response time in reviewing drugs and issuing recommendations "did not improve" or "increased" over the study period.

In fact, CDR has consistently met the aggressive, targeted review time frames that were established prior to the program's launch in 2003. Adherence to these established timelines is a critical component of the CDR process that we take very seriously – as it ultimately affects patient access to medications.

All drugs reviewed by CDR have met the meeting date of the Canadian Expert Drug Advisory Committee (CEDAC) for which they were targeted, or an earlier CEDAC meeting date. That is, all reviews have met or bettered the established 19- to 25-week time frame for CDR review and CEDAC recommendation.

The drug reviews noted in the article that extended beyond 25 weeks were generally conducted within the established timelines for the additional steps that were involved in those particular reviews. Specifically, each of those reviews involved one, if not more, of the following steps:

- a Request for Extension of the Embargo Period by the drug manufacturer
- a Request for Reconsideration by the drug manufacturer
- a Request for Clarification by the participating drug plans
- deferral of the recommendation by CEDAC (so that further information could be gathered by the CDR Directorate).

Additionally, CADTH has made numerous improvements to the CDR process since program inception. Several of these enhancements were specifically designed to reduce CDR review timelines or reduce the time to formulary listing post–Notice of Compliance. For instance:

- "Resubmissions based on a reduced price during the 10-day embargo period"

enable manufacturers to resubmit without being placed at the end of the review queue with other resubmissions (effective April 20, 2009).

- CDR priority review refinements give drug manufacturers an option to reduce the time for manufacturer's comments and reviewers' replies – so that the drug may be placed on an earlier CEDAC agenda.
- "Pre-NOC priority review submissions" enable manufacturers to file submissions with the CDR Directorate before receiving a Health Canada Notice of Compliance (NOC) or Notice of Compliance with conditions (effective July 1, 2009).

One final clarification: the study claims its findings "uphold the criticism that CDR has not reduced variation among provincial formularies."

In fact, the opposite is true. Our calculations, based on publicly available information, indicate that the decisions of the participating drug plans have followed the CDR recommendations more than 90% of the time.

This is despite the fact that, in addition to the CDR recommendation, the drug plan decisions must take into account individual drug plan mandates, jurisdictional priorities and financial resources.

Given that the CDR is still a relatively new program and has only issued recommendations for a small proportion of the drugs on the jurisdictional formularies at this point, one would reasonably expect that the full effect of CDR's centralized review and recommendation process, in terms of increased consistency amongst formularies, will be realized over a longer time horizon.

Sincerely,
Sandra Pagotto
Senior Director, Common Drug Review, Canadian Agency for Drugs and Technologies in Health

The Author's Reply

June 22, 2010

Thank you for the opportunity to respond to the letter from the Canadian Agency for Drugs and Technologies in Health (CADTH) on May 20th. While we welcome an open dialogue concerning the results of our study, we wish to clarify some of the concerns brought up by Ms. Pagotto.

Firstly, regarding the issue that we misleadingly indicated that the CDR response time in our manuscript increased, you will note that it is just for the 35 selected drugs we reviewed during the time period of January 1, 2005, to May 1, 2008. This is clearly

stated on page 105. The drugs we reviewed can be found listed in Table 1 along with their respective review times. It is clearly shown that for the drugs reviewed in our study the timeline for CDR review did increase. You will also find on page 111 that we acknowledge CADTH's time frame of 19–25 weeks for review of drug submissions. Our argument is to encourage adherence to this time frame, and we agree with Ms. Pagotto that it is critical to maintaining the success of the CDR process. With regard to Ms. Pagotto's argument that the drug reviews that extended beyond 25 weeks required additional steps, we acknowledged this issue on page 111 as well, indicating that the CDR does not have control over the quality of submissions it receives and whether additional information is required. However, our aim was to measure the overall average review time during the three-year study period for the 35 drugs included in the study, which clearly and objectively showed an overall increase in CDR review time. The improvements to the CDR process listed by Ms. Pagotto were not applicable to any of the 35 drugs included in the study.

Secondly, regarding our claim that the study findings uphold criticism that the CDR has not reduced variation among provincial formularies, we stand behind that criticism based upon the findings from the 35 drugs included during the study period. Table 2 demonstrates our findings that timeliness of uptake of CDR-recommended drugs not only varied by year within each of the four Atlantic Provinces, it also varied considerably between all four provinces. We acknowledge on page 107 that timeliness in both New Brunswick and PEI improved over the study period; however, it did not improve in Nova Scotia and Newfoundland. Additionally, PEI had failed to adopt two CDR recommended drugs by the end of the study. Similar results and arguments have been previously presented in literature (Grootendorst 2002; Marra et al. 2006; McMahon et al. 2006). While Ms. Pagotto argues that the decisions of participating drug plans follow CDR recommendations more than 90% of the time, this does not speak to variations in the timeliness of uptake of CDR recommendations, which was the objective of this paper. We acknowledge that variation in listings may occur due to financial restraints and capacity in each province (page 111) as Ms. Pagotto points out; however, we argue that participating drug plans should renew their commitment to the CDR process to decrease variation and increase transparency when delays do occur.

Overall, we feel the arguments put forth in our paper are upheld by the findings of the study and do not misrepresent the efforts of CADTH, the CDR or participating drug plans. We hope that you find this response helpful. Please let us know if you require any further clarification.

Sincerely,
Andrea Scobie, MHSA
Dalhousie University, College of Pharmacy

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Health Reform and the Obama Administration: Reflections in Mid-2010

La réforme de la santé et l'administration Obama : réflexions à la mi-2010

by THEODORE R. MARMOR

Abstract

The reforms that finally emerged from the Obama administration's initiative were the result of a year of nasty, demagogic and misleading claims in the US public forum, coupled with the complexities of crafting legislation that stood a chance of passing both the House of Representatives and the Senate. The resulting "hybrid" approach to healthcare reform produced a conservative strategy that ignores the experience of other wealthy democracies. More significantly, its long period of implementation, given a possible change of administration in 2012, increases uncertainty regarding whether and how reforms will be rolled out by 2014 and after.

Résumé

Les réformes qui ont finalement émergé, suite aux initiatives de l'administration d'Obama, sont le fruit d'une année de revendications malsaines, démagogiques

et trompeuses dans les forums publics américains, auxquels s'ajoute la complexité d'élaborer une loi qui ait la chance d'être acceptée par la Chambre des représentants et par le Sénat. L'approche « hybride » visant la réforme de santé a donné lieu à une stratégie conservatrice, qui ne tient pas compte de l'expérience d'autres démocraties dans les pays riches. Plus encore, la longue période visée pour la réforme, avec la possibilité d'un changement d'administration en 2012, accroît l'incertitude quant à sa mise en œuvre d'ici 2014 et au-delà.

"Americans remain divided on health reform," according to an April 2010 news release of the Kaiser Family Foundation. In its first tracking poll since the passage of healthcare reform in March, the Foundation emphasized that a majority (55%) are "confused about the law and how and when it will affect them." What else might anyone have expected after a year of nasty, demagogic and utterly misleading claims about healthcare reform, repeated endlessly in newspapers, magazines and television commentary? The premise of this commentary is that a lot remains to be understood about how and why the battle over healthcare reform was so confusing and why its result – the legislation signed in March – remains so elusive. For readers in Canada, the confusion is closer to bewilderment. So, we begin with the strategic premises of President Obama and his allies.

The gap between the problems of American medical care and the Democratic Party's healthcare reform proposals of 2009 was very large. Understanding why that was so requires familiarity with premises of the Obama reform team – both in the administration and in Congress. The most important assumption was that the Obama administration had to avoid the mistakes of the Clinton administration's disappointing reform experience in 1993/94. Indeed, it would not be too much to say that the reformers of 2009 assumed a good strategy was the *opposite* of the Clintons'. That meant, at the outset, leaving to Congress the bill-drafting process rather than sending up a 1,342-page bill, as the Clinton task forces had notoriously done. So it was that three committees of the House of Representatives were given the substantial task of coming up with a legislative proposal that could pass their institution and, prospectively, the Senate. It is easy in retrospect to pass over this unorthodox, multi-committee approach, but it represented an unprecedented aspiration of comity among staffs and congressional members who are more usually rivals in US healthcare policy making. The strategy called for separate action by the Senate, an institution nominally under the Democrats' control in 2009, but constrained by the filibuster practice that Republicans have increasingly favoured. In any case, turning to Congress for legislative formulation meant that for much of 2009, it was not the president who described Obamacare, but various congressional leaders. What Nancy Pelosi and

her Democratic House Committee chairs – Henry Waxman, George Miller (both of California) and Charles Rangel (New York) – proposed differed from what was acceptable to the leaders of the two Senate committees, Max Baucus (Montana) and Christopher Dodd (Connecticut).

This shift of emphasis to what Congress would be willing to pass was consequential for the policy proposals that emerged. The clearest guide to the Obama team's take on healthcare reform is former Senator Tom Daschle's book, *Critical*, published in summer 2008. Daschle, a friend and key health adviser to Obama during the presidential campaign, was preoccupied with avoiding the frustrating result of 1993/94, when "the great health-care debate … expired with barely a whimper." From that perspective flowed the other key premises of the Obama reformers. First, they had to unite around a common and broadly acceptable message. That fact helps to account for the endless repetition by Democratic reformers of the goal of "affordable healthcare for all Americans," an aim that hardly anyone could, in principle, criticize. Second, reform proposals had also to avoid known controversial positions – most prominently, appeals to Canada's national health insurance experience in expanding medicare for all or, in some formulations, a "single-payer plan." Whatever the policy merits of such ideas, they appeared to threaten the goal of broad reform consensus and therefore were off the key reformers' agenda. From these presumptions followed a number of policy suggestions that showed up in most versions of what the congressional leaders proposed during 2009.

The most obvious consequence of this strategy was the truncated range of proposals that would supposedly bring "affordable healthcare to all Americans." Although private health insurance left 50 million Americans without coverage and all Democratic proposals criticized the exclusions, restrictions and other miseries associated with commercial health insurance, the 2009 reform agenda required relying on that very same industry. The Obama administration and its congressional allies essentially proposed a patchwork of adjustments to an existing patchwork system of financing American medicine. Though broad in describing the problems of American medical care, the reformers of 2009/10 were clearly narrow in their remedies.

Among the more prominent components, the most obvious was to expand insurance coverage using the Massachusetts reform of 2006 as the basic model. The idea was to combine an individual mandate to buy insurance with subsidies to make such purchases more affordable. But in practice that meant insurance expansion short of universal coverage. The Massachusetts model required most of the uninsured to buy coverage and provided subsidies to those with lower incomes. But in the end, the target in 2009/10 was to insure about 30 million of the 50 million uninsured. To complement expanded coverage through individual mandates, other substantial measures were proposed. The most important was to expand Medicaid – America's Poor Law program administered by the 50 states. The proposal to increase eligibility for this means-tested program came with promises of increased federal funding (at least in the

short-run). These elements were what Senator Daschle imagined as part of a politically acceptable "hybrid" reform, one that builds upon both public and private health insurance programs already in place. The Obama administration's road to universal health insurance, then, was to be paved with the existing Medicare program, Medicaid expansion, the Veterans Association program, bolstering employment-related health insurance and, finally, insurance exchanges where those without insurance could get coverage at rates below the prevailing market rate. Most noteworthy, in the context of expanding health insurance coverage, was the modest attention to the problem of underinsurance. Insurance law reform would help; mandates would help, yet no simple national catastrophic limit was part of the original strategic design.

Nor was cost control addressed in any form that would be recognized by the rest of the industrial democracies. Cost control fell from favour for the very same reasons that led to a patchwork rather than a more radical reform of how Americans pay for medical care. The strategic aim was reform over time. The operational premise was to get Americans covered via the least ideologically sensitive means, and then other improvements would follow. Clichés such as "a step in the right direction" spring to mind, but this conservative strategy was born of bitter experience, not merely hackneyed language. For cost control, however, there was not so much a search for small but serious steps as an embrace of wishful thinking.

In practice, that meant proposing approaches that have broad popular appeal – e.g., promoting prevention, encouraging healthier lifestyles, expanding electronic medical records, researching medical effectiveness and experimenting with paying doctors and hospitals by different methods, including more "bundling" of activities and more use of per capita, rather than per service, payments. Without elaborating, it is safe to say that none of these policies, however much they might improve care, would be effective anti-inflationary measures in US medicine.[1] Over the course of 2009, this cautious strategy took precedence, with one exception. The reformers, when forced to explain how subsidies would be financed, came to rely on reductions in Medicare reimbursements as an answer. And that, in turn, prompted endless disputes about whether access to Medicare was being sacrificed to health insurance expansion.

A final illustration of the power of the reformers' assumptive world was the use of historical parallels in the case made for what I have labelled Obama's reform. There were, as suggested, innumerable reflections on the alleged mistakes of the Clinton reform strategy. There were as well frequent invocations of the way in which the struggle over Medicare in the 1960s justified the hybrid approach, and its accompanying hope of getting enough bipartisan support to make the bill's passage through the Senate filibuster-proof. The claim was that the political history of US Medicare's enactment illustrated both bipartisan support and the long-term impact of that support on the program's stability over decades. The analogy was wrong factually, and the implications were misleading. Medicare was bitterly fought over from the time it was

introduced in the 1950s until 1965, when the Democratic electoral landslide of the previous November ensured passage. The alignment then was not simply Democratic versus Republican views of government health insurance, but rather a deeply divisive liberal–conservative battle. The conservative coalition of the early 1960s – with senior Southern Democrats in charge, for instance, of the congressional finance and rules committees – meant that Democratic majorities did not guarantee policy victories for the Kennedy administration.[2]

The implications of this difference were not appreciated in either the assumptions of the 2009/10 reformers or in the justifications offered for the reform strategy. Instead, the effort to get Republican support for the hybrid strategy continued for most of 2009, with protracted soliciting of Republican moderates such as Senators Snowe and Collins of Maine and endless indulgence of the Senate Finance Committee negotiations among what came to be considered the "gang of six." In the early 1960s, no such efforts were made to adjust the reform proposal – 60 days of public hospital insurance for all retirees under Social Security. Rather, the effort was to elect a Congress that would support this social insurance approach. Each year, the conservative coalition blocked enactment with one or another move, pitting conservative Democrats and orthodox anti–social insurance Republicans against liberal Democrats and some moderate Republicans. The strategy of building up a liberal majority worked, though only after Kennedy's death and the 1964 electoral landslide. But the point is simply that the Obama reformers never took into account the Medicare strategy as a real alternative.

Once a strategy was established, the year unfolded with an extraordinary mix of earnest cooperation among House Democratic leaders and dismaying differences within the Senate. Moreover, the public debate was a shambles, with false charges of "death panels," illusory claims about what "government medicine" would bring, and downright lying left and right. Equally obvious were the complete failure of the bipartisan strategy and the misreading of the history of social insurance reform. Government health insurance reform, whether indirect or direct, is a source of fundamental cleavage in American politics. And American politics is sufficiently fragmented, and power so dispersed, that there are ample opportunities both to sustain ideological charges endlessly and to delay legislation even when one party "controls" both houses of Congress. So, what transpired in 2009 was an ideological battle that would hardly have been different had President Obama proposed a "Medicare for all" plan financed by social insurance taxes and a bank tax. And yet, what finally emerged was a breathless victory that took every skill House leader Pelosi and Senate leader Reid could muster.

Most of the legislative uncertainty of 2009 arose from the simple fact that the support of 60 senators was needed to avoid a filibuster. That, in turn, required support from all the Democrats, including as many as 10 or more who would not easily support any healthcare reform the more liberal House bill would produce. There were

other sources of uncertainty, of course. Government institutions disperse power, but they also de-link the fate of individual politicians from whatever a president may propose. Local considerations bear on Congress crucially, yet much more media attention was given to the health industry groups that were obviously enticed to go along with the cautious reforms of 2009, especially given Congress' reluctance to take on boldly the cost of drugs, devices, hospitals and doctors. And yet in the end, the calculations of individual congressional positions turned out to be key. The anti-abortion group in the House of Representatives would play a vital last-minute role. So too would the voters of Massachusetts, whose election of Senator Brown in December 2009 shocked the chattering classes and, in an ironic twist, nearly stopped the reform cold. Where else, one might ask, could a change from a 60% legislative party majority to a 59% majority throw into question the fate of a major-party reform proposal? The answer is nowhere among the United States' trading partners, but it took place in the wake of the Massachusetts special election of 2009. Institutions mattered in the fate of reform in 2009/10. So did ideological convictions and interest-group influence.

What, in conclusion, is worthy of emphasis for an audience outside the United States? Three come to mind as possible aids to understanding this major episode in American politics.

The character of American institutions explains much of the peculiar features of this complex reform legislation. To avoid a filibuster and to hold together a coalition of Democrats with divergent views and constituencies, the reformers of 2009/10 believed a conservative strategy was required. Their strategy may well have been overly cautious. It is certainly the case that they ignored the example of how Medicare came to pass in 1965 by a process of increasing support for a controversial program. But a gap between the rhetoric of America's healthcare problems and the remedies that the Obama administration and its allies accepted was not the product of ignorance or foolishness. It reflected political judgment, which in turn had much to do with the influence of holdovers from the Clinton presidency, both in the Congress and in the executive.

That institutional influence shaped all features of the reform that emerged legislatively. The absence of serious cost control, the failure to ensure universal insurance coverage, the reliance on the private health insurance industry and subsidies, the expansion of federal regulatory authority in health insurance, the barrage of experimental programs – all followed from the exclusion of more straightforward reforms. What also followed was almost a complete ignoring of the experience of other rich democracies with healthcare reform. This was especially striking in connection to Canada, the United States' closest neighbour in both geography and medical care arrangements. From 1992 to 1994, Canada's experience with its own medicare was prominent in the debates over the Clinton plan, as were discussions of the German social insurance experience. Nothing like that took place in 2009/10, with the exception of some right-wing groups in the United States repeating false horror stories

about Canadians fleeing south for life-saving treatment. The provincialism of the discussion meant that there was precious little clarification of what different conceptions of public policy were at work in the world of modern medical care financing, delivery and regulation.

Finally, the striking feature of this reform episode is how much of its impact will be decided in implementation over a very long time period. The expansion of insurance coverage will not take place on any large scale until 2014. Between now and then, two congressional elections and a presidential race will occur. That means the reform disputes of 2009/10 will continue, with less settled by the dramatic actions of the Democratic Congress of 2010 than anyone might have imagined at the outset of the Obama administration. That, in turn, means that any understanding of what reform actually will produce is subject to enormous uncertainty. Stay tuned.

NOTES

[1] For a fuller discussion of the limited cost control potential of prevention, electronic medical records and other delivery system reforms, see Marmor et al. 2009.

[2] That history is presented in detail by my book *The Politics of Medicare* (2000).

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DISCUSSION AND DEBATE

Fire, Aim… Ready? Alberta's Big Bang Approach to Healthcare Disintegration

Feu, en joue… présentez arme? Big bang de l'approche albertaine pour la désintégration des services de santé

by CAM DONALDSON, PHD
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Abstract

Alberta's abolition in 2008 of its health regions and the creation of Alberta Health Services (AHS) was a bold move, but the reasons for the change remain hazy. The stated goals were to "help make Alberta's … system more effective and efficient" and to "provide equitable access to health services and long-term sustainability." Data show, however, that Alberta's health regions were already performing well on these goals relative to other provinces, and where changes have since occurred, they cannot necessarily be attributed to AHS.

Résumé

En 2008, l'Alberta effectuait un changement audacieux en abolissant ses régions sanitaires et en créant les Services de santé de l'Alberta (Alberta Health Services, AHS). Cependant, les raisons derrière ce changement demeurent vagues. Les objectifs énoncés visaient à « aider le système albertain à être plus efficace et plus efficient, à donner un accès équitable aux services de santé et à favoriser la durabilité à long terme ». Toutefois, les données montrent que le rendement des régions sanitaires de l'Alberta quant à ces objectifs était déjà bon, comparé aux autres provinces. Les données montrent également que les changements qui ont eu lieu depuis cette réforme ne sont pas nécessairement attribuables aux AHS.

Twelve years ago, on taking up the Svare Chair in Health Economics at the University of Calgary, I arrived to witness the controlled implosion of the Calgary General Hospital. This seemed like the ultimate in recognizing the new dawn of a regionalized, integrated healthcare system in Alberta (Martin and Rushforth 1998). Having spent some of 2009 on sabbatical back in Calgary, I once again witnessed Alberta's "big bang" approach to healthcare reform: the sudden abolition of the health regions and the creation of Alberta Health Services (AHS).

This was a bold move. Many advanced economies of the world operate regionalized systems, at least to some degree (Saltman and Figueras 1997; Petretto 2000). Regionalization basically involves the allocation of resources from either the provincial or the national level of government to a geographically defined entity. Health regions are said to bring leadership closer to populations served and, thus, are more readily able to assess health needs, decide how best to deliver services within budget to meet as many of these needs as possible, and be more accountable for their actions. There has never been much hard evidence on the extent to which regionalization improves health for resources invested. Indeed, doubts over its ability to deliver such an outcome have been expressed (Church and Barker 1998). However, a counter-claim would be that regionalization has been challenged by issues of instability and government interference rather than anything inherent in the model itself (Lewis and Kouri 2004).

The real questions, though, are: Why did Alberta make such a move? How did the province intend to achieve its stated aims? Did it in fact achieve these? After addressing these questions, I turn, finally, to potential ways forward in the future. The main messages I hope to convey:

- Many healthcare reforms fail to streamline costs in the ways initially portrayed; the case of AHS and its associated initiatives are no exception.

- Based on limited comparative data from other provinces, the need for the Alberta reforms is unclear.
- Given the limited data and the fuzzy need for reform, the potential for significant gains (e.g., in reduced waiting times) is limited.
- Cost increases in AHS were inevitable as a result of flagship waiting list initiatives that focused on increasing activity in the costly acute sector and the introduction of financial incentives to further encourage such activity.

The Alberta Reform and Its Objectives

For readers who have not been following the events in Alberta, the health regions were abolished in 2008, and the publicly funded system is now being administered by AHS. A new body, the AHS Board, is charged with organizing the delivery of health services across the province and is accountable to the Minister of Health and Wellness. Several objectives for the reform have been stated. At the time the changes were announced, now-former Health Minister Ron Liepert stated on the AHS website that "moving to one provincial governance board will ensure a more streamlined system for patients and health professionals across the province" (AHS 2010). Premier Ed Stelmach announced that the changes would "help make Alberta's publicly funded health care system more effective and efficient" and "create a high quality and innovative system that provides equitable access to health services and long-term sustainability" (Government of Alberta 2008).

The return to a provincial-level system initially gave the appearance of saving management costs, based on statements from the premier and health minister along the lines of wanting to "clarify roles and responsibilities" and "improve the way health care is administered" (Government of Alberta 2008). Most healthcare reforms are indeed sold on such bases. However, it has long been known that promised savings are never realized as the previously unforeseen costs of management and monitoring of the newly reformed system mount up (Brown 1979). Any sensible analyst would have predicted that the same would happen in Alberta because the system would have to plug the informational gaps left by abolishing the health regions. If health regions were thought to be unresponsive, it is difficult to imagine how requests or complaints from various parts of the province would be more swiftly dealt with by Edmonton, where the top tier of management is now based. Indications that such a prediction would likely be borne out were given by the need to create such entities as the "Calgary Health Zone" (to administer sites and services previously administered by the Calgary Health Region) and the "Alberta Cancer Corridor" (to administer sites and services previously administered by Alberta Cancer Services). These involved the (re-) creation of necessary management and administrative posts in order to make the system function efficiently.

Furthermore, as illustrated in Table 1, data from the Canadian Institute of Health Information (CIHI) show that spending on health administration in Alberta was not out of line with that in other provinces, either in absolute terms or as a percentage of total health expenditures. In terms of trying to achieve low spending on administration, Alberta ranks second on percentage of the total spent on administration and seventh in terms of absolute spending per capita. If one were to look at public dollars only (not shown in the table), Alberta comes out fifth in terms of achieving the lowest absolute spending; the two big provinces of Ontario and Quebec are ahead because of the economies of scale they can achieve relative to the others. The puzzle here is: Given how well Alberta was doing in terms of administrative costs, what exactly was expected to be achieved in terms of "streamlining" and "improving administration"?

