

HEALTHCARE

# POLICY

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## Politiques de Santé

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

**Volume 11 + Number 3**

Usefulness of a KT Event to Address Practice and Policy Gaps  
Related to Integrated Care

KAREN JACKSON ET AL.

Examining Primary Healthcare Performance through  
a Triple Aim Lens

BRIDGET L. RYAN ET AL.

Cross-Border Healthcare Requests to Publicly Funded Healthcare  
Insurance: Empirical Analysis

LYDIA STEWART FERREIRA

Inappropriate Ambulance Use: A Qualitative Study  
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# POLICY

## Politiques de Santé

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

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

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

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*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.


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## De-prescribing: When *Less Is More* in Healthcare

*“It is an art of no little importance to administer medicines properly; but it is an art of much greater and more difficult acquisition to know when to suspend or altogether omit them” (Pinel 1809).*

**A**S PINEL’S QUOTE ILLUSTRATES, THE UNDERSTANDING THAT LESS IS SOMETIMES more in healthcare is not new, but there is growing energy behind efforts to advance appropriateness of care across the health sector. Ensuring the right care for each person – neither more nor less – is the goal.

In some ways, the challenge is growing over time because complex care patterns are an increasing reality in developed countries. The 2014 Commonwealth Fund survey, for instance, found that between 8% and 25% of seniors across 11 countries saw four or more doctors in the last year. And between 29% and 53% took four or more prescription medications. In both cases, Switzerland had the lowest rates and the US the highest. Likewise, the Canadian Institute for Health Information (2014) reports that nearly two-thirds of seniors took five or more prescription medications in 2012. More than one-quarter (27.2%) had claims for 10 or more medications.

With complex care patterns comes a need for strong coordination of care. Across developed countries, patients who say that they saw four or more physicians are at least twice as likely as those with one or two physicians to report having experienced a medical mistake, medication error, or laboratory test problem in the past two years (Commonwealth Fund 2010). And in Canada in 2012, 24% of those aged 65 and older – or more than a million people – had been prescribed a medication that was potentially inappropriate for seniors (CIHI 2014).

The statistics are clear, but there is nothing like personal experience to bring home the human costs involved. Two years ago, a relative of mine had been prescribed a complicated cocktail of medications. It was a true medication cascade, built up over time as clinicians added new drugs to address side effects generated by medications prescribed by others. Several falls, long hospitalizations, and broken bones later, she moved into long-term care. Her de-prescribing journey, initiated by a geriatrician during her last hospital stay, continues. And it has been a journey, complete with starts and stops, progress and setbacks.

A recent Canadian Institutes of Health Research meeting for stakeholders keen to improve safe and appropriate medical therapy for older men and women drew attention to the range of approaches that can be taken to advance this goal. Different strategies focus

at individual and interpersonal, health professional, organizational, community, and public policy levels. There are guidelines on polypharmacy, the Choosing Wisely Canada campaign targeted at both the public and health professionals, decision support tools that can be integrated into practice at the point of care, policy changes that have offered additional support for health professionals to undertake medication reviews, and much more.

Advancing understanding of the effectiveness of different types of interventions to promote appropriate care given individuals' unique needs and circumstances has the potential to help shape the future. A key challenge is to increase knowledge about which of these approaches are most effective, or, perhaps more likely, what combination of interventions works best in different circumstances. This is not just true with regards to efforts to improve the appropriateness of medications, but also for other types of care.

The articles in this issue of the journal respond to challenges like this and other important issues that cut across the continuum of care. For example, Deirdre DeJean and colleagues explore the appropriateness of ambulance service use from the perspective of paramedics. Likewise, Nathalie Clavel and colleagues examine the perspectives of decision-makers on the appropriateness of total joint replacement. Other authors focus on different types of questions related to primary care, specialty services, and emergency departments. Rounding out this issue is Karen Jackson, Omenaa Boakye and Nicole Wallace's article. It touches on knowledge translation for addressing practice and policy gaps related to integrated care.

I hope that this combination offers food for thought, regardless of your particular health interest, as well as the potential for insights from outside the areas in which each of us usually work. I also invite you to join the conversation in future issues by submitting your latest research and thoughtful evidence-informed commentaries to *Healthcare Policy/Politiques en santé*.

JENNIFER ZELMER, PHD

*Editor-in-chief*

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## Dé-prescrire : quand *moins* veut dire *plus* dans les services de santé

« *L'habileté du médecin consiste moins dans l'usage répété des remèdes, que dans l'art profondément combiné d'en user à propos ou de s'en abstenir* » (Pinel 1809).

COMME LE MONTRE LA CITATION DE PINEL, LE PRINCIPE VOULANT QUE MOINS PEUT parfois signifier plus dans les services de santé ne date pas d'hier. On observe, en effet, que de plus en plus d'énergie est consacrée aux efforts qui visent la pertinence appropriée des soins, et ce, dans tous les secteurs de la santé. L'objectif n'est ni plus ni moins que d'assurer que chaque personne reçoive les soins adéquats.

Dans un sens, ce défi prend de plus en plus d'ampleur puisque les schémas de soins complexes sont de plus en plus présents dans les pays développés. À titre d'exemple, l'enquête 2014 du Fonds du Commonwealth révèle qu'entre 8 et 25 % des aînés de 11 pays ont consulté au moins quatre médecins au cours de l'année dernière. De plus, entre 29 et 53 % d'entre eux ont pris au moins quatre médicaments sur ordonnance. Dans les deux cas, on observe en Suisse les taux les plus bas et aux États-Unis les taux les plus élevés. Dans le même ordre d'idée, l'Institut canadien d'information sur la santé (2014) rapporte que près des deux tiers des aînés prenaient au moins cinq médicaments sur ordonnances en 2012. Plus d'un quart (27,2 %) des personnes âgées indiquaient prendre au moins 10 médicaments.

Les schémas de soins complexes demandent une bonne coordination des soins. Dans les pays développés, les patients qui indiquent avoir consulté au moins quatre médecins sont deux fois plus susceptibles, que ceux qui indiquent avoir consulté un ou deux médecins, de déclarer avoir fait l'objet d'une erreur médicale, d'une erreur de médication ou d'un problème d'analyse en laboratoire au cours des deux années écoulées (Fonds du Commonwealth 2010). En 2012, au Canada, 24 % des personnes de 65 ans et plus – soit plus d'un million de personnes – ont reçu une ordonnance pour un médicament potentiellement contre-indiqué pour les personnes âgées (ICIS 2014).

Les statistiques ne mentent pas, mais il n'y a rien comme l'expérience personnelle pour en illustrer le coût humain. Il y a deux ans, une de mes parentes se trouvait devant un cocktail élaboré de médicaments sur ordonnance. Ce cocktail résultait d'une véritable montée en cascade, dans laquelle des médecins ajoutaient de nouveaux médicaments pour traiter les effets secondaires de médicaments prescrits par d'autres. Après plusieurs chutes, de longues hospitalisations et des fractures, elle a été transférée en soins de longue durée. Son travail de « dé-prescription », amorcé par un gériatre au cours de la dernière hospitalisation, est toujours en cours. Il s'agit d'un véritable périple, avec ses départs, ses arrêts, ses avancées et ses reculs.

Une réunion, organisée récemment par les Instituts de recherche en santé du Canada pour les intervenants soucieux d'améliorer la prestation de soins sécuritaires et appropriés, a fait voir

l'étendue des démarches qu'on peut entreprendre pour atteindre cet objectif. Nombres de stratégies agissent aux niveaux personnel, interpersonnel, professionnel, organisationnel, communautaire ou politique. Il y a, par exemple, des directives en polypharmacie, la campagne « Choisir avec soin » qui vise autant le grand public que les professionnels de la santé, des outils d'aide à la décision qu'on peut intégrer directement aux points de services, des changements politiques qui offrent un soutien supplémentaire aux professionnels pour revoir la médication, et la liste est longue.

Mieux comprendre l'efficacité des divers types d'interventions visant la promotion de soins appropriés en fonction des circonstances et besoins particuliers de chacun peut nous aider à mieux planifier l'avenir. Un des principaux défi est d'approfondir les connaissances sur les démarches les plus efficaces, ou plutôt, sur la combinaison d'interventions qui fonctionne le mieux dans telle ou telle circonstance. Et cela ne concerne pas seulement l'amélioration de l'adéquation des médicaments, mais aussi celle de tout autre type de soin.

Les articles du présent numéro traitent de défis de ce genre de même que d'enjeux importants qui touchent à l'ensemble des soins. Par exemple, Deirdre DeJean et ses collègues se penchent sur la pertinence de l'utilisation de l'ambulance du point de vue des ambulanciers. Pour sa part, Nathalie Clavel et ses collègues examinent le point de vue des décideurs sur la pertinence de l'arthroplastie totale. D'autres auteurs s'intéressent à diverses questions liées aux soins primaires, aux soins des spécialistes et aux services des urgences. Le numéro se complète avec l'article de Karen Jackson, Omenaa Boakye et Nicole Wallace sur le rôle du transfert de connaissances pour combler les fossés entre les politiques et la pratique dans le contexte des soins intégrés.

