HEALTHCARE

POLICY

Politiques de Santé

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

Volume 14 • Number 2

A LONGWOODS PUBLICATION Fonds WWW.HEALTHCAREPOLICY.NET

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

Longwoods Publishing | *Enabling Excellence*

HEALTHCARE
POLICY
Politiques de Santé

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

VOLUME 14 NUMBER 2 • NOVEMBER 2018

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.

—

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

CONTENTS

TABLE DES MATIÈRES

HEALTHCARE
POLICY
Politiques de Santé

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

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

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

SUBSCRIPTIONS
Individual subscription rates for one year are [C] $123 for online only and [C] $204 for print + online. Institutional subscription rates are [C] $535 for online only and [C] $729 for print + online. For subscriptions contact Barbara Marshall at telephone 416-864-9667, ext. 100 or by e-mail at bmarshall@longwoods.com.

Subscriptions must be paid in advance. An additional tax (GST/HST) is payable on all Canadian transactions. Rates outside of Canada are in US dollars. Our GST/HST number is R138513668.

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

REPRINTS
Reprints can be ordered in lots of 100 or more. For reprint information call Barbara Marshall at 416-864-9667 or fax 416-368-4443 or e-mail to bmarshall@longwoods.com.

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

EDITORIAL
To submit material or talk to our editors please contact Ania Bogacka at 416-864-9667 or by e-mail at abogacka@longwoods.com. Author guidelines are available online at http://www.longwoods.com/pages/hpl-for-authors.

ADVERTISING
For advertising rates and inquiries, please contact Matthew Hart at 416-864-9667, ext. 113 or by e-mail at mhart@longwoods.com.

PUBLISHING
To discuss supplements or other publishing issues contact Rebecca Hart at 416-864-9667, ext. 114 or by e-mail at rhart@longwoods.com.

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

Healthcare Policy/Politiques de Santé is indexed in the following: PubMed/Medline, CINAHL, CSA (Cambridge), Ulrich's, Embase, IndexCopernicus, Scopus, ProQuest, EBSCO Discovery Service, is archived in PubMed Central, and is a partner of HINARI.

ISSN No. 1715-6572
eISSN No. 1715-6580

Publications Mail Agreement No. 40069375

EDITORIAL

Illuminating the Consequences of Policy Change

"One of the greatest mistakes is to judge policies and programs by their intentions rather than their results."
– Milton Friedman

The ripple effects of major policy changes are difficult to predict in advance. That is why the ability to track consequences of decisions – intended and unintended – is an important role of health services and policy research.

In this issue of the journal, Janine Brown, Lilian Thorpe and Donna Goodridge discuss our ability to track medically assisted death (MAiD), one of the most significant health policy changes in Canada in recent history. Whatever one's views on MAiD, there is consensus on the need to understand how often, and in what circumstances, such deaths take place. Being able to track deaths in a consistent way also matters. Comparisons between different population groups, across regions of the country, and with other nations can be helpful in illuminating the effects of this policy and its application.

This type of analysis builds on a long history of the use of mortality statistics to inform decisions with important health consequences. For instance, Florence Nightingale famously used mortality data to describe the sanitary conditions in hospitals during the Crimean War. Globally, they continue to be used today to track Ebola and other infectious disease outbreaks. Mortality data are also used to understand chronic disease patterns and trends, among other applications.

Analysis of mortality statistics is a good example of the value of routinely collected data for revealing the consequences of emerging and evolving policy and practice. Other articles in this issue showcase the value of such data for understanding a wide range of other issues, from the provision of obstetrical care to physician retirement patterns.

As with other types of research, the ability to derive meaningful insights from routinely collected data depends not just on the quality of the underlying data but also on how the analysis was undertaken and reported. Reporting guidelines – such as those collated by the Equator Network – aim to improve the value and robustness of research by strengthening transparency and accuracy of published reports. Specific guidelines are available for a wide and growing range of types of research.

At *Healthcare Policy/Politiques de Santé*, we have long endorsed the use of such reporting guidelines as a way to strengthen the quality of scholarly work. Nevertheless, failure to follow such guidelines or to provide a thoughtful justification for why they do not apply in a specific

case is one of the most common reasons for articles to be rejected prior to peer review. If you are preparing an article for publication in our journal – or reporting research in any other forum – I strongly encourage you to review and apply relevant guidelines throughout the research and writing process. Doing so will make our lives easier as editors and reviewers, and more importantly will make the results of your research more useful for readers. For details, please see the Instructions for Authors on our website: https://www.longwoods.com/pages/hpl-for-authors.

JENNIFER ZELMER, PHD
Editor-in-Chief

Reference

Brown, J., L. Thorpe and D. Goodridge. 2018. "Completion of Medical Certificates of Death after an Assisted Death: An Environmental Scan of Practices." *Healthcare Policy* 14(2): 59–67.

ÉDITORIAL

Faire la lumière sur les conséquences du changement de politique

« Une des plus grandes erreurs est de juger les politiques et programmes sur les intentions plutôt que sur les résultats. »
– Milton Friedman

Il est difficile de prévoir l'effet d'entraînement des changements de politiques. C'est pourquoi la capacité de retracer les répercussions – intentionnelles ou non – des décisions revêt une grande importance pour la recherche sur les politiques et services de santé.

Dans le présent numéro, Janine Brown, Lilian Thorpe et Donna Goodridge commentent la capacité de retracer les cas d'aide médicale à mourir (AMM), un des plus importants changements de l'histoire récente au Canada en matière de politiques de santé. Peu importe le point de vue sur l'AMM, il y a consensus quant au besoin de comprendre la fréquence et les circonstances qui entourent ce type de mortalité. Il est également important de pouvoir retracer ces cas de façon cohérente. La comparaison entre divers groupes de population, entre régions ou entre nations peut aider à comprendre les effets et l'application de cette politique.

Ce type d'analyse s'inscrit dans la longue histoire de l'utilisation des statistiques sur la mortalité afin d'éclairer des décisions qui auront d'importantes conséquences dans le domaine de la santé. Par exemple, Florence Nightingale a notablement employé les données sur la mortalité afin de décrire les conditions d'hygiène dans les hôpitaux pendant la guerre de Crimée. Ce type de données est encore largement employé aujourd'hui pour retracer, par exemple, les éclosions d'Ebola ou d'autres maladies infectieuses. Les données sur la mortalité servent aussi, entre autre, à mieux comprendre les schémas et tendances des maladies chroniques.

L'analyse des statistiques sur la mortalité est un bon exemple de l'utilité des données recueillies régulièrement, ce qui permet de décrire les répercussions des pratiques et politiques émergentes. D'autres articles du présent numéro mettent à profit l'utilité de telles données afin de mieux comprendre une vaste gamme d'enjeux, allant de la prestation des soins obstétriques aux schémas de la prise de retraite chez les médecins.

Comme c'est le cas pour d'autres types de recherche, la capacité à dégager d'importantes pistes à partir des données colligées de façon régulière ne dépend pas uniquement de la qualité des données en question, mais aussi de la façon d'effectuer et de présenter leur analyse. Les directives de présentation – telles que celles répertoriées par le réseau Equator – visent l'amélioration de la valeur et de la solidité des recherches, et ce, en renforçant la transparence et l'exactitude des rapports publiés. Il y a des directives spécifiques pour une vaste gamme de types de recherche.

Depuis longtemps, à *Politiques de Santé/Healthcare Policy*, nous avons en place de telles directives dont l'objectif est de renforcer la qualité des travaux. Néanmoins, le non-respect des directives, ou l'absence de justification expliquant pourquoi elles ne s'appliquent pas dans un cas précis, figure parmi les principales raisons du refus d'un article avant l'examen par les pairs. Si vous travaillez à la rédaction d'un article destiné à ces pages – ou si vous faite rapport de résultats de recherche pour tout autre forum – je vous enjoins fortement à suivre les directives tout au cours des processus de recherche et de rédaction. Cela facilitera la tâche des éditeurs et des réviseurs, et surtout cela rendra vos résultats de recherche encore plus utiles pour les lecteurs. Pour obtenir plus de renseignements à ce sujet, référez-vous aux Directives pour les auteurs sur notre site Web : https://www.longwoods.com/pages/hpl-for-authors#french.

JENNIFER ZELMER, PhD
Rédactrice en chef

Référence

Brown, J., L. Thorpe et D. Goodridge. 2018. « Produire un certificat médical de décès dans les cas d'aide médicale à mourir : analyse du contexte des pratiques. » *Politiques de Santé* 14(2): 59–67.

Dear Editor,

I applaud Breton et al. (2018) for their recent logic analysis on primary care centralized waiting lists (CWLs) in seven Canadian provinces, recently published in your journal. This is an important step towards better understanding the effectiveness of these approaches. Given the dire situation of primary care in many jurisdictions across Canada, CWLs deserve greater research attention. In particular, I agree with the authors' comments that future research should explore CWLs effectiveness from the patient perspective. I make these arguments as a researcher and a Canadian, who recently experienced the challenges with one of these systems first-hand.

Last November, my family (wife, two-year-old daughter, and I) relocated to Waterloo, Ontario, from Victoria, British Columbia. We sought a new family physician as part of getting settled. While we were (and are) lucky to be in good health, I am familiar with the research on the importance of a family physician, and I was eager to find one for my family. I was further motivated by the fact that my wife was pregnant with our second child at the time, and our daughter was continuing in licensed childcare, which require notes from physicians on occasion attesting that a rash, cough, etc., is not contagious and that the child can return to care. We registered with Health Care Connect (HCC) as soon as we could. However, every encounter with a healthcare or public health provider reinforced that engaging with HCC was pointless.

We were encouraged by family members to contact their physicians to ask if we could become patients, since we were relatives (this did not work). A public health nurse and our midwife advised us to contact a new clinic that had recently opened (unfortunately, they were already at capacity). Later, the maternity nurses who cared for my wife and newborn provided us with a printed list of local physicians accepting patients (unfortunately, the list was out of date, and they were also at capacity). Eight months after arriving, we finally found a family physician last week, because my wife happened to drive by a new clinic that had a sign in the window. We completed the necessary forms and became patients that day. Throughout this period we heard nothing from HCC.

Conversations with friends, family and colleagues suggest that our experience is either typical or a good news story, in this part of Ontario. Precisely because this is typical, I felt it was important to write this letter in support of future research on CWLs. Clearly there has not been enough written, studied or argued about the current situation to identify best-practices and initiate reform. I am not the first to report frustration when trying to find a family physician (e.g., Galloway 2011; Kitching 2017) and access to primary care is one of the most well-known healthcare issues across Canada. However, my experience with HCC raises serious questions about HCC and CWLs elsewhere. For example, how effective is a CWL when every representative of the healthcare 'system' discouraged its use? Why are family physicians

actively preferring other methods over the CWL (e.g., sign in the window, hospital lists)? Why was there so little communication or service from HCC? Do those who administer CWLs fully appreciate the importance the public places on the need for a family physician? In our case, perhaps my family was too healthy and the needs of others were more pressing. Breton et al. (2018) report that HCC prioritizes the needs of "complex/vulnerable patients" (p. 75). I support this approach, and I am pleased that those with greater need get quicker access to care. However, some communication, guidance or other types of service from HCC would have been appreciated.

Breton et al. (2018) report that "the lack of a common or standardized approach makes it difficult to measure and compare the effectiveness of the different CWLs as provinces do not monitor and report the same indicators (e.g., not all provinces monitored and reported wait times for attachment) and similar indicators are often measured differently" (p. 79). Clearly, there is much more to investigate regarding CWLs. I hope the authors will continue their work on this important topic, including exploring their effectiveness from the patient perspective.

Sincerely,

J. Ross Graham, MSc, MPA

J. Ross Graham is the Manager, Strategic & Quality Initiatives in the Community Services Department at the Regional Municipality of Waterloo in Ontario. He has spent the past eight years working in health administration, including the past three years working in Medical Affairs at the Vancouver Island Health Authority. He can be reached at: RoGraham@regionofwaterloo.ca.

References

Breton, M., S.T. Wong, M.A. Smithman, S. Kreindler, J. Jbilou, J. Sutherland et al. 2018. "Centralized Waiting Lists for Unattached Patients in Primary Care: Learning from an Intervention Implemented in Seven Canadian Provinces." *Healthcare Policy* 13(4): 65–82.

Galloway, G. 2011. "The Soul-Destroying Search for a Family Doctor." The Globe and Mail. Retrieved August 7, 2018. <https://www.theglobeandmail.com/life/health-and-fitness/the-soul-destroying-search-for-a-family-doctor/article591331/>.

Kitching, H. 2017. "Health Care Connect Referral Rate Drops Below 10 Per Cent in Northwestern Ontario." CBC News. Retrieved August 7, 2018. <https://www.cbc.ca/news/canada/thunder-bay/health-care-connect-referral-rate-drops-below-10-per-cent-in-northwestern-ontario-1.4102496>.

Intersecting Policy Contexts of Employment-Related Geographical Mobility of Healthcare Workers: The Case of Nova Scotia, Canada

Intersection des contextes politiques liés à la mobilité géographique des travailleurs de la santé : le cas de la Nouvelle-Écosse, Canada

SHIVA NOURPANAH, PHD
Department of Sociology and Social Anthropology
Dalhousie University
Halifax, NS

IVY BOURGEAULT, PHD
Telfer School of Management
University of Ottawa
Ottawa, ON

LOIS JACKSON, PHD
School of Health and Human Performance
Dalhousie University
Halifax, NS

SHERI PRICE, PHD
School of Nursing, Dalhousie University
Halifax, NS

PAULINE GARDINER BARBER, PHD
Department of Sociology and Social Anthropology
Dalhousie University
Halifax, NS

MICHAEL P. LEITER, PHD
School of Psychology
Deakin University
Melbourne, Australia

Abstract

Mobility and movement is an increasingly important part of work for many, however, Employment-Related Geographical Mobility (ERGM), defined as the extended movement of workers between places of permanent residence and employment, is relatively understudied among healthcare workers. It is critical to understand the policies that affect ERGM, and how they impact mobile healthcare workers. We outline four key intersecting policy contexts related to the ERGM of healthcare workers, focusing on the mobility of Registered Nurses

(RNs), Licensed Practical Nurses (LPNs) and Continuing Care Assistants (CCAs) in Nova Scotia: international labour mobility and migration; interprovincial labour mobility; provincial credential recognition; and, workplace and occupational health and safety.

Résumé

La mobilité et les déplacements sont de plus en plus importants au travail, cependant la mobilité géographique pour le travail (MGT) – soit le déplacement des travailleurs entre le lieu de résidence permanente et le lieu de travail – est relativement peu étudiée chez les travailleurs de la santé. Il est primordial de comprendre les politiques qui affectent la MGT ainsi que leur impact sur les travailleurs de la santé. Nous dégageons quatre contextes d'intersection politique liés à la MGT des travailleurs de la santé, notamment pour la mobilité des infirmières autorisées, des infirmières auxiliaires autorisées et des préposés aux soins prolongés en Nouvelle-Écosse. Ces contextes sont : la mobilité et la migration de la main-d'œuvre internationale; la mobilité de la main-d'œuvre interprovinciale; la reconnaissance provinciale des titres de travail; et la santé et la sécurité au travail.

Employment-related geographical mobility (ERGM) is defined as the mobility and extended travel or movement of workers between places of permanent residence and employment (Cresswell et al. 2016; Roseman et al. 2015). This mobility may range from travel across international and interprovincial borders to secure work, to extended local and regional movement conducted as part of regular daily work schedules (e.g., home care workers). Scholars from across disciplines are paying increasing attention to ERGM and relevant theoretical perspectives in various sectors (Cresswell et al. 2016; Green 2004; Haan et al. 2014). The literature on the migration and mobility of healthcare workers both globally (for example, Kingma 2006; OECD and WHO 2010; OECD 2008) and locally (Fitzpatrick and Neis 2015) is also flourishing. These studies point to a variety of challenges and concerns arising from the ERGM of healthcare workers, ranging from brain-drain, labour shortages and surpluses, and de-skilling, to the isolation and exclusion faced by foreign workers, as well as the specific vulnerabilities associated with healthcare work in the domestic sphere, as faced by home care workers.

It has been noted that geographical mobility among healthcare professionals takes place at higher rates compared to the general workforce, however, this mobility is mostly intraprovincial, rather than interprovincial, or in other words, between communities within the same province or territory (CIHI 2007). Relatively little is known, however, about the full spectrum of ERGM from international to local among healthcare workers in the Canadian context and the policies that influence and shape their mobility.

We focus on the mobility of Registered Nurses (RNs), Licensed Practical Nurses (LPNs) and Continuing Care Assistants (CCAs) into, within, and out of Nova Scotia, while

acknowledging that healthcare workers with a range of professional and paraprofessional backgrounds engage in regular ERGM. These intersecting policy contexts are: international labour mobility and migration; interprovincial labour mobility; provincial credential recognition; and, workplace and occupational health and safety. There are important shortcomings in these policy contexts that render workers engaging in ERGM vulnerable to a range of challenges.

Setting the Stage: Nova Scotia and the ERGM of Healthcare Workers

Many of the demographic characteristics of Nova Scotia are similar to those facing other provinces but are sufficiently exacerbated to warrant the label "canary in the coal mine" (Tutton 2008). Specifically, the ERGM of healthcare workers in Nova Scotia is occurring in a context characterized by:

- a large rural population;
- a declining and aging population;
- a declining and aging workforce;
- high rates of chronic diseases;
- out-migration; and
- an ongoing restructuring of the healthcare system.