TABLE 1. Administrative costs of healthcare by province, 2008

Province	Total health expenditures (public and private) per capita, current $	Percentage of total (public plus private) health expenditures
Alberta	192.94	3.3
British Columbia	183.83	3.7
Manitoba	184.50	3.3
New Brunswick	178.84	3.4
Newfoundland and Labrador	175.04	3.2
Nova Scotia	222.20	4.0
Ontario	179.60	3.4
Prince Edward Island	369.59	7.1
Quebec	152.22	3.3
Saskatchewan	210.74	3.8

Source: CIHI 2009.

More formally, the stated objectives of AHS have now appeared in a strategic plan. The objectives are threefold, covering quality (i.e., healthcare services are safe, effective and patient-focused), access (appropriate healthcare services are available) and sustainability (healthcare services are available both now and into the future) (AHS 2009). These objectives seem to be carefully worded. For example, they do not specify desired trajectories over time, although presumably improvements in quality and access are required. Likewise, the third objective implies that all should be achieved within budget, although again, this is not explicit in the sense that "available resources" could also be taken to mean that deficits will be met if the province can afford it.

Activities and Outcomes

Eventually, a year after the announced creation of AHS, we began to hear some noises about what would be done to arrest the growing deficit across the province. This gives the impression that, like the war in Iraq, where the decision to invade was taken without a plan for how to win the peace, the decision to abolish the regions was more of a political gut reaction to the unruly behaviour of health region executives but with no plan for what to do once the axe had fallen. However, it seems that after the decision to *fire* and having taken a belated *aim*, the province was now *ready* to proceed on its plan for achieving greater efficiency in health services.

Waiting Targets

In 2009, we saw reports of the proposals in the AHS draft strategic plan to cut waiting times and emergency room delays. Such targets are not new and have been implemented in other countries without abolishing their health regions. What is more, in the United Kingdom, these targets have been achieved in conjunction with the largest ever (planned) real increases in funding in the history of the National Health Service, and also on the back of slim evidence about how long people are actually willing to wait (given that the money could be spent on other health-generating activities). Some of the increased funding in the United Kingdom was required to increase capacity in order for the targets to be met, giving a strong indication as to what might happen as a result of a focus on waiting lists in Alberta.

Thus, the question arises as to how AHS, aiming to shave hundreds of millions of dollars, could achieve such ambitions on wait times and delays given that it was already having to spend some of the planned savings to localize the management needed to make the system work, as well as to collect information on wait times in order to audit the stated objectives.

To begin with, in 2008, and according to data published on the AHS website, when benchmarked against the rest of the country, Alberta was performing at about the Canadian average on wait times for common procedures such as hip fracture surgery and knee replacement. This finding raises two further questions: (1) Why was such an initiative required; and (2) Could much improvement really be expected?

It is difficult to assess trends in wait times over the period 2008–2010 owing to changes in reporting and variations in data availability across the provinces. Furthermore, as indicated above, it is ambitious to expect impacts on waiting times from such reforms in such a short space of time. Nevertheless, for some common procedures, the CIHI has been able to calculate trends from December 2006 through December 2009 (Table 2):

- For hip replacements, there has been no change in Alberta, while times have dropped in three other provinces.
- Although the waiting time trend for knee replacements in Alberta is downward, this is also the case in at least three other provinces.
- On another indicator, the rate of coronary artery bypass grafts conducted within the recommended benchmark for the most serious of cases (i.e., level I) are high (at 96%) for Alberta, along with similarly high rates for five other provinces (CIHI 2010).

Thus, it would seem that little change might have been expected or has been achieved, and where they have occurred, changes cannot be attributed to the creation of AHS.

TABLE 2. Access to healthcare in Alberta relative to other provinces

Procedure	Waiting times in Alberta	Waiting times in other provinces
Hip replacement	Dec 2006: 97 days Dec 2009: 92 days	Dec 2006 (BC, SK, ON): 114 to 281 days Dec 2009 (BC, SK, ON): 70 to 163 days
Knee replacement	Dec 2006: 134 days Dec 2009: 110 days	Dec 2006 (BC, MB, ON): 139 to 353 days Dec 2009 (BC, SK, ON): 96 to 177 days
	Percentage within benchmark of 14 days:	
	Alberta	**Other provinces**
Level I Coronary artery bypass graft	96%	81%–100%

Source: CIHI 2010.

Case-Based Costing

At the leadership level, there is obviously great expertise in this area (Duckett 1995). There is known variation in the costs of treating equivalent cases across the province, as will be the case in other provinces too. What is not clear is that abolishing regions is the solution to this variation. If regions were not addressing such issues prior to abolition, then they are culpable, as perhaps was Alberta Health and Wellness. But maybe regions were indeed auditing this situation and found that such variation is, to an extent, justified. Rural hospitals are likely to be less able to achieve economies of scale, and thus will have more capacity (and associated longer lengths of stay) and greater fixed costs of maintaining minimum required levels of beds and staff (Asthana et al. 2003). Case-based costing will not eliminate such costs. Also, it has always seemed to me that costing everything based on the average is not necessarily optimal. Consequently, when we strip out cases from some institutions, we will strip them out at full average cost, which

may be too much; or, if we put more cases through some institutions, they will be funded at full average cost, which again may constitute overfunding.

How the actual mechanics of case-based costing will work is not clear. The international evidence regarding its impact on the efficiency of various healthcare systems, summarized by Donaldson and Gerard (2005), is conflicting, to say the least. Recent research on payment by results – the UK version of case-based costing – confirms that even if unit costs are reduced, volume of activity tends to go up (Farrar et al. 2009). Increased volume is then likely to lead to overall cost increases, given that the acute sector is the most resource-intensive part of the system.

However, if the predictions of those who propound case-based costing are to be believed, presumably one would see cost savings, or at least some element of stability in costs. Although once again there are caveats about attribution and drawing conclusions too soon, we seem to have gone from a situation where the collective deficit of the former health regions (in May 2008) was $97 million to one where the deficit for the whole system was reported as $1.1 billion in June 2009 (CBC News 2009) and now seems to require an injection of over $2 billion (CBC News 2010).

Alberta Service Models

"Alberta service models" gather evidence on best practice and ensure that, where such evidence exists, then such practice is implemented systematically across the province. Such models, however, are simply guidelines or care pathways by another name, and thus do not represent any kind of innovation at all. It would appear that by simply using the "Alberta" prefix, they will appeal to Albertans' sense of distinctiveness and originality in having models that are "made for us." This is window dressing. In Alberta, clinicians in the big-ticket areas, like cancer and cardiology, have already worked out detailed and evidence-based protocols that serve Albertans well (Graham et al. 2006; Ross et al. 2006). Likewise, the Alberta Hip and Knee Replacement Project has already worked out a pathway that has even been evaluated in a randomized trial (Gooch et al. 2009). The added value from engaging several health professionals around the province in further activity to compose the models would appear to be doubtful, at best.

Where Now?

Based on the comparative data available, it is unclear why Alberta had to take the radical steps it undertook in forming AHS. It may well be that the health regions in Alberta were culpable for not coming to grips with how to manage their fixed funding envelopes in order to best meet population need. However, the limited evidence described above would indicate that there is no prospect that AHS will do so to any

greater degree. Indeed, the waiting list initiatives undertaken have focused on the most expensive part of the healthcare system, the acute sector, almost guaranteeing that more money will have to be pumped in, as has indeed been the result. My prediction is that other elements of the reforms will add little because the value has already been realized. Much variation in cost is likely to be justified, and approaches such as case-based costing focus on the average and not "best" – i.e., most efficient – practice, adding further to cost pressures as increased activity in the acute sector actually becomes incentivised.

To manage scarce resources, we need to be able to squeeze more efficiency out of the system – which, on the face of it, is what case-based costing is about. However, beyond that, we need to compare the relative value of what is currently done with prospective service developments so that we can think about scaling back some current services in order to fund those that will better meet the needs of the population. Calgary Health Region was an international leader in the development of frameworks for doing this (Mitton et al. 2003), allowing it to service a $42-million deficit in 2000, not only by balancing the budget but also by cutting back more than the deficit to allow some reinvestment. This initiative involved substantial engagement of local managers and front-line physicians (Ruta et al. 2005), but after two years of success, the activity was not taken seriously enough at senior levels and was not sustained.

This example indicates the source of the problem in Alberta: strong leadership is required in healthcare, whether at the regional, provincial or political level. De-listing the "easy hits" will not be enough, and neither will pumping in more resources. All the latter does is encourage a culture of contentment, one that existed in the run-up to abolition of regions. It would seem, therefore, that rather than a failure of the regional structures that were in place, what Alberta experienced was a failure of leadership, not only of the regions but also at the political level – and this was a failure that had to be dealt with. It has not, however, resulting in even greater costs to the taxpayer and, no doubt, more pain down the road.

Then what? Regionalization?

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DATA MATTERS

Clinical Characteristics and Service Needs of Alternate-Level-of-Care Patients Waiting for Long-Term Care in Ontario Hospitals

Caractéristiques cliniques et besoins en services pour les patients nécessitant d'autres niveaux de soins et inscrits sur les listes d'attente pour les hôpitaux de soins de longue durée en Ontario

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Abstract

Background: Alternate-level-of-care (ALC) patients waiting for admission to long-term care (LTC) in Ontario hospitals are an important subgroup of ALC patients. Understanding the characteristics of ALC patients waiting for LTC can identify opportunities for alternative discharge options.
Methods: Characteristics from a sample of 13,915 ALC patients waiting for LTC in acute and complex hospitals were analyzed and compared to those from a sample of 113,046 long-stay home care clients in Ontario. Population-level data were obtained using Ontario's RAI-HC database for the period January 2007 to September 2008.
Findings: Relative to older long-stay home care clients, ALC patients waiting for LTC admission have more functional impairment and complex health needs. A combination of targeted transitional care and more resource-intensive home care services are needed to successfully address ALC patients' care needs in the community.
Conclusions: A substantial portion of ALC patients waiting for LTC placement in acute and complex care hospitals may be more appropriately cared for in community settings if adequate community-centred resources are put in place.

Résumé

Contexte : Les patients nécessitant d'autres niveaux de soins (ANS) qui attendent d'être admis dans un hôpital de soins de longue durée (SLD) en Ontario constituent un sous-groupe important de tous les patients ANS. Mieux connaître les caractéristiques des patients ANS inscrits sur ces listes d'attente peut aider à dégager diverses options pour les sorties d'hôpital.
Méthodologie : Nous avons analysé les caractéristiques d'un échantillon de 13 915 patients ANS en milieu hospitalier de courte durée ou de soins complexes et inscrits sur les listes d'attente pour les hôpitaux de SLD, et nous avons comparé ces données avec celles d'un échantillon de 113 046 clients de soins prolongés à domicile, en Ontario. La base de données RAI-HC de l'Ontario a servi à obtenir des données populationnelles, entre janvier 2007 et septembre 2008.
Résultats : Comparativement aux clients plus âgés qui reçoivent des soins prolongés à domicile, les patients ANS qui attendent d'être admis dans un établissement de SLD présentent davantage de déficience fonctionnelle et de besoins en services de santé complexes. Il faudrait concevoir une combinaison de soins de transition ciblés et de services de soins à domicile plus axés sur les ressources, afin de traiter adéquatement les besoins en services des patients ANS dans la communauté.
Conclusions : Une grande partie des patients ANS, en milieu hospitalier de courte durée ou de soins complexes et inscrits sur les listes d'attente pour être admis dans un établissement de SLD, pourraient être traités plus adéquatement dans des établissements communautaires, si des ressources axées sur la communauté sont mises en place.

Effective management of the needs of older adults in acute hospitals is a key challenge for healthcare systems in Canada and internationally. Of particular concern is the large number of hospital beds being occupied by older patients who no longer need acute hospital services, but have not been discharged because of ongoing post-acute care needs or inadequate supports in the community. In Ontario, these individuals are commonly designated as alternate-level-of-care (ALC) patients. ALC days in Ontario's acute hospitals have been increasing since 1995, and by 2003, ALC patients accounted for approximately 10% of all acute care beds (OACCAC et al. 2006). Since then, the proportion of ALC patients has almost doubled, comprising 19% of all current acute care beds in Ontario (Ontario Hospital Association [OHA] ALC Survey Results 2009).

The consequences of the growing numbers of ALC patients for hospitals and the healthcare system have been widely reported (ALC Expert Panel 2006; CIHI 2009; OACCAC et al. 2006; Rock et al. 1995). However, it is generally acknowledged that ALC patients are not the cause of patient flow inefficiencies within the healthcare system. Rather, the growing number of ALC patients reflects a failure of the healthcare system to meet the needs of older adults with complex and declining health (ALC Expert Panel 2006). Although there has been much discussion about the "ALC challenge," less attention has been paid to the needs and experiences of ALC patients. Prolonged hospitalization is associated with the incidence of adverse outcomes, including accelerated functional decline, delirium, pressure ulcers, infections and falls (Covinsky et al. 2003; Creditor 1993; Graf 2006: Lim et al. 2006). For example, there is evidence that between 30% and 60% of older persons develop new ADL functional dependencies during their hospital stay (Fortinsky et al. 1999; Sager et al. 1996).

Patients waiting for long-term care placement in hospitals are an important subgroup within the ALC patient population. In Canada, the longest median ALC stays in acute hospitals belonged to those waiting for LTC, with a median stay of 15 days, compared to the 10-day national average and the 6-day average for those waiting for a rehabilitation bed (CIHI 2009). In addition, ALC patients waiting for LTC accounted for 60% of all ALC days in Canada (provincial range: 49%–76%) (CIHI 2009). In Ontario, 55% of acute ALC patients and 80% of complex continuing care (CCC) ALC patients are waiting for admission to LTC (OHA ALC Survey Results 2009).

Opportunities to make better use of community care services are being explored in Canada, with the aim to redirect some ALC patients waiting for LTC back into the community. For example, the Alberta Continuing Care Strategy, among other objectives, hopes to provide assistance and funding for some individuals to move back into their communities (Government of Alberta 2008). Prince Edward Island's Healthy Aging Strategy includes "transitional care" as one of its pillars (Department of Health

and Wellness 2009). Also, Ontario's provincial ER/ALC and Aging at Home strategies both attempt to foster expanded home care/community supports to avoid or delay admission to LTC (MOHLTC 2008, 2009). Although many healthcare initiatives target ALC as a priority, relatively little is known about the demographic and clinical characteristics of ALC patients and how they compare to existing community care populations. Understanding the characteristics of ALC patients provides a starting point for optimal capacity planning and the pursuit of discharge options appropriate to ALC patients' strengths, preferences and needs.

The objective of this study was to compare ALC patients waiting for LTC in acute and complex hospitals to long-stay home care clients using RAI-Home Care (RAI-HC) assessments completed by Ontario Community Care Access Centre (CCAC) case managers.

Methods

Sample

This investigation utilized a prevalence sample of 13,915 ALC patients waiting for LTC admission and 113,046 age 65 or older long-stay home care clients assessed with the RAI-HC in Ontario from January 2007 to September 2008. The most recent, unique RAI-HC assessment occurring during the sample period was included in this analysis to control for multiple assessment bias within groups. However, a small portion of the sample (3.6%) were hospital-assessed patients and then subsequently reassessed in the community. Ethics clearance was given for secondary use of these data by the University of Waterloo Office of Research Ethics (ORE#14761).

Data

The interRAI family of assessment instruments and their related applications comprise an integrated health information system that captures important health and service utilization domains of individuals requiring care (Gray et al. 2009; Hirdes et al. 1999, 2008a). Since 2004, all Ontario ALC patients waiting for a LTC bed in acute and complex hospitals, and who are not expected to go home, receive the hospital version of the RAI-HC assessment to initiate their LTC application process. In addition, CCAC case managers have used the community version of the RAI-HC since 2002 to assess all long-stay home care clients who are expected to receive services longer than 60 days. ALC patients are identifiable in the RAI-HC database because they were the group that received the hospital version of the assessment. The Ontario RAI-HC database currently includes over 60,000 records of ALC patients assessed in acute and complex hospitals while awaiting potential placement into LTC, and over 1 million records for long-stay home care clients.

The RAI-HC is a comprehensive assessment of a person's strengths, preferences and needs. As one of four interRAI instruments mandated for use in Ontario, the RAI-HC reliably documents important domains of a person's well-being, including health, function, social support, service use and quality of life (Morris et al. 1997; Poss et al. 2008). Subsets of these items are used to generate summary scales, including the Cognitive Performance Scale (CPS) (Morris et al. 1994), the Depression Rating Scale (DRS) (Burrows et al. 2000; Koehler et al. 2005; Martin et al. 2008), the Changes in Health, End-stage Disease, and Signs and Symptoms (CHESS) Scale (Hirdes et al. 2003) and the Method for Assigning Priority Levels (MAPLe) (Hirdes et al. 2008b). The RAI-HC includes care-planning protocols, referred to as clinical assessment protocols (CAPs). These CAPs were created for RAI/MDS/interRAI instruments in use for community health, home care, assisted living and LTC. CAPs are automatically generated from the assessment items to provide a comprehensive risk and needs assessment as well as to aid the provision of evidence-based services (CIHI 2009). Individual CAPs can be triggered for resolving problems, reducing the risk of decline or increasing the potential for improvement.

Analysis

Descriptive analysis was performed using SAS Version 9.1 for Windows (SAS Institute, Cary, NC). All confidence intervals were calculated at the 99% level (alpha=0.01). Confidence intervals listed for each proportion were based on the standard error of a proportion. The majority of comparisons between groups achieved significance given the large sample sizes involved. Although statistical significance is necessary for clinical significance, it may not be sufficient to warrant a change in policy or service practice. Discretion should be exercised when considering actions needed in response to comparisons where the difference between groups is significant, but small.

Results

As shown in Table 1, the majority of ALC patients waiting for LTC were over age 75 (80.0%, 99% CI: 79.1, 80.9) (and close to half were over age 85). ALC patients waiting for LTC placement were more likely to be male, unmarried and living alone, compared to home care clients. The majority of ALC patients waiting for LTC previously lived in a private residence (79.5%, 99% CI: 78.6, 80.4), and the majority of these did not access home care service(s) through a CCAC. A modest proportion of these ALC patients previously resided in a LTC facility (12.7%, 99% CI: 12, 13.4).

TABLE 1. Demographic characteristics, primary caregiver characteristics and acute hospital utilization

		Home care (≥65 years)		ALC (All)		ALC (<75 years)		ALC (≥75 years)	
		% (CI)	N	% (CI)	N	% (CI)	N	% (CI)	N
Demographic Characteristics									
Age (mean)		82.1 (±.06)	113,046	83.0 (±0.1)	13,915	70.2 (±0.2)	1,841	85.4 (±0.1)	12,074
Gender	Female	68.0 (±0.4)	76,812	61.5 (±0.1)	8,537	51.6 (±3.0)	949	62.9 (±1.1)	7,588
Marital status	Married	37.3 (±0.4)	42,123	30.1 (±1.0)	4,214	36.7 (±2.9)	675	29.3 (±1.1)	3,539
	Not married	51.9 (±0.4)	58,633	54.9 (±1.1)	7,620	27.9 (±2.7)	514	58.9 (±1.2)	7,106
Lived alone		*33.7 (±0.4)	15,154	*39.9 (±1.1)	3,548	*38.5 (±2.9)	491	*40.1 (±1.1)	3,057
Lived in	Nursing home	*3.3 (±0.1)	1,475	*12.7 (±0.7)	1,088	*4.5 (±1.2)	49	*14.2 (±0.8)	1,039
	Private residence	*77.1 (±0.3)	34,659	*54.8 (±1.1)	4,900	*60.4 (±2.9)	769	*53.7 (±1.2)	4,131
	Private residence (HC§)	*11.8 (±0.2)	5,304	*24.7 (±0.9)	2,253	*23.0 (±2.5)	293	*25.5 (±1.0)	1,960
	Board/assisted/ group home	*7.1 (±0.2)	3,203	*9.2 (±0.6)	821	*4.5 (±1.2)	57	*9.9 (±0.7)	764
Primary Caregiver Status									
Lives with client		49.4 (±0.4)	54,923	38.5 (±1.1)	5,357	42.4 (±3.0)	779	37.7 (±1.1)	4,554
Is a spouse		*29.7 (±0.4)	32,968	*23.6 (±0.9)	3,263	*34.1 (±2.8)	596	*22.4 (±1.0)	2,667
Is a child or child-in-law		*55.1 (±0.4)	61,112	*57.5 (±1.1)	7,899	*41.1 (±3.0)	719	*60.3 (±1.1)	7,180
Caregiver is unable to continue		6.7 (±0.2)	7,456	20.7 (±0.9)	2,919	19.1 (±2.4)	352	21.3 (±1.0)	2,567
Resource Utilization									
Hospitalizations (90 days pre-admission)^	0	76.1 (±0.3)	86,076	83.9 (±0.8)	11,678	82.6 (±2.3)	1,521	84.1 (±0.9)	10,157
	1–2	23.1 (±0.3)	26,121	15.1 (±0.8)	2,128	16.1 (±2.2)	297	15.2 (±0.8)	1,831
	≥3	0.8 (±0.1)	849	1.0 (±0.2)	108	1.3 (±0.7)	23	0.7 (±0.2)	85

TABLE 1. Continued

ED visits (90 days pre-admission)^	0	82.8 (±0.3)	93,577	80.1 (±0.9)	11,137	81.4 (±2.3)	1,499	79.8 (±0.9)	9,638
	1–2	16.0 (±0.3)	18,113	17.7 (±0.8)	2,512	16.1 (±2.2)	296	18.4 (±0.9)	2,216
	≥3	1.2 (±0.1)	1,356	2.1 (±0.3)	265	2.5 (±0.9)	46	1.8 (±0.3)	219

* Missing data due to the inclusion of partial assessments
§ 'HC' = Home care
^ Not including current hospitalization
Note: All confidence intervals are 99% (alpha=0.01) unless otherwise specified.

Within the ALC sample, the majority (61.5%, 99% CI: 60.4, 62.6) did not have a primary caregiver who lived with them in their residence. ALC patients waiting for LTC who were age 75 or more were less likely to have a primary caregiver living with them, and that caregiver was more likely to be a child or child-in-law. ALC patients waiting for LTC were generally less likely to have a primary caregiver who was living with them, relative to the home care sample.

Concerning acute hospital utilization, ALC patients waiting for LTC experienced fewer recent hospitalizations, yet had a similar frequency of emergency department (ED) visits compared to the home care sample. In both samples, very few had three or more hospitalizations or ED visits during the 90 days pre-admission.

As shown in Table 2, ALC patients waiting for LTC had poorer cognitive status, diminished communication skills, more depressive symptoms, more behavioural disturbances, more functional impairment, more falls and increased health instability compared to senior home care clients. The same is true for ALC patients of advanced age (≥75 years) versus the younger subgroup (<75 years). However, there was also evidence that a subset of ALC patients awaiting LTC may still have adequate functional capacity to warrant consideration of community care options (e.g., supportive living arrangements). For example, an ALC patient in stable health condition (72.5% of the sample), with only limited ADL impairment (39% of the sample) or limited cognitive impairment (63.7% of the sample) may be appropriate for transition to a community setting.

ALC patients waiting for LTC had roughly the same frequency of co-morbid conditions as home care clients, with an exception at the high end of the distribution (4+ co-morbidities). The majority of ALC patients waiting for LTC had one or more co-morbidities. Complexity in this analysis was defined by one or more of psychiatric diagnosis, signs of depression, hallucinations or delusions, cognitive impairment, any behaviour, any antipsychotic medication use, schizophrenia or bipolar disorder. A greater proportion of persons with complex health needs were found in the ALC sample than in the home care sample. ALC patients waiting for LTC who were under the age of 75 were more likely to demonstrate complexity relative to those over age 75.

Nonetheless, almost half the ALC patients were not complex by this definition.

As shown in Figure 1, the most common diagnosis for ALC patients waiting for LTC was arthritis, which was present in 45% (99% CI: 43.9, 46.1) of all patients. The next most frequent diagnoses were non-Alzheimer's related dementia, stroke, diabetes and osteoporosis – each accounted for over 20% of the ALC sample. Relative to senior home care clients, ALC patients waiting for LTC had substantially higher rates of non-Alzheimer's related dementia, stroke, congestive heart failure (CHF), urinary tract infections (UTIs), psychiatric conditions, hip fracture and renal failure.