J'espère que cette combinaison de sujets nourrira votre réflexion, quels que soient vos intérêts, et vous donnera des pistes provenant d'autres secteurs que le vôtre. Je vous invite également à participer aux débats de cette revue en soumettant vos derniers rapports de recherche ou des commentaires éclairés par les données probantes, pour les prochains numéros de *Politiques en santé/Healthcare Policy*.

JENNIFER ZELMER, PHD

*Rédactrice en chef*

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# Usefulness of a KT Event to Address Practice and Policy Gaps Related to Integrated Care

## Utilité d'un événement de transfert de connaissances pour combler les fossés entre politiques et pratique dans le contexte des soins intégrés



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### Abstract

There are limited evaluations of the impact of knowledge translation (KT) activities aimed at addressing practice and policy gaps. We report on the impact of an interactive, end-of-grant KT event. Although action items were developed and key stakeholder support attained, minimal follow-through had occurred three months after the KT event. Several organizational obstacles to transitioning knowledge into action were identified: leadership, program policies, infrastructure, changing priorities, workload and physician engagement. Key messages include: (1) ensure ongoing and facilitated networking opportunities, (2) invest in building implementation capacity, (3) target multi-level implementation activities and (4) focus further research on KT evaluation.

## Résumé

Il y a peu d'évaluations de l'impact des activités de transfert de connaissances (TC) qui visent à combler les fossés entre la pratique et les politiques. Nous faisons rapport de l'impact d'un événement interactif de TC, après la fin du financement du projet en question. Bien que des mesures de suivi aient été mises au point et qu'il ait eu un appui de la part des principaux intervenants, on notait un suivi minimal trois mois après l'événement de TC. Nous avons noté plusieurs obstacles d'ordre organisationnel face à la transposition des connaissances en actions : le leadership, les politiques des programmes, l'infrastructure, un changement des priorités, la charge de travail et l'engagement des médecins. Les messages clés sont les suivants : (1) faciliter de façon continue les occasions de réseautage, (2) investir dans le renforcement des capacités pour la mise en œuvre, (3) cibler les activités de mise en œuvre sur plusieurs niveaux et (4) approfondir la recherche sur l'évaluation du TC.

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## Introduction

The challenges associated with KT are widely known (Oborn et al. 2013). While KT literature has primarily focused on theories, frameworks and models, there is a lack of information on KT processes (Ward et al. 2009) and the evaluation of KT strategies (Buykx et al. 2012). When evaluations do occur, quantitative measurement tools dominate, not allowing for an interpretative approach that would provide for a better understanding of the KT implementation process (Lafrenière et al. 2013).

Acknowledging this gap in KT evaluation, we explored the impact of an end-of-grant KT event associated with a research project on barriers to integrated care.

## Background

The need for integrated care has been emphasized in recent years. Kodner (2009: 7) conceptualizes integration as “designed to create coherence and synergy between various parts of the healthcare enterprise in order to enhance system efficiency, quality of care, quality of life and consumer satisfaction”. A recent research project conducted in Alberta Health Services (AHS) aimed to understand the root causes of challenges faced by patients in accessing healthcare services across the continuum of care. The research was fuelled by a joint committee between AHS and Alberta Health (AH) concerned with health system navigation and case management (Jackson et al. 2013). Committee members felt that exploring lived experiences of patients and providers would help identify the underlying causes of challenges to integrated care, which would, in turn, inform strategies to mitigate barriers to integrated care. An advisory committee comprising members from the joint committee, as well as knowledge users in various areas of Alberta's health system, worked in collaboration with the researchers throughout the research process. At the outset of the study, there was an implicit assumption that identified strategies would be embraced and implemented by appropriate stakeholders.

In total, 15 complex patients or their families and 13 of their corresponding providers were interviewed to obtain first-hand accounts of patients' journeys through the health system. Patients were selected from three population groups (mental health, children with special needs and seniors) across rural and urban Alberta, and they were included if they accessed services from at least two programs/services during the six months prior to the interview. Data analysis included a modified change analysis (US Department of Energy 1992) to allow for identification of common root causes and areas for corrective action. Further detail of this research project is available elsewhere (Jackson et al. 2013).

### *KT initiative*

Knowledge translation has been touted as having potential to address the use of knowledge in all sectors and at all levels of decision-making, thereby improving health outcomes and return on research investment (Lafrenière et al. 2013). Canadian Institutes of Health Research (CIHR) (2014) describes knowledge translation (KT) as “a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the healthcare system”. KT can be grouped into two main categories: integrated KT and end-of-grant KT (CIHR 2014). While integrated KT provides opportunities for knowledge users to be part of the research process, end-of-grant KT involves disseminating findings to the wider community. A formal KT model was not employed; however, our research project included ongoing interaction between researchers and knowledge users and a five-hour end-of-grant KT event with a larger audience.

For the end-of-grant KT event, key stakeholders ( $n = 30$ ) included members of our advisory committee as well as other policy makers and senior health service managers with decision-making ability and/or involvement in strategic planning related to integrated care in Alberta. Two study participants also attended (one patient and one frontline provider). The objectives of the event were to share key project findings, validate data interpretations and develop action plans. Prior to the event, pre-reading packages summarizing research findings were circulated to event attendees. The interactive KT event was designed to be knowledge-user-focused – i.e., sharing perspectives, brainstorming and co-constructing plans of action that would be meaningful and implementable for knowledge users throughout AHS. The action plans focused on six areas for corrective action that were identified during data analysis. Each action plan outlined suggested activities, relevant stakeholders, alignment with other organizational initiatives, anticipated outcomes, indicators of success and potential risks and risk-mitigation strategies. Approximately six weeks following the KT event, an event summary (including documented action plans) was circulated to all attendees. The event summary is available elsewhere (AHS 2013).

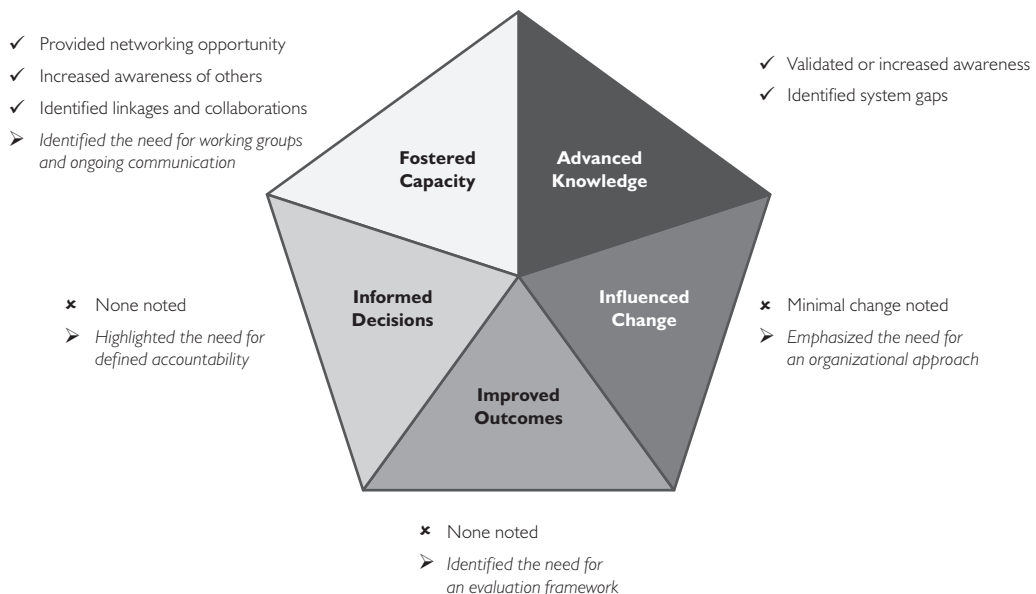
To investigate the impact of the KT event, attendees and three additional stakeholders (individuals who had not attended the event but had pledged their commitment to move forward identified action items) were invited to participate in a semi-structured interview three months after the event.

Interview questions focused on how information from the event had informed interviewees' work/practice, and if the event was an effective strategy for facilitating knowledge to action. In total, 25 participants consented to be interviewed. Interviews were primarily conducted via telephone, lasted approximately 30 minutes and were digitally recorded. A secondary analysis was guided by five pre-determined categories – advanced knowledge, fostered capacity, informed decisions, influenced change and improved outcomes – adapted from research impact frameworks available in the literature (Buykx et al. 2012; CAHS 2009). Because the primary thematic analysis and secondary analysis framework converged on topics of event impact, knowledge-to-action and sustaining momentum, it was appropriate to re-analyze the data (Heaton 2008).