Arguing from differing policy and academic perspectives, commentators suggest that a combination of these features produces a variety of labour shortages in the healthcare workforce (Province of Nova Scotia 2013b; Valiani 2012). Concurrently, workers' movements and mobility patterns into, out of, and within the province are occuring and may be increasing. The literature indicates that healthcare labour issues such as downsizing, casualization, the replacement of steady and stable jobs with shift work and the lack of guaranteed work hours and standardized patient-to-nurse ratios all make healthcare an "unfriendly" and difficult place to retain staff. Such factors may contribute to mobility, with Canada witnessing high rates of out-migration of nurses to the US (MacMillan 2013; McGillis Hall et al. 2013; Grinspun 2003).

Methods

Policies and policy-related literature of relevance to the ERGM of healthcare workers was gathered between September 2012 and December 2015 yielding over 30 relevant English language documents and website content.[1] There were no limits placed on the dates of publications. Two main strategies were used to gather information:

1) Keyword searches in Google Scholar, JSTOR, EBSCOhost, MEDLINE, and ScienceDirect amongst others.[2] Keywords included (but were not limited to) healthcare, human resources, Nova Scotia, labour mobility, demographics, immigration,

outmigration, healthcare jobs, temporary foreign workers, mobility, vehicles, road, driving, commuting, motor vehicle accidents, and occupational safety and various permutations thereof.
2) Review of the official websites of government agencies, research institutions and think tanks. These agencies/institutions/think tanks included Statistics Canada, Health Canada, Citizenship and Immigration Canada, the Labour Mobility Coordinating Group, the Government of Nova Scotia, and the Healthcare Human Resource Sector Council.

Our study is limited to public documents and to key policies related to ERGM during the period of data collection. Four people from relevant stakeholder agencies were consulted during the final phases of this study as our research clarified the key agencies and their role. These agencies include the provincial College of Registered Nurses, the Nova Scotia Nurses' Union, the Nova Scotia Office of Immigration, and the Department of Health and Wellness. Our consultations augmented the policies extracted through our online searches and provided additional insight. Although the original project design included physicians, midwives and social workers, we limited ourselves to the study of nurses and CCAs, where information was more readily available. We acknowledge our study does not capture all policies that may affect the ERGM of healthcare workers, but it provides an overview of some general concerns and relevant policy contexts. We identified four key policy contexts following our review of the literature and websites, and discuss each of these contexts from the international to the local level, in turn below.

a) International Labour Mobility and Migration

One of the key policy contexts related to the international mobility of healthcare workers is the Temporary Foreign Worker Program (TFWP), which is administered federally, and aims to fill labour shortages in the Canadian work force. Employers wishing to hire foreign workers under the TFWP need to obtain a Labour Market Impact Assessment (LMIA), which documents that an employer has searched for and failed to find a Canadian recruit, and has obtained a work permit for the worker they intend to hire. The TFWP is utilized by employers across Canada, in a variety of industries.

TEMPORARY FOREIGN WORKERS (TFWs) IN HEALTHCARE IN NOVA SCOTIA

Nurses utilize the TFWP to move into Nova Scotia from overseas and work in the province. During the 2008–2015 period, there were 1,022 TFW positions on approved LMIAs – that is, where the request of the employer to hire a TFW was approved by the federal government – in the health occupations in Nova Scotia (Government of Canada 2016). Information requested from Citizenship and Immigration Canada (CIC – renamed to Immigration, Refugees and Citizenship Canada in 2015) suggests a limited number of work

permits have been issued in Nova Scotia. Between the years 2009–2014, the CIC issued 135 work permits for the following three categories: RNs and registered psychiatric nurses; general practitioners and family physicians; and LPNs. Of these three categories, LPNs were the most populous (95 permits). Further details about the employers of these workers were not available for analysis. However, statistics reported by the College of Licensed Practical Nurses, Nova Scotia, indicate that during the period 2012–2016, the profession registered an average of 302 new LPN registrants a year, thus it can be deduced that the figure provided by CIC represents a significant portion of newcomer LPNs (CLPNS, 2016).

FEDERAL AND PROVINCIAL REGULATION OF TFWs

CIC and Employment and Skills Development Canada regulate the entrance of workers into the country; however, once they are working in Nova Scotia, provincial labour legislation applies. The Worker Recruitment and Protection Act has portions that amend the Labour Standards Code to provide protections for foreign workers. These portions include provisions such as prohibiting the charging of recruitment fees to foreign workers coming to Nova Scotia, prohibiting employers from reducing wages or any other condition of employment that the employer agreed to provide at the time of recruitment, and prohibiting a recruiter or employer from retaining a worker's property, e.g., a passport or work permit.

b) Interprovincial Labour Mobility

The constitutional right to move for employment for Canadian citizens and permanent residents within Canada is supported at the national level through the Agreement on Internal Trade (AIT). The AIT has the explicit aim of eliminating unnecessary interprovincial barriers to the free movement of workers, goods, services and investments, including achieving full labour mobility for workers in regulated occupations in Canada. This applies to the labour mobility among healthcare workers. The implementation of the AIT remains problematic, with each province listing occupations where exceptions to full labour mobility are maintained. Nova Scotia maintains seven such exceptional occupations. LPNs are the only one of these seven exceptional occupations relevant to this study. Practitioners in these exceptional occupations must undergo additional procedures before they can practice in Nova Scotia (Province of Nova Scotia 2013b).

c) Credential Recognition, Provincial Licensure and Fairness Legislation

Credential recognition and provincial licensure as it relates to ERGM is particularly important for healthcare providers entering the country or crossing provincial boundaries. Health professions that are regulated (medicine, nursing, etc.) are regulated through provincial Colleges; each College has its own standards for assessing qualifications. Although competency exams for regulated health workers are delivered nationally (except in Quebec), practitioners are licensed and registered to practice by provincial/territorial professional regulatory bodies.

In Nova Scotia, the College of Registered Nurses of Nova Scotia is the regulatory body for almost 10,000 RNs and nurse practitioners. LPNs are regulated by the College of Licensed Practical Nurses of Nova Scotia.[3] CCAs are not regulated, but since 2006, the provincial Department of Health and Wellness has required certification. Because of the challenges of credential recognition, regulatory bodies themselves have come under increasing oversight. In Nova Scotia, the Fair Registration Practices Act (FRPA) "governs the process a regulatory body follows to register a person who applies to practice as a member of that occupation" (Province of Nova Scotia 2013). According to FRPA, "registration must follow a fair procedure and be transparent, objective, and impartial" (Province of Nova Scotia 2013).

d) Workplace and Occupational Health and Safety

LEGISLATION AND COLLECTIVE AGREEMENTS

General workplace safety in Nova Scotia is governed by two complementary pieces of legislation: the *Workers Compensation Act* and the *Occupational Health and Safety Act*. The healthcare sector is also regulated through the *Co-ordinated Home Care Act*, that sets out the legal framework through which services may be offered to eligible Nova Scotians in their homes (NS Legislature 1990: 1–2). These pieces of legislation, however, do not contain any direct mention of geographic mobility of healthcare workers.

The Nova Scotia Government and General Employees Union maintains collective agreements with the Nova Scotia Health Authority and other healthcare workers such as schedulers, home support, and long-term care. The Nova Scotia Nurses' Union negotiates collective agreements for nurses in their union employed in acute care, long-term care and home care. In these agreements, the basic parameters that govern travel for work duties are set, including reimbursements, monthly allowances and mileage. There are also many private agencies offering home care services in Nova Scotia, not all of whom employ unionized workers. For these agencies, the private contract between the employer and worker governs the conditions of their mobility.

WORKPLACE AND OCCUPATIONAL HEALTH AND SAFETY OF TFWs IN HEALTHCARE

Many TFWs are in-home caregivers, who are trained healthcare professionals or para-professionals, and they face a unique set of workplace safety issues. Several scholars considered TFWs to be "precarious migrants" (Goldring and Landolt 2013: 207; Sikka et al. 2011). Their international ERGM prevents them from having rights similar to local workers and thus potentially affecting their safety concerns. The intersection of precarious migration and low-status domestic work leads to a potentially vulnerable labour situation: "… given domestic workers' precarious economic and (often) immigration status, many workers would minimize the problems they encountered" (Hanely et al. 2010: 430–31).

SAFETY IN HOMES AND ON THE ROAD: LOCAL MOBILITY AND OCCUPATIONAL AND HEALTH SAFETY

ERGM-related occupational health and safety concerns for healthcare workers arise particularly in home care. Fitzpatrick and Neis (2015) note that musculoskeletal disorders, the potential for facing violence and abuse (verbal, physical or sexual), and exposure to communicable diseases and allergens are common. They draw attention to how "[v]iolence in these workplaces is under-reported, and is often tolerated by workers when the clients have dementia" (Fitzpatrick and Neis 2015: 49).

In the *Occupational Health and Safety Act*, Section 82.15 exempts "employers with multiple temporary workplaces" from conducting violence risk assessments at each individual workplace if an assessment and prevention plan covering all "similar workplaces" is drawn up and "takes into account the circumstances and interactions that an employee is likely to encounter in the performance of their work" (NS Legislature 2015). Employers of home care providers would fall into this category.

Lippel and Walters (2014) have examined occupational health and safety policy challenges in different "facets" of mobile workers' lives, such as "getting to work" (p. 6). They note the health and safety challenges in getting to work by car, including "the quality and maintenance of vehicles, the road conditions, the abilities of the driver, and the challenges of the road for particular workers" (p. 6). They argue that there are regulatory gaps in each of these areas and there is a need for regulations. They suggest that there are "a broad range of mobile workers" who are "invisible to regulators and, to some extent, to unions," (p. 86) such that there is a lack of adequate regulation and health and safety concerns.

Discussion

The four policy contexts noted above indicate a lack of congruence and critical blind spots, findings supported in the broader health workforce literature (Bourgeault et al. 2014). This may arise from the fact that policies are often developed in different policy communities (international, interprovincial, provincial and the workplace), and there may be little or no knowledge concerning the impact on mobile health workers.

In international migration, cross-border mobility has long-reaching impact on the worker's residence, labour protection rights, and occupational health and safety. Credential recognition affects both international and interprovincial mobile healthcare workers. Federal arrangements that are put in place to facilitate interprovincial mobility do not require mandatory compliance, leaving provinces to develop their own monitoring mechanisms. Consequently, no measures are in place to ensure these mechanisms operate consistently.

In regards to the workplace and occupational health and safety, regular ERGM conducted by healthcare workers raises a number of issues that various policies address in a haphazard or arbitrary manner. For unionized workers, some protections are afforded by their collective agreements, however, for non-unionized workers, the conditions of their mobility are governed by private contracts.

These concerns are situated within a burgeoning literature exploring the unique features, challenges and concerns regarding ERGM. Given that the demographic and policy trends affecting ERGM in Nova Scotia have not significantly changed since the original research was conducted, we suggest our findings have continued relevance. Our research highlights the need for a more comprehensive, consistent and inter-sectoral set of governance mechanisms for ERGM of healthcare workers, by identifying points at which current practice places responsibility on individuals that would be better placed on institutions. For example, mobile employees carry disproportionate responsibility for occupational safety when driving or at remote settings. Inconsistencies across employers and across jurisdictions serve to aggravate that imbalance by introducing greater uncertainty for employees. Consistent policies would help to sustain a mobile workforce while reducing undue strain on individual employees regarding their mobility along the spectrum of ERGM. We call for congruence between policies to encourage greater harmonization across jurisdictions. Comprehensive and consistent policies and processes are needed to address the many challenges confronting mobile health workers and to support them to meet both the health system demands and the health needs of the population.

Notes

1. This time frame reflects the first phase of the SSHRC-funded project "On The Move: ERGM in the Canadian Context." During this phase, the research team gathered information to provide some understanding and background of policies influencing ERGM among Nova Scotia healthcare workers. A version of this paper was presented at the Annual Canadian Sociology Association, Ottawa, June 6, 2015, and subsequently revised for the current 'Discussion and Debate' paper.
2. A full list of the databases maintained by Dalhousie Libraries, where the keyword searches took place, can be found at http://dal.ca.libguides.com/az.php.
3. A draft Act for a new nursing regulator combining these two colleges was submitted to government on February 12, 2018 (https://crnns.ca/about-crnns/creation-of-one-nursing-regulator-in-ns/).

Acknowledgements

The *On the Move Partnership: Employment-Related Geographical Mobility in the Canadian Context* is a project of the SafetyNet Centre for Occupational Health & Safety Research at Memorial University. On the Move is supported by the Social Sciences and Humanities Research Council through its Partnership Grants funding opportunity (appl. ID 895-2011-1019), the Research and Development Corporation of Newfoundland and Labrador, the Canada Foundation for Innovation, and numerous university and community partners in Canada and elsewhere. The authors would also like to acknowledge funding provided by Canadian Institutes of Health Research Institute of Gender and Health Research Chair in Gender, Work and Health Human Resources.

Correspondence may be directed to: Shiva Nourpanah, Department of Sociology and Social Anthropology, Dalhousie University, Halifax, NS; e-mail: shiva.nourpanah@gmail.com

References

Bourgeault, I., C. Demers, Y. James and E. Bray. 2014. *The Need for a Pan-Canadian Health Human Resources Strategy*. Conference White Paper – Working Drafts. Retrieved October 15, 2018. <https://smith.queensu.ca/insight/system/files/2014-WhitePaper-Bourgeault.pdf>.

Canadian Institute for Health Information (CIHI). 2007. Distribution and Internal Migration of Canada's Physician Workforce. Ottawa, ON: Author. Retrieved November 12, 2018. <https://secure.cihi.ca/free_products/2007_phys_EN_web.pdf>.

College of Licensed Practical Nurses Nova Scotia (CLPNNS). 2017. Annual Reports 2016. Retrieved May 15, 2018. <http://clpnns.ca/wp-content/uploads/2015/09/2016-Annual-Report.pdf>.

Cresswell, T., S. Dorow and S. Roseman. 2016. "Putting Mobility Theory to Work: Conceptualizing Employment-Related Geographical Mobility." *Environment and Planning A: Economy and Space* 48(9): 1787–1803.

Fitzpatrick, K. and B. Neis. 2015. "On the Move and Working Alone: Policies and Experiences of Unionized Newfoundland Home Care Workers." *Policy and Practice in Health and Safety* 13(2): 47–67.

Goldring, L. and P. Landolt. 2013. *Producing and Negotiating Non-Citizenship: Precarious Legal Status in Canada*. Toronto: University of Toronto Press.

Government of Canada. 2016. "Annual Labour Market Impact Assessment Statistics 2007–2014." Retrieved October 27, 2016. <http://www.esdc.gc.ca/en/reports/foreign_workers/2014/lmia_annual_statistics/skill_type.page?#ns>.

Green, A. 2004. "Is Relocation Redundant? Observations on the Changing Nature and Impacts of Employment-Related Geographical Mobility in the UK." *Regional Studies* 38(6): 629–41.

Grinspun, D. 2003. "Part-Time and Casual Nursing Work: The Perils of Healthcare Restructuring." *International Journal of Sociology and Social Policy* 23: 54–80.

Haan, M., D. Walsh and B. Neis. 2014. "At the Crossroads: Geography, Gender and Occupational Sector in Employment-Related Geographical Mobility." *Canadian Studies in Population* 41(3–4): 6–21.

Hanley, J., S. Premji, K. Messing and K. Lippel. 2010. "Action Research for the Health and Safety of Domestic Workers in Montreal: Using Numbers to Tell Stories and Effect Change." *New Solutions: A Journal of Environmental and Occupational Health Policy* 20(4): 421–39.

Kingma, M. 2006. *Nurses on the Move: Migration and the Global Health Care Economy*. Ithaca, NY: ILR Press.

Lippel, K. and D. Walters. 2014. Employment-Related Geographic Mobility and Occupational Health and Safety Policy. (Draft Report).

MacMillan, K. 2013. "Not Dead Yet: The Spectre of Nursing Human Resource Shortages." *Nursing Leadership* 26: 1–4.

McGillis Hall, L., J. Peterson, S. Price, M. Lalonde and S. Macdonald-Rencz. 2013. "Stemming the Flow of Canadian Nurse Migration to the US." N*ursing Leadership* 26: 8–19.

Nova Scotia Legislature. 1990. *Co-ordinated Homecare Act*. Retrieved November 22, 2016. <http://nslegislature.ca/legc/statutes/coordhc.htm>.

Nova Scotia Legislature. 2015. *Violence in the Workplace Regulations*. Retrieved November 3, 2016. <https://www.novascotia.ca/just/regulations/regs/ohsviolence.htm>.

Organization for Economic Cooperation and Development (OECD) and World Health Organization (WHO). 2010. *International Migration of Health Workers*. Retrieved Nomvember 22, 2016. <http://www.who.int/hrh/resources/oecd-who_policy_brief_en.pdf>.

Organization for Economic Cooperation and Development (OECD). 2008. *The Looming Crisis in the Health Workforce*. Retrieved Novmeber 22, 2016. <http://www.who.int/hrh/migration/looming_crisis_health_workforce.pdf>.

Province of Nova Scotia. 2013a. *Fair Registration Practices*. Retrieved May 2, 2016. <http://novascotia.ca/lae/rpllabourmobility/frp.asp>.

Province of Nova Scotia. 2013b. *Labour Mobility*. Retrieved May 2, 2016. <https://novascotia.ca/lae/RplLabourMobility/LM.asp>.

Roseman, S.R., P.G. Barber and B. Neis. 2015. "Towards a Feminist Political Economy Framework for Analyzing Employment-Related Geographical Mobility." *Studies in Political Economy* 95(1): 175–203. doi: 10.1080/19187033.2015.11674951.

Sikka, A., K. Lippel and J. Hanley. 2011. "Access to Health Care and Workers' Compensation for Precarious Migrants in Quebec, Ontario and New Brunswick." *McGill JL & Health* 5: 203.