TABLE 2. Clinical characteristics

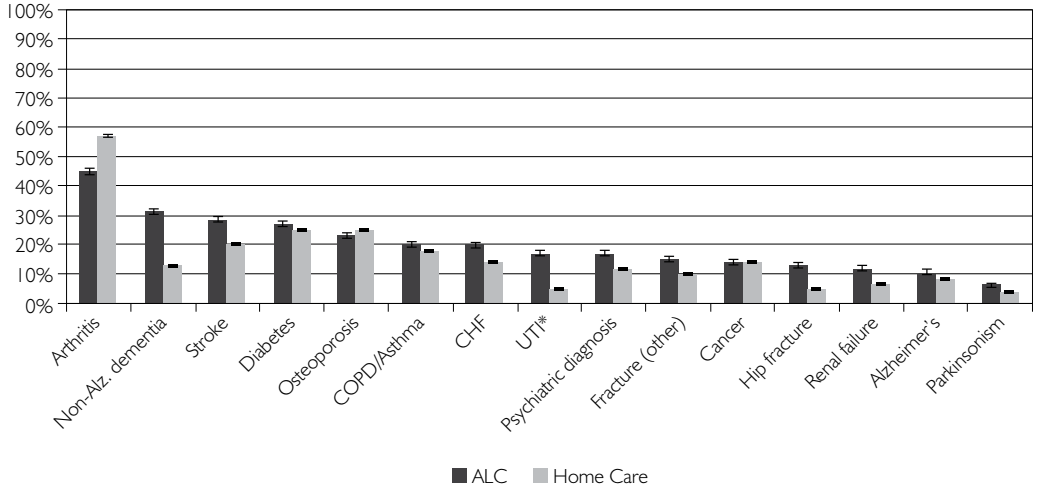
	Home care (≥65 years)		ALC (All)		ALC (<75 years)		ALC (≥75 years)	
	% (CI)	N	% (CI)	N	% (CI)	N	% (CI)	N
Cognitive Status								
Moderate to very severe cognitive impairment[1]	11.0 (±0.2)	12,502	36.3 (±1.1)	5,086	32.5 (±2.8)	598	37.2 (±1.1)	4,488
Indications of delirium (last 7 days)	1.9 (±0.1)	2,155	8.6 (±0.6)	1,183	6.3 (±1.5)	116	8.8 (±0.7)	1,067
Impaired short-term memory	40.9 (±0.4)	46,245	68.4 (±1.0)	9,520	58.0 (±3.0)	1,068	70.0 (±1.1)	8,452
Communication								
Difficulty making self understood	8.9 (±0.2)	10,049	25.9 (±1.0)	3,641	24.9 (±2.6)	460	26.4 (±1.0)	3,181
Difficulty understanding others	9.8 (±0.2)	11,088	29.5 (±1.0)	4,089	25.7 (±2.6)	473	29.9 (±1.1)	3,616
Mood and Behavioural Status								
Signs of depression[2]	13.2 (±0.3)	14,863	17.5 (±0.8)	2,485	21.1 (±2.4)	388	17.4 (±0.9)	2,097
ANY behaviour[3]	6.3 (±0.2)	7,161	19.0 (±0.9)	2,622	18.7 (±2.3)	344	18.9 (±0.9)	2,278
ADL Functioning								
Independent	67.1 (±0.4)	75,828	9.1 (±0.6)	1,266	16.3 (±2.2)	300	8.0 (±0.6)	966
Supervision/Limited impairment	21.9 (±0.3)	24,775	29.9 (±1.0)	4,199	29.3 (±2.7)	540	30.3 (±1.1)	3,659
Extensive assistance required	8.2 (±0.2)	9,295	37.1 (±1.1)	5,111	30.9 (±2.8)	569	37.6 (±1.1)	4,542
Dependent	2.8 (±0.1)	3,147	23.9 (±0.9)	3,338	23.5 (±2.5)	432	24.1 (±1.0)	2,906

TABLE 2. Continued

Health Conditions									
Unstable condition[4]		10.3 (±0.2)	11,583	27.5 (±1.0)	3,800	23.8 (±2.6)	438	27.9 (±1.1)	3,362
Falls (last 90 days)	None	71.2 (±0.3)	80,276	42.5 (±1.1)	5,940	52.2 (±3.0)	964	41.0 (±1.2)	4,976
	≥2	6.7 (±0.2)	6,834	15.7 (±0.8)	2,161	14.3 (±2.1)	261	16.1 (±0.9)	1,900
Co-morbidities[5]	None	8.2 (±0.2)	9,241	6.9 (±0.6)	974	8.4 (±1.7)	155	6.6 (±0.6)	797
	1	29.5 (±0.3)	33,371	24.0 (±0.9)	3,339	26.0 (±2.6)	479	23.7 (±1.0)	2,864
	2–3	52.5 (±0.4)	59,387	52.4 (±1.1)	7,235	49.3 (±3.0)	907	52.9 (±1.2)	6,392
	≥4	9.8 (±0.2)	11,047	16.7 (±0.8)	2,365	16.3 (±2.2)	300	16.7 (±0.9)	2,021
Complexity[6]		30.0 (±0.4)	33,875	52.4 (±1.1)	7,233	59.6 (±2.9)	1,098	51.2 (±1.2)	6,181

[1] Based on the interRAI Cognitive Performance Scale (CPS) levels ≥3. Equivalent to 15 – 1 MMSE (Morris et al. 1994; Hartmaier et al. 1995).
[2] Based on the interRAI Depression Rating Scale (DRS) (Burrows et al. 2000) levels ≥3.
[3] Includes: wandering, verbal abuse, physical abuse, socially inappropriate behaviour and resisting care.
[4] Based on the interRAI Changes in Health, End-stage Disease, and Signs and Symptoms (CHESS) Scale (Hirdes et al. 2003) levels ≥3.
[5] Co-morbidities include: congestive heart failure, Alzheimer's disease, non-Alzheimer's related dementia, Parkinsonism, arthritis, osteoporosis, psychiatric diagnosis, cancer, diabetes, renal failure and COPD.
[6] One or more of: psychiatric diagnosis, signs of depression (DRS 3+), hallucinations/delusions, cognitive impairment (CPS 3+), any behaviour, any antipsychotic medication use, schizophrenia and bipolar disorder.
Note: All confidence intervals are 99% (alpha=0.01) unless otherwise specified.

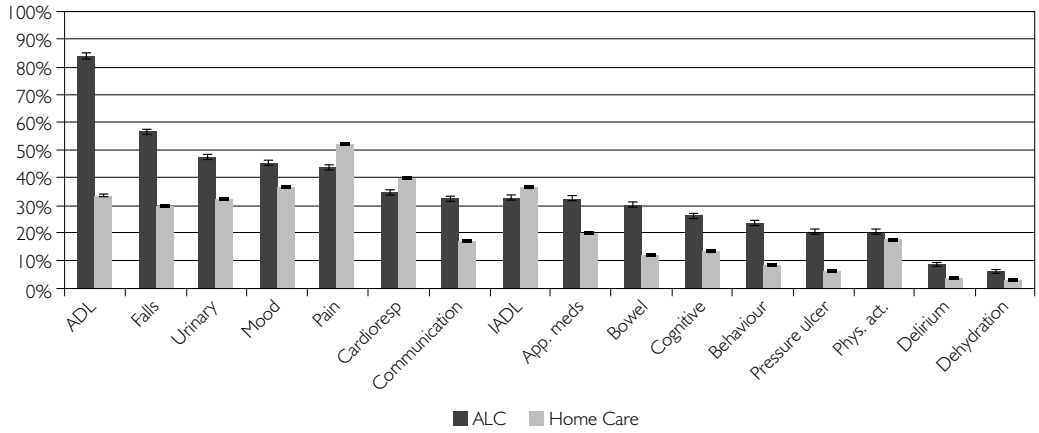
FIGURE 1. Current disease diagnoses and health conditions by group



* Last 30 days
Note: All confidence intervals are 99% (alpha=0.01) unless otherwise specified.

As shown in Figure 2, the most common needs identified by the RAI-HC's clinical assessment protocols (CAPs) among ALC patients waiting for LTC were potential to improve or prevent declines in ADLs, falls, urinary incontinence, mood and pain. Each of these CAPs was triggered for over 40% of the ALC sample. The ALC sample had substantially higher needs than the home care sample with respect to ADLs, falls, urinary incontinence, communication, medication management, bowel incontinence, cognition, behaviours, pressure ulcers and delirium.

FIGURE 2. Triggered clinical assessment protocols (CAPs)* by group



* Triggered at any level
Note: All confidence intervals are 99% (alpha=0.01) unless otherwise specified.

Discussion

ALC patients waiting for LTC are a unique population, clinically distinct from older long-stay home care clients in Ontario. Many older adults with complex health needs receive care in multiple settings. The availability of standardized RAI-HC assessment data provides an opportunity to gain unique insights into the needs of the ALC population and compare them to the needs of existing home care clients.

Given that most community-based alternatives to LTC rely on some level of informal care capacity, access to informal support is an important consideration. ALC patients waiting for LTC were less likely than older home care clients to have a primary caregiver living with them and more likely to have a primary caregiver who expressed inability to continue. Inferring precise estimates of informal care capacity from the relationship to a primary caregiver, living situation or both can be difficult given that there may be considerable qualitative differences in caregiver capacity (Fraser and Warr 2009; Fujino and Matsuda 2009). However, the primary caregiver characteristics presented here suggest that ALC patients have less access to informal

support compared to home care clients. This factor alone indicates that some ALC patients may be unable to return to a solitary dwelling without considerable formal home care supports.

ALC patients waiting for LTC had higher levels of functional deficits, complexity and disease burden than community-based clients. Cognitive impairment is a chief concern among functional deficits given that many community care settings require some ability on the part of residents to direct their own care. Moderate to severe cognitive impairment was found in over one-third of the ALC sample. Likewise, relative to senior home care clients, difficulties associated with stroke, dementia or acute delirium were more prevalent in ALC patients waiting for LTC. The observed rates of Alzheimer's and non-Alzheimer's related dementia are consistent with previous reports of high ALC hospitalizations and lengths of stay (CIHI 2009).

Patient well-being is an important indicator for clinicians and policy makers interested in quality of care. ALC patients waiting for LTC displayed higher levels of depression indicators compared to community-based home care clients. This finding agrees with a recent ethnographic study by Kydd (2008) that suggested older adults, termed "bed-blockers" or "delayed discharge," are anxious about their future and feel unsupported. Perhaps such anxiety is not surprising considering that a transition to an in-patient bed brings changes to daily life patterns and social consequences that are distressing to older patients. In addition, it is generally known that many older adults have negative views of residential care settings. Therefore, the transition to a less desirable care setting might have contributed to a more negative mood in the ALC sample. This factor could also have contributed to the higher number of depression indicators in the younger ALC subgroup, where the relatively early need for LTC could have had negative physiological implications.

Previous hospitalizations and ED visits were slightly less common in the ALC sample than in the home care sample. However, about 15% and 20% of ALC patients experienced one or more hospitalizations and ED visits, respectively, in the previous 90 days. Any strategy to reduce ALC days should include initiatives to prevent hospitalizations in the first place. For example, falls are a well-known risk factor for hospitalization and were experienced by 57.5% of the ALC patients compared to 28.8% of community home care clients. Likewise, the ED is an ideal setting for the use of geriatric screening to detect older persons at high risk for adverse outcomes, including ALC status. Early detection and intervention is imperative given that ALC patients admitted through the ED account for 73% of ALC bed days in Canada (Dawson et al. 2008).

Overall, the socio-demographic and clinical characteristics of the described population samples suggest that some ALC patients waiting for LTC might be successfully managed in the community with intensive and targeted home care services or with supportive living options. Moreover, a transitional care model could have an important role in returning ALC patients back to these community settings. However, this

approach would require adequate resources and needs-based interventions in order to ensure quality care. The interRAI CAPs provide a useful starting point for planning and initiating services to support ALC patients' return to the community. Based on the current study, interventions aimed at restoring functional ability, preventing falls, managing incontinence and alleviating depressive symptoms could be of considerable benefit to a substantial portion of ALC patients in Ontario.

Despite some evidence for community-based alternatives, the real need for LTC also should not be discounted, particularly for ALC patients with extensive functional impairments. Research concerning the transitions of ALC patients to the community, the level of service intensity necessary for a successful transition, as well as cost–benefit analyses are required to determine the feasibility of community care options for ALC patients waiting for LTC admission.

Strengths and limitations

The combination of census-level records with over 300 clinical variables per record makes the RAI-HC database one of the largest data holdings available to describe ALC patients in Canada. However, given changing definitions and discharge practices for ALC in Ontario, the sample (January 2007 to September 2008) included in this analysis may not be fully representative of ALC patients waiting for LTC in coming years. Likewise, it is not known how generalizable Ontario's ALC population is to the ALC populations in other provinces.

The characteristics presented in this study reflected ALC patients' health status at the time of LTC application. Given that health status is not a static measure (particularly for hospitalized older adults), the timing of hospital RAI-HC assessment may or may not represent the characteristics of an ALC patient during his or her entire length of stay. Likewise, it is unclear whether the functional deficits and geriatric syndromes presented were reasons for, or consequences of, a prolonged ALC hospital stay.

Including the most recent, unique RAI-HC assessment in this analysis might over-represent the last ALC episode for patients who were either assessed during multiple ALC episodes or assessed twice during the same ALC episode. However, ALC patients with more than one assessment were rare (less than 4%). Only the most recent assessment for home care clients was used in order to eliminate a bias towards the characteristics of long-stay clients who had multiple assessments during the study period.

Conclusions

This analysis suggests that while some ALC patients waiting for LTC may be candidates for community-based care, many will require targeted services at a higher level of intensity than most community-based home care clients. ALC patients waiting for

LTC have complex medical and psychosocial needs that would benefit from the alignment of timely need-based care decisions with access to appropriate care options.

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RESEARCH PAPER

Does It Matter What You Measure? Neighbourhood Effects in a Canadian Setting

Ce que vous mesurez a-t-il de l'importance? L'effet de quartier dans une région du Canada

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Abstract

Data from 8,032 Manitoba respondents to the 1996/97 Canadian National Population Health Survey were linked to the 1996 census to study whether measures of morbidity, both self-reported and objectively determined, were affected by neighbourhood context. Once age, gender, smoking status, diabetes, body mass index and individual income were added to individual and multi-level regression models, effects of various neighbourhood characteristics were attenuated and significant in relatively few cases. Caution is definitely called for in generalizing from studies based on one or two dependent variables. Weak relationships are likely to lead to contradictory findings with respect to the importance of neighbourhood effects.

Résumé

Nous avons fait le lien entre les données provenant de 8 032 répondants manitobains à l'Enquête nationale sur la santé de la population canadienne 1996/1997 et le recensement de 1996, afin de voir si les mesures de morbidité (tant autodéclarées qu'objectivement déterminées) étaient influencées par le contexte du quartier. Après avoir tenu compte de l'âge, du sexe, du tabagisme, du diabète, de l'indice de masse corporelle et du revenu individuel dans les modèles de régression multiniveau et individuelle, les effets de plusieurs caractéristiques associées au quartier se trouvent atténués et ne s'avèrent significatifs que dans relativement peu de cas. Il faut réellement être prudent dans les généralisations provenant d'études qui se fondent sur une ou deux variables indépendantes. La faiblesse des relations établies peut mener à des conclusions contradictoires quant à l'importance de l'effet de quartier.

The relationship between higher individual socio-economic status (SES) and better health has been documented in many contexts (Smith et al. 1990). A number of studies using different methodologies have reported a direct, if modest, influence of neighbourhood factors on various health outcomes, even after taking individual characteristics into account. In many contexts, neighbourhood characteristics have been found to directly affect mortality (Kawachi and Berkman 2003a; Jones et al. 2000; Yen and Kaplan 1999; van Lenthe et al. 2005; Bosma et al. 2001; Jaffe et al. 2005). Are various measures of health affected by neighbourhood context in a Canadian province where no direct effect on mortality was found (Roos et al. 2004)? Because morbidity measures and self-reported health are known predictors of mortality, these health outcomes might well not be affected by neighbourhood characteristics (Idler and Benyamini 1997). However, other Canadian studies have found neighbourhood effects; such effects appear stronger both for

morbidity measures (compared to mortality) and for subjective measures (compared to objective) (Malmstrom et al. 2001; Pickett and Pearl 2001; Boyle et al. 2004; Martikainen et al. 2004; Hou and Myles 2005; Simpson et al. 2005; Robert 1998; Veenstra et al. 2005).

Both individuals and neighbourhoods are commonly classified on a continuum of socio-economic status; variables typically differ among studies, limited by the availability of data. Project locales, research designs, sampling methodologies and specific health outcomes examined also range widely. These variations have contributed to controversy as to whether neighbourhoods directly affect health, making it difficult to predict whether a lack of effect on mortality will correspond to a similar lack of effect on morbidity measures.

This study concentrates on a single province, restricting differences in political and social contexts while providing considerable variation in income, urban–rural status and so on (Duncan and Raudenbush 2001). Both the sampling methodology and individual neighbourhood characterization are identical to those in our previous study of mortality (Roos et al. 2004).

This paper examines how health outcomes other than mortality, including both self-reported and objectively determined measures of morbidity, are affected by neighbourhood characteristics. This research works towards understanding the pathways by which neighbourhood characteristics affect morbidity and mortality. Such studies are rare in the published literature.

Methods and Materials

Sampling and linkage

Our method of sampling and linkage has been described in detail elsewhere (Roos et al. 2004). The sample included 8,032 Manitoba respondents aged 18 to 75 in the 1996/97 Canadian National Population Health Survey (NPHS); these respondents were linked to the Population Health Research Data Repository, housed at the Manitoba Centre for Health Policy. The repository linkage provided information on place of residence (census enumeration area) and health outcomes. A total of 1,105 census enumeration areas were included (the smallest area for which census data are available), because small jurisdictional areas generally show stronger place effects than larger areas (Boyle and Willms 1999; Roos and Walld 2007). Such a design with many small groups appears satisfactory for the modelling carried out here (Raudenbush 2007).

Individual characteristics

Individual variables from the 1996/97 Canadian National Population Health Survey included age, gender, smoking status, diabetes, body mass index (BMI), household

income and education. Where missing data for a variable were less than 1%, those individuals were eliminated from analyses using that variable. Larger amounts of missing data were recorded for household income (13%) and BMI (22%, because NPHS provided this information only for those aged 20–64). Separate "missing BMI" and "missing household income" categories accounted for non-responders when these characteristics were examined.

Utilization of a methodology consistent with earlier studies facilitates meaningful comparisons. Accordingly, the Nova Scotia cutting points, originally used in our earlier study of mortality, were applied in this work (Veugelers et al. 2001; Roos et al. 2004). Respondents to the household income question were grouped according to annual gross household income: (a) less than $20,000, (b) from $20,000 to less than $40,000 and (c) more than or equal to $40,000 (Canadian dollars used throughout). For comparability, this paper emphasizes the lower half of the SES distribution; accordingly, the terms "rich" and "poor" are used in a relative context. Education was categorized on the basis of the highest level of schooling completed: (a) less than high school, (b) high school or vocational school and (c) college or university. To allow risk adjustment both for persons with low BMI (<20) and for obese persons (those with a BMI ≥27), participants were placed into three groups (Veugelers et al. 2001). Descriptive statistics can be found in Table 2 later in this paper.

Neighbourhood characteristics

As in previous studies, mean household income, mean dwelling value, percentage of less than grade 9 education, unemployment rate and percentage of single mothers were available at the enumeration area level from the 1996 Canada Census. These neighbourhood variables had face validity as measures of socio-economic status, were relatively easy to construct from census data and have been suitable for comparative work (Roos et al. 2004). Similar contextual characteristics have been used in other small-area studies (Kawachi and Berkman 2003b). Neighbourhood household income was grouped according to mean annual gross household income: (a) less than $30,000, (b) from $30,000 to less than $40,000 and (c) more than or equal to $40,000. Mean dwelling value was categorized as less than $60,000, from $60,000 to less than $80,000, and more than or equal to $80,000. The categories for unemployment rate were less than 10%, 10% to less than 15%, and more than or equal to 15%. Neighbourhoods were also split into those having 15% or more of their residents with an education of less than grade 9 and those having 10% or more of the families headed by single mothers. The socio-economic factor index (SEFI), built from principal components analysis with 23 socio-demographic variables serving as the initial base, was also used to characterize the neighbourhood environment (Roos et al. 2004; Martens et al. 2002). Consistent with earlier cross-provincial work, SEFI was split on its mean,

with above-average values indicating a more disadvantaged area (Veugelers et al. 2001; Roos et al. 2004). Table 3 later in this paper provides descriptive statistics of neighbourhood characteristics. Considering the contextual covariates as tertiles and as (logit transformed) continuous variables did not markedly affect the observed associations.

Health outcomes

Using both interview and administrative data provides a multi-method perspective (Roos et al. 2004). Three measures based on the NPHS interviews represent different aspects of health: self-reported health, health utility and psychological distress. Self-reported health has been noted as the most frequent measure used in studying individual and neighbourhood effects on health outcomes (Riva et al. 2007). A morbidity measure was also created using "the Adjusted Clinical Group (ACG) System, a diagnosis-based, case-mix methodology that describes or predicts a population's past or future healthcare use and costs" (Baldwin et al. 2006). With mortality dichotomous and relatively infrequent, the outcomes based on interview data were dichotomized for comparative purposes. Responses of poor or fair to the survey question "In general, how would you say your health is?" were considered "low self-reported health." Answers of good, very good or excellent were included in the reference group. Although the category names sometimes differ, this split follows other research using "less than good health" as the cut-off (Stafford et al. 2005; Cummins et al. 2005).

The Health Utility Index (HUI) – Mark III is a multi-attribute health utility function that takes into account an individual's vision, hearing, speech, mobility, dexterity, cognition and emotion, as well as pain and discomfort (Drummond et al. 1997; Statistics Canada 1997). Variation in HUI scores reflects differences in health states weighted by a fixed set of utilities. The HUI is summarized into a value between 0 and 1. Scores below 0.90 were considered "low health utility" as "an individual who is near-sighted, yet fully healthy on the other seven attributes, receives a score of 0.95" (Drummond et al. 1997; Statistics Canada 1997). Psychological distress is measured by a six-item symptom checklist that yields a score of 0 to 24 (Statistics Canada 1997). Psychological distress is considered to be present if the NPHS distress score had a value over 5 (a strong predictor of depression) (Patten 2002; Stephens et al. 1999).

The Adjusted Clinical Group (ACG) case-mix adjustment system produces Aggregated Diagnosis Groups (ADGs) that characterize the morbidity of an individual based on hospital discharge abstracts and physician claims (Kozyrskyj et al. 2005). The greater number of ADGs (in the year prior to the interview), the greater the burden of morbidity. This widely used morbidity measure (treated as ordinal) has been validated in Manitoba (Kozyrskyj et al. 2005; Reid et al. 2001, 2002) and is one of several claims-based morbidity measures similarly correlated with mortality (Baldwin et al. 2006).

There were no missing data for mortality, self-reported health or number of

ADGs; missing data for health utility (0.27%) and psychological distress (2.5%) were limited. Individuals with missing health outcome data were eliminated from analyses including the specific outcome. Frequencies of the various health outcomes were determined (Table 1); mortality was included in this table for comparative purposes.

TABLE 1. Frequency of health outcomes among survey participants in Manitoba (N=8,032)

Health outcome	n	Percentage
Mortality	269	3.35
Low self-reported health	782	9.74
Low health utility	2,216	27.59
Psychological distress	1,018	12.67
Number of ADGs[a]		
0	1,476	18.38
1	1,541	19.19
2	1,421	17.69
3	1,161	14.45
4	838	10.43
5	593	7.38
6	412	5.13
7+	590	7.35

[a] The larger number of ADGs are condensed only for the purposes of this table; in analyses, "7 and over" were not grouped. The number of ADGs ranged from 0 to 17.