## Results

For most interviewees, the research findings resonated and provided evidence to support their perceptions and assumptions. The majority of impact was seen in the categories of advanced knowledge and fostered capacity. For an overview of the five categories, see Figure 1.

FIGURE 1. Impact analysis



### *Advanced knowledge*

Many interviewees stated that the research findings either validated or increased their awareness of integrated care barriers encountered by patients and providers, the impact of those challenges and the importance of addressing system gaps such as communication, collaborative practice and patient/family engagement across the care continuum.

It hit me ... just how complex this all really gets and depending on your perspective you can miss other pieces of that complexity.

### *Fostered capacity*

Interviewees reported that the KT event provided networking opportunities, contributed to a better understanding of what other stakeholders or programs were doing in relation to integrated care, and identified linkages and necessary collaborations between projects/portfolios.

Just the opportunity to meet people and get to know people better has allowed me to sort of pick up the phone, call people and get more support.

Interviewees were keen to sustain the momentum achieved at the KT event. Many expressed a desire for ongoing connection with KT event attendees to share what has been done and what the impact has been, and to identify gaps, needs and next steps. They suggested strategies such as identification of other key stakeholders and development of working groups to take forward specific pieces of work identified as necessary at the KT event. They also recommended continued communication to promote awareness, facilitate collaboration and create synergy.

### *Informed decisions*

There was no mention by the interviewees on how the research findings and event discussions informed decisions. However, interviewees highlighted that the KT event validated the need to continue with current work and to embrace a collaborative and integrated organizational approach to the work. Many voiced that it was helpful to now have supporting evidence.

This [research] very much aligns with my work ... and it's timely ... Data is a pretty powerful thing, it is hard to ignore.

Others acknowledged the importance of a purposeful approach with clear role accountabilities, and suggested that the action plans developed at the KT event needed more how-to detail, leadership commitment and defined accountability.

From my perspective there is no clarity on how to move this forward ... so it is hard to harness the passion and energy when there is no road map.

### *Influenced change*

The majority of interviewees reported that no new or revised work related to integrated care emerged from the KT event "*as the cogs of the wheel don't move that fast.*" Yet, a few interviewees spoke to "*new eyes*" and new insight to make small local changes in their approach to working with other services and programs.

We have initiated at our local level – let’s just get around the table and talk ... let’s learn what each others’ challenges are ...

Interviewees felt that support from management, awareness of organizational alignment, eagerness of staff for improvement in care and broader circulation of the KT event documentation, would be necessary for change to occur.

The [KT event] report creates a point of reference where you can start to develop a community of interest or a community of understanding.

Interviewees also identified barriers to change including lack of leadership support, restrictive program policies, lack of infrastructure, complexity of healthcare system, changing priorities, workload issues and physician engagement.

I think that our healthcare system is incredibly complicated so just even understanding who does what and how to get the right people to do this level of work is quite complicated.

### *Improved outcomes*

While limited change had occurred, a few interviewees stressed the need for an evaluation framework to assist with identifying outcome indicators and appropriate measures. There was a desire for a focused discussion to determine “*what difference has been made.*”

### **Lessons Learned**

Despite participant excitement and the creation of high-level plans of action during our KT event, a three-month follow-up with our participants revealed a lack of uptake or further development of the action plans. Although we had hoped for more, this was in line with Lomas and Brown’s (2009) caution that researchers should expect modest impact in health system policy making. What should have been considered was a dynamic KT plan that continued beyond the life of the research project (i.e., provided ongoing interaction with the aim of actively influencing change). Just as partnerships between researchers and knowledge users are important during the research process, sustained partnerships can leverage future use of research findings (Ross et al. 2003).

What does this mean for decision-makers and researchers? Participants identified several organizational obstacles to transitioning knowledge into action including leadership, program policies, infrastructure, changing priorities, workload and physician engagement. Suggested strategies for sustaining momentum were related to communication, collaboration, leadership commitment and defined accountability. Interestingly, our participants who were key stakeholders pointed to “the organization” as needing to step up to the plate – not acknowledging their own role with enabling and sustaining momentum. Not surprisingly, stakeholders who do not believe they have executive support, resources or accountability to implement change will not be empowered to carry the torch. To enable adoption, Greenhalgh et al. (2004) suggest the engagement of

champions such as an organizational maverick, who provides autonomy to innovators, and a transformational leader, who gathers support from others in the organization. As well, health system interventions such as integration are complex, as they involve a number of interacting components (Husereau et al. 2014). Thus, a champion role of network facilitator (Greenhalgh et al. 2004) would ensure opportunities for continuous and facilitated interaction between various organizational programs and departments through networks or communities of practice. These ongoing opportunities for exchange can enable a collaborative effort to transitioning knowledge into action at the organizational level. Additionally, decision- and policy makers should create opportunities for researchers to participate in networks and committees to inform decisions (Lavis et al. 2002), while researchers and funding agencies need to consider opportunities that encourage researcher and decision-maker interactions beyond the research process (Ross et al. 2003).

What does this mean for the science of KT? Implementing research findings into practice was a challenge for our participants, and our research team lacked understanding and time to move evidence into practice and policy. While we engaged stakeholders throughout the research process, our knowledge transfer activities focused primarily on a KT event. Ideally, our KT plan should have been guided by a KT model – and specifically a global model that considered determinants, dissemination and implementation. KT related to health services research is complex and requires a multi-level approach to ensure that essential implementation strategies are addressed. Consideration needs to be given to implementation components such as system readiness, organizational structure and communication, leadership and management, human resource capacity, funding and inter-organizational networking (Greenhalgh et al. 2004). Furthermore, investment in building implementation capacity needs to be guided by implementation research (Holmes et al. 2012). Finally, additional research is needed on evaluating the effectiveness of KT strategies, including development of methods for measuring impact. To this end, Van Eerd et al. (2011) encourage further development of KT evaluation tools, especially theory-based and context-independent tools.

## Conclusion

The science of KT is still in its infancy. Further work is required to assist researchers and organizations with mobilizing knowledge to action. In particular, our exploration identified that additional research is required to build implementation capacity and identify evaluation methods, and that translating knowledge into practice requires communication, collaboration, leadership commitment and defined accountability.

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# Examining Primary Healthcare Performance through a Triple Aim Lens

## Examen du rendement des soins de santé primaires sous la lentille du triple objectif



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## Abstract

*Purpose:* This study sought to apply a Triple Aim framework to the measurement and evaluation of primary healthcare (PHC) team performance.

*Methods:* Triple Aim components were populated with 10 dimensions derived from survey and health administrative data for 17 Family Health Teams (FHTs) in Ontario, Canada. Bivariate analyses and rankings of sites examined the relationships among dimensions and among Triple Aim components.

*Results:* Readily available measures to fully populate the Triple Aim framework were lacking in FHTs. Within sites, there was little consistency in performance across the Triple Aim components (health, patient experience and cost).

*Conclusions:* More and better measures are needed that can be readily used to examine the Triple Aim performance in PHC teams. FHTs, in this study, are partially achieving Triple Aim goals; however, there was a lack of consistency in performance. It is essential to collect appropriate measures and attend to performance across all components of the Triple Aim.

## Résumé

*Objet :* Cette étude visait à employer le cadre du triple objectif pour mesurer et évaluer le rendement des équipes de soins de santé primaires (SSP).

*Méthodes :* Les composantes du triple objectif ont été appliquées à 10 aspects provenant des données administratives et de sondages auprès de 17 équipes Santé familiale (ESF) de l'Ontario, au Canada. Des analyses bivariées et le classement des sites ont permis d'examiner la relation entre les composantes de ces aspects et celles du triple objectif.

*Résultats :* Il y avait, dans les ESF, un certain manque d'accès à des mesures rapidement et facilement utilisables pour fournir des données complètes au cadre du triple objectif. Il y avait, sur les sites, peu de cohésion quant au rendement pour chacune des composantes du triple objectif (santé, expérience des soins, coûts).

*Conclusions :* Il faut davantage et de meilleures mesures qui soient rapidement et facilement utilisables afin d'examiner le rendement du triple objectif dans les équipes de SSP. Les ESF de cette étude atteignent de façon partielle les trois objectifs visés; toutefois, on note un manque de cohésion dans le rendement. Il est essentiel de prendre les mesures adéquates et de veiller au rendement de chacune des composantes du triple objectif.

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**T**HE INSTITUTE FOR HEALTHCARE IMPROVEMENT (IHI) TRIPLE AIM IS A framework describing an approach to optimizing health system performance (Berwick et al. 2008). The Triple Aim focuses on (1) improving the health of populations; (2) improving the patient experience (including quality, patient-centredness, safety and timeliness of care); and (3) reducing the per capita cost of healthcare (IHI 2014). The goal of the Triple Aim is to achieve improvement simultaneously in all three components.

Although initially conceived as a framework for health system improvement, the Triple Aim can be adapted to primary care at both the sector and practice/organization levels (Kates et al. 2012).