Tutton, M. 2008 (June 23). "Lost Generation? Exodus of Youth Presents 'Scary' Challenge on Aging East Coast." *The Canadian Press*. Retrieved May 2, 2016. <http://forum.skyscraperpage.com/showthread.php?t=153190>.

Valiani, S. 2012. *Rethinking Unequal Exchange: The Global Integration of Nursing Labour Markets*. Toronto, ON: University of Toronto Press.

Understanding the Allocation of Caesarean Outcome to Provider Type: A Chart Review

Comprendre la répartition des résultats de césariennes en fonction du type de dispensateur de services : examen des dossiers

KELLIE THIESSEN, RM, RN, PHD
Director, Midwifery Program (University of Manitoba/McMaster University)
Assistant Professor, College of Nursing, Rady Faculty of Health Sciences
University of Manitoba
Winnipeg, MB

NATHAN NICKEL, MPH, PHD
Assistant Professor, Manitoba Centre for Health Policy
Max Rady College of Medicine, Rady Faculty of Health Sciences
University of Manitoba
Winnipeg, MB

HEATHER J. PRIOR, MSC
Manitoba Centre for Health Policy
Max Rady College of Medicine, Rady Faculty of Health Sciences
University of Manitoba
Winnipeg, MB

MARGARET MORRIS, MD, FRCSC, MED
Professor, Department of Obstetrics, Gynecology and Reproductive Science
University of Manitoba
Health Sciences Centre, Women's Hospital
Winnipeg, MB

KRISTINE ROBINSON, BSCN, RM, MSC
Winnipeg Regional Health Authority
Winnipeg, MB

Abstract

Introduction: The concept, "most responsible provider" has a specific definition in the Canadian National Discharge Abstract Database (DAD). Variation exists in how care providers are defined in administrative data.
Methods: We compared chart data with administrative data to understand how "most responsible provider" was identified in these two data sources.
Results: We found a 3% discrepancy between data sources. Differences between data sources were attributable to transfers in care that occurred at birth.
Discussion: "Most responsible provider" should consider the full trajectory of care when assigning outcomes in order to understand how to best support optimal health among low-risk births.

Résumé

Introduction : La définition du concept de « dispensateur principal » est précisée dans la Base de données sur les congés des patients (BDCP). Or, il existe certaines variations quant à la façon de définir les dispensateurs de services de santé dans les données administratives.
Méthode : Nous avons comparé les données des dossiers aux données administratives pour comprendre comment le dispensateur est désigné dans ces deux sources de données.
Résultats : Nous avons observé une divergence de 3 % entre les sources de données. Ces différences sont imputables aux transferts des soins qui ont lieux lors des naissances.
Discussion : La notion de « dispensateur principal » doit tenir compte de l'ensemble de la trajectoire des soins au moment d'assigner les résultats, et ce, afin de comprendre la façon d'optimiser la santé dans les cas de naissances à faible risque.

Introduction

The concept of "most responsible provider" (MRP) is a data description, defined in the Canadian National Discharge Abstract Database (DAD) as: "The most responsible provider … a physician or other provider (i.e., midwife) who is responsible for the care/treatment of the patient for the majority of visits in healthcare facilities (p. 192)" (CIHI 2017). MRP is assigned based on the point of care in these acute care facilities, which are typically hospitals. The data element of MRP in the DAD is standard for reporting, however, researchers have defined MRP in studies differently (Aubrey-Bassler et al. 2015).

The majority of maternity outcome studies use administrative data to answer research questions (Birthplace in England Collaborative Group 2011; Heaman et al. 2012; Hutton et al. 2009; Thiessen et al. 2016). While administrative data are reliable and inform trends in population health (Harvey et al. 1996; Janssen et al. 2007, 2009), there are limitations such as incomplete data or coding discrepancies/disagreements (MCHP 2017). Additionally, based on availability of the data, it may not be possible to fully understand all processes

preceding interventions such as availability of technology, level of provider's skill or style, out of hospital birth, and philosophy of practice (Baruffi et al. 1990; Janssen et al. 2007).

Most perinatal outcomes studies only consider outcomes around the time of birth (Birthplace in England Collaborative Group 2011; Harvey et al. 1996; Janssen et al. 2007; Janssen et al. 2009; Sword et al. 2015; Thiessen et al. 2016). In order to understand differences in models of care, we believe prenatal care should be considered. Prenatal care has been shown to impact outcomes, and the quality of prenatal care has been shown to be a significant factor in perinatal health (Sword et al. 2012, 2015).

The results from our pilot study (Thiessen et al. 2016) whereby the DAD definition of MRP was used to allocate MRP to outcomes, demonstrated that midwives had a 1.7% Caesarean section rate, which was low compared to rates in literature (Birthplace in England Collaborative Group 2011; Harvey et al. 1996; Janssen et al. 2007, 2009). We wanted to investigate any potential discrepancy between chart data and administrative data. Therefore, the objective of this study was to understand if the primary outcome of Caesarean section, in our pilot study, was misallocated to the MRP. Our two research questions were: 1) How does the assignment of MRP differ between chart data and administrative data reports; 2) What percentage of Caesarean sections were incorrectly allocated?

Methods

This is a descriptive study. We conducted a retrospective chart review to understand how provider type had been assigned the outcome of Caesarean section. We randomly selected Caesarean section cases from the cohort in the administrative data from our pilot study (Thiessen et al. 2016) and matched them to their prospective charts in each facility to understand how provider type was allocated to the Caesarean section outcome. In cases where the administrative data disagreed with the chart data, we were interested in understanding variables around each case that might have influenced how the outcomes were allocated.

Inclusion Criteria

COHORT DEFINED

We used these defined low-risk (College of Midwives of Manitoba 2011; Health Sciences Centre 2014; Janssen et al. 2009; St. Boniface General Hospital n.d.) cases from our administrative data and linked them to their charts.

MATERNITY PROVIDER TYPES IN MANITOBA

In Manitoba, midwives and general/family practice physicians consult with and transfer to obstetricians when indicated. Obstetricians do the majority of maternity care and exepct for rural areas (general/family practice and general surgeons responsible for Caesarean sections), are responsible for the majority of Caesarean sections. Midwives are responsible for low-risk women and do not perform surgical procedures.

Primary Outcome of Interest

Our primary outcome of interest was the allocation of provider type to the Caesarean section outcome by the two major tertiary care centres responsible for all the hospital deliveries in the Winnipeg Regional Health Authority (WRHA) of Manitoba. We reviewed charts from 2004/05 to 2012/13. During this time period, there were a total of 132,918 births in Manitoba. Of those births, 47,083 were identified as high risk (35%) and 85,835 (65%) were identified as low risk. The total number of Caesarean sections from the low-risk birth cohort during this time frame for the two urban tertiary care centres was: Facility 1 (n=3,563) and Facility 2 (n=4,158).

Data Collection

ADMINISTRATIVE DATA AND DEFINITION OF VARIABLES

Caesarean section data came from the low-risk cohort of women from our previous pilot study (Thiessen et al. 2016). The data came from three databases housed in the Population Research Data Repository (MCHP 2017). The hospital abstract database in the Manitoba Population Research Data Repository at MCHP codes provider type as follows: 1) Specialty of provider who actually delivers the baby; 2) Specialty of attending provider; and 3) Specialty of MRP, i.e., the physician responsible for the primary (most responsible) patient service that reflects the definition for MRP as delineated in the national DAD. Therefore, in the administrative data cases, the provider most responsible for the primary (most responsible) patient service at birth was attributed to the outcome of interest.

CHART REVIEW DATA AND DEFINITION OF VARIABLES

To gain an understanding of how the outcome of Caesarean section was attributed to the MRP type in the chart data, we abstracted: provider type (before birth, at birth, at discharge, and for prenatal care), mode of delivery (Caesarean section), gestation at first prenatal visit and at transfer of care, transfer of care, and reason for transfer of care.

The chart reviews took place at two urban tertiary care centres in Winnipeg, Manitoba. During our study time frame, there were only 35 Caesarean sections allocated to midwives between both facilities. We included all midwifery Caesarean cases. We formed a matched-comparison group using a 3:1 (family practice) and 5:1 (OB/GYN) matching ratio. Comparisons were matched by month of birth and birth facility. A chart audit tool was devised and piloted by the research team prior to commencing the full chart review study.

A discrepant case in our study was then defined as a case where the provider type was allocated to a Caesarean section in the chart data, but that same case differed with how provider type was allocated to Caesarean in the administrative database. In summary, discrepant cases occurred when the chart disagreed with the administrative database.

Analysis

After linking the chart review data with the administrative data cases at the MCHP, we performed descriptive statistics to identify what proportion of these cases differed between data sources in how the MRP type was allocated to the outcome of Caesarean section. We used the kappa statistic to measure the agreement for categorical (grouped) data. The kappa looks for agreement across the diagonal of the table and will return a high score if there is high agreement between the two variables (McHugh 2012). We identified the proportion of cases for each provider type – midwife, family physician, and obstetrician. We calculated the proportion of discrepant cases for each provider-type at each point during the birth process. Chi-square tests were done to analyze the agreement by provider type (Y/N) and Facility (1 and 2). All analyses used an *a priori* statistical significance level of $p<0.05$ and were conducted using SAS 9.4.

Ethics

All research assistants involved in the chart review completed the orientation and signed the *Personal Health Information Act* pledge. Ethics approval was obtained from the University of Manitoba Health Research Ethics Board (HS 19004 [H2015:382]). A research agreement was obtained to access Manitoba information at the MCHP. Approvals were obtained from both the Impact Committee from tertiary care centre number one (RI2015:154) and from the Review Committee of tertiary care centre number two (RRC/2015/1519). Finally, approval was obtained from the Manitoba Health Information Privacy Committee (2015/2016-54).

Results

We reviewed a total of 315 charts from tertiary care centre number one (n=153) and tertiary care centre number two (n=162) (See Table 1).

Inter-Rater Reliability

To ensure consistency among chart reviewers, we randomly selected 10% of the charts in our study sample to examine the reproducibility of extracting the data elements by independent reviewers. The review was independently completed by the two trained research assistants who also completed the overall chart review. Between the two trained research assistant reviewers, we measured the inter-rater reliability (IRR) with all data elements included on the chart audit tool using the percent level of agreement (McHugh 2012). The IRR, as measured by percent agreement, was initially 77.4% for mode of delivery and 67.7% for healthcare provider type at birth. We learned that some family practice physicians have obstetrical training and are coded as obstetricians. We were able to identify all these cases. After review and revision of the chart audit methods and tool, the data that were extracted from all charts included in the study and the percent level of agreement on all variables was 100%.

Table 1 describes the percentage of agreement between the MRP type in the chart data and the administrative data. For example, when an OB/GYN was identified as the MRP for

the provider at birth in the administrative data, there was 100% agreement with the chart review data.

TABLE 1. Low-risk cohort Caesarean sections by facility: data collection facility 1 & 2. Time period: 2004/05 to 2012/13

	Total Caesarean sections (n)	Matched	Total # charts for review
Tertiary care centre 1			
OB/GYN	3,461	5:1	85
FP	85	3:1	51
MW	17		
Total [tertiary care centre 1]			**153**
Tertiary care centre 2			
OB/GYN	3,897	5:1	90
FP	243	3:1	54
MW	18		
Total [tertiary care centre 2]			**162**
TOTAL # charts for review			**315**

TABLE 2. Agreement of provider assignment between administrative data and chart review data (combined facilities)

MRP administrative data	Chart review data	Percent agreement (%)	Kappa (95% CI)
OB/GYN	Provider at birth	100	0.026 (-0.003, 0.054)
FP	Provider at birth	s*	
MW	Provider at birth	0**	
OB/GYN	Provider at discharge	98.27	0.947 (0.912, 0.981)
FP	Provider at discharge	94.68	
MW	Provider at discharge	97.14	
OB/GYN	Provider at birth	99.43	0.965 (0.937, 0.993)
FP	Provider at birth	96.91	
MW	Provider at birth	94.12	
OB/GYN	Provider of prenatal care	92.68	0.904 (0.858, 0.950)
FP	Provider of prenatal care	97.80	
MW	Provider of prenatal care	94.29	

*"s" denotes suppressed values for confidentiality reasons. Note that missing chart review data were not included in percent agreement calculations; percentages may not reflect total sample size.

**Midwives do not perform Caesarean sections, therefore, this value was 0.

In 11 cases, we noted misalignment between the chart review data and the administrative data. In these cases, for example, at the time of birth, the chart data showed a different MRP than the administrative data. It was interesting to note, however, that for each of these cases (n=11) where this misalignment occurred, the provider prior to birth had at least 5 or more prenatal care visits. Reasons for transfer are summarized in Table 2.

Discussion

Our findings revealed a total of 11 cases where obstetricians were assigned a Caesarean section in the administrative data when, in fact, the chart data revealed they had not been responsible for the prenatal care for that client. Among those 11 cases, 10 were transfers of care that continued to code OB/GYN as MRP after transfer, in spite of the fact that the majority of the overall care was done by another provider.

In the misallocated cases, we discovered greater than 2/3 of the prenatal visits (>5 prenatal visits) were done by the provider at birth. Provider type for the majority of prenatal care has implications beyond the DAD definition of MRP (CIHI 2017) and evidence supports this (Heaman et al. 2012). Prenatal care is considered a preventive health service that impacts the health outcomes of women and infants (Heaman et al. 2014). The MRP type definition should consider the provider responsible for the majority of prenatal care, as well.

It is also noteworthy that elective Caesarean section cases were allocated to OB/GYN when in fact they had been cared for by either a midwife or family physician prenatally.

While we matched a small random sample from our larger cohort study, these findings have implications for clinical practice, including an increased understanding of how we might provide more clarity around roles of providers. It is important to consider which provider had the majority of the prenatal care when assigning MRP since this will influence the study results.

Our results provide a heightened awareness regarding transfer of care and the misallocation of provider type, and of the need for more clarity and consistency in this process.

Limitations

Factors that lead to misallocation of provider type in the administrative data may also be related to birth outcomes. However, given the low rate of misalignment, this is likely a minor concern.

Limitations of our study include time and financial constraints. Due to time and financial constraints, we could not fully execute a validation study. Additionally, the DAD does not include out of hospital birth data, which limits further understanding of full scope midwifery practice. Another limitation is that there could have been data entry error during the abstraction and/or re-abstraction process; however, data abstractors at the two institutions go through a 2-year training and the administrative data have been extensively validated in

numerous studies. We also used two re-abstractors with high inter-rater agreement between them; thus, we think this limitation poses minimal threats to our study.

Summary

There was approximately a 3% discrepancy in allocating a Caesarean section to obstetricians in our sample. It is important to consider which provider had the majority of the prenatal care. As policy makers consider health workforce planning, understanding who is providing care at what point is important in planning care teams for health delivery services. Therefore, understanding the details of how providers are allocated to outcomes in population health studies is essential in understanding the roles each profession has in meeting the needs of population health. Otherwise, data discrepancy misleads decision-makers about the contribution of each healthcare professional involved in care delivery.

Examples exist of validation studies that use the DAD to understand coding with hospital databases (Heaman et al. 2012; McHugh 2012) and linkage of census data to the DAD (Heaman et al. 2014). To date, there are no validation studies that analyze MRP assignment based on the DAD and hospital charts. Our next step involves using a large sample size to triangulate three data sources (MCHP 2017) to determine a "gold standard dataset" to maximize the probability of any one outcome occurring by the MRP and to evaluate the completeness of the data in each source (Sword et al 2012). Assigning the MRP to outcomes is potentially misleading if limitations aren't highlighted regarding the definition and its usage in any given study.

Acknowledgements

The authors acknowledge the Manitoba Centre for Health Policy for the use of data contained in the Population Health Research Data Repository under project #2016-002 (HIPC#2015/2016-54). The results and conclusions are those of the authors and no official endorsement by the Manitoba Centre for Health Policy, Manitoba Health, Healthy Living, and Seniors, or other data providers is intended or should be inferred. This study was funded by the University Start-up Funds for New Faculty at the University of Manitoba.

Correspondence may be directed to: Dr. Kellie Thiessen, College of Nursing, Rady Faculty of Health Sciences, University of Manitoba, 89 Curry Place, Winnipeg, MB R3T 2N2; tel.: 204-474-6684; e-mail: Kellie.thiessen@umanitoba.ca.

References

Aubrey-Bassler, K., R. Cullen, A. Simms, S. Asghari, J. Crane, P. Wang and M. Godwin. 2015. "Outcomes of Deliveries by Family Physicians or Obstetricians: A Population-Based Cohort Study Using an Instrumental Variable." *Canadian Medical Association Journal* 187(15): 1125–32. doi: http://doi.org/10.1503/cmaj.14163.3

Baruffi, G., D.M. Strobino and L.L. Paine. 1990. "Investigation of Institutional Differences in Primary Caesarean Birth Rates." *Journal of Nurse-Midwifery* 35(5): 274–81.

Birthplace in England Collaborative Group. 2011. "Perinatal and Maternal Outcomes by Planned Place of Birth for Health Women with Low Risk Pregnancies: The Birthplace in England National Prospective Cohort Study." *BMJ* 343: 1–13. doi10.1136/bmj.d740.0

Canadian Institute for Health Information (CIHI). 2017. "DAD Abstracting Manual." Retrieved February 22, 2017. <https://secure.cihi.ca/estore/productSeries.htm?pc=PCC7>.

College of Midwives of Manitoba (CMM). 2011. *Standard for Out of Hospital (OOH) Birth*. Retrieved June 30, 2018. <http://midwives.mb.ca/policies_and_standards/8%20Standard%20for%20Planned%20Out%20of%20Hospital%20Birth.pdf>.