Statistical approaches

The direct influence of individual and contextual characteristics on the health measures was calculated using logistic regressions for the binary health outcomes (low self-reported health, low health utility, psychological distress) and Poisson regression for the ordinal "number of ADGs." Hierarchical modelling was employed when examining the effects of contextual characteristics. Model 1 adjusted for only age and gender to quantify the associations of both individual and contextual characteristics on the various health outcomes (Tables 2 and 3). Adjustments for smoking status, diabetic status and BMI were run, although such adjustments may "overcontrol" because of these variables' association with overall health (Macintyre and Ellaway 2003). Finally, without controlling for individual-level SES, "neighbourhood level variables may act partially or

entirely as proxies for individual attributes and a partition of the contribution of each to the chosen health outcome is impossible" (Pickett and Pearl 2001) (Tables 3 and 4).

Odds ratios (from the logistic regressions) and risk ratios (from the Poisson regressions) for individual characteristics were calculated with SAS v. 8.2; the hierarchical modelling program HLM2 v. 5.00 for Unix was used for analyses including neighbourhood characteristics. Details on power calculations are available from the senior author.

Results

Health outcomes

Table 1 provides the frequencies of the various health outcomes among the 8,032 survey participants. Although not presented here, modest Spearman correlations among the various outcomes were found; this is expected, considering that all but one of the outcomes is binary. Mortality showed the smallest associations with the other measures, with low self-reported health showing the strongest relationship with mortality. The highest correlations for the ordinal measure based on administrative data, the number of ADGs, were with low self-reported health (0.209) and low health utility (0.190).

The sample was almost equally distributed between those aged 18–34 and 35–49 (n=2,577 and 2,486, respectively). There were 1,823 respondents between 50 and 64 and 1,146 between 65 and 74. Females outnumbered males 4,255 to 3,777.

Low self-reported health, low health utility and the number of ADGs showed an expected progression with age. For example, low self-reported health increased from 4.1% (18- to 34-year-olds) to 19.5% (65- to 74-year-olds) with increasing age. On the other hand, psychological distress was more likely among the young, decreasing from 14.4% in 18- to 34-year-olds to 82% in those from 65 to 74.

Individual characteristics

Table 2 (see http://www.longwoods.com/content/21883) highlights individual characteristics and appropriate odds ratios (ORs) or risk ratios (RRs) for the various health outcomes, adjusted for age and gender. In the same population the age- and gender-adjusted mortality risk was significantly greater among smokers and diabetics (Roos et al. 2004). The other health outcomes all showed similar results, except that smokers did not have a significantly greater age- and gender-adjusted risk of having a higher number of ADGs. Both a BMI of less than 20 and one equal to or more than 27 were associated with low self-reported health, low health utility and more ADGs. BMI was not significantly associated with psychological distress or mortality (Roos et al. 2004). Household income and level of education significantly affected all of the health outcomes when age and gender were controlled for. Because relationships were

only minimally attenuated by controlling for smoking status, BMI and diabetic status, these results were not included in Table 2. Education did not significantly affect mortality when these additional covariates were included in the model (Roos et al. 2004). All health outcomes showed a gradient across income and educational groups, except for the number of ADGs where both the medium- and high-income groups had very similar risk ratios. Missing data were treated as separate categories and were removed from the models (Table 2) to deal with potential biases (Greenland and Finkle 1995); the results did not vary significantly.

Neighbourhood characteristics

Our previous analysis found no significant direct effect of neighbourhood-level characteristics on mortality, regardless of the variables adjusted for (Veugelers et al. 2001; Roos et al. 2004). However, neighbourhood household income, education, unemployment rate, proportion of families with single mothers and the SEFI had a significant age- and gender-adjusted direct effect on self-reported health (Table 3). The majority of these effects persisted after adjustment for proximate health concerns, except for the 10% to ≤15% unemployment rate range (compared to <10% reference) and SEFI (model 2 in Table 4). With individual household income added to the model, only neighbourhoods with an average household income between $30,000 and $40,000 and neighbourhoods with an unemployment rate equal to or greater than 15% were significantly associated with low self-reported health. Higher levels of neighbourhood unemployment were associated with larger odds ratios for low self-reported health. The effects of neighbourhood household income on self-reported health were suggestive across the models but significant for only one category when individual household income was included.

After we adjusted for age and gender, high neighbourhood household income, high neighbourhood unemployment, medium neighbourhood dwelling value and a neighbourhood proportion of families with single mothers over 10% were significantly associated with higher odds of low health utility (Table 3). The effects of high neighbourhood unemployment and high neighbourhood household income disappeared with adjustment for other proximate health concerns. Upon adjustment for individual income, the proportion of families with single mothers no longer significantly affected health utility. Neighbourhood dwelling values in the medium range ($60,000 to ≤$80,000) continued to have a significant direct effect on low health utility even after the inclusion of individual income (Table 4).

High neighbourhood unemployment and SEFI showed a significant age- and gender-adjusted relationship with psychological distress. After including additional lifestyle factors (model 2) and individual income (model 3), no significant direct effects of neighbourhood-level characteristics on psychological distress were found (Table 4). High neighbourhood unemployment and the proportion of single mothers had signif-

TABLE 3. Effects of neighbourhood characteristics on various health outcomes adjusted for age and gender (model 1)

		Low self-reported health		Low health utility	
	Total N	n	Model 1	n	Model 1
Neighbourhood household income[b]					
<$30,000	1,134	156	1.0	349	1.0
$30,000–<$40,000	2,863	270	0.67 (0.52, 0.86)**[c]	835	0.97 (0.82, 1.15)
≥$40,000	4,035	356	0.67 (0.53, 0.85)**	1,032	0.83 (0.70, 0.98)*
Neighbourhood dwelling value±					
<$60,000	2,300	246	1.0	636	1.0
$60,000–<$80,000	2,366	232	0.88 (0.72, 1.09)	716	1.18 (1.02, 1.36)*
≥$80,000	3,366	304	0.91 (0.75, 1.11)	864	0.96 (0.84, 1.10)
Neighbourhood education of less than grade 9 ≥15%	3,393	378	1.20 (1.02, 1.41)*	984	1.06 (0.95, 1.18)
Neighbourhood unemployment rate (%)					
<10	6,547	604	1.0	1,775	1.0
10–<15	1,017	110	1.27 (1.01, 1.60)*	291	1.16 (0.98, 1.36)
≥15	468	68	1.97 (1.47, 2.63)***	150	1.38 (1.04, 1.82)*
Neighbourhood proportion of families with single mother >10%	3,081	337	1.29 (1.10, 1.52)**	900	1.20 (1.08, 1.34)**
Neighbourhood Socio-Economic Factor Index > mean	3,466	374	1.19 (1.01, 1.40)*	985	1.06 (0.95, 1.19)
		Psychological distress			Number of ADGs
	Total N	n	Model 1		Model 1
Neighbourhood household income[b]					
<$30,000	1,134	153	1.0		1.0
$30,000–<$40,000	2,863	367	0.92 (0.74, 1.14)		0.93 (0.87, 1.00)
≥$40,000	4,035	498	0.84 (0.68, 1.03)		0.96 (0.90, 1.02)
Neighbourhood dwelling value±					
<$60,000	2,300	296	1.0		1.0
$60,000–<$80,000	2,366	312	1.03 (0.86, 1.22)		0.99 (0.94, 1.05)
≥$80,000	3,366	410	0.89 (0.76, 1.04)		1.01 (0.96, 1.06)

TABLE 3. Continued

Neighbourhood education of less than grade 9 ≥15%	3,393	430	1.04 (0.91, 1.19)		0.98 (0.93, 1.02)
Neighbourhood unemployment rate (%)					
<10	6,547	816	1.0		1.0
10–<15	1,017	129	0.99 (0.79, 1.25)		1.07 (1.00, 1.14)
≥15	468	73	1.29 (1.00, 1.67)*		1.14 (1.03, 1.25)*
Neighbourhood proportion of families with single mother >10%	3,081	422	1.15 (1.00, 1.31)		1.07 (1.02, 1.12)**
Neighbourhood Socio-Economic Factor Index > mean	3,466	465	1.15 (1.00, 1.32)*		1.04 (0.99, 1.08)

[a] Effect presented in adjusted odds ratios (confidence intervals); except for Number of ADGs where it is adjusted risk ratio (confidence intervals). The odds ratios and risk ratios were calculated with multi-level logistic and Poisson regression, respectively.
[b] Values in Canadian dollars. In the 1990s, one Canadian dollar approximated an average value of $0.70 in US dollars.
[c] *p value<0.05, **p value<0.01, ***p value<0.001.

icant direct, although modest, effects on the number of ADGs even with age, gender, smoking status, BMI and diabetic status controlled for. These relationships remained significant, but slightly attenuated, with the inclusion of individual income (Table 4).

Discussion

Once individual socio-economic status was accounted for, the models that included both individual and neighbourhood household income showed negligible neighbourhood effects. Unlike research examining mortality in the same population, when only age, sex and lifestyle factors were adjusted for, neighbourhood characteristics showed direct correlations with low self-reported health, low health utility and the number of ADGs morbidity measure (Table 4) (Roos et al. 2004). Neighbourhood socio-economic characteristics appear to act as a proxy for individual income to a greater extent when examining morbidity than mortality. The general lack of association between neighbourhood characteristics and psychological distress accords with other evidence that common mental disorders are not affected by small-area variations (Weich 2005).

A key strength of this research is the use of a consistent methodology, the same data sources and similar context as previous Canadian studies (Veugelers et al. 2001; Roos et al. 2004). The use of both objective and subjective measures of morbidity in conjunction with hierarchical modelling are additional strengths. The dichotomization of health outcomes addresses concerns that subjective health measures (particularly at the extremes) may not be consistent across socio-economic and cultural groups (Evans 2007). Although examined morbidity measures can vary by access to health services,

TABLE 4. Effects of neighbourhood characteristics on various health outcomes adjusted for age and gender, with diabetes, BMI and smoking status added (model 2), and with individual income added (model 3)

		Low self-reported health		Low health utility		
	Total N	Model 2	Model 3	n	Model 2	Model 3
Neighbourhood household income[b]						
<$30,000	1,134	1.0	1.0	349	1.0	1.0
$30,000–<$40,000	2,863	0.72 (0.57, 0.93)*	0.78 (0.61, 1.00)*	835	1.00 (0.84, 1.18)	1.06 (0.89, 1.25)
≥$40,000	4,035	0.72 (0.57, 0.91)**	0.84 (0.66, 1.07)	1,032	0.86 (0.73, 1.02)	0.97 (0.82, 1.15)
Neighbourhood dwelling value±						
<$60,000	2,300	1.0	1.0	636	1.0	1.0
$60,000–<$80,000	2,366	0.88 (0.72, 1.09)	0.91 (0.74, 1.12)	716	1.18 (1.02, 1.35)*	1.20 (1.04, 1.39)*
≥$80,000	3,366	0.93 (0.77, 1.13)	1.02 (0.84, 1.24)	864	0.97 (0.85, 1.12)	1.04 (0.91, 1.20)
Neighbourhood education of less than grade 9 ≥15%	3,393	1.19 (1.01, 1.39)*	1.09 (0.93, 1.28)	984	1.05 (0.94, 1.17)	0.98 (0.88, 1.10)
Neighbourhood unemployment rate (%)						
<10	6,547	1.0	1.0	1,775	1.0	1.0
10–<15	1,017	1.20 (0.96, 1.50)	1.16 (0.93, 1.45)	291	1.12 (0.95, 1.31)	1.08 (0.92, 1.27)
≥15	468	1.80 (1.35, 2.39)***	1.58 (1.19, 2.10)**	150	1.30 (0.99, 1.72)	1.18 (0.89, 1.56)
Neighbourhood proportion of families with single mother >10%	3,081	1.23 (1.04, 1.44)*	1.16 (0.99, 1.36)	900	1.16 (1.04, 1.30)**	1.11 (0.99, 1.24)
Neighbourhood Socio-economic Factor Index > mean	3,466	1.13 (0.97, 1.33)	1.05 (0.89, 1.23)	985	1.03 (0.92, 1.15)	0.96 (0.86, 1.07)
		Psychological distress			Number of ADGs	
	Total N	Model 2	Model 3		Model 2	Model 3
Neighbourhood household income[b]						
<$30,000	1,134	1.0	1.0		1.0	1.0

TABLE 4. Continued

$30,000–<$40,000	2,863	0.94 (0.75, 1.16)	1.00 (0.80, 1.24)		0.95 (0.88, 1.01)	0.96 (0.90, 1.03)
≥$40,000	4,035	0.86 (0.69, 1.06)	0.96 (0.78, 1.19)		0.98 (0.91, 1.04)	1.00 (0.93, 1.07)
Neighbourhood dwelling value±						
<$60,000	2,300	1.0	1.0		1.0	1.0
$60,000–<$80,000	2,366	1.02 (0.86, 1.22)	1.05 (0.88, 1.25)		1.00 (0.94, 1.05)	1.00 (0.95, 1.06)
≥$80,000	3,366	0.90 (0.77, 1.06)	0.96 (0.81, 1.12)		1.02 (0.97, 1.07)	1.03 (0.98, 1.08)
Neighbourhood education of less than grade 9 ≥15%	3,393	1.04 (0.91,1.20)	0.98 (0.86, 1.13)		0.97 (0.93, 1.01)	0.96 (0.92, 1.00)
Neighbourhood unemployment rate (%)						
<10	6,547	1.0	1.0		1.0	1.0
10–<15	1,017	0.95 (0.76, 1.20)	0.92 (0.73, 1.16)		1.06 (0.99, 1.13)	1.05 (0.99, 1.12)
≥15	468	1.20 (0.92, 1.56)	1.08 (0.83, 1.40)		1.13 (1.02, 1.24)*	1.10 (1.00, 1.21)*
Neighbourhood proportion of families with single mother >10%	3,081	1.09 (0.95, 1.25)	1.04 (0.91, 1.19)		1.07 (1.02, 1.11)**	1.06 (1.01, 1.10)*
Neighbourhood Socio-Economic Factor Index > mean	3,466	1.11 (0.97, 1.28)	1.05 (0.91, 1.20)		1.09 (0.96, 1.23)	1.02 (0.97, 1.06)

[a] Effect presented in adjusted odds ratios (confidence intervals), except for Number of ADGs where it is adjusted risk ratio (confidence intervals). The odds ratios and risk ratios were calculated with multi-level logistic and Poisson regression, respectively.
[b] Values in Canadian dollars. In the 1990s, one Canadian dollar approximated an average value of $0.70 in US dollars.
[c] *p value<0.05, **p value<0.01, ***p value<0.001.

this is less of an issue in Manitoba (Sutton et al. 1999). Only 18% of the population did not use the healthcare system in fiscal 1996, and individuals of lower socio-economic status receive more care than their more advantaged counterparts (Reid et al. 2001; Roos et al. 2005). Even the number of ADGs, with its link to healthcare utilization, has "a strong positive linear relationship with the subsequent rate of premature death" (perhaps the best available proxy of overall population health needs) across the province's small areas (Reid et al. 2002).

Perhaps Canada's greater social support network and universal medical care better protect its population from neighbourhood influences than those of several other countries (Veugelers et al. 2001; Roos et al. 2004; Ross et al. 2000; McLeod et al. 2003). However, other Canadian research has found significant neighbourhood effects on self-reported health, injury levels and BMI (Hou and Myles 2005; Simpson et al. 2005; Veenstra et al. 2005). In Sweden, a country with particularly strong social supports, Malmstrom and colleagues (2001) examined the same location and study population, finding a significant neighbourhood effect on self-reported long-term illness but not on mortality. Only occasionally do neighbourhood characteristics (even after including individual SES) appear to affect the examined health outcomes significantly (Table 4). Summarizing generally weak relationships across several variables and in more than one country is intrinsically difficult.

The study has several limitations. The design of this and similar research may have led to an overestimate of the effects of neighbourhood. Comparison of siblings in families living in the same neighbourhoods has found very weak neighbourhood effects on a number of estimates of well-being (in American, Canadian and Norwegian studies) (Roos and Walld 2007; Solon et al. 2000; Duncan et al. 2001; Oreopoulos 2003; Raaum et al. 2006). Adding more individual-level variables might further reduce neighbourhood effects (Ginther et al. 2000).

The prevalence measures used are affected by incidence and duration of a condition; longitudinal data would have been helpful. Different variables are associated with different stages in the life cycle. Looking at mortality focuses on older ages (and those in poorest health), while measures of subjective health and health utility are relevant for a wider age range. Better measurement of access to resources and psycho-social impacts of deprivation – as well as more powerful research designs – may prove helpful.

It is difficult to infer causality from even strong cross-sectional relationships. The small or non-existent neighbourhood effects found in this study imply problems in devising programs to improve health by focusing on neighbourhood variables. Certainly, neighbourhood improvement can be seen as a good thing in itself. The relationship between self-reported health and neighbourhood unemployment might suggest subjective benefits associated with policy efforts to lower neighbourhood unemployment, but – based on the overall weight of the evidence – such judgments remain speculative. Policies focused on benefiting neighbourhoods may improve health, but the causal pathway seems likely through their effects on individual variables. With individual-level variables disproportionately important, more time-consuming efforts focusing on individuals (and their families) may be more fruitful.

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Does It Matter What You Measure? Neighbourhood Effects in a Canadian Setting
Ce que vous mesurez a-t-il de l'importance? L'effet de quartier dans une région du Canada

by LESLIE L. ROOS, JENNIFER MAGOON AND DAN CHÂTEAU

TABLE 2. Effect of individual characteristics on various health outcomes adjusted for age and gender

		Low self-reported health			Low self-reported health[c]		Low health utility			Low health utility[c]		Psychological distress			Psychological distress[c]		Number of ADGs		Number of ADGs[c]		
	Total N	n	OR[a]	95% CI[a]	OR[a]	95% CI[a]	n	OR[a]	95% CI[a]	OR[a]	95% CI[a]	n	OR[a]	95% CI[a]	OR[a]	95% CI[a]	RR[a]	95% CI[a]	RR[a]	lower	upper
Smoker	2,404	267	1.58	1.35, 1.86	1.81	1.48, 2.21	743	1.50	1.35, 1.68	1.52	1.34, 1.73	415	1.69	1.47, 1.94	1.81	1.54, 2.12	0.99	0.96, 1.02	0.99	0.96	1.03
Body mass index																					
<20	346	33	1.92	1.30, 2.84	1.88	1.24, 2.85	97	1.43	1.11, 1.84	1.42	1.09, 1.85	61	1.18	0.88, 1.59	1.22	0.89, 1.67	1.15	1.08, 1.22	1.12	1.04	1.20
20 ≤27	3,665	223	1.0				840	1.0				487	1.0				1.0				
≥27	2,343	270	1.75	1.45, 2.12	1.85	1.51, 2.26	664	1.21	1.07, 1.37	1.21	1.07, 1.38	294	1.04	0.89, 1.22	1.02	0.86, 1.20	1.12	1.08, 1.16	1.14	1.10	1.19
Missing	1,678	256	1.19	0.94, 1.51	removed		615	1.13	0.97, 1.31	removed		176	0.92	0.76, 1.12	removed		1.15	1.11, 1.20	removed		
Diabetic	326	113	3.77	2.93, 4.84	4.14	2.94, 5.84	140	1.42	1.13, 1.80	1.55	1.14, 2.13	53	1.69	1.24, 2.31	1.79	1.22, 2.64	1.46	1.38, 1.54	1.67	1.55	1.80
Household income[b]																					
<$20,000	1,459	253	1.0				578	1.0				265	1.0				1.0				
$20,000–<$40,000	2,343	237	0.63	0.52, 0.77	0.63	0.51, 0.76	691	0.72	0.62, 0.83	0.65	0.55, 0.77	290	0.61	0.51, 0.74	0.53	0.43, 0.65	0.88	0.85, 0.91	0.85	0.81	0.89
≥$40,000	3,199	183	0.41	0.33, 0.50	0.40	0.32, 0.49	671	0.51	0.44, 0.58	0.44	0.38, 0.52	349	0.50	0.42, 0.60	0.42	0.35, 0.52	0.88	0.85, 0.91	0.87	0.83	0.91
Missing	1,031	109	0.62	0.49, 0.80	removed		276	0.59	0.49, 0.70	removed		114	0.56	0.44, 0.71	removed		0.88	0.84, 0.92	removed		
Education																					
Less than high school	2,378	386	1.0				874	1.0				325	1.0				1.0				
High school, vocational	2,986	232	0.66	0.55, 0.80	0.51	0.40, 0.65	718	0.74	0.65, 0.84	0.71	0.61, 0.83	388	0.74	0.62, 0.87	0.7	0.57, 0.86	0.94	0.91, 0.97	0.93	0.89	0.97
College, university	2,624	158	0.46	0.37, 0.56	0.34	0.26, 0.43	606	0.64	0.57, 0.73	0.61	0.52, 0.71	302	0.67	0.56, 0.80	0.65	0.53, 0.80	0.93	0.90, 0.96	0.93	0.89	0.97

[a] OR, odds ratio; RR, risk ratio; CI, confidence interval. The odds ratios and risk ratios for individual characteristics were calculated with individual-level logistic and Poisson regression, respectively.
[b] Values in Canadian dollars. In the 1990s, one Canadian dollar approximated an average value of $0.70 in US dollars.
[c] The indicated analyses were performed only on people with complete data (n=5,573).

RESEARCH PAPER

Graduate Attributes for Master's Programs in Health Services and Policy Research: Results of a National Consultation

Caractéristiques des diplômés pour les programmes de maîtrise en recherche sur les services et les politiques de santé : résultats d'une consultation nationale

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Abstract

Objective: Our objective was to identify desirable attributes to be developed through graduate training in health services and policy research (HSPR) by identifying the knowledge, skills and abilities thought to be keys to success in HSPR-related careers. We aimed for a framework clear enough to serve as a touchstone for HSPR training programs across Canada yet flexible enough to permit diversity of specialization across and within those programs.
Methods: Our approach involved several stages of data collection and analysis: a review of literature; telephone interviews with opinion leaders; online surveys of HSPR students, recent graduates and employers; an invitational workshop; and an interactive panel at a national conference. Our final framework was arrived at through an iterative process of thematic analysis, reflection on invited feedback from consultation participants and triangulation with existing competency frameworks.
Results: Our final result was a framework that identifies traits, knowledge and abilities of master's-level graduates who are capable of fostering health system improvement through planning, management, analysis or monitoring that is informed by credible evidence and relevant theory. These attributes are organized into three levels: generic graduate attributes, knowledge related to health and health systems and, finally, attributes related to the application of knowledge for health system improvement. The HSPR-specific attributes include not only an understanding of HSPR theories and methods but also the skills related to the practical application of knowledge in the complex environments of health system decision-making and healthcare policy.
Conclusion: Master's-level HSPR training programs should prepare students to pose and seek answers to important questions and provide them with the skills necessary to apply their knowledge within complex decision-making environments.

Résumé

Objectif : Notre objectif était de déterminer les caractéristiques souhaitables pour la formation des diplômés en recherche sur les services et les politiques de santé (RSPS), en repérant les connaissances, les compétences et les habiletés pouvant mener à la réussite d'une carrière dans la RSPS. Nous avons voulu établir un cadre suffisamment clair pour servir de modèle pour les programmes de formation en RSPS au Canada, tout en étant suffisamment souple pour permettre la diversité des spécialisations parmi ces programmes.
Méthodologie : Notre démarche comprend plusieurs étapes pour la collecte et l'analyse des données : une revue de la littérature; des entrevues par téléphone auprès de leaders d'opinion; des sondages en ligne auprès des étudiants, des jeunes diplômés et des employeurs dans le domaine de la RSPS; un atelier de travail sur invitation; et un panel interactif au cours d'un colloque national. Nous avons forgé le cadre au moyen d'une

analyse thématique itérative, de réflexions sur la rétroaction demandée aux participants et d'une vérification par triangulation avec les cadres de compétences existants. *Résultats :* Notre résultat final est un cadre qui détermine les traits, les connaissances et les habiletés des étudiants de maîtrise de sorte qu'ils soient en mesure de favoriser une amélioration du système de santé grâce à une planification, une gestion, une analyse et une surveillance éclairées par des données crédibles et des théories pertinentes. Ces caractéristiques s'articulent autour de trois niveaux : les caractéristiques générales des diplômés, les connaissances liées à la santé et aux systèmes de santé et, finalement, les caractéristiques liées à une application des connaissances visant l'amélioration du système de santé. Pour ce qui est de ces dernières, la plupart des caractéristiques comprennent non seulement la compréhension des méthodes et des théories de la RSPS, mais également les compétences en matière d'application pratique de ces connaissances dans l'environnement complexe de la prise de décisions et des politiques du système de santé. *Conclusion :* Au deuxième cycle universitaire, les programmes de formation en RSPS devraient servir à préparer les étudiants à formuler d'importantes questions et à y trouver réponses. Ces programmes devraient également doter les étudiants des compétences nécessaires pour appliquer leurs connaissances dans l'environnement complexe de la prise de décisions.