Ontario's Family Health Teams (FHTs), launched in 2005, serve more than three million Ontarians, approximately 22% of the provincial population (Hutchison and Glazier 2013; Ontario Ministry of Health and Long-Term Care 2009–2010). In total, 200 FHTs were established between 2006 and 2011. FHTs are inter-professional organizations that include family physicians and other primary healthcare (PHC) professionals, most commonly nurses, nurse practitioners, social workers, dietitians, pharmacists and registered practical nurses, as well as administrative support staff (Accreditation Canada 2013). The main objectives of the provincial government's FHT program are improved access to PHC, quality and comprehensiveness of care (with an emphasis on chronic disease management, health promotion and disease prevention), interdisciplinary teamwork, patient engagement, and integration and coordination of care (system navigation) (Accreditation Canada 2013). Physicians working in FHTs are remunerated through a blended capitation or blended salary payment model (Accreditation Canada 2013; Hutchison and Glazier 2013).

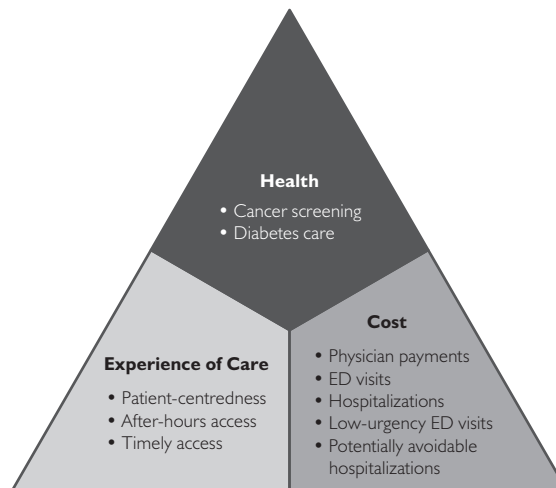
The extent to which it is possible to populate the Triple Aim framework with measures of PHC performance and thereby assess the extent to which PHC teams achieve the Triple Aim has not been previously reported. The principal objectives of this study were to: (1) determine the extent to which it was possible to populate the Triple Aim framework using readily obtainable data to measure the performance of PHC teams; and (2) examine the extent to which FHT performance is consistent across the components of the Triple Aim. A secondary objective was to explore anticipated relationships among the 10 dimensions of Triple Aim performance measured in this study.

## Methods

### *Study design and sample*

This paper reports results from a larger mixed-methods study that assessed the relationship between FHT characteristics and performance based on an examination of 17 FHT sites. Sites recruited by the Ontario College of Family Physicians were selected to reflect a range of locations (urban and rural), years in operations as an FHT, mix of health professionals and practice configurations (e.g., single site, multi-site). The Triple Aim *components* were populated with *10 dimensions of PHC performance* derived from patient survey data and health administrative data sets that were linked using unique, encoded identifiers and analyzed at the Institute for Clinical Evaluative Sciences. In the remainder of this paper, we describe the methods, analyses and results for the patient survey data collection, the health administrative data and the Triple Aim analysis (Figure 1). Findings from the qualitative portion of this study are reported elsewhere (Brown et al. 2015). Ethics approval for this study was received from The University of Western Ontario's Review Board for Health Sciences Research Involving Human Subjects and through Sunnybrook Health Sciences Centre Research Ethics Board.

FIGURE 1. Triple Aim framework components and associated dimensions



### *Populating the Triple Aim outcomes*

The IHI provides a guide for the types of measures that can be used to populate the Triple Aim framework (Stiefel and Nolan 2012). This study attempted to populate the framework with measures appropriate to PHC. We selected measures based on the current availability of relevant data and the feasibility of primary data collection given the overall mixed methods research design and study budget.

Improving the health of populations: We used proxy measures of population health rather than direct measures. The latter are unlikely to be sensitive to PHC performance at the team level given the powerful impact of other influences on population health, including social determinants, other healthcare sectors and the illness burden of the population being served. Appropriate proxy measures – over which PHC teams have substantial control – are clinical processes of care and intermediate outcomes linked in logic and evidence to health outcomes. In this study, we populated the “health” component of Triple Aim with cancer screening (colorectal, cervical and breast) and diabetes care (HbA1c testing, eye examination, cholesterol testing and ACE or ARB prescription), measures that were readily available in health administrative data, although limited in scope.

Improving the patient experience: We populated “patient experience” with patient-centredness, access to after-hours care and timely access to care.

Reducing the per capita cost of healthcare: Finally, we populated “cost” with per capita physician services costs, emergency department (ED) visit costs, hospital in-patient costs, rates of low-urgency ED visits and potentially avoidable hospitalizations.

Appendix 1 (available at: <<http://www.longwoods.com/content/24521>>) provides the data sources and the definitions for the 10 dimensions of primary care performance we used to represent the three components of the Triple Aim.

### *Patient surveys*

Patients were approached in the waiting room by the researchers after being invited to participate by the receptionist. Their acceptance of the invitation to participate was signalled by their acceptance of an information postcard. Patients completed the surveys immediately after their appointments. Inclusion criteria were: being 18 years of age or older and having a visit with a family physician, nurse practitioner or inter-professional healthcare provider (e.g., dietitian, pharmacist or social worker). Exclusion criteria were: (1) non-English speaking; (2) too ill or cognitively impaired; (3) attending an appointment for strictly administrative reasons; or (4) having an appointment with a healthcare trainee at the FHT. Data collection took place in 2012 and 2013.

The patient survey was used to capture the following dimensions of the Triple Aim “patient experience” component – patient-centredness, after-hours access and timely (same- or next-day) access. The patient survey included: (1) demographic questions; (2) a validated 14-item Patient Perception of Patient-Centredness (PPPC) Survey (Stewart et al. 2014b) that is based on the conceptual framework of the Patient-Centred Clinical Method (Stewart et al. 2014a); and (3) two questions concerning access to PHC that were taken from the 2013 Commonwealth Fund International Policy Survey of Adults in 11 countries (Schoen et al. 2013). See Appendix 1 for definitions. The analysis was conducted using SPSS21 (SPSS Statistics 2012). The mean PPPC score, standard deviation, median and range of scores were calculated. Bivariate analyses (*t*-tests and ANOVA as appropriate) examined whether there were differences between the PPPC scores for different groups of patients. The percentage of patients who achieved access was calculated, and only those patients who tried to access services were included in the denominator.

### *Health administrative data*

Administrative data profiles were generated for the 17 FHT sites based on patients of site physicians as of the year ending 31 March 2011. These profiles included the following dimensions of the Triple Aim components: “health” – cancer screening and diabetes care and “cost” – physician visit and capitation costs, ED visit costs, in-patient hospital costs, low-urgency ED visit rates and potentially avoidable hospitalization rates. Means and frequencies were computed for each of these dimensions. Profiles also included practice demographics and summary statistics across the 17 sites. As healthcare utilization is expected to vary according to practice demographics, the Triple Aim performance dimension scores were adjusted for age, sex, rurality, income quintile and morbidity. See Appendix 1 for definitions. In these health administrative databases, patients were linked to a family physician if they were enrolled with the family physician. Those who were not enrolled were linked to the family physician from whom they received the majority of their primary care.

### *Triple Aim analysis*

For each of the 10 dimensions used to populate the Triple Aim performance, a bivariate analysis calculating Pearson's correlation coefficients was conducted in SPSS21 (SPSS Statistics 2012) to compare each of the dimensions against the other dimensions.

For the Triple Aim component analysis, standardized z-scores for each of the "health," "patient experience" and "cost" components were calculated by summing the standardized z-scores for the performance dimensions representing each of the Triple Aim components. This was necessary because the units of measurement varied among the 10 dimensions. A bivariate analysis calculating Pearson's correlation coefficients ( $r$ ) was conducted in SPSS21 to compare each of the Triple Aim components against the other components. Additionally, sites were ranked by the Triple Aim Components, with 1 indicating the highest rank, that is, the most desirable outcome, to 17 indicating the lowest rank, that is, the least desirable outcome. The ranks were then divided into tertiles, with each site being in the top, middle or bottom third of the rankings on the Triple Aim components.

## Results

### *Patient surveys*

The survey sample consisted of 398 patients; 70% were females, with 24% between the ages of 18 and 34 years; 34% between the ages of 35 and 64 years; and 25% aged 65 years and older. The majority of patients (77%) had seen family physicians, 19% had seen either a nurse or inter-professional healthcare provider and 4% reported seeing two providers where one was a family physician. The mean number of surveys per site was 25. The bivariate analysis found no statistically significant differences between patient-centredness (PPPC scores) and patient sex or patient age group, or for the type of provider seen. As well, there were no significant differences in PPPC scores across the practice sites. The descriptive statistics for the Triple Aim performance dimensions derived from the patient survey (patient-centredness, after-hours access and timely [same-day/next-day] access) are reported in Table 1.