Harvey, S., J. Jarrell, R. Brant, C. Stainton and D. Rach. 1996. "A Randomized, Controlled Trial of Nurse-Midwifery Care." *Birth* 23(3): 128–35.

Health Sciences Centre. 2014. "Practice Guidelines Women's Health Program." *Obstetrics: Perinatal Bed Utilization*. Section 80.275.010.

Heaman, M., D. Kingston, M.E. Helewa, M. Brownell, S. Derksen, B. Bogdanovic et al. 2012. "Perinatal Services and Outcomes in Manitoba." Retrieved February 20, 2017. <http://mchp-appserv.cpe.umanitoba.ca/reference/perinatal_report_WEB.pdf>.

Heaman, M., M. Moffatt, L. Elliot, W. Sword, M.E. Helewa, H. Morris et al. 2014. "Barriers, Motivators and Facilitators Related to Prenatal Care Utilization among Inner-City Women in Winnipeg, Canada: A Case-Control Study." *BMC Pregnancy and Childbirth* 14: 227. doi.org/10.1186/1471-2393-14-227.

Hutton, E.K., A.H. Reitsma and K. Kaufman. 2009. "Outcomes Associated with Planned Home and Planned Hospital Births in Low-Risk Women Attended by Midwives in Ontario, Canada, 2003-2006." *Birth* 35(3): 180–09. doi: 10.1111/j.1523-536X.2009.00322.x

Janssen, P.A., E.M. Ryan, D.J. Etches, M.C. Klein and B. Reime. 2007. "Outcomes of Planned Hospital Birth Attended by Midwives Compared with Physicians in British Columbia." *Birth* 34(2): 140–07.

Janssen, P.A., L. Saxell, L.A. Page, M.C. Klein, R.M. Liston and S.K. Lee. 2009. "Outcomes of Planned Home Birth with Registered Midwife versus Planned Hospital Birth with Midwife or Physician." *Canadian Medical Association Journal* 181(6–7): 377–83. doi: 10.1503/cmaj.081869.

Manitoba Centre for Health Policy (MCHP). 2017. "Population Health Research Data Repository." Retrieved June 6, 2018. <http://umanitoba.ca/faculties/health_sciences/medicine/units/chs/departmental_units/mchp/resources/repository/datalist.html>.

McHugh, M.L. 2012. "Interrater Reliability: The Kappa Statistic." *Biochem Med* (Zagreb) 22(3): 276–82.

St. Boniface General Hospital, LDRP Unit. (n.d.) *Guideline for Admission to the SBGH LDRP Unit*.

Sword, W., M. Heaman, M.A. Biro, C. Homer, J. Yelland, N. Akhtar-Danesh and A. Bradford-Janke. 2015. "Quality of Prenatal Care Questionnaire: Psychometric Testing in an Australia Population." *BMC Pregnancy and Childbirth* 15: 214. doi: 10.1186/s12884-015-0644-7.

Sword, W., M. Heaman, S. Brooks, S. Tough, P. Janssen, D. Young et al. 2012. "Women's and Care Providers' Perspectives of Quality Prenatal Care: A Qualitative Descriptive Study." *BMC Pregnancy and Childbirth* 12: 29. doi: https://doi.org/10.1186/1471-2393-12-2.9.

Thiessen, K., N. Nickel, H. Prior, A. Banerjee, M. Morris and K. Robinson. 2016. "Maternity Outcomes in Manitoba Women: A Comparison between Midwifery-Led Care & Physician-Led Care at Birth." *Birth* 43(2): 108–15.

Will the Real Physician Retirees Please Stand Up?

Que le vrai médecin retraité se lève !

LINDSAY HEDDEN, PHD
Centre for Clinical Epidemiology and Evaluation
Research Pavilion, Vancouver General Hospital
Vancouver, BC

M. RUTH LAVERGNE, PHD
Faculty of Health Sciences
Simon Fraser University
Burnaby, BC

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

MICHAEL R. LAW, PHD
Centre for Health Services and Policy Research
University of British Columbia
Vancouver, BC

LUCY CHENG, MSC
Centre for Health Services and Policy Research,
University of British Columbia
Vancouver, BC

MEGAN A. AHUJA, MPH
Centre for Health Services and Policy Research
University of British Columbia
Vancouver, BC

MORRIS L. BARER, PHD
Centre for Health Services and Policy Research
University of British Columbia
Vancouver, BC

Abstract

Policy makers and health workforce planners rely on counts of practice licences as a measure of the size of the active physician workforce. We use a population-based approach to correlate estimates of retirement from clinical care based on these data with those produced using physician payment data. We find that licensure data generates per-capita estimates of physician supply in British Columbia that are substantially higher than activity-based estimates. Licensure data are unlikely to produce reliable estimates of the timing and extent of physician retirement and therefore should not be used as the primary basis for estimating current or future physician supply.

Résumé

Les responsables de politiques et les planificateurs de la main-d'œuvre en santé comptent sur les permis d'exercice pour mesurer l'effectif de la main-d'œuvre chez les médecins. Nous avons employé une démarche axée sur la population afin de calculer la corrélation entre l'estimation des retraites dans les soins cliniques en fonction de ces données et de l'estimation effectuée au moyen des données sur la rémunération des médecins. Nous avons observé que les données concernant les permis donnent lieu, en Colombie-Britannique, à des estimations du nombre de médecins par personne substantiellement plus élevées que celles qui se fondent sur l'activité. Les données concernant les permis ne permettent probablement pas d'effectuer des estimations fiables quant au moment de la retraite et à son étendue. Ces données ne devraient donc pas être employées comme source première pour estimer le nombre de médecins actuel ou à venir.

Introduction

Estimates of current and future physician supply depend in part on accurate information on retirements. This is particularly important given that a sizable cohort of physicians is rapidly approaching normal retirement age (Hedden et al. 2017; Pong et al. 2007). Underestimating numbers or rates of retirement could lead to or exacerbate service shortages, while overestimating them could lead to the reverse. Retirement data are also deployed in policy considerations regarding training capacity and therefore under- or overestimating retirements could affect the number of funded medical school positions and the number of new physicians entering practice.

Three sources of data can provide information on physician retirement patterns: retirement intention surveys; licensure information maintained by regulatory bodies; and payment (billings) data. Retirement intention surveys are limited by the usual concerns about self-report data and have been shown to have limited predictive accuracy (Pong 2011; Rittenhouse et al. 2004; Steel and Ovalle 1984; Tett and Meyer 1993). Policy makers and workforce planners typically rely heavily on data from physician licensing bodies to determine when a physician has ceased clinical practice. These data may underestimate retirements if physicians either choose to maintain active licenses beyond the time when they stop delivering care, or if they keep their licenses while substantially reducing their clinical activity prior to full retirement.

In this exploratory analysis, we sought to examine the concordance between retirement from clinical practice defined using licensure data and retirement defined using payment (activity) data based on a variety of "intensity" thresholds. We comment on the strengths and limitations of these approaches in identifying retired or retiring physicians.

Materials and Methods

Data Sources and Study Cohort

Physicians must have a license to practice medicine, which in Canada is granted through provincial and territorial regulatory authorities. The College of Physicians and Surgeons of British Columbia (CPSBC) licenses and maintains a register of physicians for BC. We used this registry to define a complete cohort of physicians for the years 2005/6–2011/12, and as our source of licensure information (CPSBC 2013).

To quantify levels of clinical activity, we used physician payment data for the same period (April 1, 2005 to March 31, 2012) from BC's Medical Services Plan (MSP) payment files (British Columbia Ministry of Health 2013b). These data capture all fee-for-service payments to all physicians who were practicing in BC during the period. We supplemented them with non-fee-for-service payment data from the Ministry of Health's Alternative Payment Program (APP) database, which is a record of all salaries, service contracts, sessional fees and other payments to physicians outside of the fee-for-service remuneration system (British Columbia Ministry of Health 2015a). Together these data encompass all clinical care payments to physicians within BC's publicly financed healthcare system. Care provided outside of the publicly financed system remains rare.

Our study cohort includes all physicians who were age 50+, had an active BC practice license at the beginning of the 2005/6 fiscal year, and who received any payment for clinical practice during at least one year of the study period.

Identifying Retirement from Clinical Practice

LICENSURE DATA

The CPSBC maintains a record of physicians' practice licenses; however, it does not currently maintain a separate licensure status that indicates retirement. Rather, retiring physicians cancel their provincial registration when they wish to cease practice. Prior to June 2009, physicians had the option of moving from full license to a "Retired Life" licensure category. This classification allowed them to maintain the ability to prescribe medicines (while no longer delivering clinical care) for up to three years following their retirement (CPSBC 2018). We identified retirement from clinical practice either as the date of cancellation of provincial registration, or the date of a move from an active license to the Retired Life category during the study period. We distinguished between retirement events that were temporary – i.e., cases where provincial registration was reinstated following any unlicensed or retired period – from those that were permanent.

ACTIVITY DATA

We selected three monthly threshold values ($0, $833 and $1,667), corresponding to total annual payments of $0, $10,000 (4% of average annual payments) and $20,000 (8% of average annual payments), to identify possible retirement events in the payments database. We selected these thresholds as they were used in another study of retirement patterns that used the same data sources (Hedden et al. 2017), and were shown to be robust, reflecting allowances for minimal clinical activity. In all three cases, a physician would be flagged as having retired from clinical practice if they fell below the threshold in a given month. We defined temporary retirements as periods of at least a single month of falling below a threshold, followed by return to months of higher billing. Permanent retirements were counted as occurring at the first month of falling below the $ threshold, with no subsequent month rising above that threshold. A physician may have no retirement, one or more temporary retirements, and/or one permanent retirement.

Analysis

For each retirement definition, we examined the number and timing of temporary and permanent retirement events observed over the study period overall, and by gender and specialty grouping. We produced correlations across all measures to examine the concordance of the licensure-based and activity-based definitions of retirement. We also examined the mean and distribution of age at the time of retirement according to each definition.

Results

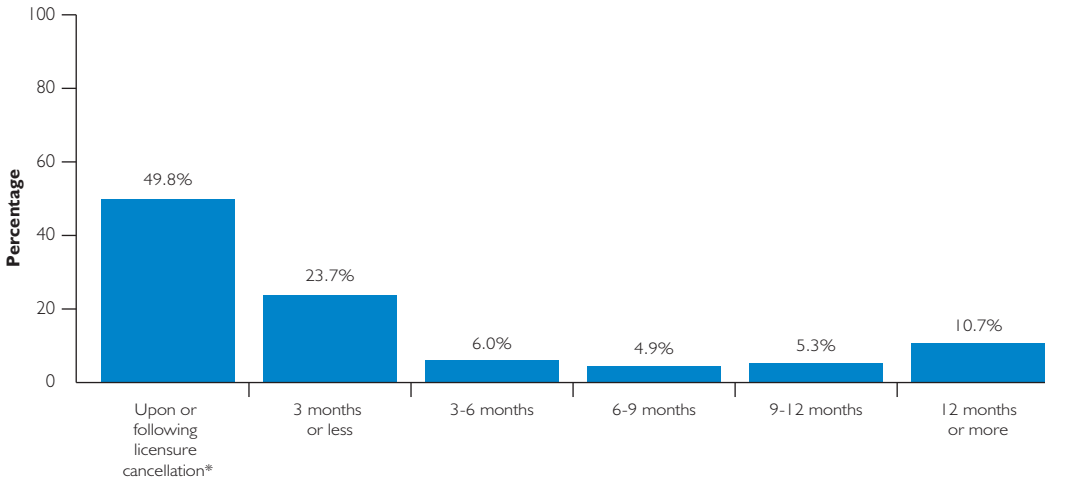
A total of 4,503 physicians met our inclusion criteria. There was substantial variability in the number of retirement events across the four definitions and between the two data sources (Table 1). Twelve hundred and fifty-four (27.8%), 1,413 (31.4%) and 1,549 (34.4%) physicians permanently retired according to the $0, $833 and $1,667 monthly billing thresholds, respectively. Over the same period, only 832 (18.5%) permanently retired according to the licensure-based definition. Four hundred and fifty-nine (10.2%), 660 (14.7%) and 747 (16.6%) fell below the three billing thresholds but subsequently returned to active practice, and 100 (2.2%) cancelled their licenses but subsequently reinstated them. The size of the differences between the retirement definitions was generally consistent for male and female physicians and across specialty groupings (Supplements 1 and 2 available online at www.longwoods.com/content.25688); however, temporary retirement was less common among lab and imaging, and medical specialists compared with general practitioners or surgical specialists. "Overall, the average age of permanent retirement within the licensure data was more than a full-year later than that implied using least restrictive billing threshold definition (66.9 compared to 65.5, respectively)."

TABLE 1. Retirement events

Retirement definition (data source)	Permanent retirement events (% of cohort)	Returned to active practice after temporary retirement (%)	Total retirement events (%)	Average age at retirement (SD)
Licensure-based (CPSBC registry)	832 (18.5)	100 (2.2)	932 (20.7)	66.9 (8.0)
$0 billings (MSP/APP)	1,254 (27.8)	459 (10.2)	1,713 (38.0)	66.2 (7.9)
$833/monthly billings (MSP/APP)	1,413 (31.4)	660 (14.7)	2,073 (46.0)	65.8 (7.8)
$1,667/monthly billings (MSP/APP)	1,549 (34.4)	747 (16.6)	2,296 (51.0)	65.5 (7.7)

Irrespective of eventual licensure cancellation, 970 (21.5%) and 727 (16.1%) physicians held an active practice license with no billing activity for six- and 12-months, respectively. Among those who retired permanently according to both the lowest billing threshold ($0) and the CPSBC licensure data, there is an average of 3.5 months (median: 0 months) between the cessation of billing and subsequent cancellation of license (Figure 1). Furthermore, while the payment data showed that resumption of clinical activity after an inactive period was common, reinstatement of a provincial license following an unlicensed period was less frequent.

FIGURE 1. Months between cessation of billing activity and cancellation of provincial license to practice



*Billings appearing after cancellation of licensure are likely a result of retroactive payments reflecting fee increases that are applied to previous fiscal years

Correlation Between Retirement Definitions

Correlations between the permanent payment threshold-based retirements and those based on the CPSBC licensure status ranged from 0.64 to 0.74 (Table 2). The correlation was lower if temporary and permanent retirements were considered together, ranging from 0.48–0.61 between licensure- and payment-based definitions. The lower correlations reflect many more physicians moving back and forth between active and retired according to the payment compared to licensure data.

TABLE 2. Correlation between definitions of retirement[1]

	Licensure-based (CPSBC registry)	$0 billings (MSP/APP)	$833/monthly billings (MSP/APP)	$1,667/monthly billings (MSP/APP)
Correlation for *permanent* retirement events				
Licensure-based (CPSBC registry)	1	0.7433	0.6867	0.6442
$0 billings (MSP/APP)		1	0.9187	0.8579
$833/monthly billings (MSP/APP)			1	0.9338
$1,667/monthly billings (MSP/APP)				1
Correlation for *any* retirement events[2]				
Licensure-based (CPSBC registry)	1	0.6113	0.5245	0.4844
$0 billings (MSP/APP)		1	0.8484	0.7682
$833/monthly billings (MSP/APP)			1	0.9055
$1,667/monthly billings (MSP/APP)				1

1. We computed kappa scores as an alternative measure of correlation and they were consistent with the r^2 values reported here
2. Includes individuals who retired (dropped below billing thresholds or turned in their practice licenses) but subsequently returned to active practice

Discussion

Accurately identifying when physicians retire from clinical practice is critical to the measurement of current, and prediction of future, physician supply. Existing evidence using payment data to examine patterns of retirement among physicians suggest that more than 40% of physicians reduce their clinical activity levels by 10% or more in the three years preceding retirement, and while there is no difference in age of retirement by specialty group, women and physicians working in rural areas tend to retire earlier (Hedden et al. 2017). In this study, we found that the measurement of the extent and timing of retirement is also critically dependent both on data source and the definition of retirement used. Retirement events are less common and more likely to be permanent when measured using licensure data than payment data.

The lack of agreement between these data sources is driven by the number of physicians who ceased or severely limited their clinical activity, while still maintaining an active license for an extended period. One reason for this disparity is that physicians may limit or cease delivering clinical care and therefore submit little or no clinical billings, but may choose to maintain an active license for the purposes of teaching or research. We identified nearly twice as many physician retirements using the $20,000 annual billing threshold compared to the licensure data. Furthermore, we identified 727 physicians who received no clinical service payments for at least one year, while still holding an active license. Based on the physician counts provided by the Canadian Institute for Health Information, this corresponds to a 7.1% overestimate of the size of the active workforce in BC (CIHI 2012).

In order to retain a license and to maintain "currency" in clinical practice, the CPSBC asks that physicians self-report (on an annual basis) that they have practiced for 24 weeks (960 hours) within the preceding three years (CPSBC 2010). Thus, physicians could cease clinical care for more than two years and still be in compliance with College licensing regulations. Furthermore, physician self-reports are not checked by the College against payment data to ensure accuracy of recall. This policy could introduce a substantial overestimate in the size of the active physician cohort if licensure data (whose primary purpose is just that) are used as a primary source for health human resources planning.

The provincial Ministry of Health – charged with setting medical school enrollment and residency slot caps – should base estimates of physician retirement on clinical care delivery data generated through their own payment systems.

Conclusion

We found lower correlations between payment- and licensure-based measures of retirement than between different payment-based measures, chiefly due to a substantial number of physicians maintaining an active license while providing limited or no patient care. Most physicians maintain a period of limited billing before cancelling their licenses. Licensure data appear unlikely to produce reliable estimates of physician retirement and should not be used as the sole (or primary) measure of current physician supply, or as a robust source of data for forecasting future physician supply. The use of these data to generate per-capita estimates of physician supply is likely to generate overestimates of the size of the active physician workforce.