What distinguishes a health services and policy research (HSPR) graduate from graduates of related fields such as epidemiology or population health? What traits, knowledge and skills should HSPR training programs be sure to help all their students attain? Most readers will have ideas about how to answer these questions; however, we suspect those answers would vary considerably. HSPR is an interdisciplinary field – one that attracts people from a wide variety of backgrounds and shares somewhat blurred boundaries with related fields. This range would explain some variety in how people might envision HSPR graduates. Another reason for variation in answers to questions about the attributes of HSPR trainees is that, despite the many indicators that HSPR is maturing as a field of its own – the emergence of funding institutes, a national association, annual conferences and a dedicated journal – HSPR in Canada presently lacks a common definition of its core competencies.

A clear definition of attributes that distinguish HSPR graduates would be helpful to educators, students and employers. It would serve the practical goal of communicating the abilities that employers can expect in HSPR graduates and that prospective students can expect to attain through HSPR training. Moreover, the process of exploring and delineating the field's unifying attributes can help improve our understanding of the role or purpose of HSPR (Pittman and Holve 2009), and in doing so, assist indi-

viduals in identifying themselves as members of the HSPR field – a potentially important outcome of advanced education (Lucia and Lepsinger 1999; Barnett et al. 2001).

Several training centres have published lists delineating learning objectives for their students (Atlantic Regional Training Centre 2008; Ontario Training Centre in Health Services and Policy Research 2008; Western Regional Training Centre for Health Services Research 2008). While these lists represent important steps for the Canadian field as a whole, each was independently developed, varies in structure and content from the others and includes elements that may not be relevant for non-academic HSPR-related careers. American researchers have conducted two national consultations to determine core competencies for US doctoral programs in health services research (HSR) (Martin 2008; Forrest et al. 2009). By design, however, these lists of competencies were tailored for predominantly academic careers in the context of the US health system and related research and policy foci.

This paper summarizes an extensive consultation with experts from across Canada that we undertook to identify desirable attributes to be developed through graduate training in HSPR. We began by seeking broad input on the "core competencies" of the field: the skills, knowledge and abilities that are keys to success in HSPR-related careers today and in the foreseeable future. We also sought input on how HSPR training could be improved to better prepare students for related careers. Our approach involved several stages of data collection and analysis, which we report in sequence here: a review of literature on competencies, graduate attributes and curriculum design; telephone interviews with renowned leaders in HSPR-related careers; online surveys of current HSPR students, recent alumni of HSPR training programs and employers of HSPR graduates; an invitational workshop; and an interactive panel at a national conference. Readers who wish to 'skip to the chase' can simply bypass the methods and analysis sections of this paper and review the final framework in the results section (page 75).

We wish to emphasize from the outset that we did not set out to professionalize HSPR with narrowly defined, task-specific competencies. Instead, we aimed for a framework of desirable graduate attributes that was clear enough to serve as a touchstone for HSPR training programs across Canada yet flexible enough to permit diversity of specialization across and within those programs. The final framework lists attributes that would ideally be possessed by all graduates of master's programs in HSPR, regardless of their area of specialization. Similar frameworks for subspecialties of the HSPR field – including frameworks for doctoral-level trainees – should be developed through subsequent consultation processes.

Background: Core Competencies and Graduate Attributes

Many members of the HSPR community will be familiar with "core competency" lists. This is so because many identify not only as being in the HSPR field but also

as members of professions that use "competence" as a condition of membership. HSPR-related professions that have developed and promoted detailed competency lists include medicine, nursing, pharmacy, public health and health administration (Calhoun et al. 2002; Neilson et al. 2003; CNA 2005; ACGME 2007; Burke et al. 2008; Calhoun et al. 2008; Leach 2008; PHAC 2008; Laidlaw et al. 2009). A unifying theme of processes for professional competency definition and assessment – though one not always adhered to in practice – is that it is both possible and desirable to define a set of observable traits that have a causal relationship to workplace performance (McClelland and Boyatzis 1980). Professional training programs would be designed to help students attain such competencies, and accreditation processes would test for them in order to certify standards of the profession.

Advanced education beyond the boundaries of accredited professional schools has also embraced curriculum development based on specified learning objectives (Lucia and Lepsinger 1999; Markus et al. 2005; Howard 2007). Comprehensive educational programs – in some cases, entire university systems (Barrie 2004; Bath et al. 2004) – have been influenced by the view that defining a range of desirable graduate attributes is a useful mechanism for rational and accountable curriculum development. Here, the phrase *graduate attributes* – as opposed to *core competencies* – is used to connote a set of learning outcomes that extends beyond the demonstration of workplace-specific roles and abilities. The phrase helps distinguish more flexible approaches or guides to curriculum development from the more focused professional core competency models that are often praised and yet much maligned (Lucia and Lepsinger 1999; Voorhees 2001; Westera 2001; Jones et al. 2002; Jarvis and Parker 2004; Howard 2007). The use of the term "attributes" also helps to serve as a reminder that all components of training programs – from admissions through curriculum, practicum and evaluation – can be affected by defining them (Barrie 2004, 2006).

For specific disciplines or fields, such as HSPR, frameworks for defining desirable attributes for graduates often take the form of pyramids (Lucia and Lepsinger 1999; Calhoun et al. 2002; Jones et al. 2002; Barrie 2004; Chyung et al. 2006). At their foundation are generic yet enabling traits such as critical thinking, creativity, teamwork and communication skills. Some of these generic attributes may even be viewed as prerequisites for entry into a field when their attainment is a necessary foundation for the development of field-specific competencies (Barrie 2006). Secondary attributes in these frameworks generally include content area knowledge and skills, but might also include certain core values or orientations. Finally, attribute frameworks often include demonstrated abilities to apply competence in the context of a particular field. Whereas the demonstration of abilities in professional competency models may focus on narrow workplace competencies, graduate attribute frameworks may incorporate more general definitions of how abilities and knowledge are applied, permitting diversity within a field and interpretation by particular training programs or departments.

Methods: The Consultation Process

Input from leaders in HSPR-related fields

TELEPHONE INTERVIEWS

Over a 10-week period in 2008, we conducted a series of telephone interviews with individuals identified as key leaders in HSPR-related careers. To identify interviewees, we compiled a list of suggestions from the CIHR's Institute for Health Services and Policy Research, the Canadian Health Services Research Foundation, the Canadian Association for Health Services and Policy Research and directors of health services and policy research centres across Canada. We purposefully chose a sample of 67 of the 106 recommended experts from across Canada and from a diversity of backgrounds and places of work.

Forty-five people, representing all provinces except Prince Edward Island, agreed to participate in a telephone interview (67% participation rate). Twenty-eight (62%) of the interviewees were non-academics in a range of mid- to senior-level positions and careers. Interviews were conducted by the principal investigator (SM) and, whenever possible, the research assistant (KO). Interviews lasted 20 to 40 minutes and involved a maximum of 12 open-ended questions about keys to success in HSPR-related careers today and in the foreseeable future (see online Appendix). We digitally recorded the interviews and coded the professionally transcribed transcripts using NVivo software. Coding and analysis were guided by the qualitative coding strategies of Miles and Huberman (1994). Two of us (SM and KO) independently generated open coded themes from the raw transcripts and met to develop a final coding scheme. We identified 22 broad theme areas under which we grouped 53 competencies and traits.

RESULTS FROM EXPERT INTERVIEWS

Table 1 lists the 10 competencies most frequently identified in telephone interviews as keys to success in HSPR-related careers. Two of the three competencies most commonly cited related to knowledge of the Canadian healthcare system. Most notably in this regard, many experts that we interviewed suggested that HSPR graduates needed to understand the politics of healthcare systems and policies in addition to basic knowledge of healthcare system structures. This level of understanding policy making related to an overarching theme of HSPR careers as a bridge between academe and the real world of health systems and policies:

> I think it is absolutely critical for people to have some grounding in politics. That is, political theory, political science and public administration. It doesn't have to be huge, but there needs to be a basic understanding of how democracies work and how – in the healthcare system – resources get allocated. How interests come to play in decisions and how decision-makers digest and use

> research-based evidence and/or don't use research-based evidence in what they do. (Private consultant)

TABLE 1. Ten competencies most frequently cited during telephone interviews with key leaders in the HSPR field

	Mentions by non-academics (n=28)	Mentions by academics (n=17)	Total mentions (n=45)
Knowledge of the Canadian healthcare system	16	8	24
Understanding of research methods and study designs	13	11	24
Understanding of the politics of healthcare systems and policy processes	14	6	20
Ability to engage in meaningful research producer–user partnerships	16	4	20
Effective, non-technical written communication skills	17	2	19
Strong interpersonal and teamwork skills	16	2	18
Ability to think critically and analytically	12	6	18
General communication skills	14	3	17
Ability to conduct quantitative research	9	6	15
Sufficient understanding to be able to assess/interpret quantitative research	9	6	15

Certain research skills also ranked highly in terms of frequency of mention in our telephone interviews. Research skills were typically discussed in the context of the ability to critically appraise existing work and to formulate important research questions. As one expert noted, the HSPR career in most non-academic environments is one of being an educated "user" of research, not a "producer" of research:

> We do less conducting research in the health system, in the applied side. We do some [in our organization] … but it tends to be the university community that drives and conducts research. So if I was employing somebody in [our organization], I would be less expecting them to be conducting studies rather than applying research and developing policy based on research that was done. (Decision-maker in a regional health authority)

One of the most interesting themes to emerge from the interviews was an emphasis on practical skills as essential traits for success in HSPR-related careers. These skills included communication, teamwork, critical thinking and – quite bluntly – intellect:

> It's absolutely essential that people are able to express complex ideas in a succinct way. (Senior executive of a public agency)

> Some of the most successful people [in our organization] are those people who have good personalities – who have good people skills. Who can build bridges and be able to share the kind of expertise that they can bring to a problem in a way that is ultimately constructive and advances the larger organization's learning. (Senior government manager)

> But really, at the end of the day, it's the ability to make sense of a complex and vast amount of information and being able to draw insights from it. (Government analyst)

A final theme of interest from the telephone interviews was that when asked what one thing they would change about HSPR training in Canada, 31 of the 45 leaders interviewed (69%) recommended more student interaction with the healthcare system. Work placements or co-op–based programs were mentioned by 21 of these experts (47%); assigning projects or theses to be done either in collaboration with or in response to questions generated by decision-makers was mentioned by 10 others (22%). No other category of recommendation for HSPR training was cited by more than five people.

Online surveys of students, alumni and employers

ONLINE SURVEY

Over three months in the fall of 2008, we surveyed HSPR students, recent graduates and employers of HSPR graduates using LimeSurvey software. Students and alumni were recruited to these voluntary surveys through focused e-mails sent to 16 training programs across Canada: 12 university department–based programs in HSPR spanning eight provinces as well as the Atlantic, Ontario and Western CHSRF/CIHR Regional Training Centres for health services and policy research and the Quebec Regional Training Centre for nursing services research (Conrad 2008). Employers were invited to participate by e-mail notices sent via contact lists developed in order to select experts for telephone interviews (excluding those who were interviewed by phone) and through broadcast e-mails sent by the Canadian Association for Health Services and Policy Research and the CIHR's Institute for Health Services and Policy Research.

Survey questions were tailored for participant groups, but all three surveys included open-ended, short-form questions similar to the telephone interviews in their focus on the knowledge, abilities and skills required for success in HSPR-related careers. Two of us (CM and KO) independently coded all survey responses using a coding scheme that best suited the format of and themes from online survey responses.

RESULTS FROM STUDENT AND ALUMNI SURVEYS

We received 72 complete student surveys, 36 complete alumni surveys and 39 complete employer surveys. Students responded from 14 universities, representing all provinces but Prince Edward Island. Over half (56%) of the students were in master's programs. Alumni responded from seven provinces and from the United States, with a majority (61%) being employed in Ontario. Just 11% of alumni respondents were in academic careers. Employer surveys were completed by participants from eight provinces, with Ontario accounting for the largest number (15 of 39 completed surveys). Fourteen employer surveys were from university-based academics and 25 came from persons working in government, health authorities, hospitals, consultancies and health associations.

Table 2 lists the competency themes most commonly cited by students, alumni and employers who completed online surveys. As with telephone interviews, online surveys revealed a pattern of competency themes that suggested an "applied scholarship" view of HSPR careers. Moreover, the range of graduate attributes identified as necessary for HSPR success were similar among students, alumni and employers, with all groups citing the same four categories of attributes with the highest frequency. These most frequently cited competency themes included general research skills; personal professional skills such as time management, flexibility, patience and curiosity/drive; comfort with interdisciplinary teamwork; and knowledge of Canada's health system. Current students appeared to differ somewhat from alumni and employers with respect to the relative importance they placed on research skills (more frequently cited by students) versus knowledge of policy processes and politics (more frequently cited by alumni and employers).

Alumni and employer responses also encompassed a more recognizable and consistent range of terms and concepts than student responses: a discrete "language of HSPR." Perhaps this language is acquired over time and through exposure to the concepts of this field – access, quality, equity, cost-effectiveness, etc. – in the context of applied settings and policy environments. An additional and perhaps related finding of interest from the student survey was that eight student respondents offered unsolicited comments about their wishes to have additional opportunities to participate in "policy" or "decision-maker" settings in a "hands-on" or "practical" way; as one student stated plainly, "more time with non-researchers in their environment."

Deliberative consultations

INVITATIONAL WORKSHOP

After tabulating data from the telephone interviews and online surveys, we held a workshop to which we invited 30 people selected based on their standing in the field, geographic representation and professional background. Twelve academics and 12 non-academics accepted the invitation to participate. Prior to the workshop, we sent

these participants summaries of the leading themes identified in our telephone interviews and online surveys and asked them to look for emerging themes and gaps.

TABLE 2. Ten most frequent competency themes in online surveys submitted by HSPR students

Students	Alumni	Employers
General research skills	General research skills	Interdisciplinary teamwork
Professional skills	Professional skills	Professional skills
Interdisciplinary teamwork	Interdisciplinary teamwork	General research skills
Canadian health system knowledge	Canadian health system knowledge	Canadian health system knowledge
Quantitative research methods	Writing skills	Quantitative research methods
Knowledge translation skills	Critical and analytical thinking	Research methods knowledge
Research methods knowledge	Research methods knowledge	Critical and analytical thinking
Policy analysis skills	Quantitative research methods	Partnership skills for KT
Qualitative research methods	Knowledge of policy processes and politics	Knowledge translation skills
Critical and analytical thinking	Partnership skills for KT	Knowledge of policy processes and politics

At the workshop, borrowing from the question asked by a group working towards Master of Public Health competencies in the United States (Moser et al. 2008), we asked our participants to answer the following question: "What types of knowledge and abilities are needed by every HSPR graduate for them to be effective in their careers and in lifelong learning, whatever form or focus their HSPR-related career might take?" Following a lengthy group discussion about themes and gaps in data generated to that date, participants identified four domains of HSPR competence that are common to most (if not all) HSPR-related careers: (1) theories and frameworks, (2) research methods, (3) policies and systems and (4) knowledge translation. Breakout groups discussed and reported back with recommendations concerning the nature of competency in these four domains.

With respect to theories and frameworks, workshop participants argued that being equipped with discipline-specific theories (typically gained prior to HSPR training) and theories of the HSPR field was as essential to critical thinking and creative problem-solving. They identified a few HSPR-specific theories and concepts – i.e., healthcare utilization, access and quality – and highlighted a few HSPR-related, but not HSPR-specific, theories – e.g., health economics, determinants of health and organizational behaviour.

With respect to research methods, participants concluded that HSPR graduates should be able to formulate relevant research questions and to critically appraise methods – including experimental, non-experimental, qualitative and quantitative methods – for answering such questions.

With regard to policies and systems, participants suggested that HSPR graduates should understand the history and structure of the Canadian healthcare system and to be able to place that system within a comparative international context. Workshop participants also urged that graduates should be able to work with basic ideas of political economy, such as how interests, institutions and ideas shape policy processes.

Finally, with regard to knowledge translation, participants argued that HSPR graduates need to be able to engage effectively with various audiences and to understand the barriers and facilitators to the use of evidence in practice and policy. Workshop participants highlighted the importance of communication skills, including plain language writing, teamwork, presentations and relationship building.

CONFERENCE PANEL

Following the invitational workshop, we hosted a panel at the annual meeting of the Canadian Association of Health Services and Policy Research in May 2009. Over 80 participants attended the panel (making it the largest parallel session held during that time slot). The panel consisted of short talks by the study authors, followed by comments from four invited experts and an interactive discussion with attendees. Detailed field notes were taken by the principal investigator (SM) during the panel session and incorporated into the latter stages of theme definitions and framework development.

The conference panel discussion produced several notable recommendations regarding a framework for core competencies in HSPR. Panel participants and audience members noted that it is important to distinguish HSPR from related fields – such as population health, health administration, public health and clinical epidemiology – and to be clear about the role of the "P" (for policy) in HSPR. At the same time, participants also argued that while trying to be clear in defining this field, we should deliberately strive to keep the framework "interpretable" so that it is inclusive of our community's diversity and flexible enough for programs and students to use as a base for building their own concentrations.

A repeated concern among participants in the panel session was that there is a risk that we might set the bar too high for HSPR trainees. Participants argued that a framework for graduate attributes – and its interpretation by training programs – needs to be pragmatic about what can be learned in degree programs and what will ultimately require on-the-job training over the course of a career. Others suggested that simply introducing students to a breadth of concepts may suffice to help prepare them to confront the concepts again later in their careers. A key theme in relation to

this point was that "not every competency equals a course" – in other words, don't over-program students and don't try to teach everything in the classroom.

Finally, panel participants and audience members recommended that we not place too great an emphasis on training for an academic track. Most master's-level graduates (and many graduates of doctoral programs) enter careers in non-academic settings that require a different balance of skills related to the collection, appraisal and use of evidence versus skills related to evidence production. As one participant noted, HSPR professionals in non-academic careers often have to review and synthesize knowledge bases quickly, so that they can respond to requests from their employers in "hours or days" rather than the "weeks, months or years" time scale of academe. Others noted that the flexibility and practicality of skill sets are important because HSPR-related careers often require the ability to become reasonably "expert" in several topics over the course of a given year.

FEEDBACK ON DRAFT FRAMEWORKS

After reviewing the data from all prior stages of the analysis, the principal investigator (SM) developed a draft framework of attributes that should be attained by graduates of master's-level HSPR training programs in Canada. This framework was based on triangulating input from consultation with the existing HSR competency frameworks from the United States and the learning objectives of Canadian training centres. We circulated that draft by e-mail to the 51 individuals who participated in telephone interviews, the invitational workshop or both. Nineteen of these individuals (37%) responded with feedback and suggestions on the framework during August and September 2009.

By the time we had disseminated the draft framework for comments, the focus was clearly placed on the largely non-academic career paths that a majority of master's-level graduates take. All individuals who provided feedback felt the focus on master's-level graduates was appropriate and that the framework could be useful for training programs across Canada. Nevertheless, most (17 of 19) had suggestions for improvement – ranging from minor rewording to re-organizing the order in which specific attributes were presented. In this process, we were reminded again to ensure that the framework is motivated by consideration of the career paths of master's-level HSPR graduates.

Results: A Framework of Graduate Attributes

To arrive at the final list of desirable graduate attributes for those entering the field of HSPR, it was necessary to define the field and, in particular, the ultimate goal of HSPR education programs in terms of the impact(s) on graduate careers. We posit that HSPR is a problem-oriented field into which people enter from a wide range of

disciplinary backgrounds to work together to find ways that healthcare can best be organized, financed and delivered. This includes work conducted to measure, assess and monitor health services, which is captured by the AcademyHealth definition of the field of health services research (HSR, no "P"):

> Health services research is the multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies and personal behaviors affect access to health care, the quality and cost of health care and ultimately our health and well-being. Its research domains are individuals, families, organizations, institutions, communities and populations. (Lohr and Steinwachs 2002)

On the basis of our consultations, we would add that HSPR (with the "P") also includes an evidence-informed focus on a public purpose: to improve the health and well-being of patients and populations by advancing health system accessibility, quality, equity, efficiency and safety. (It is worth noting that members of the American health services research field have also argued for such an outcomes focus in their definitions [Phillips 2006].) The "P" in HSPR may be viewed as a symbol of this community's focus on effecting change and therefore on the need to understand the policy processes – at local, regional, provincial, national and supra-national levels – that influence health system decision-making and outcomes.

Figure 1 illustrates our framework of attributes of HSPR graduates who would be capable of fostering health system improvement through policy planning, analysis, implementation and monitoring that is informed by credible evidence and relevant theory. It begins with a set of foundational attributes and works upward towards the specific application of those attributes within health systems.

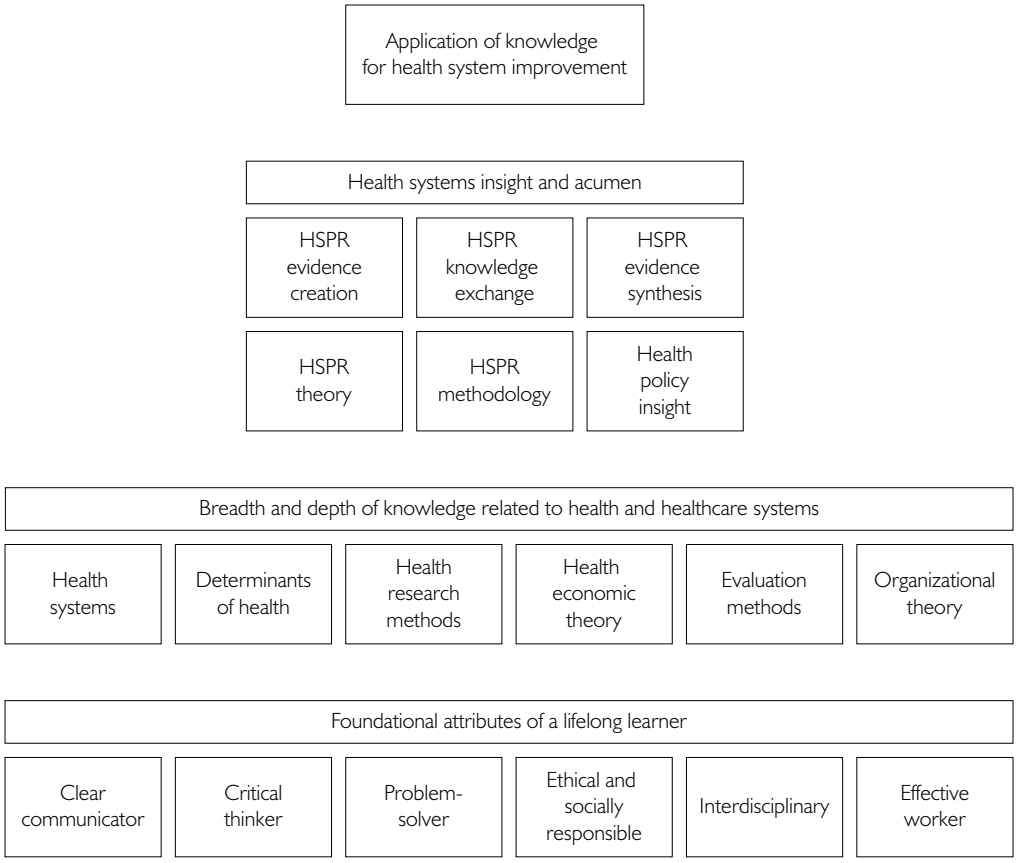
Foundational attributes of a lifelong learner

At the base of our framework are foundational graduate attributes: clear communicator, critical thinker, problem-solver, ethical and socially responsible, interdisciplinary and effective worker. The overarching theme of these foundational graduate attributes is lifelong learning, including the curiosity and drive to tackle new problems and the skills needed to do so in a creative and socially responsible way.