### *Administrative data*

In the administrative data for the 17 sites, over half of the patients were women. Patients aged 65 years and older represented 13% of patients, and 46% of patients were in the two highest-income quintiles. The majority of patients (67%) were in a major urban centre. There was wide variation across the 17 sites with regard to ED visits, potentially avoidable hospitalizations, cancer screening, diabetes care and primary care-related costs. The descriptive statistics for the Triple Aim performance dimensions derived from the health administrative data are reported in Table 1. Table 2 describes the patient characteristics of the 17 FHT sites.

### *Triple Aim Analysis*

Within each site, there was little consistency in the rankings of the Triple Aim components. Only one FHT scored in the top tertile on all Triple Aim components and only two scored

## Examining Primary Healthcare Performance through a Triple Aim Lens

in the bottom tertile on all three components. The remaining 14 FHTs scored in at least two different tertiles for the three components. Figure 2 provides one example of this variation within the sites. The five sites that scored in the top tertile for “patient experience” are used as an illustration. The standardized z-scores for the 10 performance dimensions representing the “health,” “patient experience” and “cost” components of the Triple Aim are plotted for these sites. This illustrates that performing in the top tertile for “patient experience” did not necessarily mean that the sites performed well in all 10 dimensions.

**TABLE 1.** Descriptive statistics for Triple Aim component dimensions ( $n = 17$  sites)

Component Dimension	Source	Mean	SD	Minimum	Maximum	IQR
<b>Health</b>						
1. Cancer screening (%)	Health administrative data	68.9	6.6	56.7	78.5	11.7
2. Diabetes care (%)	Health administrative data	68.8	3.9	62.1	75.2	6.2
<b>Patient experience</b>						
3. Patient-centredness (score out of 4)	Patient survey	1.4	0.1	1.2	1.5	0.1
4. After-hours access (%)	Patient survey	55.2	25.1	10.0	100.0	34.6
5. Timely access (%)	Patient survey	71.5	19.5	28.6	100.0	28.5
<b>Cost</b>						
6. Physician visit and capitation costs (\$/patient)	Health administrative data	1,150.40	94.40	1,050.10	1,315.10	167.00
7. ED visit costs (\$/patient)	Health administrative data	196.80	47.60	134.60	309.60	68.10
8. In-patient hospital costs (\$/patient)	Health administrative data	970.90	122.50	771.80	1,214.40	164.50
9. Low-urgency ED visits (per 100)	Health administrative data	16.3	7.4	8.2	37.5	10.2
10. Potentially avoidable hospitalizations (per 10,000)	Health administrative data	33.9	13.2	14.2	69.1	13.8

Across the sites, when the 10 dimensions were aggregated to form the overall Triple Aim components of “health,” “patient experience” and “cost,” there were no statistically significant correlations among the three components. There were, however, some significant correlations among the 10 dimensions used to populate the Triple Aim components. Some of these correlations reflected anticipated relationships. Greater after-hours access was associated with: (1) more timely access ( $r = 0.502$ ,  $p = 0.040$ ), (2) lower rates of low-urgency ED visits ( $r = -0.496$ ,  $p = 0.043$ ) and (3) lower overall ED visit costs ( $r = -0.543$ ,  $p = 0.024$ ). Lower rates of low-urgency ED visits were associated with lower overall ED visit costs ( $r = 0.828$ ,  $p = 0.001$ ). Better cancer-screening performance was associated with better diabetes care ( $r = 0.634$ ,  $p = 0.006$ ). Higher potentially avoidable hospitalizations were associated with higher ED visit costs ( $r = 0.555$ ,  $p = 0.021$ ). However, other relationships were not

anticipated. Better diabetes care was associated with higher rates of potentially avoidable hospitalizations ( $r = 0.505, p = 0.039$ ) and with higher in-patient hospital costs ( $r = 0.547, p = 0.023$ ). Higher scores on patient-centredness were associated with higher access ( $r = 0.500, p = 0.041$ ). Higher physician visit and capitation costs were associated with lower in-patient hospital costs ( $r = -0.633, p = 0.006$ ).

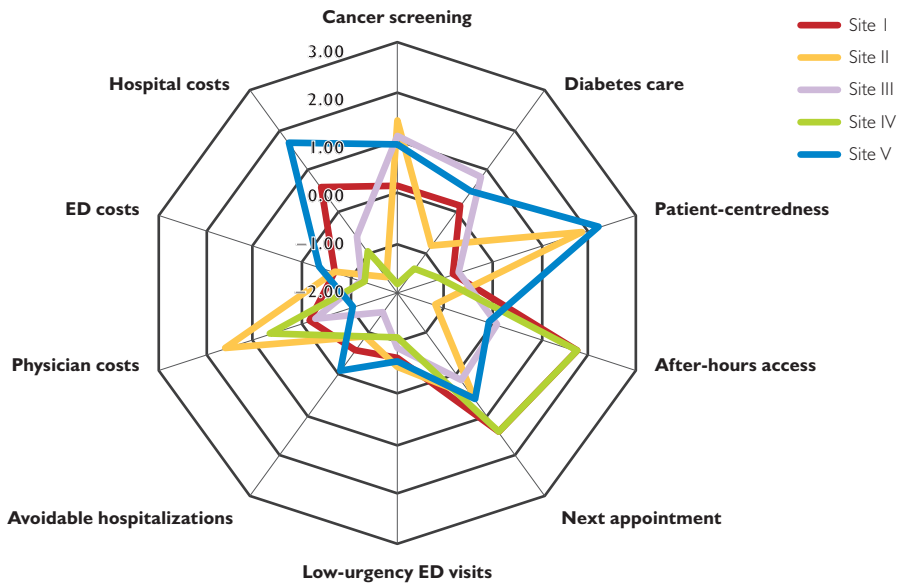
TABLE 2. Characteristics of patients – health administrative data ( $n = 17$  sites)

	Mean	SD	Minimum	Maximum
<b>Number of patients</b>	14,515	8,594	3,165	38,262
<b>Male (%)</b>	46.5	4.7	38.0	53.3
<b>Age in years (%)</b>				
≤18	22.6	4.4	14.4	32.7
19–49	43.8	6.8	36.6	63.6
50–64	19.8	3.0	12.6	23.6
≥65	13.0	4.5	4.8	20.1
<b>Income quintile (%)</b>				
1 (low)	16.1	5.7	4.9	25.9
2	18.2	4.2	8.1	25.4
3	19.8	5.7	11.5	39.4
4	23.1	7.8	12.1	46.2
5 (high)	22.6	7.1	6.0	33.0
<b>Rurality (%)</b>				
Major urban	67.5	37.6	4.3	98.1
Non-major urban	26.7	32.0	0.8	94.3
Rural	5.3	9.0	0.3	32.7
<b>Resource utilization ban (RUB) (Mean)</b>	2.6	0.1	2.4	2.9

## Discussion

This study examined the extent to which it was possible to populate the Triple Aim framework with dimensions of healthcare performance using readily available data for 17 Ontario FHTs. Ten dimensions of PHC performance were identified to populate the Triple Aim components of “health,” “patient experience” and “cost”. Analyses examined both the Triple Aim components as a whole and the 10 individual dimensions. There were two clear messages from this study: (1) readily available measures to populate the Triple Aim framework were lacking in FHTs and (2) there was a lack of consistency in FHT performance across and within different FHT practice sites.

FIGURE 2. Dimensions of Triple Aim components – standardized z-scores for five sites\*



\*The standardized z-scores for the 10 performance dimensions representing the “health” (Cancer screening and Diabetes care), “patient experience” (Patient-centredness, After-hours access and Next appointment), and “cost” (remaining five) components of the Triple Aim are plotted for the five sites that performed in the top tertile for “patient experience.”

### Data availability and quality

With respect to measurement, the two dimensions that were used to represent “health” were narrow in scope (cancer screening and recommended diabetes care) and were not in themselves direct measures of health. Rather, they measured care that is expected to be related to good health outcomes. More comprehensive measurement of outcome-related clinical processes would require clinical record review (Green et al. 2012). Identification of appropriate measures of population health is a major challenge when applying the Triple Aim framework at the PHC team level. The measures of population health recommended by IHI (e.g., mortality, health and functional status, healthy life expectancy, disease burden, health behaviours and physiological measures) (Stiefel and Nolan 2012) are applicable at the health system level and for substantially large populations. However, they are almost certain to be insensitive to PHC team performance. Clinical processes of care and intermediate outcomes are feasible alternatives, although these would normally fall within the Experience of Care component in IHI’s typology (Stiefel and Nolan 2012). Further theoretical and empirical work is needed to define a suitable set of measures of PHC team-level population health in the context of Triple Aim, including those that are patient-reported (McGrail et al. 2012).

Patient experience measures included patient-centredness and access. Patient-centredness must be measured from the patient’s perspective (Stewart 2001). Patient access could be measured from both the patient’s perspective and the practice’s perspective through internal audits of wait times, use of after-hours care and reports of the number of patients who access ED for care that could have been provided by the practice.