Acknowledgements

All inferences, opinions and conclusions drawn in this manuscript are those of the authors, and do not reflect the opinions or policies of the Data Stewards. We obtained ethics approval for this study from the University of British Columbia Behavioural Research Ethics Board. This study was supported by a Canadian Institutes of Health Research Operating Grant (FRN-104086). Dr. Law received salary support through a Canada Research Chair in Access to Medicines and a Michael Smith Foundation for Health Research Scholar Award.

Correspondence may be directed to: Lindsay Hedden, Postdoctoral Fellow, School of Population and Public Health, University of British Columbia, 201-2206 East Mall, Vancouver, BC V6T 1Z3; tel.: 604-822-5684; fax: 604-822-5690.

References

British Columbia Ministry of Health. 2013a. Alternative Payments Program. Population Data BC. Data Extract. Retrieved March 10, 2018. <http://www.popdata.bc.ca/data>.

British Columbia Ministry of Health. 2013b. Medical Services Plan (MSP) Payment Information File. V2. Population Data BC. Retrieved March 10, 2018. <http://www.popdata.bc.ca/data>.

Canadian Institute for Health Information (CIHI). 2012. Supply, Distribution and Migration of Canadian Physicians. Retrieved August 5, 2014. <https://secure.cihi.ca/estore/productSeries.htm?pc=PCC34>.

College of Physicians and Surgeons of British Columbia (CPSBC). 2013. Medical Services Plan Physician Database. Population Data BC Data Extract. Retrieved March 10, 2018 <http://www.popdata.bc.ca/data>.

College of Physicians and Surgeons of British Columbia (CPSBC). 2010. College of Physicians and Surgeons of British Columbia: Orientation Guide for Applicants. Retrieved January 20, 2018. <https://www.cpsbc.ca/files/pdf/Orientation-Guide-for-Applicants.pdf>.

College of Physicians and Surgeons of British Columbia (CPSBC). 2018. College of Physicians and Surgeons of British Columbia: Bylaws. Vancouver, BC. Retrieved January 20, 2018. <https://www.cpsbc.ca/files/pdf/HPA-Bylaws.pdf>.

Hedden, L., M.R. Lavergne, K.M. McGrail, M.R. Law, L. Cheng, M.A. Ahuja and M.L. Barer. 2017. "Patterns of Physician Retirement and Pre-Retirement Activity: A Population-Based Cohort Study." *CMAJ* 189(49): E1517-E1523. doi: 10.1503/cmaj.170231.

Pong, R.W. 2011. *Putting Away the Stethoscope for Good? Toward a New Perspective on Physician Retirement Spending and Health Workforce*. Ottawa, ON. Retrieved January 20, 2018. <https://secure.cihi.ca/estore/productFamily.htm?locale=en&pf=PFC1609>.

Pong, R.W., F. Lemire and J. Tepper. 2007. "Physician Retirement in Canada: What Is Known and What Needs to Be Done." Paper prepared for the 10th International Medical Workforce Conference, Vancouver, BC, March 20–24, 2007. Retrieved January 20, 2018. <http://rcpsc.medical.org/publicpolicy/imwc/10_ret&retCAN.pdf>.

Rittenhouse, D.R., E. Mertz, D. Keane and K. Grumbach. 2004. "No Exit: An Evaluation of Measures of Physician Attrition." *Health Services Research* 39(5): 1571–88. doi.org/10.1111/j.1475-6773.2004.00304.x.

Steel, R.P.and N.K. Ovalle. 1984. "A Review and Meta-Analysis of Research on the Relationship between Behavioral Intentions and Employee Turnover." *Journal of Applied Psychology* 69(4): 673–86. doi.org/10.1037/0021-9010.69.4.673.

Tett, R.P. and J.P. Meyer. 1993. "Job Satisfaction, Organizational Commitment, Turnover Intention, and Turnover: Path Analyses based on Meta-Analytic Findings." *Personnel Psychology* 46(2): 259–93. doi.org/10.1111/j.1744-6570.1993.tb00874.x.

Borderline Intellectual Functioning and Lifetime Duration of Homelessness among Homeless Adults with Mental Illness

Fonctionnement intellectuel limite et durée de l'itinérance chez les adultes itinérants ayant une maladie mentale

ANNA DURBIN, PHD
Centre for Urban Health Solutions, St. Michael's Hospital
Department of Psychiatry, University of Toronto
Institute for Clinical Evaluative Sciences
Toronto, ON

YONA LUNSKY, PHD
Centre for Addiction and Mental Health
Department of Psychiatry, University of Toronto
Institute for Clinical Evaluative Sciences
Toronto, ON

RI WANG, MMATH
Centre for Urban Health Solutions, St. Michael's Hospital
Toronto, ON

ROSANE NISENBAUM, PHD
Centre for Urban Health Solutions and
Applied Health Research Centre
St.Michael's Hospital
Dalla Lana School of Public Health, University of Toronto
Toronto, ON

STEPHEN W. HWANG, MD
Centre for Urban Health Solutions, St. Michael's Hospital
Division of General Internal Medicine, Department of Medicine
University of Toronto
Toronto, ON

PATRICIA O'CAMPO, PHD
Centre for Urban Health Solutions, St. Michael's Hospital
Dalla Lana School of Public Health, University of Toronto
Toronto, ON

VICKY STERGIOPOULOS, MD
Centre for Addiction and Mental Health
Centre for Urban Health Solutions, St. Michael's Hospital
Department of Psychiatry, University of Toronto
Toronto, ON

Abstract

This paper reports on the association between intellectual functioning and lifetime homelessness duration among 172 homeless adults with mental illness in Toronto, Canada. Using a standardized test of intellectual functioning, we created two groups: individuals with borderline or lower intellectual functioning (16%) and individuals with above borderline intellectual functioning (84%). Lifetime homelessness duration was approximately three years longer, or almost twice as long, for individuals with borderline or lower intellectual functioning. Implementing more systematic strategies for identifying and supporting individuals with cognitive impairments may hasten transitions out of homelessness for this population. Brief intellectual functioning assessment tools are available.

Résumé

Cet article porte sur les liens entre le fonctionnement intellectuel et la durée de l'itinérance dans le cas de 172 adultes itinérants ayant une maladie mentale à Toronto, Canada. Nous avons créé deux groupes au moyen d'un test normalisé portant sur le fonctionnement intellectuel. Ces deux groupes sont : les personnes qui présentent un fonctionnement intellectuel limite ou moins élevé (16 %) et les personnes qui présentent un fonctionnement intellectuel plus élevé que l'état limite (84 %). La durée de l'itinérance était approximativement trois ans plus longue, soit près de deux fois plus importante, chez les personnes ayant un fonctionnement intellectuel limite ou moins élevé. La mise en place de stratégies plus systématiques pour repérer et soutenir les personnes qui présentent des déficits cognitifs pourrait accélérer leur sortie de l'itinérance. Il existe des outils pratiques pour évaluer le fonctionnement intellectuel.

Introduction

Compared to the general population, homeless individuals have more physical, mental health problems, and cognitive deficits (Hwang 2001; Nishio et al. 2015; Rohde et al. 1999; Stergiopoulos et al. 2014; Stergiopoulos et al. 2015). These challenges can be exacerbated during prolonged periods of homelessness, for example, due to lengthy exposure to weather, infections, drugs and violence (Blair and Spreen 1989).

Homeless programs do not typically evaluate participants' intellectual functioning or provide supports to people with these deficits (Van Straaten et al. 2014), potentially prolonging homelessness by not providing supports for deficits in intellectual functioning. Only two small studies have examined the relationship between duration of homelessness and intellectual functioning, yielding inconsistent findings. One Japanese study of 18 homeless individuals (Nishio et al. 2015) reported that intellectual disability was associated with longer durations of homelessness, while a study (Rohde et al. 1999) of 50 homeless adolescents in the US found no relationship. The paucity of research and study limitations

accentuate the need for more studies in this area to inform delivery of more effective supports and interventions.

The aim of this study is to: 1) describe the premorbid intellectual functioning level, duration of homelessness, as well as sociodemographic and clinical characteristics of 172 English-speaking homeless adults with mental illness in Toronto, ON, and 2) assess whether premorbid borderline or lower intellectual functioning is associated with homelessness duration.

Method

Sample and Setting

The sample included 172 individuals from a larger study of 575 homeless adults with mental illness who participated in the Toronto site of the Canadian At Home/Chez Soi randomized trial between 2009 and 2013. Nearly two-thirds of participants had mood disorders, and over one-half had substance-related problems (Stergiopoulos et al. 2014). This trial evaluated the effects of Housing First, an approach that provides participants with access to permanent independent housing in conjunction with client-centred treatment and mental health support services. In this approach housing is not contingent on acceptance of treatment or demonstration of sobriety. The participants receiving Housing First were compared to a control group that received no specific intervention but had access to locally available services (e.g., emergency shelters, case management) (Stergiopoulos et al. 2014). Participants were referred to the At Home/Chez Soi study from community agencies such as shelters, drop-in centres, street outreach teams, in-patient programs, or criminal justice programs, or identified by interviewers. Eligible participants had to be absolutely homeless, or precariously housed with episodes of absolute homelessness in the past year (see Appendix 1 for definitions at www.longwoods.com/content/25687) (Goering et al. 2011). Additional inclusion criteria were being at least 18 years old and having a serious mental disorder. More study information is provided in detail elsewhere (Goering et al. 2011; Stergiopoulos et al. 2014).

Of the 575 Toronto participants, 414 were included in an additional two-year follow-up, but only 364 of these individuals completed the extended study. Of these individuals, 189 (51.9%) were eligible to take the intellectual functioning test because they spoke English, did not have visual impairments and were available for face-to-face interviews. Seventeen potential participants (4.7%) refused or had missing data, leading to a final sample of 172 participants with an intellectual functioning assessment. There were no significant differences between those included (n=172) and those in the total Toronto sample but not included in the current analysis (n=403) with respect to age and gender.

The At Home/Chez Soi study was approved by institutional research ethics boards at St. Michael's Hospital and was registered with the International Standard Randomized Control Trial Number (ISRCTN 42520374).

Variables

Premorbid rather than current intellectual functioning was assessed to avoid confounding by illness severity. We measured premorbid intellectual functioning using the Revised New Adult Reading Test (NART/NART-R) that displayed 61 words that do not follow regular grapheme-phoneme rules that participants were asked to read and pronounce (Blair and Spreen 1989; Strauss et al. 2006). Similar to prior research (Hassiotis et al. 2008), the verbal intelligence NART-R score was converted to an IQ score (Blair and Spreen 1989). Borderline intellectual functioning occurs when a person has below average cognitive ability, indicated by having an IQ in the 70–84 range. A more severe intellectual impairment is consistent with a diagnosis of intellectual disability, defined by having an IQ less than 70. Intellectual disabilities originate before age 18 and are characterized by lifelong limitations in cognitive and adaptive functioning that impact on activities of daily living. Due to the small sample size and NART-R limitations, we compared the group of participants with borderline or lower intellectual functioning (IQ score<85) to those with above borderline intellectual functioning (IQ score of 85+).

The outcome, lifetime duration of homelessness (in years), was measured at the baseline study visit when participants were asked: "In your lifetime, what is the total amount of time you have been homeless?" Other variables examined are listed in Table 1 available at www.longwoods.com/content/25687.

STATISTICAL ANALYSIS

Intellectual functioning groups were compared with respect to sociodemographic factors, mental and physical health using the two-sample t-test or Fisher's exact test. Bivariate comparisons of homelessness duration between groups were made with the Mann-Whitney U test for the whole sample (n=172, primary analysis). To address concerns that immigrants may have worse English proficiency, affecting their performance on the NART-R, we also ran a sensitivity bivariate analysis on the sample excluding immigrants (n=131, sensitivity analysis). A multivariable linear regression model assessed the association between intellectual functioning and lifetime duration of homelessness. Covariates (Table 1) were included in the adjusted model if they were conceptually relevant or statistically significant in the bivariate analysis.

Data analyses were conducted using R (version 3.4.0). All statistical tests were two-tailed and statistical significance was defined as p-values less than 0.05.

Results

Of the 172 study participants, 144 (83.7%) had premorbid IQ scores above the borderline intellectual functioning cut-off, and 28 (16.3%) had scores in the borderline premorbid IQ range or below. Compared to the former group, individuals in the borderline or lower intellectual functioning group were more likely to be immigrants (46.4% versus 19.4%, p=0.006) and to have completed at most some high school (75.0% versus 45.8%, p=0.007). Groups

were similar with respect to age, gender, ethnicity, receipt of disability income support, mental health functioning, any mental health or addictions disorder or symptom severity, arrests, or community provider visits (data not shown).

In the primary bivariate analysis of the entire sample, lifetime duration of homelessness was longer for the borderline or lower intellectual functioning group (median 6.0 years vs. 3.2 years, p=0.038, Table 1). Results were similar in the sensitivity analysis that excluded immigrants (median 7.0 years [IQR 5.2–11.6] vs. 4.5 [IQR 1.8–9.0], p=0.02). Similarly, in the multivariable analysis, membership in the borderline or lower intellectual functioning group was associated with an average longer homelessness duration of approximately 3.0 years (p<0.01, Table 1). Other variables associated with increased average homelessness duration in the multivariable analysis were male gender (p<0.01), and increased age (p<0.01). Ethnoracial, compared to White ethnicity, was associated with decreased average homeless duration (p=0.03).

Discussion

A prevalence of borderline or lower intellectual functioning of 16.3% in our setting is consistent with findings in other jurisdictions, with reported prevalence rates ranging from 6.0% to 37.5%. Moreover, international studies have noted that evaluations of participants' intellectual functioning are generally absent from homeless programs (Van Straaten et al. 2014). Since the present study was done in a setting with universal health insurance that recently invested considerable funds into community mental health (SEEI Coordinating Centre 2009), the finding that people with mental illness in the borderline premorbid IQ range or below were homeless for about three years longer (about twice as long) as other homeless individuals with mental illness may even be more pronounced in other settings where health and social supports are even less accessible.

These findings suggest that it may be harder for individuals with lower intellectual functioning to exit homelessness, highlighting their unique and complex support needs, such as requiring help to understand information and complete routine tasks (Nishio et al. 2015). Furthermore, identifying these individuals may be challenging (Lougheed and Farrell 2013) as impairments may not be obvious to staff with no specific training in this area (Nishio et al. 2015). Brief cognitive assessment tools can be integrated into homeless services to identify these clients and support more appropriate person-centred service planning (Lougheed and Farrell 2013).

Limitations

Premorbid IQ scores on the NART-R could not be below 74 (a floor effect) so we could not separate people with an intellectual disability from those with borderline intellectual functioning. In addition, we did not evaluate intellectual delays that developed after childhood, or estimate current full-scale IQ or verbal IQ. However, NART-R scores correlate with full-scale IQ and verbal IQ (Blair and Spreen 1989; Strauss et al. 2006). Also, since

data were ascertained via self-report, there may have been inaccuracies in the information reported, especially for individuals in the borderline or lower intellectual functioning group. Study strengths are a moderately large and well-characterized sample of homeless adults with mental illness, and adding to a very small body of literature on intellectual functioning and duration of homelessness. Prior studies in this area had few participants (Cotman and Sandman 1997; Oakes and Davies 2008; Rohde et. 1999) or did not examine homelessness duration (Van Straaten et al. 2014).

Conclusion

Present findings support existing calls (Durbin et al. 2018; Lougheed and Farrell 2013) to consider screening for intellectual functioning in programs that serve homeless individuals, and tailor interventions to better support this disadvantaged population. The prevalence of intellectual disabilities compared to borderline intellectual functioning among homeless people, and the experience of these groups with respect to homelessness and barriers to getting housed, should be examined in future work.

Acknowledgements

This research has been made possible through a financial contribution from Health Canada and funded by the Mental Health Commission of Canada. The views expressed herein solely represent the authors'.

Correspondence may be directed to: Anna Durbin, PhD, Centre for Urban Health Solutions, St. Michael's Hospital, Toronto, ON; e-mail: durbinan@smh.ca.

References

Blair, J.R. and O. Spreen. 1989. "Predicting Premorbid IQ: A Revision of the National Adult Reading Test." *Clinical Neuropsychologist* 3(2): 129–36. Retrieved November 15, 2017. <http://www.tandfonline.com/doi/abs/10.1080/13854048908403285>.

Cotman, A. and C. Sandman. 1997. "Cognitive Deficits and Their Remediation in the Homeless." *Journal of Cognitive Rehabilitation* 15: 16–24.

Durbin, A., B. Isaacs, D. Mauer-Vakil, J. Connelly, L. Steer, S. Roy and V. Stergiopoulos 2018. "Intellectual Disability and Homelessness: A Synthesis of the Literature and Discussion of How Supportive Housing Can Support Wellness for People with Intellectual Disability." *Current Developmental Disorders Reports* 5(3): 125–31. doi.org/10.1007/s40474-018-0141-6.

Goering, P.N., D.L. Streiner, C. Adair, T. Aubry, J. Barker, J. Distasio et al. 2011. "The At Home/Chez Soi Trial Protocol: A Pragmatic, Multi-Site, Randomised Controlled Trial of a Housing First Intervention for Homeless Individuals with Mental Illness in Five Canadian Cities." *BMJ Open* 1(2): e000323. doi: 10.1136/bmjopen-2011-000323.

Griffin, S.L., M.R. Mindt, E.J. Rankin, A.J. Ritchie and J.G. Scott. 2002. "Estimating Premorbid Intelligence: Comparison of Traditional and Contemporary Methods across the Intelligence Continuum." *Archives Clinical Neuropsychology* 17: 497–507.