As delineated in Table 3, these foundational attributes are clearly "generic" in the sense that they describe characteristics that are not specific to one discipline or context. Most, for example, have been identified as desired outcomes for higher education more generally (University of South Australia 2009). They are nevertheless among the attributes most commonly cited by experts in the field as required for success in HSPR-related careers. We therefore refer to the generic attributes in our framework

as "foundational attributes" in order to emphasize the fact that the acquisition of more context-specific attributes is, at least in part, dependent on first developing these generic traits (Barrie 2006).

FIGURE 1. Graduate attributes for master's programs in health services and policy research (HSPR)



The importance of these foundational attributes is underscored by the way that leading HSPR experts responded to questions about which important skills, knowledge or abilities were most commonly lacking among recent graduates. Communication skills were often cited in this context:

> Increasingly, I'm finding that people who graduate can't write. Can't write with power … . They can write a 30-page research paper and footnote it to the *New England Standard*, but they can't write a briefing note. (Senior executive of a public agency)

> You can be God's gift to policy research, but if you can't communicate that to the folks who are actually making the decisions … you're extremely deficient. (Former ADM of a ministry of health)

TABLE 3. Foundational attributes of a lifelong learner

Lifelong learner Prepared for lifelong learning in pursuit of personal development and career achievement
Clear communicator Able to communicate important aspects of theory, research findings and context clearly and effectively, in ways appropriate to various audiences; able to give, receive and incorporate feedback relevant to research and professional work
Critical thinker Able to critically appraise theory and evidence and to use independent judgment to synthesize information and place it in a broader context
Problem-solver Able to conceptualize problems and use theory, evidence, context and reasoning to identify a range of possible solutions and make recommendations from among them
Ethical and socially responsible Aware of and committed to ethical action and social responsibility in all research and professional activities, including respect for context and diversity – e.g., along lines of ethnicity, sex and gender, geography, education, income, occupation and others
Interdisciplinary Have capacity for and orientation towards working with and integrating the knowledge of people with different academic training, professional roles and socio-cultural backgrounds
Effective worker Able to work effectively, independently and collaboratively within teams, including the ability to plan and manage projects through to completion on time and on budget

The ability to write clearly and concisely – which also requires critical thinking and creative problem-solving abilities – is thus among the fundamental attributes required for success in careers related to HSPR.

Breadth and depth of knowledge related to health and healthcare systems

Above the generic attributes in our framework are areas of knowledge related to health and healthcare systems: knowledge of health systems, the determinants of health, health research methods, health economic theory, evaluation methods and organizational theory. Delineated in Table 4, these attributes are clearly context-related. The bases for many courses in the departments and schools in which master's programs in HSPR are offered, these areas of knowledge are shared (to varying extents) with related fields such as healthcare leadership, applied epidemiology and public health.

It is important to recognize that no master's-level graduate could be an expert in all these context-related subject areas. Master's-level graduates should simply be conversant with these areas of content knowledge; that is, they should be sufficiently familiar with each subject that they would be prepared to work with related theories or research evidence as needed. One former assistant deputy minister of a ministry of health described this breadth requirement as "the ability to span the discipline" and to work on a variety of projects. Several decision-makers suggested that a balance is achieved when people know enough to be able to seek out and make partnerships with experts in particular niche areas.

TABLE 4. Breadth and depth of knowledge related to health and healthcare systems

Disciplinary depth Possess detailed knowledge and skills from a specific discipline or field related to health services and policy research (e.g., epidemiology, medicine, nursing, sociology, economics, political science or management)
Health systems Able to describe the main features of the Canadian healthcare system and to place the Canadian system in a comparative international context
Determinants of health Able to define and work with concepts of health and identify the relative importance of broad determinants of health at the individual, group, community and population level
Health research methods Able to explain how health and disease are measured and how relationships between determinants (e.g., environmental, behavioural or treatment) and health are established
Health economic theory Able to explain how health and healthcare differ from ordinary unique economic goods and describe core concepts in health economics (e.g., cost-effectiveness, health insurance, moral hazard, etc.)
Evaluation Able to identify appropriate ways in which health services can be evaluated using tools of program evaluation, health technology assessment and/or health economics
Organizational theory Able to describe a variety of theories concerning how people interact within and between organizations and to place such theories in the context of healthcare systems

Along with a breadth of subject area conversance, a master's-level HSPR graduate should also possess somewhat deeper knowledge and skills from one or more specific disciplines and on one or more HSPR content areas. Disciplinary depth may come from such fields as medicine, nursing, sociology, economics, political science or statistics. Content depth – in areas such as primary healthcare, mental health, health human resources, etc. – could be developed through major projects, term papers, work placements or even theses. The disciplinary depth requirement, in particular, is a precursor attribute that provides a framework for explaining and exploring a range of phenomena related to the subject area (Barrie 2004).

This combination of broad subject knowledge, disciplinary depth and interdisciplinary comfort (one of the foundational skills) is a hallmark of an HSPR professional.

Application of knowledge for health system improvement

The very peak of the framework is the application of knowledge for health system improvement. HSPR-specific attributes related to health systems insight and acumen are therefore the top cluster of graduate attributes for HSPR trainees. These include the drive to pose important questions about health services and policy in pursuit of health system improvement; the ability to find credible and reliable answers to those questions; and the skills necessary to apply the resulting knowledge within complex decision-making environments. Delineated in Table 5, the specific attributes in this cluster are health policy insight, knowledge of HSPR theory and HSPR methodology, and the ability to generate, synthesize and exchange HSPR knowledge.

TABLE 5. Attributes related to the application of knowledge for health systems improvement

Health systems insight and acumen Inclined to pose and seek answers to important questions about health services and policy, informed by decision-making needs, existing evidence and relevant theory; aware of the many considerations that influence decision-making in health systems; able to know when and how to support evidence-informed change
HSPR knowledge exchange Aware of the needs of and constraints on different participants; able to communicate effectively with researchers, health professionals, policy makers and communities for the purpose of planning, conducting and translating health services and policy research
HSPR evidence synthesis Able to identify sources of information and data on health services and policy issues and to acquire, assess and synthesize relevant theory and evidence for application to particular contexts
HSPR evidence creation Able to contribute to original research to answer important health services and policy questions, including ability to help frame questions, select methods and interpret results
Health policy insight Able to describe decision-making processes in the healthcare system and to identify historical, political, economic and legal factors that influence health policies and their implementation at a national, provincial and local level
HSPR methodology Able to describe the approaches, strengths and weaknesses of a variety of research designs used to study health services and policy issues; able to identify methods (including mixed methods) appropriate for generating valid and reliable information on specific research questions
HSPR theory Able to define and work with core concepts of health services research (e.g., need, access, quality, equity and safety); able to identify, select from and work with a range of theories (e.g., social, political, behavioural and economic) regarding the organization, financing, delivery, utilization and outcomes of health services

Although people come into HSPR from a variety of disciplines and are therefore equipped with a range of knowledge and theoretical frameworks, the field of HSPR has its own theories, concepts and methods. These have evolved over time, often adapted from frameworks and tools from specific disciplines and applied to health systems. Because they are important to explaining and exploring a range of phenomena related to the field, the core HSPR concepts, theories and methods should be understood by all master's-level graduates of HSPR programs. These include understanding of such concepts as accessibility, quality, equity, efficiency and safety; sufficient theoretical knowledge to be able to identify appropriate questions and hypotheses regarding such concepts; and sufficient understanding of both quantitative and qualitative methods to be able to identify strengths and limitations of different approaches to addressing each question.

HSPR graduates should also develop an understanding of the "real world" of decision-making and an ability to advance evidence-informed change within its complexity and politics:

> Basically, to work in non-academic jobs, you have to be comfortable with uncertainty, arbitrariness, the ebb and flow of policy moments, organizational dynamics, etc. … those who succeed in these environments have a certain feel for what is important, what language to use when engaging decision-makers, some sensitivity to the rhythms of democracy and empathy with the dilemmas confronting governments. (Private consultant)

This attribute, so frankly emphasized in all stages of our consultation process, poses perhaps the greatest challenge for university-based HSPR training programs. It requires an explicit acknowledgement that evidence is not the only driver of policy and practice; it also requires mechanisms for teaching practical skill sets that are seldom used within academe.

Discussion

The framework presented above includes a long list of desirable attributes for graduates of master's-level HSPR programs. As training programs strive to help students develop these attributes, it will be important to recall that not every attribute requires a course to attain it. Indeed, some of the most important competencies delineated above are ones that can be developed only through interactions with the system and work experience. Others, including a range of subject knowledge, may be obtained in survey courses that cover a variety of content.

Some of the attributes identified through our consultations as key to success in

HSPR-related careers may be seen as prerequisites for graduate training programs themselves. Communication skills and various traits of "bright" individuals – critical thinking, problem-solving and ability to work productively, for example – were the attributes most commonly identified as required for success in HSPR-related careers. Of course, these skills can (and should) be enhanced or tailored for specific applications through various learning opportunities. But an HSPR training program is not the place for remedial action to be taken on foundational attributes that are seriously deficient.

Finally, it would be a mistake to suggest that our consultation did not uncover sources of tension among the many shared beliefs. Perhaps the most troubling tension was the fact that a few of our peers did not appear comfortable with a vision of their students in non-academic careers. Even in this applied field, some scholars appear to have a lingering belief that a terminal master's degree is a failed doctorate. Some even put forward arguments against any framework that would encourage non-thesis master's degrees, citing evidence that students who complete thesis-based master's programs take less time to complete their doctoral dissertations. While true in some respects, such arguments assume that the *raison d'être* for master's programs is to prepare students for a doctorate.

While a master's program for many students is a testing ground for their interest and ability to seek further academic training, most master's students graduate to a myriad of careers no less worthy than academe. We believe that HSPR educators should not only accept this reality – and are glad that most already do – but that the HSPR community should view success in non-academic careers as a principal metric of excellence for a master's-level training program (Conrad et al. 1993; Demers and Desai 2002). This view does not require us to "dumb down" HSPR training. Indeed, the final framework from our consultation places knowledge of illuminating theories and investigating methodologies at the core of master's-level HSPR programs. What might be encouraged, however, is greater consideration to attracting and nurturing well-rounded candidates and striving whenever possible to expose master's students to practical health system workplaces, as is done in the regional training centres (Conrad 2008; DiCenso et al. 2008). If this is done correctly, the academic stars of our HSPR community will flourish no less – and perhaps to an even greater extent – under such a paradigm.

Conclusion

The framework for graduate attributes in HSPR that has emerged from our consultation process is our best, first attempt at identifying the knowledge, skills, traits and abilities that are respectful of our field's diversity yet instrumental to the roles and responsibilities that most master's-level graduates need to be prepared for. The framework identifies common ground for all master's-level trainees while providing sufficient flexibility for training programs – and for individual students – to special-

ize while covering most (if not all) of that common ground. The building blocks (as shown in Figure 1) related to critical thinking, values, content knowledge and research methods are essential for success in HSPR-related careers. However, it is the skills related to the practical application of knowledge within the complex environments of health system decision-making and healthcare policy that generate value for communities from the work of HSPR graduates. The better prepared students are for this reality – through graduate training that includes increased practical exposures – the greater the value created by the HSPR field as a whole.

We hope this framework and its overarching focus will be a useful guide to educators and those responsible for the design of HSPR training programs – from admissions through curriculum, practicum and evaluation. It is certainly not an easy task to align learning opportunities with a broad set of learning objectives while dealing with the time limitations of graduate students, practical constraints of learning institutions and subject interests of faculty educators. Different programs will (indeed, should) make different choices about where to focus in the development of student knowledge, skills and abilities. An overarching framework developed through consultation and input from across the field – such as the one provided here – can serve as a compass to help keep capacity development on course. We therefore wish to emphasize that the framework presented here should be considered an evolving tool for Canada's HSPR community. As the community debates, shapes and enhances this framework – and similar ones for HSPR subspecialties – we believe such dialogue will not only improve HSPR training programs but also provide important insights about the nature and purpose of the field more generally.

Appendix: Telephone Interview Guide

Working definition: A "core competency" is an ability, skill or knowledge base that is essential for success in careers related to health services research and/or health policy.

Here are the questions we would like to discuss with you.

(1) **Your background:** Please tell us a bit about your career path. And, if relevant, could you briefly describe your experience working with and/or hiring graduates of programs in health services and policy research.
(2) **Career tracks:** Based on your experience and observations, how might you describe the main career tracks for health services and policy research graduates?
(3) **General abilities:** What general abilities do you believe to be important for success in careers related to health services research and/or health policy?
(4) **Knowledge base:** Are there areas of knowledge that you view to be important for success in careers related to health services research and/or health policy?
(5) **Specific skills:** Are there specific skills that you view to be important for careers

related to health services research and/or health policy?

(6) **Future competencies:** Do you believe that the core competencies of health services and policy researchers will change in the next 10 years? If so, how?

(7) **Competency levels:** Do you feel that, upon graduation, students generally possess the abilities, skills and knowledge bases necessary for careers related to health services research and/or health policy? What are the competencies that are most often lacking?

(8) **Unnecessary training:** Do you feel that some skills taught in health services and policy research programs are unnecessary or over-emphasized? If so, which ones?

(9) **In-career training:** Do you feel that health services and policy research graduates generally require further training, perhaps through on-the-job training or extra courses? Could universities play a role in helping to meet any of these skills?

(10) **Training successes:** Overall, what most impresses you about graduates from health services and policy research programs in Canada?

(11) **First thing to change:** If there was one thing that you could change about current HSPR graduate training programs, what would it be?

(12) **Any other comments:** Do you have any other comments about core competencies that you feel would help schools across Canada build stronger HSPR graduate curricula?

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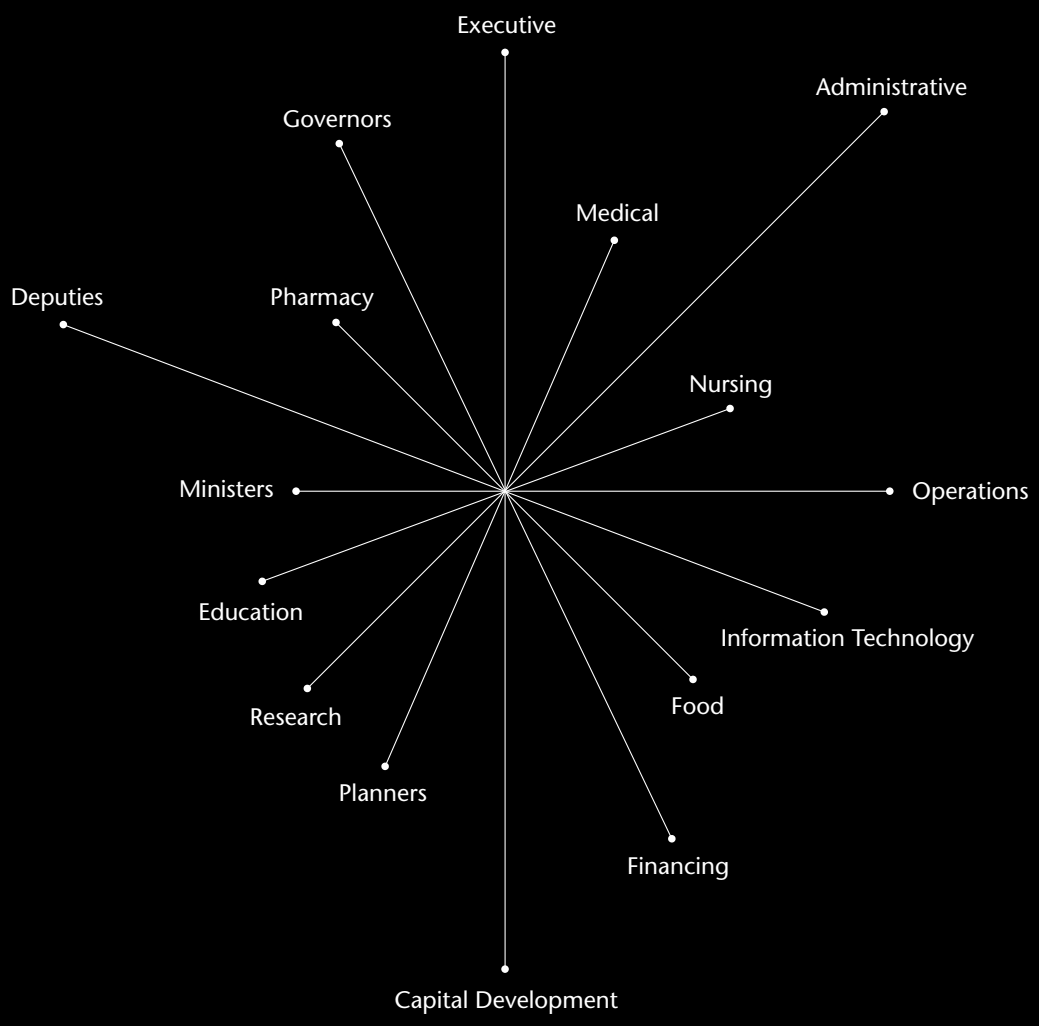
Networking*

One on One



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RESEARCH PAPER

Age Difference Explains Gender Difference in Cardiac Intervention Rates After Acute Myocardial Infarction

La différence d'âge explique la différence entre hommes et femmes dans les taux d'intervention cardiaque après un infarctus aigu du myocarde

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THE NEED TO KNOW TEAM
A collaborative network of researchers from the Manitoba Centre for Health Policy and senior planners from Manitoba Health and all Regional Health Authorities in Manitoba

Age Difference Explains Gender Difference in Cardiac Intervention Rates After Acute Myocardial Infarction

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Abstract

Many investigators have reported higher rates of cardiac procedures for males than females after acute myocardial infarction (AMI), suggesting that men are treated more aggressively than women. However, others have reported no significant differences after controlling for age, resulting in uncertainty about the existence of a true gender bias in cardiac care. In this study, a population-based cohort approach was used to calculate age-specific procedure rates by sex from administrative data. Chi-square tests and generalized linear modelling were used to assess gender differences and interactions. For all four procedures studied, rates were significantly higher for males than females ($p<0.01$). However, age-specific rates revealed few significant differences by gender and a sharp decrease in intervention rates with age for both males and females. Generalized linear modelling confirmed that patient age was a significant predictor of intervention rates, whereas sex was not. The significant gender difference in overall rates was completely confounded by the older age profile of female AMI patients compared to their male counterparts.

Résumé

Plusieurs chercheurs ont observé de plus haut taux d'interventions cardiaques pour les hommes que pour les femmes après un infarctus aigu du myocarde (IAM), laissant

croire que les hommes sont traités de façon plus agressive que les femmes. Toutefois, d'autres chercheurs indiquent qu'il n'y a pas de différence significative si on contrôle le facteur âge, ce qui mène à une incertitude quant à l'existence réelle d'un biais lié au sexe dans les soins cardiaques. Dans la présente étude, nous avons utilisé une démarche populationnelle fondée sur des cohortes afin de calculer, à partir de données administratives, les taux d'intervention selon le sexe et pour des âges précis. Nous avons utilisé des tests du khi carré et la modélisation linéaire généralisée pour évaluer les interactions et les différences entre les sexes. Pour les quatre interventions étudiées, les taux étaient significativement plus élevés pour les hommes que pour les femmes ($p<0{,}01$). Toutefois, les taux associés à des âges précis indiquent peu de différence significative entre les sexes ainsi qu'une nette diminution des taux d'intervention selon l'âge tant pour les hommes que pour les femmes. La modélisation linéaire généralisée a permis de confirmer que l'âge des patients est un indicateur significatif des taux d'intervention, alors que le sexe ne l'est pas. Pour l'ensemble des taux dans les cas d'IAM, la différence significative entre les sexes s'estompe complètement quand on compare le profil des femmes plus âgées avec celui de leurs homologues masculins.

Heart disease is a leading cause of morbidity and mortality for both men and women in Canada and the United States (Manuel et al. 2003; Statistics Canada 2007; National Centre for Health Statistics 2008). Although the combined number of deaths from heart disease and stroke is now equal between males and females in Canada (Heart and Stroke Foundation of Canada 2007; Statistics Canada 2007), there are still more acute myocardial infarctions (AMIs) among males, and males experience AMIs at younger ages than females (Chandra et al. 1998; Alter et al. 2002; Bertoni et al. 2004; Tu et al. 2003; Shaw et al. 2004; Williams et al. 2004; Vaccarino et al. 2005; Anand et al. 2005; Fang and Alderman 2006). However, these differences have not always been adequately controlled for in studies of treatment rates, resulting in conflicting evidence about the existence of a gender bias in clinical care after AMI. In 2006, the Canadian Cardiovascular Outcomes Research Team (CCORT) published a comprehensive atlas that included cross-provincial comparisons of heart disease burden, cardiac care patterns and outcomes (ICES 2006). Subsequently, the GENESIS team published a report focusing on gender-based differences in heart disease and cardiac care (Pilote et al. 2007). Both these influential Canadian teams, as well as the Heart and Stroke Foundation of Canada (2007), have called for further exploration of male and female patterns of heart disease and cardiac care.

Investigators from many countries have reported that intervention rates after AMI are higher for males than females, suggesting that men are treated more aggres-

sively than women (Ayanian and Epstein 1991; Steingart et al. 1991; Udvarhelyi et al. 1992; Maynard et al. 1992; Krumholz et al. 1992; Every et al. 1993; Chiriboga et al. 1993; Jaglal et al. 1994; Kostis et al. 1994; Funk and Griffey 1994; Kudenchuk et al. 1996; Woods et al. 1998; Chandra et al. 1998; Shin et al. 1999; Hanratty et al. 2000; Gottlieb et al. 2000; de Gevigney et al. 2001; Alter et al. 2002; Heer et al. 2002; Bertoni et al. 2004; Shaw et al. 2004; Bakler et al. 2004; Williams et al. 2004; Anand et al. 2005; Martinez-Selles et al. 2005; Vaccarino et al. 2005; Fang and Alderman 2006). However, the results from a number of those studies (Steingart et al. 1991; Maynard et al. 1992; Krumholz et al. 1992; Funk and Griffey 1994; Shin et al. 1999; Hanratty et al. 2000; Gottlieb et al. 2000; Alter et al. 2002; Heer et al. 2002; Bertoni et al. 2004; Shaw et al. 2004; Bakler et al. 2004; Williams et al. 2004; Vaccarino et al. 2005), along with others (Vacek et al. 1995; Khaykin et al. 2002; Rathore et al. 2003; Pilote et al. 2004; Moriel et al. 2005), show that when patient age is adequately controlled for, the apparent gender difference is often diminished or becomes statistically non-significant. The current uncertainty is most pronounced for bypass surgery rates, for which some investigators report no gender difference after controlling for age, clinical characteristics or both (Steingart et al. 1991; Maynard et al. 1992; Funk and Griffey 1994; Kostis et al. 1994; Gottlieb et al. 2000; Ghali et al. 2002), while others report that rates among males remain higher than those for females even after adjustment (Ayanian and Epstein 1991; Udvarhelyi et al. 1992; Krumholz et al. 1992; Jaglal et al. 1994; Woods et al. 1998; de Gevigney et al. 2001; Rathore et al. 2003; Bertoni et al. 2004; Shaw et al. 2004; Vaccarino et al. 2005; Blomkalns et al. 2005; Pilote et al. 2004; Fang and Alderman 2006). Proposed explanations for gender differences include possible sex-related differences in anatomy (e.g., blood vessel size), operative risk and suitability for percutaneous coronary intervention (PCI) versus bypass surgery (Rathore et al. 2003; Bertoni et al. 2004; Jacobs and Eckel 2005; Barrett-Connor 2007).

However, many of these studies were not population-based, did not adequately control for age or did not restrict analyses to AMI patients only, in whom the indication for these procedures is strongest. Therefore, the purpose of this study was to examine cardiac intervention rates after AMI in males and females, using a population-based cohort approach with careful control for age.

Materials and Methods

The rates of four diagnostic and therapeutic cardiac interventions were compared for all male and female AMI patients in the province of Manitoba, Canada. The analysis used a population-based cohort approach, including all residents age 40 or older identified in the anonymized administrative data housed at the Manitoba Centre for Health Policy. This data system contains complete and validated health service records

for virtually every resident of the province (Roos et al. 2005). The Health Research Ethics Board of the University of Manitoba approved this study as part of a larger project on gender differences in health and healthcare use (Fransoo et al. 2005).