Similar to limitations reported in other studies (Green et al. 2012), there were also limitations in measuring cost. Several costs are not yet captured by the health administrative data algorithm including, for example, primary care (as opposed to total) physician costs and inter-professional and administrative staff team member salaries.

In Ontario and elsewhere in Canada, primary care clinicians and managers have routine access to only the most limited practice-level data on their performance, other than the data they collect themselves. FHTs now have access to administrative data profiles similar to those used in this study. Health Quality Ontario, in partnership with a broad range of relevant stakeholders, has recommended a comprehensive set of practice- and system-level primary care performance measures covering the full scope of primary care, drawing on health administrative, electronic medical record, patient survey, and provider and organizational data (Health Quality Ontario 2015). Of the 112 recommended measures, only 15 (13%) will be available to all primary care practices in the province within the near future. Clearly, major investments in infrastructure for primary care data collection, analysis and reporting are required to equip primary care providers and organizations with feedback on their performance over time and in comparison with peers that will enable them to identify opportunities for improvement and to track the impact of their improvement efforts.

### *Relevance of the Triple Aim framework*

A major strength of the Triple Aim framework is its emphasis on improvement and on balancing potential trade-offs between health, patient experience and cost. The Triple Aim framework addresses key aspects of the Ontario government's objectives for FHTs and its February 2015 *Patients First: Action Plan for Health Care*, particularly access, quality and comprehensiveness, integration/coordination and improved patient experience (Ontario Ministry of Health and Long-Term Care 2015). Future research should focus on identifying a parsimonious set of performance measures to adequately capture the Triple Aim at the practice level, to further explore the relationships among the Triple Aim components and to identify the key policy and organizational drivers of the Triple Aim.

### *Triple Aim performance in FHTs*

With respect to performance, across FHT practice sites, we found a wide range in scores for the different dimensions of the Triple Aim components. As examples, for "health," cancer screening varied by a magnitude of 1.4; for "patient experience," there was a 10-fold variation in patients reporting after-hours access; and for "cost," there was almost a twofold variation in in-patient adjusted hospital costs. No consistent pattern was found within practice sites. Only one FHT scored in the top tertile on all of the Triple Aim components and two scored in the bottom tertile on all three components.

Despite a lack of overall consistency in performance across and within FHT practice sites, there were specific correlations among some of the 10 dimensions of the Triple Aim performance we assessed. Not previously reported in the literature were two significant relationships between:

(1) after-hours access and the rates of low-urgency ED visits and (2) after-hours access and overall ED visit costs. It is to be expected that provision of after-hours care would result in lower ED visits and lower ED visit costs. This study demonstrated these relationships at the practice level by bringing together health administrative data and patient-reported data, suggesting the possibility of a significant system impact through having access to more after-hours PHC.

The correlation between diabetes care and hospital care was not in the expected direction. Higher percentages of patients receiving diabetes care according to guidelines was associated with higher potentially avoidable hospitalizations and higher in-patient hospital costs. One possible explanation for this finding is that a higher percentage of patients receiving appropriate diabetes care is a proxy for having sicker patients with diabetes that could lead to more hospital care.

An interesting and unexpected finding was the correlation between higher physician costs and lower in-patient hospital costs. This suggests that more intensive physician care may reduce the need for hospital care. This finding cannot be attributed entirely to primary care physician care because this dimension included all physician costs and it was not possible to separate primary care physician costs in these data.

### *Limitations*

A limitation of this study was the small sample size of 17 FHT practice sites. The modest number of patient surveys at each site resulted in some imprecision in measurement for each site. Further, generalizability to all FHTs is also limited due to the wide variations in FHT structure within the province of Ontario. Health administrative data are always older than data that can be collected at a practice site in real time. In this study, the administrative data were older by a year than the patient survey data. The other limitation is the cross-sectional nature of these data that prevents implying causality from any associations and prevents drawing conclusions about improvement in care which is the focus of the Triple Aim framework. Finally, research of this nature is time-consuming, costly and resource-intensive. However, research has shown that chart audit and access are excellent measures to utilize (Harris et al. 2015), but they were not within the budget of this study. Future research in this area should consider the use of chart audits, organizational surveys and interviewing patients directly.

### **Conclusion**

This study highlights the need for more and better measures that can be readily used to examine FHT (and more generally, PHC team) performance on the Triple Aims of patient health, patient experience and healthcare costs. The findings also reveal how the FHTs in this study are partially achieving the goals of the Triple Aim framework. It cannot be determined from this study why FHTs do not perform consistently across all the components of the Triple Aim. It may be that as FHTs evolve and grow, they choose to focus their efforts in particular ways at particular times in response to their patient population's needs.

Perhaps, given limited resources, an increase in performance in one dimension may come at the expense of performance in another dimension. This study provides evidence that performance in one area of the Triple Aim is not necessarily associated with performance in another area. Therefore, it is essential at both the practice and health system levels to collect appropriate measures and be attentive to performance across all components of the Triple Aim framework.

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# Contested Ground

Why are some policies healthy and others not?

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# Cross-Border Healthcare Requests to Publicly Funded Healthcare Insurance: Empirical Analysis

## Demandes auprès du régime public d'assurance maladie pour obtenir des services de santé à l'étranger : analyse empirique



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### Abstract

Despite the legal authority to confirm, override or modify healthcare insurance decisions made by physicians and government officials, health tribunal decisions have not been empirically analyzed. Using a novel quantitative methodology, all 387 Health Services Appeal and Review Board written and publicly available electronic decisions released over a five-year time period were statistically analyzed with respect to Ontario public health insurance requests for global cross-border healthcare. The statistical results found that patients knew their diagnosis prior to requesting cross-border healthcare, and 84% of patients requested specific northern US facilities for specific treatment. Two specific healthcare facilities in the US were requested for either surgery or assessments. A significant number of patients were seeking cross-border healthcare for pain treatment. This research challenges the assumption that cross-border treatment requests result only from domestic delay when instead patients are seeking specific treatments at specific facilities. This novel quantitative research methodology and data source of written and publicly available electronic Health Services Appeal and Review Board decisions should be used to inform policy decision regarding the utilization and evaluation of Canada's healthcare system and publicly funded healthcare insurance.

## Résumé

Bien que les dispositions du tribunal de la santé – quant à la confirmation, au remplacement ou à la modification des décisions en matière d'assurance maladie prises par les médecins ou des représentants du gouvernement – aient une valeur juridique, ces dispositions n'ont pas fait l'objet d'analyses empiriques. À l'aide d'une nouvelle méthodologie quantitative, nous avons analysé statistiquement l'ensemble des 387 décisions des cinq dernières années, accessibles en ligne, prises par la Commission d'appel et de révision des services de santé quant aux demandes faites, auprès de l'assurance maladie publique ontarienne, pour obtenir des services de santé à l'étranger. Les résultats statistiques montrent que les patients connaissaient leur diagnostic avant de faire une demande pour obtenir des services de santé à l'étranger; 84 % d'entre eux ont fait une demande pour un traitement précis dans un établissement particulier du nord des États-Unis. Deux établissements précis aux États-Unis étaient demandés pour des interventions chirurgicales ou pour une évaluation. Un nombre significatif de patients voulaient obtenir des services de santé à l'étranger pour des traitements antidouleur. Cette recherche remet en question l'idée que les demandes pour obtenir des services à l'étranger s'expliquent uniquement en raison des délais au pays, alors que les patients souhaitent plutôt obtenir des traitements précis dans des établissements particuliers. Cette nouvelle méthodologie quantitative ainsi que les données écrites et accessibles en ligne sur les décisions de la Commission d'appel et de révision des services de santé pourraient être employées pour éclairer les décisions d'ordre politique au sujet de l'utilisation et de l'évaluation des systèmes de santé et des régimes publics d'assurance maladie au Canada.



## Introduction

Adjudicative administrative tribunals (tribunals) are one mechanism for resource allocation. Tribunals provide a party – who has been denied a government resource by a government agency – a forum to appeal the resource allocation decision. Tribunals are important because more citizens have resource allocation decisions determined by tribunals than by courts (*Cooper v. Canada* 1996). Empirical research to evaluate health tribunals has never before been comprehensively undertaken (Sossin and Hoffman 2010). In particular, there is no empirical research on patients who request a tribunal to override healthcare services decisions made by physicians and/or government officials.

As a case study, this article seeks to quantitatively analyze patients who come before a specific tribunal – the Health Services Appeal and Review Board (HSARB) – seeking government funding for out-of-country healthcare in terms of their residence, diagnosis, treatment request and the desired location of treatment. HSARB decisions are an important, yet overlooked, existing source of objective healthcare system utilization and evaluation data. The novel quantitative methodology and analysis reported in this article should be used to inform healthcare policy decisions.