Hassiotis, A., A. Strydom, I. Hall, A. Ali, G. Lawrence-Smith, H. Meltzer et al. 2008. "Psychiatric Morbidity and Social Functioning among Adults with Borderline Intelligence Living in Private Households." *Journal of Intellectual Disability Research* 52: 95–106.

Hwang, S.W. 2001. "Homelessness and Health." *Canadian Medical Association Journal* 164: 229–33.

Lougheed, D.C. and S. Farrell. 2013. "The Challenge of a 'Triple Diagnosis': Identifying and Serving Homeless Canadian Adults with a Dual Diagnosis." *Journal of Policy and Practice in Intellectual Disabilities* 10: 230–35.

Nishio, A., M. Yamamoto, H. Ueki, T. Watanabe, K. Matsuura, O. Tamura et al. 2015. "Prevalence of Mental Illness, Intellectual Disability, and Developmental Disability among Homeless People in Nagoya, Japan: A Case Series Study." *Psychiatry and Clinical Neurosciences* 69: 534–42.

Oakes, P.M. and R.C. Davies. 2008. "Intellectual Disability in Homeless Adults." *Journal of Intellectual Disability Research* 12: 325–34.

Rohde, P., J. Noell and L. Ochs. 1999. "IQ Scores among Homeless Older Adolescents: Characteristics of Intellectual Performance and Associations with Psychosocial Functioning." *Journal of Adolescence* 22: 319–28.

SEEI Coordinating Centre. 2009. "Moving in the Right Direction: SEEI Final Report." Health Systems Research and Consulting Unit, Centre for Addiction and Mental Health. Retrieved December 17, 2017. http://ontario.cmha.ca/wp-content/uploads/2016/08/seei_final_report_cmha_ontario_March2003.pdf.

Stergiopoulos, V., A. Cusi, T. Bekele, A. Skosireva, E. Latimer, C. Schütz et al. 2015. "Neurocognitive Impairment in a Large Sample of Homeless Adults with Mental Illness." *Acta Psychiatrica Scandinavica* 131: 256–68.

Stergiopoulos, V., P. O'Campo, S. Hwang, A. Gozdzik, J. Jeyaratnam et al. 2014. "At Home/Chez Soi Project: Toronto Site Final Report." Calgary, AB: Mental Health Commission of Canada. Retrieved December 19, 2017. https://www.mentalhealthcommission.ca/sites/default/files/At%252520Home%252520Report%252520Toronto%252520ENG_0.pdf.

Strauss, E., E. Sherman and O. Spreen. 2006. "A Compendium of Neuropsychological Tests: Administration, Norms, and Commentary." Oxford University Press.

Van Straaten, B., C.T.M. Schrijvers, J. Van Der Laan, S.N. Boersma, G. Rodenburg, J.R.L.M. Wolf et al. 2014. "Intellectual Disability among Dutch Homeless People: Prevalence and Related Psychosocial Problems." *PLoS One* 9(1): e86112.

A Model of Care for Osteoarthritis of the Hip and Knee: Development of a System-Wide Plan for the Health Sector in Victoria, Australia

Modèle de soins pour l'arthrose de la hanche et du genou : développement d'un plan pansystémique pour le secteur de la Santé à Victoria, en Australie

ANDREW M. BRIGGS, BSC (PT)HONS, PHD
Professor, School of Physiotherapy and Exercise Science
Curtin University, Perth
St Vincent's Hospital
Melbourne, Australia

CAROLYN J. PAGE, BSC, MPHYSIO
Advanced Musculoskeletal Physiotherapist
St Vincent's Hospital
Melbourne, Australia

BRIDGET R. SHAW, BAPPSC(PHYSIO), M MANIP PHYSIO
Past President Australian Physiotherapy Association (Victorian Branch)
Melbourne, Australia

ANDREA BENDRUPS, MBBS, MSC
Rheumatologist and medical educator, Australian Rheumatology Association
University of Melbourne Department of Medicine, Royal Melbourne Hospital, Melbourne, Australia

KATHLEEN PHILIP, BAPPSCI, MPHYSIO, MPH
Chief Allied Health Advisor, Department of Health and Human Services
Victoria, Australia

BELINDA CARY, BPHYSIO, MPH, MPHYSIO
Physiotherapy Manager, St Vincent's Hospital
Melbourne, Australia

PETER F. CHOONG, MBBS, MD
Orthopaedic Surgeon, St Vincent's Hospital
Professor of Surgery
University of Melbourne Department of Surgery
Melbourne, Australia

Abstract

Osteoarthritis (OA) imposes a significant burden to the person, the health system and the community. Models of Care (MoCs) drive translation of evidence into policy and practice and provide a platform for health system reform. The Victorian MoC for OA of the hip and knee was developed following a best-practice framework, informed by best-evidence and iterative cross-sector consultation, including direct consumer consultation. Governance and external expert advisory committees consisting of local OA care champions facilitated the development and consultation processes. The MoC outlines key components of care, care that is not recommended, and suggests phased implementation strategies. This paper describes the MoC development process and lessons learned.

Résumé

L'arthrose est un lourd fardeau pour les personnes, le système de santé et la communauté. Les modèles de soin (MdS) permettent de transposer les données en politique ou en pratique, en plus d'offrir une plateforme pour la réforme du système de santé. Le MdS de Victoria pour l'arthrose de la hanche et du genou a été développé en suivant un cadre de pratique exemplaire, en tenant compte des meilleures données et en menant des consultations intersectorielles itératives, notamment auprès de la clientèle. Le développement et la consultation ont été facilités par des comités de gouvernance et d'experts-conseils externes formés de champions locaux des soins pour l'arthrose. Le MdS présente les éléments clés des soins, relève les soins non recommandés et propose des stratégies de mise en œuvre par phases successives. Cet article décrit le processus de développement du MdS ainsi que les leçons qui en ont été tirées.

Background

Osteoarthritis (OA) is recognized as a major health issue in Australia and across the globe (Cross et al. 2014) and an Australian National Health Priority Area since 2002. In Australia, approximately 2.2 million people live with OA, often co-morbid with other chronic health conditions. Projections estimate that this will rise to 3.1 million Australians by 2030, with the highest prevalence expected in people aged 55 years and over (Ackerman et al. 2018). The expected sharp rise in global prevalence is attributed to population aging, obesity and an increasing prevalence of risk factors for chronic health conditions (Kopec et al. 2016).

OA affects people from early middle-age onwards and symptoms associated with OA can have a profound impact on the person's ability to socialise and maintain regular work, which has significant downstream consequences for national workforce productivity and human capital (Ackerman et al. 2015; Arthritis and Osteoporosis Victoria 2013; Schofield et al. 2016; Schofield et al. 2015). In 2012, OA accounted for 41% of the $9.51 billion (AUD)

spent on musculoskeletal conditions in Australia (Arthritis and Osteoporosis Victoria 2013), with a large proportion of total cost attributed to hip and knee joint replacement surgery. The lifetime risk of requiring total knee or hip joint replacement surgery has risen substantially in the 10-year period between 2003 and 2013 internationally (Ackerman et al. 2017a; Ackerman et al. 2017b). These trends will have significant implications for health service delivery quality and efficiency in Australia and other countries. In the state of Victoria, Australia, the direct healthcare costs attributed to OA care are expected to exceed $693 million (AUD) in 2030 (2015 dollars) (Ackerman et al. 2016).

Like other chronic health conditions, management of OA may be complex and require components of care to be delivered by different parts of the health system at different times over a protracted period. This approach to care collides with the historic structure and functionality of healthcare systems in high-income economies, which have had better capacity for responding to acute or episodic health needs, particularly in the context of hospital services (i.e., curative healthcare), rather than care delivery and self-management support over long periods (i.e., rehabilitative healthcare) (Briggs and Dreinhöfer 2017). As health systems internationally come to terms with the need for a paradigm shift from curative to rehabilitative healthcare, policy makers, health funders and administrators, service delivery organizations, clinicians, and consumers seek tools to support these complex transitions. Here, system-level Models of Care (MoCs) offer one such option (Briggs et al. 2016a).

An MoC is an evidence- and consultation-informed policy or framework that outlines the optimal manner in which condition-specific care should be made available and delivered to consumers within a local health system (Briggs et al. 2014). It articulates what care is appropriate, with a focus on high-value care, and how it could ideally be delivered. The implementation focus of MoCs is a substantial and important extension from clinical guidelines, which inadequately support implementation of evidence to practice (March et al. 2010; Nelson et al. 2014). Recent reviews have examined the current state of OA MoCs globally (Allen et al. 2016; Dziedzic et al. 2016; Lim et al. 2016). The aim of this paper is to describe the development of the Victorian MoC for OA of the hip and knee – a process to translate evidence and experience into a system-wide plan and summarize the lessons learned.

Objective

Recognizing the burden of disease of OA in Victoria, Australia, the Department of Health and Human Services (DHHS) commissioned the development of an MoC in 2015 under the auspices of the Victorian Musculoskeletal Clinical Leadership Group (CLG). The Musculoskeletal CLG, established in 2013, consists of a multidisciplinary group of clinicians, consumers, and policy makers who represent a range of peak bodies tasked with providing advice to government regarding musculoskeletal health service delivery issues. "Peak" bodies refer to those that undertake a national or jurisdictional leadership, advocacy or representation role, such as professional societies or non-government consumer organizations.

Setting

The setting for this initiative was the Victorian health system, comprising all levels of the system – primary care and community care, hospital services and private health settings. In Australia, health services are delivered through a mixed public and private model. Primary care services are administered by the Commonwealth government, while hospital services are predominantly managed by state and territory governments. Importantly, the focus of the MoC was on the broader health system, not just components of the system for which the DHHS has responsibility. While recognizing the burden of OA at all joints, the focus of the MoC was hip and knee joint OA as the majority of the prevalence of OA and health expenditure relates to these sites and the associated population-level burden of disease is high and increasing (Cross et al. 2014).

Methods

Governance

The DHHS and St Vincent's Hospital, Melbourne (SVHM), provided financial support to appoint two part-time project leads from October 2015 to March 2017 (AMB, CJP). A project governance sub-committee, supported by a DHHS secretariat, was established comprising CLG members, project leads and representatives from SVHM, to oversee the management of the project and facilitate a reporting line to the CLG. The subcommittee was responsible for monitoring milestones, reporting and overseeing contractual obligations. Once the project commenced, an External Expert Advisory Committee (EEAC) was established to provide independent clinical and health service advice and facilitate consultation across the life of the project (n=25 multidisciplinary members identified as local OA clinical/service champions). The EEAC members ascribed to a Terms of Reference, which included the requirement for them to act as liaisons with their professional/peak organizations.

Development process

The MoC was developed following a best-practice framework (Briggs et al. 2016b). This Framework was developed as a global initiative through the Global Alliance for Musculoskeletal Health of the Bone and Joint Decade. It provides an empirically defined, best-practice approach to development, implementation and evaluation of MoCs and policy for non-communicable conditions, with a focus on musculoskeletal health. It was informed by 93 individuals across 30 countries and is publicly supported by 54 peak international organizations.

The MoC development process comprised four sequential phases, underpinned by the guiding principles of i) continuous consultation; ii) continuous incorporation of best available evidence as it became available; and iii) alignment with existing and emerging relevant policy, frameworks or position statements.

Consultation process

Each phase of development involved consultation.

PHASE 1

In phase 1, an electronic survey was disseminated to 17 peak Victorian and national bodies, public and private health services, Victorian Primary Health Networks, four consumer organizations and Victorian government departments. The survey was open-ended, allowing respondents (n=75) to describe key issues in OA care (Box 1).

BOX 1. Components of the phase I consultation survey

- What is currently working well in OA service delivery in Victoria?
- What needs improvement in OA service delivery in Victoria?
- What are the current barriers to consumers accessing/receiving:
  - > The **right care** for their OA?
  - > Care at the **right time** for their OA?
  - > Care from the **right team** for their OA?

Phase 1 also involved an initial scoping of consumers' views on OA care (data not shown).

These phase 1 consultation data were analyzed deductively using a summative content-analysis approach (Hsieh and Shannon 2005), consistent with the method reported by Cunningham and Wells (2017) to develop an initial framework for the MoC, which outlined important components of the MoC.

PHASE 2

The phase 1 initial framework for the MoC was presented to the EEAC for initial discussion at an inception workshop in April 2016. At the conclusion of this workshop, the following outcomes were achieved:

1. A defined scope for the MoC, including a population definition and continuum of care boundaries.
2. A defined structure for the MoC with foci of:
   a. *What* care should be delivered?
   b. *What* care should not be delivered?
   c. *How* should care be delivered?
3. Establishment of topic working groups to develop content.

Consultation with EEAC members continued for a period of five months, during which time the components of the MoC were drafted and refined. Content was developed by topic working groups comprised of the project leads and EEAC members. All content related to

components of care needed to be supported by evidence (local data, clinical trial, systematic review or clinical guideline), rather than opinion-based, consistent with the development Framework we adopted (Briggs et al. 2016b). Over this period, EEAC members responded to two rounds of an online survey, powered by SurveyMonkey® (California, US), to provide comment on the components of the MoC (contextual information; guiding principles and standards of care; components of care including non-pharmacological care, pharmacological care and surgical care; strategies for care delivery; and background). These consultation-based data were used to further refine the MoC. Between the surveys, meetings with individual EEAC members or teleconferences with groups of EEAC members were held to further discuss and refine components on the MoC. At the conclusion of the five-month consultation and development cycle, seven clinical issues remained to be discussed and resolved at a final face-to-face workshop with all EEAC members in September 2016.

Concurrently, a consumer organization was commissioned to undertake an independent, in-depth consultation with consumers across Victoria regarding health service issues related to OA care (n=36; 75% residents of metropolitan Melbourne; 25% residents of rural or remote Victoria). The outcomes of this consultation have been published elsewhere (Nolan et al. 2016). A recent systematic review of consumers' needs in OA care was also used as a primary evidence source for the MoC (Wluka et al. 2016).

The outcome of phase 2 was the development of a full draft MoC.

PHASE 3

In phase 3, the full draft of the MoC was distributed to the same stakeholder groups as phase 1 for comment using an online survey to collect quantitative and qualitative data. Specifically, respondents were asked to review each component of the MoC and provide a nominal response ranking of their level of agreement with the content (Table 1). Where respondents either did not support the content or had suggested changes, they were asked to provide free-text responses to explain their selection. These responses were reviewed to further refine the MoC. Over this 3-month consultation, 43 submissions were received and analyzed quantitatively (Table 1) and qualitatively using a content analysis method (Hsieh and Shannon 2005). EEAC members acted as liaisons for consultations with the peak bodies they represented.

TABLE 1. Quantitative feedback from the phase 3 consultation, presented as proportions (%) by nominal response category

Draft MoC section	Component	Support content in its current form	Support content, but changes required	Do not support content in its current form	Not relevant to my expertise or organization
Part 1: Introduction	Context description	88.0	12.0	0	0
Part 2A: Context of the MoC	Structure, guiding principles, approach to OA care and diagnosis	84.0	16.0	0	0
Part 2B: Components of care (*what* care)	Non-pharmacologic care	80.0	20.0	0	0
	Pharmacologic care	68.0	16.0	4.0	12.0
	Surgical care	64.0	20.0	4.0	12.0
	Care that should not be delivered	64.0	16.0	4.0	16.0
Part 2C: Enablers to care delivery (*how* to deliver care)	Building peoples' capacity to more effectively participate in care	92.0	8.0	0	0
	Models of health service delivery	92.0	8.0	0	0
	Information and communication technology	84.0	12.0	0	4.0
	Health policy and planning	92.0	8.0	0	0
Part 3: Background	The case for change	92.0	8.0	0	0

PHASE 4

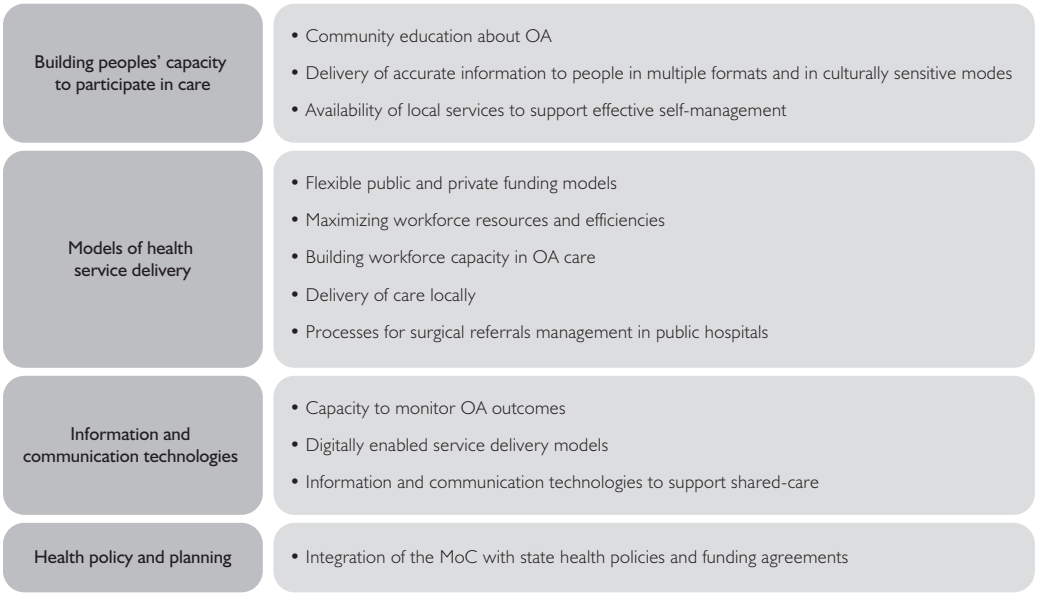
Following the phase 3 consultation, the MoC was revised again and re-distributed to peak Victorian and national bodies for final comment and endorsement in phase 4.