The AMI cohort included all residents hospitalized for AMI (most responsible diagnosis ICD-9-CM code 410) in the three-year period April 1, 1999, through March 31, 2002. Patients hospitalized for AMI in the previous two years were excluded, as were patients discharged alive but who had stayed less than three days in hospital ("rule-out" cases), based on the validation work of Tu and colleagues (1999). Sex was coded as either male or female for all residents.

Rates of each of the following procedures were calculated separately for males and females: diagnostic cardiac catheterization (ICD-9-CM codes 37.21–37.23 or 88.52–88.57); percutaneous transluminary coronary angioplasty (PTCA) (codes 36.01, 36.02 or 36.05); coronary stent insertion (code 36.06); and coronary artery bypass surgery (codes 36.10–36.14 or 36.19). The latter three procedures all depend on previous or concurrent cardiac catheterization, which was confirmed for over 95% of male and 96% of female patients receiving those procedures.

Procedure rates for males and females were compared using chi-square tests during initial ("index") AMI hospitalization and at 30, 90 and 365 days thereafter, to determine whether gender differences exist and any change over that period. Age-specific rates of each procedure at each time point were also calculated for both sexes, using five-year age groups, starting at age 40. In keeping with confidentiality requirements, results based on fewer than five events were suppressed.

A series of generalized linear models (one for each procedure at each time period) was created to determine the influence of age and sex on intervention rates after AMI. Each model also included a quadratic term for age (age^2) to model potential non-linear trends, and an interaction term between age and sex, to model potential differences in age trends by gender.

To control for the inflation of type I error due to multiple testing, the "false discovery rate" method of Benjamini and Hochberg (1995) was used to calculate p values. All analyses were performed on a Unix server with SAS version 9.1 (SAS Institute, Cary, NC).

Results

The AMI cohort included more males (4,199) than females (2,645), and males were younger than females: the mean (SD) age was 67.4 years (12.9) for males versus 74.3 years (11.9) for females. Figure 1 shows the age distribution of male and female AMI patients.

FIGURE 1. Number of AMIs by age and sex

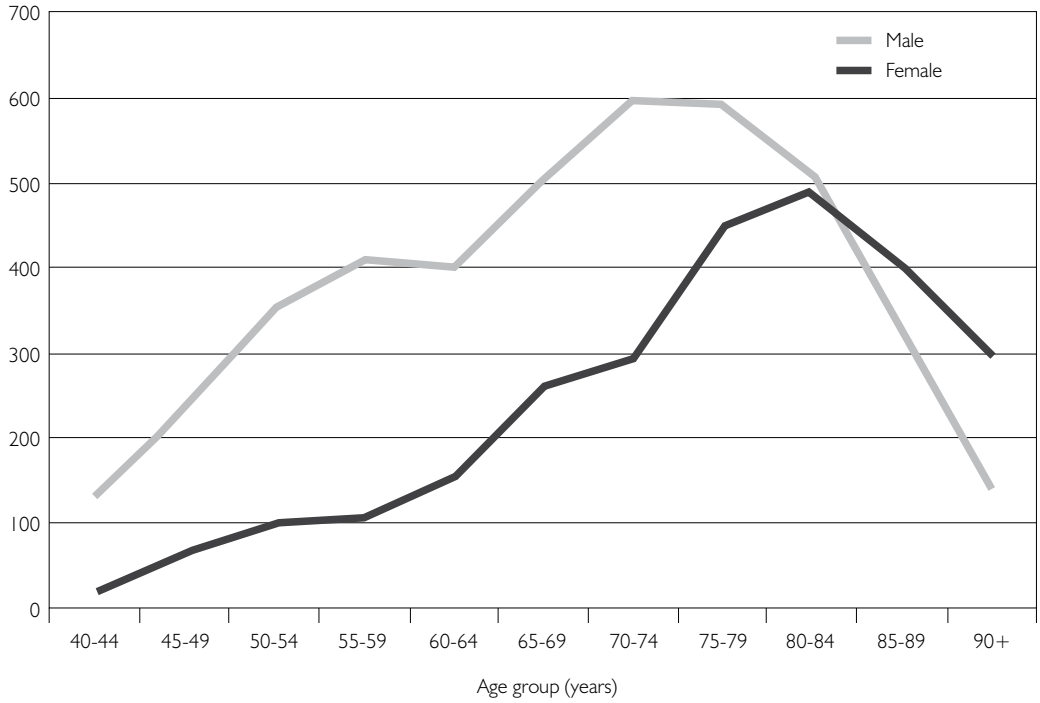

Table 1 contains the number and the proportion of male and female AMI patients receiving each procedure during index hospitalization and by 30, 90 and 365 days thereafter. For each procedure at each time period, the number of procedures performed among males was double that for females. The differences in the proportion of males versus females receiving each procedure were smaller, but still highly significant in almost all cases. However, these results do not take patient age into account.

Figure 2 shows the crude rates of cardiac catheterization during index hospitalization for males and females in each five-year age group. The overlapping confidence intervals indicate that within every age group, male and female catheterization rates were not statistically different. In both sexes, the proportion of patients receiving catheterization was much lower among older patients than younger patients. Similar trends were found for all four procedures at all four time points.

Table 2 shows the results from the generalized linear models. In all models, the age–sex interaction term was not significant, so results were taken from models without that term.

The results in Table 2 show that sex was not significantly related to rates of any of the procedures at any of the time periods, whereas patient age and the quadratic age term (age^2) were highly significant in all models. The coefficient associated with the quadratic age term was less than one, indicating that the slope decreased with age.

TABLE 1. Number and proportion of AMI patients receiving procedures

	Number of AMI patients: 3,280 males, 1,963 females				
	Number of AMI patients receiving procedure		Proportion of AMI patients receiving procedure		Sex difference in proportions
	Male	Female	Male	Female	(*p* value)
During index hospitalization					
Cardiac catheterization	1,144	527	34.9%	26.8%	<0.0001
Angioplasty	518	212	15.8%	10.8%	<0.0001
Stent nsertion	456	197	13.9%	10.0%	<0.0001
Bypass surgery	76	26	2.3%	1.3%	0.012
By 30 days after AMI					
Cardiac catheterization	1,348	620	41.1%	31.6%	<0.0001
Angioplasty	598	244	18.2%	12.4%	<0.0001
Stent insertion	533	226	16.3%	11.5%	<0.0001
Bypass surgery	209	90	6.4%	4.6%	0.007
By 90 days after AMI					
Cardiac catheterization	1,501	675	45.8%	34.4%	<0.0001
Angioplasty	656	265	20.0%	13.5%	<0.0001
Stent insertion	584	245	17.8%	12.5%	<0.0001
Bypass surgery	267	106	8.1%	5.4%	0.0002
By 365 days after AMI					
Cardiac catheterization	1,675	754	51.1%	38.4%	<0.0001
Angioplasty	719	288	21.9%	14.7%	<0.0001
Stent insertion	649	266	19.8%	13.6%	<0.0001
Bypass surgery	364	138	11.1%	7.0%	<0.0001

Discussion

There were many more AMIs among males than females, a finding that partly explains why the number of procedures performed among males was higher than that for females for each procedure at each time point. Gender differences in the proportion of patients receiving procedures were much smaller than differences in the number of procedures performed, but remained highly significant, demonstrating that the difference in the number of AMIs explains some but not all of the gender difference in the number of procedures performed.

FIGURE 2. Percentage of AMI patients receiving cardiac catheterization during AMI hospitalization

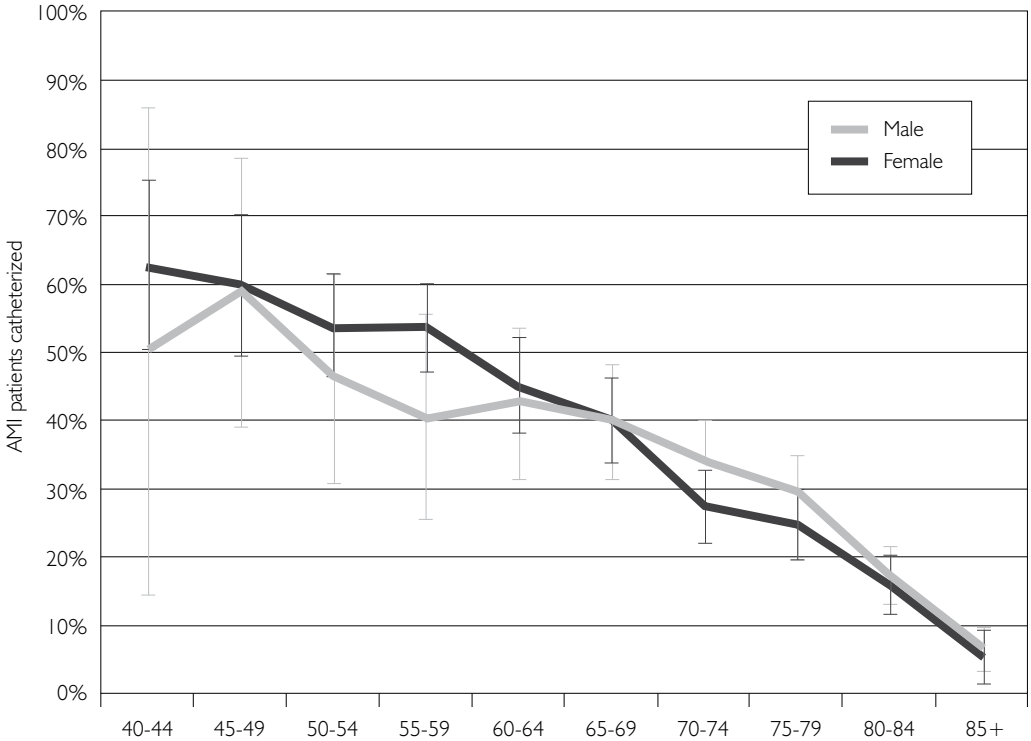

TABLE 2. Results of generalized linear models of intervention rates

	Sex (male=1)		Age (linear)		Age² (quadratic)	
	Coefficient	*p* value	Coefficient	*p* value	Coefficient	*p* value
During index hospitalization						
Cardiac catheterization	0.008	0.930	0.147	<0.0001	-0.001	<0.0001
Angioplasty	0.074	0.637	0.150	0.0004	-0.002	<0.0001
Stent insertion	0.011	0.930	0.151	0.001	-0.002	<0.0001
Bypass surgery	0.433	0.342	0.389	0.0003	-0.003	0.0001
By 30 days after AMI						
Cardiac catheterization	0.047	0.637	0.145	<0.0001	-0.001	<0.0001
Angioplasty	0.088	0.603	0.146	0.0002	-0.002	<0.0001
Stent insertion	0.048	0.784	0.155	0.001	-0.002	<0.0001
Bypass surgery	0.126	0.603	0.346	<0.0001	-0.003	<0.0001

TABLE 2. Continued

By 90 days after AMI						
Cardiac catheterization	0.076	0.603	0.152	<0.0001	-0.001	<0.0001
Angioplasty	0.116	0.603	0.146	0.0002	-0.002	<0.0001
Stent insertion	0.073	0.637	0.155	0.0004	-0.002	<0.0001
Bypass surgery	0.250	0.342	0.370	<0.0001	-0.003	<0.0001
By 365 days after AMI						
Cardiac catheterization	0.077	0.603	0.162	<0.0001	-0.002	<0.0001
Angioplasty	0.122	0.603	0.133	0.001	-0.001	<0.0001
Stent insertion	0.094	0.603	0.140	0.001	-0.001	<0.0001
Bypass surgery	0.261	0.286	0.361	<0.0001	-0.003	<0.0001

However, these overall rates mask the fact that as age increases, the rates of all interventions decrease sharply for both males and females (Figure 2). This decrease in procedure rates with age is consistent with previous research (Ayanian and Epstein 1991; Udvarhelyi et al. 1992; Maynard et al. 1992; Krumholz et al. 1992; Kostis et al. 1994; Shin et al. 1999; Alter et al. 2002; Khaykin et al. 2002; Rathore et al. 2003; Pilote et al. 2004; Shaw et al. 2004; Williams et al. 2004), and is likely related to the increased co-morbidity, frailty and higher operative risk among older patients (Mark 2000; Tecce et al. 2003; Jacobs and Eckel 2005; Ayanian 2006; Barrett-Connor 2007).

Results from the generalized linear models for all four procedures at all four time points confirmed that age was a strong predictor of procedure rates, and that sex was not significant. The coefficient associated with the age^2 term is less than one, indicating that the decline in procedure rates decelerated with age in a non-linear fashion (i.e., the slope became less steep with age).

Therefore, the significant gender differences seen in the overall rates of procedures were completely confounded by the older age profile of female versus male AMI patients. Males were not treated more aggressively than females; rather, older patients were less likely to receive interventions, and female AMI patients were older than their male counterparts.

Comparisons with CCORT Atlas data

The composition of the AMI cohort is the same as that reported in the CCORT Atlas, with almost two-thirds of all AMI patients being male, and female AMI

patients having an older age distribution than their male counterparts (Tu et al. 2003). Both studies revealed a sharp decline in procedure rates with age for males and females (Pilote et al. 2004), a finding that is critical for the interpretation of results. In both the CCORT analysis and this study, the large difference in overall rates is driven by the older age profile of female versus male AMI patients. Examining age-specific results dramatically reduces the apparent gender difference in the CCORT data and closes the gap completely in our results. This finding may be partly attributable to the smaller (five-year) age groups used in this study, as others have shown that even within the age groups used in the CCORT analysis, women were significantly older than men (Alter et al. 2002). Data from other jurisdictions might also reveal small or no gender differences if analyzed using narrower age groups.

Comparisons with other studies

In studies of gender differences in cardiac care using data up to 1995, many investigators reported significantly higher intervention rates for males than females (Ayanian and Epstein 1991; Udvarhelyi et al. 1992; Every et al. 1993; Chiriboga et al. 1993; Jaglal et al. 1994; Kostis et al. 1994; Vacek et al. 1995; Kudenchuk et al. 1996; Woods et al. 1998; de Gevigney et al. 2001), although some reported no difference after controlling for age (Steingart et al. 1991; Krumholz et al. 1992; Maynard et al. 1992; Funk and Griffey 1994; Vacek et al. 1995; Wong et al. 1998). Almost all newer studies show that gender differences are non-significant or marginal after controlling for age (Hanratty et al. 2000; Gottlieb et al. 2000; Rathore et al. 2002, 2003; Khaykin et al. 2002; Bertoni et al. 2004; Pilote et al. 2004; Bakler et al. 2004; Williams et al. 2004; Moriel et al. 2005; Vaccarino et al. 2005). In the two exceptions (Fang and Alderman 2006; Kaul et al. 2007), the outcome measure was "any revascularization," which includes both CABG and PCI, leaving the possibility that CABG rates had a gender difference while PCI rates did not. In some studies, PCI rates for females were higher than those for males (Steingart et al. 1991; Krumholz et al. 1992; Rathore et al. 2003; Vaccarino et al. 2005; Wong et al. 1998; Kilaru et al. 2000), although not all differences reached statistical significance.

Some reports showing significant gender differences in treatment rates did not adjust for age of AMI patients, including the US National Registry of Myocardial Infarction–I trial (Chandra et al. 1998), a large retrospective study from the United Kingdom (Shaw et al. 2004), and a recent international study (Anand et al. 2005). Studies incorporating clinical measures have shown that differences in clinical characteristics also help explain gender differences in intervention rates, sometimes in addition to the difference explained by age (Ghali et al. 2002), sometimes in conjunction

with simultaneous age control (Wong et al. 1998; Rathore et al. 2002; Blomkalns et al. 2005) and sometimes without including age (Kilaru et al. 2000).

The finding of equal bypass surgery rates in this study is consistent with findings reported by some investigators (Steingart et al. 1991; Maynard et al. 1992; Funk and Griffey 1994; Kostis et al. 1994; Gottlieb et al. 2000; Ghali et al. 2002), but contrary to others reporting higher bypass surgery rates for males than females even after age adjustment (Ayanian and Epstein 1991; Udvarhelyi et al. 1992; Krumholz et al. 1992; Jaglal et al. 1994; Woods et al. 1998; de Gevigney et al. 2001; Rathore et al. 2003; Bertoni et al. 2004; Shaw et al. 2004; Vaccarino et al. 2005; Blomkalns et al. 2005; Pilote et al. 2004; Fang and Alderman 2006), suggesting the need for further study.

The key limitation of this study is the lack of detailed clinical data, which limits the ability to assess appropriateness. As a result, it is impossible to know the "right" rate of each of the procedures. There is also the issue of undiagnosed or "silent" AMIs. An early paper from the Framingham investigators reported that undiagnosed AMIs were more common among females and older males (Kannel and Abbott 1984), though more recent work shows that this difference disappears after controlling for age (Boland et al. 2002; de Torbal et al. 2006). Our findings cannot rule out the possibility of gender bias in diagnosis of AMI. However, our results show that once diagnosed, female AMI patients were as likely as males of the same age to get each of these interventions.

The findings of this study show that there is currently no gender bias in key cardiac interventions after AMI in Manitoba, and suggest that similar analyses in other jurisdictions may reveal similar findings. Lower procedure rates for females were completely explained by their older age profile compared to male AMI patients, because intervention rates drop sharply with age for both males and females.

These results are important for clinicians and policy makers, as they show that while the age of the patient plays a role in post-AMI intervention decisions, the sex of the patient does not. The equal treatment of male and female AMI patients shown in our study may reflect a changing reality in clinical practice, as almost all other recent studies that adequately controlled for age also revealed non-significant or marginal sex differences. Bypass surgery may be the exception and requires additional research. Furthermore, demonstrating equality in rates of treatment after AMI does not address other issues regarding gender differences in heart disease, including possible differences in risk factors, presentation, diagnosis, patient preferences and effectiveness of various treatments.

Future research in this area should employ careful age control and could include a more thorough examination of how gender differences in treatment rates have changed over time. Several investigators in the United States and Canada have documented a narrowing of gender differences over time (Khaykin et al. 2002; Harrold et al. 2003; Bertoni et al. 2004; Alter et al. 2006), though others found no change (Lucas et al. 2006). Further study could also broaden the follow-up to include other types of treatments and outcomes of care.

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ONLINE EXCLUSIVE

Knowledge Translation, Linkage and Exchange

Development of Health Policy and Systems Research in Nigeria: Lessons for Developing Countries' Evidence-Based Health Policy Making Process and Practice

CHIGOZIE J. UNEKE, ABEL E. EZEOHA, CHINWENDU D. NDUKWE, PATRICK G. OYIBO AND FRIDAY ONWE

Abstract

Health policy and systems research (HPSR), which aims to produce reliable and rigorous evidence to inform the many critical decisions that must be made about health systems, is a new concept in Nigeria. In this study, policy makers and other stakeholders in the health sector identified the challenges and the potential intervention strategies to HPSR evidence use in policy making in Nigeria. The major challenges identified included capacity constraints at individual and organizational levels, communication gaps and poor networking between policy makers and researchers, and the non-involvement of healthcare recipients in identifying and planning care delivery needs. The main solutions suggested included promotion of strategies to encourage partnership between researchers and policy makers, improvement of staff incentives and facilities for research activities, improved budgetary provision for research, and sustainable institutional capacity development. These strategies have been shown to improve evidence-based policy making in developed countries and are likely to produce better outcomes in the developing world.

Résumé

La recherche sur les politiques et les systèmes de santé (RPSS), qui vise à produire des données fiables et rigoureuses pour éclairer les multiples décisions importantes du système de santé, est un concept nouveau au Nigéria. Dans la présente étude, des responsables de politiques et d'autres intervenants du secteur de la santé ont dégagé les défis et les stratégies potentielles d'intervention en matière d'utilisation des données de la RPSS dans l'élaboration de politiques de santé au Nigéria. Les principaux défis repérés comprennent, notamment, les contraintes en matière de capacité aux niveaux individuel et organisationnel, les lacunes en matière de communication, le manque de réseautage entre les responsables de politiques et les chercheurs, ainsi que la non participation des bénéficiaires des services de santé dans l'identification et la planification des besoins en prestation de services. Les principales solutions proposées sont, entre autres, la promotion de stratégies qui favorisent les partenariats entre les chercheurs

et les responsables de politiques, l'amélioration des mesures incitatives, la mise en place d'installations pour les activités de recherche, une amélioration des dispositions budgétaires pour la recherche et le développement durable des capacités institutionnelles. Il a été démontré que ces stratégies ont permis d'améliorer l'élaboration de politiques de santé fondées sur les données probantes dans les pays développés; elles permettraient sans doute d'améliorer les résultats dans les pays en développement.

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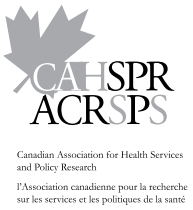

Development of Health Policy and Systems Research in Nigeria: Lessons for Developing Countries' Evidence-Based Health Policy Making Process and Practice

Développement de la recherche sur les politiques et les systèmes de santé au Nigéria : leçons à retenir pour l'élaboration de politiques et de pratiques de santé fondées sur les données probantes, xdans les pays en développement

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Abstract

Health policy and systems research (HPSR), which aims to produce reliable and rigorous evidence to inform the many critical decisions that must be made about health systems, is a new concept in Nigeria. In this study, policy makers and other stakeholders in the health sector identified the challenges and the potential intervention strategies to HPSR evidence use in policy making in Nigeria. The major challenges identified included capacity constraints at individual and organizational levels, communication gaps and poor networking between policy makers and researchers, and the non-involvement of healthcare recipients in identifying and planning care delivery needs. The main solutions suggested included promotion of strategies to encourage partnership between researchers and policy makers, improvement of staff incentives and facilities for research activities, improved budgetary provision for research, and sustainable institutional capacity development. These strategies have been shown to improve evidence-based policy making in developed countries and are likely to produce better outcomes in the developing world.

Résumé

La recherche sur les politiques et les systèmes de santé (RPSS), qui vise à produire des données fiables et rigoureuses pour éclairer les multiples décisions importantes du système de santé, est un concept nouveau au Nigéria. Dans la présente étude, des responsables de politiques et d'autres intervenants du secteur de la santé ont dégagé les défis et les stratégies potentielles d'intervention en matière d'utilisation des données de la RPSS dans l'élaboration de politiques de santé au Nigéria. Les principaux défis repérés comprennent, notamment, les contraintes en matière de capacité aux niveaux individuel et organisationnel, les lacunes en matière de communication, le manque de réseautage entre les responsables de politiques et les chercheurs, ainsi que la non participation des bénéficiaires des services de santé dans l'identification et la planification des besoins en prestation de services. Les principales solutions proposées sont, entre autres, la promotion de stratégies qui favorisent les partenariats entre les chercheurs et les responsables de politiques, l'amélioration des mesures incitatives, la mise en place d'installations pour les activités de recherche, une amélioration des dispositions budgétaires pour la recherche et le développement durable des capacités institutionnelles. Il a été démontré que ces stratégies ont permis d'améliorer l'élaboration de politiques de santé fondées sur les données probantes dans les pays développés; elles permettraient sans doute d'améliorer les résultats dans les pays en développement.

Health policy and systems research (HPSR) has been defined as "the production of new knowledge to improve how societies organize themselves to achieve health goals" (AHPSR 2007). The attention of the international community was drawn to the concept of HPSR by the World Health Organization's (WHO) Ad Hoc Committee on Health Research (1996), which identified lack of HPSR as a key problem impeding the improvement of health outcomes in low- and middle-income countries. Following the committee's recommendations, the Alliance for Health Policy and Systems Research (AHPSR), an international collaboration based in WHO Geneva, was established. AHPSR aims to promote the generation and use of HPSR as a means to improve the health systems of developing countries. This goal was in line with an earlier report of the Council on Health Research for Development (COHRED 1990), which recommended investment in essential national health research, international partnerships and mechanisms to monitor progress. The recommendation was necessitated by the discovery that only 5% of global spending on health research went to problems affecting the poorest 93% of the world's people, known as the "10/90 gap" (COHRED 1990).