## Background

Healthcare services are provided to Ontario residents in three major situations and in three main geographic areas, which include: (1) a medical emergency situation, (2) a non-emergency outpatient situation and (3) a non-emergency in-patient situation. Ontario residents are able to receive healthcare in three main geographic locations: (1) within Ontario, (2) outside Ontario but within Canada and (3) outside Canada. This article analyzes patient requests for out-of-Canada non-emergency in-patient healthcare services.

Healthcare services outside Canada are – theoretically – available to all residents. The question is *who pays* for healthcare service outside Canada. If the patient pays for the healthcare services outside Canada through a private health insurance plan or out-of-pocket – often referred to as “medical tourism” – the government and the publicly insured health plan have no say in which health services are or are not to be funded by the government’s public insurance plan. However, if the government is asked to use the public insurance plan to pay for out-of-country healthcare, legislation is invoked and decisions are made on whether to fund the requested healthcare service.

In Ontario, the provincial government pays for insured healthcare services for Ontario residents via the publicly funded Ontario Health Insurance Plan (OHIP), which is governed by the *Ontario Health Insurance Act* (HIA) (R.S.O. 1990, c.H.6). In an out-of-country coverage for non-emergency in-patient health services (OCCNEIHS), the patient – based on approval from their physician – can appeal to OHIP to fund an OCCNEIHS.

As of April 2009, the criteria by which OHIP determines if an OCCNEIHS will receive OHIP funding is set out in the HIA’s Regulation 552 (R.R.O. 1990, [hereinafter “Regulation 552”]). According to this Regulation, the OCCNEIHS will be covered by OHIP if it is generally accepted in Ontario as appropriate for a person in the same medical circumstances as the insured person in question *and* either the treatment is not performed in Ontario by an identical or equivalent procedure *or* if the treatment is performed in Ontario, travel outside the country to receive the treatment is required to avoid a delay that would result in the insured person’s death or medically significantly irreversible tissue damage (Section 28.4(2) of Regulation 552).

OHIP may either grant or deny the requested OCCNEIHS. Where OHIP has denied the requested OCCNEIHS, the patient has the statutory right to appeal the request to HSARB (Section 20 of the HIA). As such, it is the patient who activates HSARB’s jurisdiction and a hearing before HSARB adjudicators. HSARB has the jurisdiction to either accept or deny the OHIP decision, direct OHIP to take action or amend an OHIP decision as long as such a determination is in accordance with the HIA (Section 21(1) of the HIA). The legislation does not provide HSARB with the jurisdiction to assess either economic or compassionate patient circumstances. The patient and/or OHIP may appeal the tribunal’s decision to the courts (Section 24 of the HIA).

## Research Methodology

The following research methodology was developed for this study to analyze the patients appearing before HSARB requesting an OCCNEIHS.

### *Case selection*

The unit of analysis for this research was the written and publicly available decision released by HSARB on their website for the fiscal period 2003/2004–2007/2008. The search engine on the HSARB website was used to identify all cases dealing with OCCNEIHS. HSARB only issues written decisions. It is possible, although extremely rare, that a verbal decision would be issued at the hearing. In this case, the verbal decision would be followed-up with a written decision that outline the facts, legislation and reason for the decision.

### *Sample size*

In total, 387 HSARB decisions were analyzed. This number of decisions represented all of the OCCNEIHS cases posted to HSARB's website for the five-year study period. Of the 387 cases analyzed, only 315 met the inclusion criteria of dealing directly with OCCNEIHS. Further, 72 cases were not included in the study sample. The reason for excluding these cases included: duplicates of existing included cases, motions and/or orders related to an existing included case and cases that incorrectly attempted to request an OCCNEIHS, i.e., requests for healthcare in another province of Canada.

### *Time frame*

The five-year time period was selected for the review of HSARB decisions for several reasons. First, the time frame spans a period of one Ontario-elected government (Ontario Liberals 2003 to 2014). Second, it was assumed that the legal research technology on the HSARB website would allow for accessing OCCNEIHS posted case decisions for the study period. Third, there were no amendments to HSARB's governing legislation or the HIA's Regulation 552 during the study period. As a result, any changes or trend variations were not a function of legislative amendments, as this factor was controlled. However, in the spring of 2009 and again in the spring of 2011 – after the end of the study period – the government amended s.28.4(2) of Regulation 552 which deals with the OCCNEIHS criteria. The 2009 amended s.28.4(2) presented a natural endpoint to critically assess the section. Fourth, the author of this study was appointed an adjudicative member of HSARB in 2008 and began hearing cases as a decision-maker for HSARB as of April 2008. Given that all written and publicly available electronic cases were included in this study, for objectivity, the author included only those cases for the time period she was not an HSARB member.

### *Research matrix*

A research matrix and coding system was developed to perform percentage total for patient profile variables and – as reported elsewhere – quantitative statistical correlations among HSARBs' procedures, the parties' substantive legal arguments and HSARBs' outcome

decisions to either grant or deny OCCNEIHS requests. The research matrix and coding system was developed in multiple phases. First, a literature review of existing qualitative and quantitative empirical research on tribunals was undertaken. A total of six qualitative (Gamble 2002; Jacobs 2009) and quantitative studies (Chipman 1999; Fernadez 2009; Pitfield 2003; Pitfield and Flood 2005) were reviewed for methodology and study variables.

Second, the patient profile variables were coded within the research matrix and included: patient age, sex, geographic place of residence within Ontario, patient diagnosis, the patient's requested treatment, the requested location of the treatment – by country, US State, North/South/East/West US and patients' requested healthcare facility/hospital out of country. In terms of diagnosis, only the patients' primary health concern was ranked. For example, cancer was ranked in the "cancer" category rather than in the "pain" category even if the decision reported pain with the cancer diagnosis.

Third, the coding system was pilot tested on 30 cases and refined. The coding system was then used on all cases including the initial 30 cases. An independent researcher randomly reviewed the accuracy of 10 of the 315 coded cases. Revisions to the coding system were made, and the recorded data were inputted into a statistical package with the assistance of the university's statistical consulting group and analyzed by the author.

### *Study limitations*

It should be noted that this study deliberately did not empirically research HSARB members' capacity, independence, potential bias or appointment process, as this information was not available from the data source. It must also be noted that the empirical quantitative research that was undertaken in this study examined preliminary percentages not correlation or causation relationships. It is also important to note that the patient profile factors analyzed in this study represent a subset of patients utilizing the Ontario public healthcare system. The results of this study are for a specific time frame and thus cannot be generalized to subsequent time frames.

## **Results**

### *Patient age*

Approximately 60% of the cases did not provide the age of the patient. The majority of the patients that did report their age (22%) were in the age range of 25–64 years.

### *Patient sex*

Patients appearing before the Board were approximately split evenly between males (48%) and females (52%).

### *Patient residence*

The Patients' residence data indicated that a high percentage (52%) of the cases were "Unknown," as they did not stipulate the geographic residence of the patient. Of those that did, patients from the southern part of Ontario (15%) and the western part of Ontario (15%) most often appealed to the Board. This number was closely followed by the northern part of Ontario (11%) and the eastern part of Ontario (7%).

### *Patients' diagnosis*

Almost all patients (99%) reported a diagnosis. The highest percentage of patients have a collection of "Other" conditions (22%). The "Other" patient diagnosis category included: pneumonia, CP, MS, Fabry disease, leukemia, falls, hernia, vertigo, gynaecological diseases, asthma, reconstruction after mastectomy, birthmark infection, lymph nodes, bowel polyps, stents, multiple (health issues), neuropathy in feet, gallbladder, gastrointestinal issues, liver, kidney, urine blockage, uterine fibroids, endometriosis, Menier's disease, carpal tunnel syndrome, lesions, abdominal complaints, hereditary condition, genetic disease, menstrual disorder, lymphoma, MRI of the breast, nerve function, laryngeal issue, myelodysplasia, scleroderma morphea, pelvic organ prolapse and Wegener's granulomatosis.

"Cancer" (15.6%) was the second highest diagnosis followed by "Back Pain" (11.4%), "Head" (11.1%), "Joints" (10.8%), "Addictions/Mental Health/Anorexia" (9.2%), "Obesity" (7%), "General Pain" (7%), "Heart Disease/Circulation" issues (5.4%) and "Unknown diagnosis" (1%). Note that "Pain" was a primary diagnostic condition by itself and did not include pain that might be associated with other diagnostic conditions such as cancer pain, head pain and so on.

### *Patients' requested treatment*

The patients requested surgery 49.2% of the time – almost half of all cases (Table 1). This was followed by medical assessments (14%), treatment (13.3%) and diagnostic procedures such as an MRI, CT scan, etc. (12.4%). The combination of categories dealing with counselling, drug treatment, follow-up to an existing out-of-country healthcare service and unknown requests for treatment amounted to 9.2% of cases. Only 1.9% dealt with transplants.