Outcome: Final drafting and public support

The MoC describes appropriate assessment and key components of care for OA, including: non-pharmacologic and non-surgical care for all (education, reassurance and support for appropriate self-management, physical activity and exercise, weight loss/nutrition management, management of persistent pain based on contemporary pain science); pharmacologic care; and total joint replacement surgery (Victorian Musculoskeletal Clinical Leadership Group 2018). Knee arthroscopy, as a primary intervention, and the routine use of magnetic resonance imaging (MRI) are specifically not recommended. Enablers to care delivery are

summarized in Figure 1. Each enabler is supported by suggested implementation strategies within the MoC. The MoC is publicly supported by 20 peak organizations.

FIGURE 1. Enablers to OA care delivery in Victoria



Discussion

The Victorian MoC for OA of the hip and knee describes an evidence and consultation-informed blueprint for OA care delivery for the state of Victoria, supported by local stakeholders. Importantly, the MoC aligns with existing state health policy, MoCs in other jurisdictions (Department of Health [Western Australia) 2010; NSW Agency for Clinical Innovation 2012) and nations (Allen et al. 2016), recent national initiatives aimed at optimizing care for OA (Arthritis Australia 2014; Australian and New Zealand College of Anaesthetists 2010; Royal Australian College of General Practitioners 2009; Therapeutic Guidelines 2017) and contemporary OA guidelines and clinical care standards (Australian Commission on Safety and Quality in Health Care 2017; March et al. 2010; Nelson et al. 2014; Stoffer et al. 2015), building momentum for national service improvement. A seminal review of OA MoCs highlights international progress in developing and implementing innovative service models that prioritize first-line, high-value management strategies for OA, such as exercise, weight loss and support for self-management; appropriate pain management; and pathways that facilitate timely and appropriate selection of suitable candidates for joint replacement surgery (Allen et al. 2016). That review also identified the need to contextualize service models according to the local environment. The Victorian MoC incorporates these components of care (i.e., "what care"). and outlines strategies to implement care in the Victorian context (i.e., "how to deliver the care').

The MoC now provides a platform for the Victorian health sector to collaboratively engage in system and service reform to improve care for people with hip or knee OA. While supported by the DHHS, the MoC is not intended as implementation responsibility for state government, but rather an enabler for all participants in the health system to work in partnership towards health service improvements. In this context, it is affirming that a multidisciplinary EEAC and 20 peak organizations have publicly supported the MoC.

The development process was guided by an existing Framework, which ensured an appropriate, inclusive and transparent approach to development (Briggs et al. 2016b). We suggest this same best-practice Framework be used to guide implementation activities for the MoC under the stewardship of a representative implementation advisory group. Our ability to comply with all the recommendations in the best-practice Framework was limited by project resourcing and timeline restrictions. For example, while the use of online consultations was efficient, a greater face-to-face presence would have been preferred as a mechanism to facilitate engagement by external stakeholders, particularly those in rural areas and to expand the scope of the consumer consultation.

The establishment of a governance framework for the project provided context about the project to both internal (e.g., government) and external stakeholders and an explicit description of project management. The governance subcommittee provided an important structure to the project, ensuring reporting responsibilities and milestones were met and a formal mechanism for troubleshooting established. The establishment of the EEAC was similarly a critical component of the MoC development process. This group provided independent, expert advice on components of care, assisted with content development and facilitated consultation with, and endorsement by, peak bodies. Engaging nominees from peak organisations from inception of the project ensured sustained engagement with the development process and will likely facilitate the implementation stage.

Engaging a consumer organization to lead and undertake targeted consumer consultation minimized any possible or perceived bias and allowed project leads to focus on other components of work. We recommend that future endeavours allocate a greater proportion of funds to consumer consultation activities and plan these budgets with consumer organizations to ensure feasibility.

While engagement with the DHHS was facilitated by a secretariat role, the progress of the project was impacted by a change of government and the dynamic nature of strategic priorities. The process of developing the MoC and use of the development and implementation Framework can be applied across conditions and across settings. While some modifications in processes will be important to align with local sociocultural factors, the use of evidence and phased consultation is broadly transferable.

Acknowledgements

The Victorian Department of Health and Human Services and St Vincent's Hospital Melbourne are acknowledged for financially supporting this project under the auspices of the Victorian Musculoskeletal Clinical Leadership Group. The members of the External Expert Advisory Group are gratefully acknowledged for their time and expertise: Associate Professor Ilana Ackerman, Mr. Nigel Broughton, Ms. Robyn Blackmore, Dr. Stephen Bunker, Professor Flavia Cicuttini, Ms. Lisa Collison, Professor Richard de Steiger, Associate Professor Michelle Dowsey, Dr. Chris Fong, Ms. Naomi Gandler, Dr. Naomi Harris, Professor Rana Hinman, Clinical Associate Professor Malcolm Hogg, Ms. Naomi Kubina, Clinical Associate Professor Keith Lim, Clinical Associate Professor Susan Liew, Dr. Helen Lindner, Dr. Anita Munoz, Ms. Genevieve Nolan, Dr. Vanessa J Rice, Dr. Debra Schulz,
Dr. Janice Sheringham, Dr. Jane Simms, Mr. Bill Suen, and Mr. Jason Wallis. Musculoskeletal Australia is acknowledged for independently conducting the consumer consultation to inform the Model of Care. Tim Buckley, Barbara Whyte and Sharon Christie (Department of Health and Human Services, Victoria) are acknowledged for their role as project secretariat. AMB is supported by a fellowship awarded by the Australian National Health and Medical Research Council (#1132548).

Correspondence may be directed to: Professor Andrew M. Briggs, School of Physiotherapy and Exercise Science, Curtin University, GPO Box U1987, Perth, WA 6845, Australia; tel.: +61 8 9266 4644; fax: + 61 8 9266 3699; e-mail: A.Briggs@curtin.edu.au.

References

Ackerman, I.N., M.A Bohensky, R. de Steiger, C.A. Brand, A. Eskelinen, A.M. Fenstad et al. 2017a. "Substantial Rise in the Lifetime Risk of Primary Total Knee Replacement Surgery for Osteoarthritis from 2003 to 2013: An International, Population-Level Analysis." *Osteoarthritis and Cartilage* 25(4): 455–61. doi: 10.1016/j.joca.2016.11.005.

Ackerman, I.N., M.A. Bohensky, R. de Steiger, C.A. Brand, A. Eskelinen, A.M. Fenstad et al. 2017b. "Lifetime Risk of Primary Total Hip Replacement Surgery for Osteoarthritis from 2003–2013: A Multi-National Analysis Using National Registry Data." *Arthritis Care & Research* 69(11): 1659–67. doi: 10.1002/acr.2319.7

Ackerman, I.N., M.A. Bohensky, C. Pratt, A. Gorelik and D. Liew. 2016. *Counting the Cost: Part 1 – Healthcare Costs. The Current and Future Burden of Arthritis*. Sydney: Arthritis Australia.

Ackerman, I.N., A. Bucknill, R.S. Page, N.S. Broughton, C. Roberts, B. Cavka et al. 2015. "The Substantial Personal Burden Experienced by Younger People with Hip or Knee Osteoarthritis." *Osteoarthritis and Cartilage* 23(8): 1276–84. doi: 10.1016/j.joca.2015.04.008.

Ackerman, I.N., C. Pratt, A. Gorelik and D. Liew. 2018. "Projected Burden of Osteoarthritis and Rheumatoid Arthritis in Australia: A Population-Level Analysis." *Arthritis Care & Research* 70(6): 877–83. doi: 10.1002/acr.23414.

Allen, K.D., P.F. Choong, A.M. Davis, M.M. Dowsey, K.S. Dziedzic, C. Emery et al. 2016. "Osteoarthritis: Models for Appropriate Care across the Disease Continuum." *Best Practice & Research: Clinical Rheumatology* 30(3): 503–35. doi: 10.1016/j.berh.2016.09.003.

Arthritis and Osteoporosis Victoria. 2013. *A Problem Worth Solving. The Rising Cost of Musculoskeletal Conditions in Australia*. Melbourne, Australia: Author.

Arthritis Australia. 2014. Time to Move: Osteoarthritis. Sydney: Arthritis Australia.

Australian and New Zealand College of Anaesthetists. 2010. National Pain Strategy. Melbourne: Faculty of Pain Medicine.

Australian Commission on Safety and Quality in Health Care (ACSQHC). 2017. Osteoarthritis of the Knee Clinical Care Standard. Sydney, Australia: Author.

Briggs, A.M., M. Chan and H. Slater. 2016a. "Models of Care for Musculoskeletal Health: Moving towards Meaningful Implementation and Evaluation across Conditions and Care Settings." *Best Practice & Research: Clinical Rheumatology* 30(3): 359–74. doi: 10.1016/j.berh.2016.09.00.9

Briggs, A.M., J.E. Jordan, M. Jennings, R. Speerin, J. Chua, P. Bragge et al. 2016b. *A Framework to Evaluate Musculoskeletal Models of Care*. Cornwall: Global Alliance for Musculoskeletal Health of the Bone and Joint Decade.

Briggs, A.M., J.E. Jordan, M. Jennings, R. Speerin, P. Bragge, J. Chua et al. 2017. "Supporting the Evaluation and Implementation of Musculoskeletal Models of Care: A Globally Informed Framework for Judging Readiness and Success." *Arthritis Care & Research* 69(4): 567–77. doi: 10.1002/acr.22948.

Briggs, A.M., S.C. Towler, R. Speerin and L.M. March. 2014. "Models of Care for Musculoskeletal Health in Australia: Now More Than Ever to Drive Evidence into Health Policy and Practice." *Australian Health Review* 38(4): 401–05. doi: 10.1071/AH14032.

Cross, M., E. Smith, D. Hoy, S. Nolte, I. Ackerman, M. Fransen et al. 2014. "The Global Burden of Hip and Knee Osteoarthritis: Estimates from the Global Burden of Disease 2010 Study." *Annals of the Rheumatic Diseases* 73(7): 1323–30. doi: 10.1136/annrheumdis-2013-204763.

Cunningham, M. and M. Wells. 2017. "Qualitative Analysis of 6961 Free-Text Comments from the First National Cancer Patient Experience Survey in Scotland." *BMJ Open* 7(6): e015726. doi: 10.1136/bmjopen-2016-015726.

Department of Health (Western Australia). 2010. Elective Joint Replacement Service Model of Care. Perth: Health Networks Branch.

Dziedzic, K.S., S. French, A.M. Davis, E. Geelhoed and M. Porcheret. 2016. "Implementation of Musculoskeletal Models of Care in Primary Care Settings: Theory, Practice, Evaluation and Outcomes for Musculoskeletal Health in High-Income Economies." *Best Practice & Research: Clinical Rheumatology* 30(3): 375–97. doi: 10.1016/j.berh.2016.08.004.

Hsieh, H.F. and S.E. Shannon. 2005. "Three Approaches to Qualitative Content Analysis." *Qualitative Health Research* 15(9): 1277–88. doi: 10.1177/1049732305276687.

Kopec, J.A., E.C. Sayre, P. Fines, W.M. Flanagan, C. Nadeau, A. Okhmatovskaia et al. 2016. "Effects of Reductions in Body Mass Index on the Future Osteoarthritis Burden in Canada: A Population-Based Microsimulation Study." *Arthritis Care & Research* 68(8): 1098–105. doi: 10.1002/acr.22796.

Lim, K.K., M. Chan, S. Navarra, S.A. Haq and C.S. Lau. 2016. "Development and Implementation of Models of Care for Musculoskeletal Conditions in Middle-Income and Low-Income Asian Countries." *Best Practice & Research: Clinical Rheumatology* 30(3): 398–419. doi: 10.1016/j.berh.2016.08.007.

March, L., B. Amatya, R.H. Osborne and C. Brand. 2010. "Developing a Minimum Standard of Care for Treating People with Osteoarthritis of the Hip and Knee." *Best Practice & Research: Clinical Rheumatology* 24(1): 121–45. doi: 10.1016/j.berh.2009.10.002.

Nelson, A.E., K.D. Allen, Y.M. Golightly, A.P. Goode and J.M. Jordan. 2014. "A Systematic Review of Recommendations and Guidelines for the Management of Osteoarthritis: The Chronic Osteoarthritis Management Initiative of the U.S. Bone and Joint Initiative." *Seminars in Arthritis and Rheumatism* 43(6): 701–12. doi: 10.1016/j.semarthrit.2013.11.012.

Nolan, G., H. Koutsimanis, C. Page, A.M. Briggs and B. Harris. 2016. "Consumer Feedback on the Current and Future Management of Hip and/or Knee Osteoarthritis in Victoria." Melbourne: MOVE: Muscle, Bone & Joint Health.

NSW Agency for Clinical Innovation. 2012. *Musculoskeletal Network: Osteoarthritis Chronic Care Program Model of Care*. Sydney, Australia: Author.

Royal Australian College of General Practitioners. 2009. *Guideline for the Non-Surgical Management of Hip and Knee Osteoarthritis*. Melbourne, Australia: Author.

Schofield, D., R. Shrestha and M. Cunich. 2016. *Counting the Cost: Part 2 – Economic Costs. The Current and Future Burden of Arthritis*. Sydney: Arthritis Australia.

Schofield, D.J., R.N. Shrestha, M. Cunich, R. Tanton, S. Kelly, M.E. Passey et al. 2015. "Lost Productive Life Years Caused by Chronic Conditions in Australians Aged 45–64 Years, 2010–2030." *Medical Journal of Australia* 203(6): 260.

Stoffer, M.A., J.S. Smolen, A. Woolf, A. Ambrozic, F. Berghea, A. Boonen et al. 2015. "Development of Patient-Centred Standards of Care for Osteoarthritis in Europe: The Eumusc.net-project." *Annals of the Rheumatic Diseases* 74(6): 1145–9. doi: 10.1136/annrheumdis-2014-206176.

Therapeutic Guidelines. 2017. Rheumatology (3rd ed.). Melbourne: Therapeutic Guidleines.

Victorian Musculoskeletal Clinical Leadership Group. 2018. *Victorian Model of Care for Osteoarthritis of the Hip and Knee*. Melbourne: MOVE Muscle, Bone & Joint Health.

Wluka, A.E., L. Chou, A.M. Briggs and F.M. Cicuttini. 2016. "Consumers' Perceived Needs of Health Information, Health Services and Other Non-Medical Services: A Systematic Scoping Review. Melbourne: MOVE Muscle, Bone & Joint Health.

RESEARCH PAPER

Completion of Medical Certificates of Death after an Assisted Death: An Environmental Scan of Practices

Produire un certificat médical de décès dans les cas d'aide médicale à mourir : analyse du contexte des pratiques

JANINE BROWN, RN, CCNE
PhD Candidate, Health Sciences Graduate Program
College of Medicine, University of Saskatchewan
Faculty of Nursing, University of Regina
Saskatoon, SK

LILIAN THORPE, MD, PHD
Professor, Departments of Community Health & Epidemiology and Psychiatry
University of Saskatchewan
Saskatoon, SK

DONNA GOODRIDGE, RN, PHD
Professor, College of Medicine
University of Saskatchewan
Saskatoon, SK

Abstract

Policies and practices have been developed to operationalize assisted dying processes in Canada. This project utilized an environmental scan to determine the spectrum of assisted death reporting practices and medical certificate of death (MCD) completion procedures both nationally and internationally. Findings suggest medically assisted dying (MAiD) is represented on the MCD inconsistently nationally and internationally. Related factors include

the specifics of local assisted death legislation and variations in death-reporting legislation, variation in terminology surrounding assisted death and designated oversight agency for assisted dying reporting.

Résumé

Au Canada, des politiques et des pratiques ont été élaborées pour opérationnaliser les processus d'aide médicale à mourir. Ce projet analyse le contexte afin de déterminer le spectre des pratiques pour la déclaration des décès assistés ainsi que les procédures pour les certificats médicaux de décès (CMD), aux niveaux national et international. Les résultats font voir que l'aide médicale à mourir n'est pas représentée de façon cohérente sur les CMD, et ce, aux niveaux national et international. Les facteurs concernés comprennent les précisions quant à la législation locale concernant l'aide à mourir ainsi que les variations dans la législation sur la déclaration des décès, une variation dans la terminologie connexe et les agences de surveillance désignées pour la déclaration de l'aide médicale à mourir.

Medically assisted dying (MAiD) is an end-of-life option that has become available to eligible Canadians since the passing of Bill C-14 by the federal government in 2016. Because of the jurisdiction of provincial governments over matters concerning health, there is significant variability in both policies and procedures across the 10 provinces and three territories of Canada. The completion of the medical certificate of death (MCD) after MAiD profoundly impacts the families of the deceased and the tracking and analyzing population-level data. MCDs are important to families as they provide closure, peace of mind and documentation of cause of death to family members (Department of Health and Human Services 2003). Additionally, the MCD may reveal sensitive information about deceased individuals including cause, manner and location of death and significant medical history (Boles 2012). This project utilized an environmental scan to determine the current Canadian and international practices regarding MCD completion post-assisted death. An environmental scan was conducted according to a process suggested by Albright (2004). The process followed the steps of 1) identification of need, 2) gathering the information, 3) analyzing the information, 4) communicating the results, and 5) facilitating and encouraging the making of informed choices. This paper represents partial fulfillment of step 4.