Ten years later, an International Conference on Health Research for Development (ICHRD) was convened in Bangkok, Thailand, by the WHO, World Bank,

COHRED and Global Forum for Health Research (GFHR). At the conference, participants emphasized the need to strengthen national health research systems as a key priority to reduce the 10/90 gap (ICHRD 2000). Two subsequent international meetings were held in Mexico City in 2004 and Bamako in 2008 which, among other issues, emphasized the promotion of the conduct and use of essential health systems research, securing public confidence in research and bridging the gap between knowledge and action in developing countries (WHO 2004; AHPSR 2008).

In most developing countries of the world, health outcomes have been described as unacceptably low. At the centre of this human crisis is a failure of health systems (WHO 2007). The health systems comprise all the organizations, institutions and resources that are devoted to producing health actions, and have a primary purpose of improving health (WHO 2000). Unfortunately, in Nigeria – as in many other developing countries – weak health systems are impeding the success of the various health intervention programs being implemented. Bowen and Zwi (2005) have noted that a key challenge to public health in most developing countries is to better contextualize evidence for more effective policy making and practice. There is therefore increasing recognition that strong and effective health systems that are evidence-based in their operations are necessary to achieve continued improvement in health outcomes in an efficient and equitable manner (WHO 2008; Travis et al. 2004).

A number of reports have provided convincing information to prove that evidence from research can enhance health policy process and development by identifying new issues for the policy agenda, informing decisions about policy content and direction and evaluating the impact of policy (Campbell et al. 2009; Dobrow et al. 2004; Hanney et al. 2003; Innvær et al. 2002). HPSR has been shown to have the potential to produce reliable and rigorous evidence that can help inform policy development and the policy making process (AHPSR 2007).

The Alliance for Health Policy and Systems Research aims to produce reliable and rigorous evidence to help inform the many and varied critical decisions that must be made by ministers of health, senior policy makers and health service managers about how to organize the health systems and effect changes (AHPSR 2007). In Nigeria, HPSR is a somewhat new phenomenon; most health researchers, health policy makers, health services managers and other major stakeholders at government and non-governmental levels are yet to fully appreciate its value in policy making and practice (Uneke et al. 2009). However, as a result of the recognition of the importance of evidence-based health policy by the Government of Nigeria – a recognition necessary for the actualization of comprehensive health sector reform – the Nigeria Evidence-based Health System Initiative (NEHSI) was established.

NEHSI is a collaborative project between the Government of Nigeria, Canada's International Development Research Centre (IDRC) and the Canadian International Development Agency (CIDA) as a response to Nigeria's commitment to health sec-

tor reform, particularly in the area of primary healthcare (PHC) (NEHSI 2009). Although NEHSI was developed as a two-year extensive planning phase (2005–2007) to inform the implementation of a six-year initiative (which began 2008) to support a fair, effective and efficient PHC system, it is being conducted in only two states (Bauchi and Cross River) out of the 36 states in Nigeria. Hence, the absence of such a program in other Nigerian states has left these regions with no significant awareness or information on health system research. There is therefore little interest in transfer and uptake of research into policy and practice in most parts of the country, and a major factor contributing to this situation is the lack of recognition of the importance of HPSR (Uneke et al. 2009). There are instances, however, where policy making has involved the use of research evidence in Nigeria, but such use has occurred mainly in clinical decision-making (evidence-based medicine) and only in a number of tertiary health institutions, such as teaching hospitals.

The World Health Organization, like many other international agencies, is currently vigorously supporting the process of contextualizing evidence and translating it into policy through the utility of HPSR in many developing countries, including Nigeria (WHO 2003; AHPSR 2007). This approach is in line with the resolution of the World Health Assembly (WHA) held in Geneva in May 2005, which laid emphasis on how to harness health research more effectively in order to achieve the United Nations Millennium Development Goals in low- and middle-income countries (WHA 2005).

Capacity constraints at the individual and organizational levels are perceived to be major impediments in HPSR evidence use in the health policy making process in most developing countries, including Nigeria (Gonzalez-Block and Mills 2003; Uneke et al. 2009). Green and Bennett (2007) noted that more evidence is needed about how capacity constraints in countries inhibit evidence-informed health policy, and which strategies are effective in addressing these constraints. There is a dearth of information on the status of HPSR evidence use in policy making at the individual and institutional levels in Nigeria. The scarcity of such baseline information hampers effective development of strategies to promote the application of HPSR in policy making. This study was therefore designed to identify the challenges associated with HPSR evidence use in policy making and the potential strategies to address them.

Materials and Methods

Study participants

This research was a subnational study; participants consisted of individuals whose geographical area of operation is southeastern Nigeria, with emphasis on Ebonyi State. Participants included the following: health professionals in charge of the health systems; regional, state and local government directors of the health ministry; health

professionals working with specific programs in the health ministry who wish to use HPSR to improve the impact of their strategies; staff and consultants involved in public health issues within the health ministry; and program/project managers under the health ministry.

Data collection

An Evidence–Policy Workshop was organized by the research team in July 2009, and the study participants were invited to it. A total of 73 participants attended. During this forum, a focus group discussion was held, and up to seven discussion groups of between seven to 12 persons per group took part in discussions lasting up to 45 minutes. The issues discussed were categorized into four central themes, with questions within each theme as follows:

1. *Capacity constraints and challenges that impede the development of HPSR evidence use in Nigeria:* (a) What are the individual staff constraints that impede HPSR evidence use in your organization? (b) What are the organizational challenges and constraints that impede HPSR evidence use in your organization?
2. *Identification of critical gaps in HPSR evidence use, with a focus on improving public health:* (a) What are the critical gaps in HPSR evidence use in your organization that have affected efforts to improve public health in your geographical areas of operation? (b) How have the critical gaps identified affected evidence-based healthcare delivery in your geographical areas of operation?
3. *Identification of barriers to and solutions for translating research into policy and practice via evidence use:* (a) What are the barriers to effective utilization of research evidence in policy making and practice in your organization? (b) What possible interventions can be adopted to facilitate the process of translating research evidence into policy and practice?
4. *Identification of potential strategies and solutions that would address capacity constraints and challenges of HPSR evidence use in Nigeria:* (a) What are the possible strategies that can be adopted to improve individual capacity in HPSR evidence use in your organization? (b) What possible strategies can your organization adopt to improve organizational capacity in HPSR evidence use?

Theoretical foundation underlying the methodological approach

The target participants in this study were health service/policy providers because we anticipated a supply-driven outcome that would address capacity constraints in HPSR evidence use in policy making and policy implementation by these individuals. According to AHPSR (2004), the supply-driven model has been used extensively to

design capacity-strengthening initiatives in developing countries, based on the assumption that if the skills of the main actors (researchers and policy makers) are enhanced via training and enough institutional capacity is built, research outputs will be put to good use. Although this argument has intensified in HPSR circles with a focus on the demand side, the supply-driven approach has a stronger tendency to accomplish a high level of ownership of policies, an outcome that has been witnessed in Nigeria and other developing countries. The reason is that health policies are better implemented when those charged with this responsibility are made to identify the capacity challenges and the solutions required to address these challenges.

Capacity constraints at the individual level are perceived as major impediments in HPSR evidence use in the health policy making process in most developing countries, including Nigeria (Gonzalez-Block and Mills 2003; Uneke et al. 2009). Green and Bennett (2007) have noted that evidence is needed about how capacity constraints, particularly among policy makers in various countries, inhibit evidence-informed health policy, and which strategies are effective in addressing these constraints. No other category of individuals is in the best position to identify the capacity challenges of service/policy providers in HPSR evidence use in policy than the service/policy providers themselves. This assumption informed the adoption of our methodological approach. Our intention, however, was not to restrict the investigation to the supply-driven model. The goal was first to generate information using the supply-driven model, and then to use it to stimulate the demand-driven aspect, which is also key to achieving evidence-based policy making and practice. A number of earlier reports provided evidence proving that supply-side capacity-building strategies that do nothing to stimulate the demand for research are unlikely to achieve expectations, and may actually further distort allocations (Bhagavan 1992; Acemoglu 1997). The essence of our approach was to address the uncoordinated "pushing" of research results by scientists and "pulling" of research results by market-oriented users (AHPSR 2004).

We employed a focus group discussion because our study was intended to draw upon respondents' attitudes, feelings, beliefs, experiences and reactions with respect to capacity constraints in HPSR evidence use in policy making. A focus group was seen as the most feasible method of accomplishing this aim, as other methods such as observation, one-to-one interviewing and questionnaire surveys do not enhance social gathering and interaction the way a group discussion does. The approach that we took to elicit information from key informants in the focus groups has been described by Kitzinger (1995). The theoretical foundations underlying this approach were based on the work of Thomas and colleagues (1995), who described the focus group as "a technique involving the use of in-depth group interviews in which participants are selected because they are a purposive, although not necessarily representative, sampling of a specific population, this group being 'focused' on a given topic." Richardson and Rabiee (2001) have noted that individuals participating in a focus group are usually selected

based on the fact that they have a working knowledge of issues addressed, are within a similar age range, have similar socio-demographic characteristics and are likely to be comfortable talking to the interviewer and with one another. According to Burrows and Kendall (1997; cited in Rabiee 2004), "this approach to selection relates to the concept of 'Applicability,' in which subjects are selected because of their knowledge of the study area."

Data analysis

The responses from the focus group discussion were noted and were analyzed based on Giorgi's (1985) phenomenological approach, which has been elaborated by Albert and colleagues (2007). The analysis followed the following steps: (a) going over all the textual data to gain an overall impression; (b) identifying all comments that appeared significant to the research and extracting these meaning units; (c) independent abstracting of the meaning units, followed by discussion and consensus; (d) independent categorization and summarization of abstractions into challenges of HPSR evidence use in policy making and the solutions as perceived by policy makers, followed by discussion and consensus; and finally (e) returning to the extracted text to ensure a good fit with the final list of challenges and solutions.

Results

The participants' attributes are presented in Table 1; the responses from the focus group discussion are summarized in Table 2.

Concerning *capacity constraints and challenges that impede the delivery of HPSR evidence use in Nigeria*, some participants identified *individual-level constraints* as follows: "There are inadequate facilities for health policy and systems research in our health ministry"; "We lack access to reliable electronic information systems, especially Internet services"; "There are poor incentives and lack of motivation for health policy and systems research"; "I do not have much interest in research since it is not encouraged by my organization," etc.

At the *organizational level*, participants identified a number of capacity constraints: "Our organization has poor capacity to collaborate with partners and other organizations/institutions"; "There is inadequate funding for any research activity including health policy and systems research"; "There is a lot of political interference in our operations, which are not in favour of research"; "We lack sufficiently trained manpower"; "The policy formation processes in our organization are very inconsistent"; "Our organization does not have established capacity development programs," etc.

Participants identified the *critical gaps in HPSR evidence use, with a focus on improving public health*: "There is non-integration of efforts in planning and in deci-

sion-making"; "Non-involvement of health recipients in identifying and planning healthcare delivery needs"; "Non-use of multiprofessional approach in formulating health policy and initiating health research works"; "The existence of poor networking"; "There is a huge communication gap between the policy makers and the researchers," etc.

TABLE 1. Attributes of focus group participants in the Evidence–Policy Workshop for health policy makers in Nigeria

Participant attributes	No. (%) of participants N=73
1. Gender	
Male	44 (60.3)
Female	29 (39.7)
2. Age	
25–34	10 (13.7)
35–44	44 (60.3)
≥45	19 (27.1)
3. Official designation	
Program officers	17 (24.3)
Managers/Heads of departments	39 (55.7)
Directors	17 (24.3)
4. Years of experience in current designation (in years)	
<3	24 (32.9)
3–5	24 (32.9)
5–10	18 (24.7)
>10	7 (9.6)
5. Highest academic qualification	
Diploma	13 (17.8)
Bachelor	40 (54.8)
Master's	18 (24.7)
Doctorate	2 (2.7)

Participants also described *how these gaps affect evidence-based healthcare delivery:* "These critical gaps have led to poor and substandard health service delivery"; "They have hindered the achievement of health sector goals/targets"; "These gaps can lead to the failure of policy process and implementation and so can disrupt priority setting"; "They lead to inefficiency in the use of available resources"; "They lead to service duplication and the generation of irrelevant services"; "They increase mortality and morbidity rates," etc.

Concerning *barriers to translation of research into policy and practice via evidence use,* the policy makers commented: "There is [a] dearth of existing relevant research data";

"There are often interdisciplinary conflicts, that is, lack of interdisciplinary teamwork"; "We have [a] poor logistics system"; "There is lack of knowledge on the part of the policy makers to appreciate the relevance of evidence-based research," etc.

TABLE 2. Outcomes of focus group discussion during Evidence–Policy Workshop for health policy makers in Nigeria

	Discussion issues	Summary of responses from discussion groups
1.	Capacity constraints and challenges that impede the delivery of HPSR evidence use in Nigeria	**Individual Staff Constraints** • Inadequate funding for research programs • Inadequate facilities • Lack of access to information (and specifically, Internet services) • Poor incentives/lack of motivation • Lack of interest in research (individuals think it is not their responsibility to initiate/conduct research) **Organizational Constraints** • Poor capacity to collaborate with partners • Inadequate funding • Political interference • Inadequate manpower • Inconsistency in policy formation processes • Lack of capacity development programs • Inadequate involvement of the appropriate health personnel in policy making • Non-continuity of health programs due to change in government
2.	Critical gaps in HPSR evidence use, with a focus on improving public health	**Critical Gaps in HPSR Evidence Use** • Dearth of qualified personnel (experts) • Non-integration of efforts in planning and in decision-making • Non-involvement of health recipients in identifying and planning healthcare delivery needs • Non-use of multiprofessional approach in formulating health policy and initiating health research works • Poor networking • Lack of functional database • Top-down policy making approach that excludes critical agents at the primary level • Communication gap between the policy makers and the researchers • Non-availability of research units/departments in most health organizations **How the Factors (Gaps) Affect Evidence-based Healthcare Delivery** • Lead to poor/substandard health services delivery • Hinder the achievement of health sector goals/targets • Lead to process/implementation failure, and so can disrupt priority-setting • Lead to inefficiency in the use of available resources • Lead to service duplication and the generation of irrelevant services • Increase mortality and morbidity rates • Affect planning for healthcare delivery • Create gaps between the policy makers and the implementers, giving rise to non-involvement of grassroots in ownership and participation

TABLE 2. Continued

3.	Barriers to and solutions for translating research into policy and practice via evidence use	**Barriers to the Use of Evidence in Policy Making Process and Practice** • Dearth of existing relevant research data • Interdisciplinary conflicts (i.e., lack of interdisciplinary teamwork) • Poor logistics system • Lack of knowledge on the part of policy makers to appreciate the relevance of evidence-based research • Political interferences or influence • Socio-cultural barriers **What Can Be Done to Facilitate the Process of Translating Research Evidence into Policy and Practice** • Increase funding provision for building and maintenance of research evidence database • Ensure institutional/personnel capacity development • Undertake advocacy campaigns • Educate policy makers on the importance of evidence use in health policy making • Promulgate relevant legislation to back up implementation of research results • Fund health research projects • Train health personnel to carry out research • Equip planning and research centres at state and local government levels
4.	Potential strategies and solutions that would address capacity constraints and challenges of HPSR evidence use in Nigeria	**Strategies and Solutions for Improving Individual Capacity** • Train personnel to enable them to know more in their area of specialization • Provide Internet facilities and reference materials • Improve staff incentives for research activities • Motivate personnel through incentives **Strategies and Solutions for Improving Organizational Capacity** • Enhance collaboration and networking among stakeholders in the health sector (including private sector participants and donor agencies) • Initiate and undertake political advocacy on critical health issues • Ensure adequate resource mobilization (especially on how to optimize internal sources) • Improve funding and incentives; provide research budgets • Ensure widespread dissemination of research results and feedback • Develop sustainable institutional capacity • Fund research and utilization of results in decision-making and policy implementation in the health sector • Utilize research findings in quarterly/annual meetings where research evidence can be presented to policy makers • Ensure proper data management • Minimize political interests in the development of HPSR • Introduce effective monitoring and evaluation programs

To *facilitate the process of translating research evidence into policy and practice,* the participants commented: "There should be increased funding provision for building and maintenance of research evidence databases in various health organizations"; "Mechanisms should be put in place to ensure institutional and personnel capacity development"; "It is important for the promulgation of relevant legislations to back up implementation of research results"; "Efforts should be made in equipping planning and research centres at state and local government levels," etc.

The *potential strategies and solutions that would address capacity constraints and challenges of HPSR evidence use in Nigeria* were identified as follows: "There should be the provision of functional Internet facilities in health-based organizations"; "Each organization should ensure the improvement of staff incentives for research activities"; "It is vital to establish processes that are capable of enhancing collaboration and networking among stakeholders in the health sector"; "Establish ways of ensuring adequate resource mobilization, especially on how to optimize internal sources"; "The organizations should improve budgetary provision for research"; "It is vital to ensure that there is widespread dissemination of research results and feedback, particularly to health ministries"; "There should be sustainable institutional capacity development"; "Funding research works and utilization of results in decision-making and policy implementation in the health sector should be made mandatory"; "There should be minimization of political interests in the development of health policy and systems research," etc.

Discussion

Although HPSR evidence use in policy making is a new concept in Nigeria, the results of this study indicate a willingness on the part of policy makers to embrace it in the health policy development process. The reason is that HPSR is seen to have the potential to play an increasingly important role in strengthening the health systems upon which health priority programs and interventions run. HPSR is also seen as a key source of understanding about the nature both of how health systems operate and the content of policy making in the country. It was the consensus of the policy makers in this study that capacity constraints constitute the major challenge in the delivery of HPSR evidence use in policy making in Nigeria, as exemplified in the participants' comments: "Our organization does not have established capacity development programs"; "Our organization has poor capacity to collaborate with partners and other organizations/institutions"; "There is inadequate funding for any research activity, including health policy and systems research"; "There are inadequate facilities for health policy and systems research in our health ministry."

Gonzalez-Block and Mills (2003) have defined HPSR capacity as "the level of expertise and resources at the researcher, project and institutional levels for the production of new knowledge and applications to improve the social response to health problems." Also included is the capacity to engage stakeholders in policy and program development. Weak capacity at a number of levels in the institutions and interfaces between knowledge generation and use in policy making has been identified by the Alliance for Health Policy and Systems Research as a key strategic issue, but one about which there is still inadequate understanding (AHPSR 2007). Specific capacity constraints identified in this study – such as inadequate facilities, particularly lack of

access to information (specifically, Internet services); poor capacity to collaborate with partners, e.g., researchers; inadequate funding/lack of incentives for research; and lack of capacity development programs – appear to be widespread challenges to HPSR evidence use in most developing countries (Gonzalez-Block and Mills 2003; Green and Bennett 2007).

The participants generally agreed that the transfer and uptake of research into the health policy making process are not widely practised in Nigeria. Thus, evidence-based policy making and practice still attract very low attention and interest. Critical gaps in evidence-based policy making, especially communication gaps/poor networking between policy makers and researchers, and of course non-use of multidisciplinary approaches in formulating health policy and initiating health research – all have a negative impact on the country's health systems. As some participants noted: "There is a huge communication gap between the policy makers and the researchers"; "Non-use of multiprofessional approach in formulating health policy and initiating health research works"; and "The existence of poor networking."

O'Neill and Nath (2005) have noted that "rapid progress towards disease-control targets in developing countries is greatly hampered by weak, poorly functioning or in some cases non-existent health systems" and that "it is critical to know how to strengthen the health system and the specific actions appropriate for different settings." It has been established that HPSR is key to strengthening the ability of national health systems to achieve the United Nations Millennium Development Goals. The reason is that the health system functions of stewardship, regulation, organization, information provision, financing and delivery of services are the focal subjects of HPSR. Even the broader determinants directly affecting the health system are also considered within the purview of HPSR, such as social and economic policies affecting key health system structures and processes (Gonzalez-Block and Mills 2003; Green and Bennett 2007; AHPSR 2007). Thus, the need to enhance capacity for HPSR in developing countries cannot be overstated, in spite of the fact that HPSR has remained relatively neglected alongside its better established and resourced counterpart, biomedical research (AHPSR 2007). Green and Bennett (2007) have noted that "capacities to make critical choices for limited HPSR resources must be a primary concern of countries since it is axiomatic that capacity to direct the focus of HPSR is pivotal to shaping evidence-informed national health policies and systems."

If the gaps in evidence-based policy making must be bridged, then it is of fundamental importance to pursue a process of getting research into policy and practice. This goal is important, because – as identified by the policy makers in this study – failure to enhance the evidence-based health policy making process, especially as it affects healthcare delivery, can lead to poor/substandard health services delivery; hinder the achievement of health sector goals/targets; and lead to process/implementation failure, thus disrupting priority setting. However, because government

health officials and bureaucrats often lack the ability to translate policy challenges into demands in the health research agenda (van Kammen et al. 2006), it is therefore imperative that those who produce the research and those who use their work be encouraged to get together to define priorities, synthesize knowledge, commission research, learn from the findings and put them into practice (O'Neill and Nath 2005; Hanney et al. 2003).

One participant in this study suggested that "it is vital to establish processes that are capable of enhancing collaboration and networking among stakeholders in the health sector." Such a researcher–policy maker partnership has been described as a crucial element for promoting the use of health research for policy development, and has been used successfully in many developed countries (Innvær et al. 2002; Hanney et al. 2003; Campbell et al. 2009). Therefore, this partnership between researchers and decision-makers requires greater attention and consideration in developing countries, including Nigeria, where its potential utility has not been fully evaluated. Hyder and colleagues (2007) have observed that the process of translation of research outcomes into policies is a critical and yet under-studied process in most developing countries and as such, both informal and formal mechanisms used for such translation, and the types of people involved, especially in entities like health policy units, all merit consideration.

One significant observation made by the policy makers in this study was the non-involvement of health recipients in identifying and planning healthcare delivery needs. This is one of the major critical gaps in HPSR evidence use in policy making that is very common in developing countries. Hyder and colleagues (2007) have stated that health policy making is not complete if the focus is mainly on government and providers; community participation is a vital element that cannot be overlooked. At the conclusion of Forum 8 of the Global Forum for Health Research held in Mexico City, November 16–20, 2004, article 8 of the resolution stated as follows:

> Civil society, NGOs and communities must be involved in the governance, definition, generation and conduct of health research; in the application of the knowledge and technologies it provides; in monitoring progress and in maintaining the public debate about resources and priorities. (GFHR 2004)

To enhance the appreciation of research evidence and promote the process of its translation to health policy, it is imperative for developing countries to implement the Essential National Health Research concept of establishing multi-stakeholder triads, consisting of researchers, community members and policy makers, to jointly establish local health research agendas (Green and Bennett 2007). This approach is capable of enhancing the potential for translating needs analysis into demands, a vital step in the evidence-to-policy process, and also placing the focus on equity (including gender con-

sideration), social justice and the poor, as well as addressing social, economic, political, ethical and management dimensions important to public health and health systems in general (COHRED 2000).

One further point raised by our participants: Even when researchers collaborate with policy makers and other stakeholders (including community members) in health policy/research priority setting, the research must be relevant for the policy makers. The policy makers in this study noted that there is a dearth of research evidence that is relevant to their needs or tailored to the policy making process. As one participant observed: "There is [a] dearth of existing relevant research data." Decision-makers and managers want research that is relevant to real life and that can address prevailing needs, not results written up in esoteric language and published only in inaccessible journals (O'Neill and Nath 2005). Policy makers often argue that the constraints to use research include lack of understanding of health systems and policy processes on the part of researchers; research that fails to address the most pressing concerns of decision-makers; research reports that are difficult to read; and research results that are not timely (Choi et al. 2005; O'Neill and Nath 2005). The solutions to this problem are not simple. However, Choi and colleagues (2005) have suggested that

> if researchers and policymakers can fully recognize their incompatibility problems and promote successful experiences in the collaboration such as establishment of observatories on Health Systems and Policies and use of the knowledge brokerage mode, facilitators to the use of research by policymakers can be promoted while the barriers can be suppressed.

The policy makers in this study further emphasized improvement of staff incentives for research activities in policy making institutions; sustainable institutional capacity development through training of policy makers; provision of functional facilities, such as Internet access, to encourage research; and improving budgetary provision for research. These strategies have been shown to improve evidence-based policy making in developed countries (Green and Bennett 2007), and are therefore likely to produce better outcomes in the developing world.

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