An environmental scan is an appropriate methodological choice to analyze a practice environment to identify emergent issues, review the impact of significant events, guide future plans, review quality improvement opportunities, raise issue awareness, initiate a broader project and inform decision-making (Albright 2004; Graham 2008; Guion 2010; Wilburn 2016). It is an especially useful process after regulatory and legal changes, as these may have

significant impact on government agencies and health delivery organizations, who may utilize the resulting information in forming evidence-based policies and informing strategic planning (Albright 2004). Within the Canadian context of this environmental scan, federal Bill C-14 legalized MAiD necessitating provinces and territories, who have jurisdiction through provincial/territorial legislation, to develop policies and procedures for MCD completion and death reporting standards.

Every country has a system for reporting cause and manner of deaths and issuing of death certificates (Das 2005). It is generally accepted that the cause of death is "the disease, injury or poison responsible for the death of a person" (Das 2005: 193), whereas the manner of death is a description of the circumstances of how the death occurred with the usual manner of death categories including natural, accident, suicide, homicide or undetermined (Das 2005; Hanzlick et al. 2002). Downie and Oliver (2016) reported on the MCD of 12 Canadian provinces and territories. Each available provincial MCD made a determination of cause of death (immediate, antecedent and underlying) and specified a manner of death from a selection of pre-set categories. There was some variation province to province in the manner of death categories.

Natural deaths are deaths solely or near solely related to the disease and/or the aging process (Hanzlick et al. 2002), and within the Canadian context, this information is provided on the MCD in accordance with the World Health Organization's guidelines and classified in accordance with the international classification of diseases, injuries and causes of death (Office of the Registrar General 2010). Within most Canadian jurisdictions, the most responsible practitioner (i.e., physician or nurse practitioner) is tasked with determining the cause of death in such situations (Wetmore 2007). When the manner of death is deemed non-natural, the death is typically reported to an oversight agency, such as the coroner's office or medical examiner's (ME) office (Canadian Medical Protective Society 2016). Cause and manner of death is guided by both legislation and principles. Within the Canadian context, each province has its own death investigation or reporting legislation resulting in provincial/territorial practice differences.

Within the Canadian context, the MCD constitutes the legal record of an individual's death that may be utilized to settle issues of estate, insurance claims, matters of pension, and genealogy (Brooks and Reed 2015; Office of the Registrar General 2010; Swain et al. 2005). Nationally, the MCD is also used as a key source of mortality data. These statistical data are used to a) assess and monitor for changes and identify regional differences in population health status, b) to monitor trends in infant and maternal mortality, infectious diseases, accidents and suicides, c) to anticipate health research and healthcare priorities, and health facilities, services and manpower, and d) to plan prevention, screening and health promotion programs (Office of the Registrar General 2010; Swain et al. 2005). International evidence suggests errors on MCDs have been reported, including errors in recording the immediate and underlying cause of death, incomplete or inaccurate recording of contributing disease processes, MCDs with incomplete or incorrect sections (i.e., place of death), and incorrect

manner of death classification (Hunt et al. 1993; McGivern 2017; Mieno et al. 2015; Nielsen et al. 1991; Smith Sehdev and Hutchins 2001). Given the vast utilization, and far reaching impacts, of the MCD data, ensuring accuracy and a measure of consistency in reporting is paramount.

Identifying the Need

MAiD is an end-of-life option available to eligible Canadians since the passing of Bill C-14. Section 3.1 of Bill C-14 states the Minister of Health, after consultation with provincial governments, will establish guidelines regarding MCD completion in cases where MAiD has been provided (Government of Canada 2016). The Government of Canada (2017) followed with non-binding guidelines suggesting the immediate cause of death be listed as toxicity of the drugs administered and the precipitating medical condition as the underlying cause of death. They further suggest 1) MAiD be recorded as contributing to the death, but not part of the sequence of events, and that 2) specification be provided if MAiD was practitioner- or self-administered, and 3) that the manner of death should be recorded as natural if that option exists. Downie and Oliver (2016) reflected on two of the factors in death reporting post-assisted death, that of privacy and insurance concerns, and offered first principles with regards to completion of MCDs after an assisted death. They suggest physician-assisted death (now termed "medically assisted death," as nurse practitioners may also provide this) be recorded as the manner and the underlying medical condition as the cause of death.

In absence of binding national directions, provincial jurisdictions bear the responsibility of determining how the MCD is completed post-assisted death. This responsibility includes death investigation and registration oversight, while balancing accuracy and both health practitioner and care recipient sensitivities. Because MAiD became legally accessible June 2016, it is important to review the current pan-Canadian and international practice of recording assisted death on MCDs. The objective of this project was to determine and compile current practices in the completion of the MCD in Canadian and international jurisdictions related to assisted dying.

Gathering the Information

Information on MCD completion post-assisted death, specifically cause and manner of death and related assisted death reporting recommendations, was sought from all the Canadian provinces and territories, the American states of Vermont, Oregon, Washington State, California and Colorado and internationally from Belgium, the Netherlands and Switzerland. Within the United States of America, there is no federal assisted death legislation and development of assisted death legislation is under the purview of individual states. The American states chosen for inclusion in the environmental scan are states with state-level assisted death legislation with operationalized frameworks, policies and procedures. The international jurisdictions of Belgium, the Netherlands and Switzerland were included in the environmental scan as these nations have legalized assisted death.

Web-based searches were conducted for data in relation to MCD completion post-assisted death. Search terms included (in a variety of combinations) MAiD, assisted death, death certificates, medical certificates of death, vital statistics, Office of the Chief Coroner, Medical Examiner, names of assisted death legislation (i.e., Death with Dignity Act), provincial physician associations, Dignitas, EXiT, assisted death reporting, and Death with Dignity. Documentation was utilized if it was available in English. Within the Canadian context, e-mail communication was sent to available provincial and territorial agencies (provincial/territorial Vital Statistics, offices of provincial/territorial Coroners/Medical Examiners [ME], and physician associations), as well as known end-of-life researchers and MAiD providers, for information solicitation with regards to cause and manner of death and related assisted death reporting recommendations and for validation of online documents. Canadian data were reported if at least two data sources reported the same information or if information was obtained from a provincial agency representative.

American state information was obtained from a variety of sources including state Dying with Dignity agencies, State annual reports, State Health Departments (website and e-mail communication), as well as by review of State assisted dying legislation. Practice information from Belgium, the Netherlands and Switzerland was obtained from e-mail communication with Dignitas, EXIT, World Right to Die Federation, various end-of-life researchers (known through authors' professional connections and via communication with authors of peer reviewed journal articles regarding assisted death in the included international countries), and review of available English translated federal laws pertaining to assisted death.

Analyzing the Information

Within Canada, there is variability in MCD completion. Twelve jurisdictions are represented in Table 1 (available online at longwoods.com/content/25685). One jurisdiction is not reported due to lack of available online documents and/or non-response from identified provincial organizations (Vital Statistics Offices, ME/Coroner's Offices, physician associations). Four jurisdictions closely approximate the Health Canada MCD completion guidelines (Government of Canada 2017), while no jurisdictions fully subscribe to the first principles suggested by Downie and Oliver (2016). Of the reporting jurisdictions, eight classify the manner of death as natural, three jurisdictions document the manner as unnatural (one as a suicide, one as unclassified and one as MAiD) and in one jurisdiction the manner is not explicitly stated. Involvement with the provincial coroner's office or ME's office depends on three factors: 1) designation (or not) as the oversight agency for assisted deaths, 2) designation (or not) of the assisted death as a natural death, and 3) if there was an unnatural antecedent event precipitating the assisted death (i.e., spinal cord injury due to an accident).

Within the American states included in this review, there is consistent application of cause and manner of death; cause of death is the underlying precipitating illness and the manner of death is natural (Table 2 – available online at longwoods.com/content/25685).

In most states there is clear language embedded in their legislation to protect the privacy of the individual care recipient choosing an assisted death and, in most cases, prohibits reference to either the medications used or suicide as the manner of death. Internationally, the availability of English documentation limited the depth of information that was able to be obtained. The practice in reporting assisted deaths has a varied process with one country reporting assisted deaths as natural and two countries reporting deaths as non-natural (Table 3 – available online at longwoods.com/content/25685). In the countries where death is reported as non-natural (the Netherlands and Switzerland), the manner of death is consistent with their legislated terminology (i.e., euthanasia in the Netherlands; assisted suicide in Switzerland). European jurisdictions have a variety of practices to ensure the laws and related practice safeguards are upheld. Due to the variations in practice, and the limitations on the available data, the European information will not be considered in the section entitled "Facilitating and Encouraging the Making of Informed Choices."

Communicating the Results

Project results will be shared through the authors' professional networks with the goal of supporting planning and policy decision-making within the Canadian context. A number of stakeholders who provided insight and information to the regional practices have asked to be informed of the project results, which will be facilitated through sharing publication information. Additionally, results will be shared through existing academic knowledge translation processes including relevant conferences and presentations.

Facilitating and Encouraging the Making of Informed Choices

An environmental scan is helpful in an environment after regulatory change and may assist in forming evidence-based policies and strategic planning (Albright 2004). As assisted death is a newly available care option, precipitated by a national law change, with provincial authority over operationalization of practice, variation in policy is understandable. Based on the current state of Canadian practices and the experiences of other jurisdictions, the authors recommend a) a consistent provincial approach in MAiD reporting in Part 1 and Part 2 of the MCD, b) a consistent provincial reporting of manner of death post-assisted death and, c) a designated process for MAiD oversight.

In the reviewed American states, where both assisted death legislation and death reporting is at the state level, binding MCD completion standards are possible. As the Canadian federal parliament does not have the power to legislate consistent MCD completion requirements, these choices are left to the purview of the Canadian provinces and territories. Consistency in death reporting Part 1, Part 2 and the manner of death on the MCD may require re-examination and/or amendment of provincial/territorial death investigation/reporting legislation. These discussions should occur in a timely, coordinated, sensible approach. Additionally, finding a balanced approach regarding the information provided on

the MCD and the information further provided to families (should they request it) on the death certificate is further warranted to balance reporting needs and care recipient and practitioner sensitivities.

The most appropriate agency (Coroner's Office, ME Office or other) to oversee assisted death reporting processes should not be determined by the classification of the death as natural or unnatural. MAiD is a unique, sensitive, practice area and dedicated reporting and oversight of all MAiD-related deaths to facilitate practice review is paramount. The government of Canada (2017) has proposed a federal monitoring regime to support accountability, transparency and the protection of vulnerable individuals, as well as identification of trends, legislation monitoring and collection pf quality and consistent data (2017). Provincial resultant practices should align such that MCD completion and oversight standards are consistently applied while being cognizant of reporting duplication and client, family and provider sensitivities. This is critical not only for consistency in recording and reporting of the data but, most importantly, to ensure upholding of assisted death safeguards embedded in both legislation and local policy. The importance of a consistent approach to reporting and oversight cannot be understated.

Conclusion

The goal in this project was to undertake an environmental scan of the practice of MCD completion in assisted death nationally and internationally. Assisted death is represented on the MCD inconsistently across the scanned jurisdictions. Related factors include the overarching assisted death legislation and variations in death investigation/reporting legislation, variation in assisted death terminology and the designated oversight agency for assisted dying reporting. Within the Canadian context, striving for consistent application of cause and manner of assisted death reporting is important for accurate, sensitive and pan-Canadian consistent statistical reporting. Further discussion at both the federal and provincial level is encouraged to determine the most appropriate process and/or agency to review medically assisted deaths in Canada. These measures would support the continued development of a consistent, transparent and respectful assisted death reporting system in Canada.

Acknowledgements

The authors acknowledge that this is a rapidly evolving practice landscape and MCD reporting/oversight processes might have changed from the time of the initial data collection.

The authors would like to thank the individuals who provided information and documents as part of the environmental scan. Specific thank you to Dr. Rob Jonquiere, with the World Federation of Right to Die Societies, for the assistance in obtaining international documents, and M^{e} Pierre Deschamps, member of the McGill Research Group on Health and Law in sourcing and translating information from Quebec.

Correspondence may be directed to: Janine M. Brown, RN, CCNE, Nursing Instructor, Faculty of Nursing, University of Regina, Saskatoon Campus, 111.30 – 116 Research Drive, Saskatoon, SK; tel.: 306-664-7395; e-mail: janine.brown@uregina.ca.

References

Albright, K. 2004. "Environmental Scanning: Radar for Success." *The Information Management Journal* 38(3): 38–44.

Boles, J.R. 2012. "Documenting Death: Public Access to Government Death Records and Attendant Privacy Concerns." *Cornell Journal of Law and Public Policy* 22(1). Accessed at https://scholarship.law.cornell.edu/cgi/viewcontent.cgi?article=1375&context=cjlpp.

Brooks, E.G. and K.D. Reed. 2015. "Principles and Pitfalls: A Guide to Death Certification." *Clinical Medicine and Research* 13(2): 74–82. doi: 10.3121/cmr.2015.1276.

Canadian Medical Protective Society. 2016. "Completing Medical Certificates of Death: Who's Responsible?" Retrieved March 5, 2018. https://www.cmpa-acpm.ca/en/advice-publications/browse-articles/2016/completing-medical-certificates-of-death-who-s-responsible.

Das, C. 2005. "Death Certificates in Germany, England, the Netherlands, Belgium and the USA." *European Journal of Health Law* 12: 193–211.

Department of Health and Human Services. 2003. Medical Examiners' and Coroners' Handbook on Death Registration and Fetal Death Reporting. Retrieved March 7, 2018. https://www.cdc.gov/nchs/data/misc/hb_me.pdf.

Downie, J. and K. Oliver 2016. "Medical Certificates of Death: First Principles and Established Practices Provide Answers to New Questions." *Canadian Medical Association Journal* 188(1): 49–52. doi: https://doi.org/10.1503/cmaj.151130.

Government of Canada. 2017. Monitoring of Medical Assistance in Dying Regulations. Retrieved April 22, 2018. http://www.gazette.gc.ca/rp-pr/p1/2017/2017-12-16/html/reg6-eng.html.

Government of Canada. 2016. *An Act to Amend the Criminal Code and to Make Related Amendments to Other Acts (Medical Assistance in Dying).* Retrieved March 5, 2018. http://www.parl.ca/DocumentViewer/en/42-1/bill/C-14/royal-assent.

Government of Canada. 2017. *Guidelines for Death Certificates.* Retrieved March 5, 2018. https://www.canada.ca/en/health-canada/services/publications/health-system-services/guidelines-death-certificates.html.

Graham, P. 2008. "Environmental Scans: How Useful Are They for Primary Care Research?" *Canadian Family Physician* 54(July): 1022–3.

Guion, L. 2010. "A 10-Step Process for Environmental Scanning." *Journal of Extension* 48(4): 4IAW2

Hanzlick, R., J.C. Hunsaker and G. Davis. 2002. A Guide for Manner of Death Classification. 1st ed. National Association of Medical Examiners. Retrieved March 5, 2018. http://www.ncids.com/forensic/pathology/pathology.shtml.

Hunt, L.W., M.D. Silverstein, C.E. Reed, E.J. O'Connell, W.M. O'Fallon and J.W. Yunginger. 1993. "Accuracy of Death Certificates in a Population-Based Study of Asthmatic Patients." *Journal of the American Medical Association* 269: 1947–52. doi: 10.1001/jama.1993.03500150059027.

McGivern, L., L. Shulman, J.K. Carney, S. Shapiro and E. Bundock. 2017. "Death Certificate Errors and the Effect on Mortality Certificates." *Public Health Reports* 132(6): 669–675. doi: 10.1177/0033354917736514

Mieno, M.N., N. Tanaka, T. Arai, T. Kawahara, A. Kuchiba, S. Ishikawa and M. Sawabe. 2015. "Accuracy of Death Certificates and Assessment of Factors for Misclassification of Underlying Cause of Death." *Journal of Epidemiology* 26(4): 191–198. doi: 10.2188/jea.vE20150010.

Nielsen, G.P., J. Bjornsson and J.G. Jonasson. 1991. "The Accuracy of Death Certificates. Implications for Health Statistics." *European Journal of Pathology* 419(2): 143–6.

Office of the Registrar General. 2010. Handbook on Medical Certification of Death. Retrieved March 5, 2018. www.publications.serviceontario.ca/ecomlinks/016600.pdf.

Smith Sehdev, A.E. and G. Hutchins. 2001. "Problems with Proper Completion and Accuracy of the Cause-of-Death Statement." *Archives of Internal Medicine* 161(2): 277–284. doi: 10.1001/archinte.161.2.277.

Swain, G., G.K. Ward, P.P. Hartlaub. 2005. "Death Certificates: Let's Get it Right." *American Family Physician* 71(4): 652–656.

Wetmore, S. 2007. "A Duty to Certify." *Canadian Family Physician* 53(6): 977–78.

Wilburn, A. 2016. "Environmental Scanning as a Public Health Tool: Kentucky's Human Papillomavirus Vaccination Project." *Preventing Chronic Disease* 13: 160–65. doi: http://dx.doi.org/10.5888/pcd13.160165.

2019 ANNUAL CAHSPR CONFERENCE

PRE-CONFERENCE DAY: MAY 28, 2019
CONFERENCE DAYS: MAY 29-31, 2019

HALIFAX CONVENTION CENTRE • HALIFAX

CAHSPR ACRSPS

Canadian Association for Health Services and Policy Research

L'Association canadienne pour la recherche sur les services et les politiques de la santé

CONFÉRENCE ANNUELLE DE 2019 DE L'ACRSPS

JOURNÉE PRÉ-CONFÉRENCE : LE 28 MAI 2019
CONFÉRENCE : DU 29 AU 31 MAI 2019

CENTRE DE CONGRÈS HALIFAX • HALIFAX

Visit www.cahspr.ca for more information!

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

www.healthcarepolicy.net