TABLE 1. Patients' requested procedure

Procedure	Frequency	%	Cumulative %
Surgery	155	49.2	49.2
Treatment	42	13.3	62.5
Transplant	6	1.9	64.4
Diagnostics	39	12.4	76.8
Assessment	44	14.0	90.8
Counselling/drug treatment only/follow-up/unknown	29	9.2	100.0
Total	315	100.0	100.0

### *Requested location for treatment*

- ✦ Country (Table 2): The clear majority of requests are for healthcare services in the US (83.5%). The next closest requested treatment location is Europe and the UK (8.6%) followed by India (2.9%), "Other" (3.2%), China (1.3%) and Israel (0.6%).
- ✦ Geographic Location, Treatment Requested and Facility Requested: Approximately 44% – the majority of Ontario patients before the Board – sought treatment in the northern

US. From the data, Ontario patients who are seeking treatment in the northern US (44%) are almost double the rate of those seeking treatment in the southern US (20%). Patients also appear to infrequently access the eastern states for treatment (17%) and rarely appear to be accessing the western US (2%). Of the northern states, Minnesota was the state most often requested (41%) followed by Michigan (39%) and Ohio (14%).

- ✦ Northern States – Requested Health Facilities (Table 3): Of the facilities in the northern states requested by the Ontario patients, 34.6% of patient requests are for the Mayo Clinic (Minnesota), 10.2% are for the Cleveland Clinic (Ohio), 11.0% are for Detroit-area facilities (Michigan), 3.9% are for Royal Oaks (also Michigan), 34.6% are for “Other Facilities” and 5.5% are “Not Stated” in the decision.
- ✦ Northern States – Requested Treatment (Table 4): Of patients’ treatment requests in northern states, 75% were for surgery (49.6%) and assessment (24.4%).
- ✦ Northern States – Specific State and Requested Treatment: Ontario patients requested certain states for certain healthcare. Minnesota had 29% of its cases requesting surgery and 44% of its cases requesting assessment. Michigan had 65% of its cases requesting surgery and 12% of their cases requesting assessment. Ohio had 67% of its cases requesting surgery and 6% of its cases requesting assessment.

**TABLE 2.** Global location of patients’ requested treatment

Location	Frequency	%	Cumulative %
US	263	83.5	83.5
Europe + UK	27	8.6	92.1
India	9	2.9	94.9
China	4	1.3	96.2
Israel	2	0.6	96.8
Other	10	3.2	100.0
Total	315	100.0	100.0

**TABLE 3.** Patients’ requested facility in the northern US

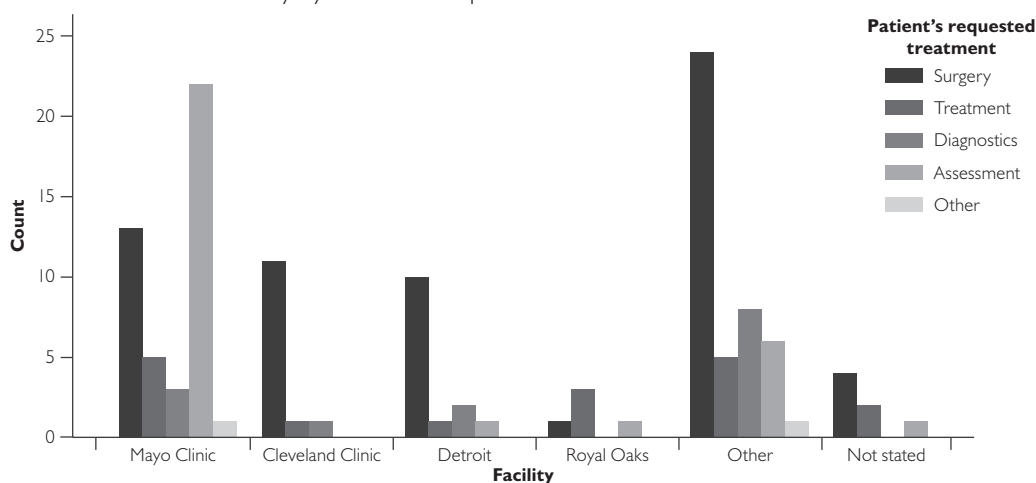
Facility	Frequency	%	Cumulative %
1 Mayo Clinic	44	34.6	34.6
2 Cleveland Clinic	13	10.2	44.9
3 Detroit	14	11.0	55.9
4 Royal Oaks	5	3.9	59.8
8 Other	44	34.6	94.5
9 Not stated	7	5.5	100.0
Total	127	100.0	100.0

- † Northern States – Requested Health Facility and Requested Treatment (Figure 1): Ontario patients were going to a particular healthcare facility within a particular state. For example, 50% of the Mayo Clinic (Minnesota) requests were for assessments and 30% were for surgery. Alternatively, 85% of the Cleveland Clinic (Ohio) requests were for surgery, with no requests (0%) for assessment.

**TABLE 4.** Patients' requested treatment in the northern US

Treatment	Frequency	%	Cumulative %
1 Surgery	63	49.6	49.6
2 Treatment	17	13.4	63.0
4 Diagnostics	14	11.0	74.0
5 Assessment	31	24.4	98.4
6 Other	2	1.6	100.0
Total	127	100.0	100.0

**FIGURE 1.** Healthcare facility by treatment request



### Analysis

Patients know, very clearly, their diagnosis, the treatment they wish to receive and the facility they would like to perform the treatment. In this respect, patients are not going out of country for any healthcare but rather to specific facilities for specific treatment.

### Diagnosis

For example, unlike the under-reporting of patient age, sex and residence, 99% of patients knew their diagnosis. The highest percentage of patients appealing to the tribunal have a collection of “Other” conditions (21.6%), with “Cancer” (15.6%) ranking second. Of interest in these data is the high percentage of pain cases. If one adds the back pain category (11.4%)

with the general pain category (7%), pain ranks second (18.7%) as the diagnosis for the patient wanting to go out of country for healthcare services – ahead of the category of cancer (15.6%). “Pain” is an interesting category. Pain is often considered a patient’s subjective experience rather than an objective, quantifiable medical diagnosis by a physician. The high percentage of “pain” cases reported coupled with the lack of objective, quantifiable medical diagnosis by the physician may lead to a discrepancy between the patient and the physician regarding generally acceptable treatment and the urgency or delay in receiving the treatment. Further research needs to be undertaken to determine if there is a connection between a patient’s subjective experience of pain and their attempt to seek treatment out of country.

This combination of relatively rare conditions (“other”), subjective conditions (“pain”) and highly resourced conditions (“cancer”) is puzzling. The current diagnostic categories are based on the information provided within the tribunal’s decisions and the author’s summary of diagnostic conditions. In that respect, the diagnostic categories should be interpreted with caution. It is recommended that, in the future, the tribunal’s decisions and their subsequent analysis utilize formal medical diagnostic codes to assist with statistical analysis and interpretation.

#### *Patient-requested treatment*

Almost half of the out-of-country requests for the US were for surgery (49.2%) and only 1.9% of the requests dealt with transplants. It is interesting to note that the potentially most expensive healthcare services – surgery (49.2%) and transplants (1.9%) – occupy spots for both the most (surgery) and least (transplant) requested healthcare services.

#### *Requested location for treatment*

It appears that out-of-country cases are predominantly seeking American treatment (84%), with almost half of Ontario patients before the tribunal requesting treatment in the northern US (44%) – specifically in Minnesota, Michigan and Ohio. However, patients are not going to the state but to the healthcare facility within the state, i.e., the Mayo Clinic in Minnesota for assessments and the Cleveland Clinic in Ohio for surgery.

The specificity of the patients’ requests implies that the patients had contact with a medical system – either domestically or out of country or both.

### **Conclusion**

There is a dearth of empirical research on healthcare resource allocation made by tribunals who have the jurisdiction to override medical decision and governmental health insurance determinations. There is also a dearth of quantitative research on the patients who appear before tribunals requesting coverage for out-of-country healthcare. The analysis of tribunal healthcare resource allocation decisions is an untapped data source to analyze healthcare utilization and health insurance evaluation that should inform policy formulation.

This article reports on a novel empirical research methodology developed to analyze health tribunal decisions over a five-year period. The analysis determined that 99% of

patients knew their diagnosis, with a significant number of “pain” cases seeking public health insurance for out-of-country healthcare. Patients also requested specific facilities in the northern US for specific medical treatment. For example, patients requested the Mayo Clinic in Michigan for assessments and the Cleveland Clinic in Ohio for surgery. This research may challenge the assumption that cross-border treatment requests result from domestic delays – when instead patients are seeking specific treatment at specific facilities.

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# Patient Satisfaction with Wait-Times for Breast Cancer Surgery in Newfoundland and Labrador

## Satisfaction de la patiente quant au temps d'attente pour une chirurgie du cancer du sein à Terre-Neuve-et-Labrador



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### Abstract

Do shorter waits for breast cancer surgery lead to greater wait-related patient satisfaction? Using survey and cancer clinic chart data of 99 patients with breast cancer from Newfoundland and Labrador, we found that median wait-time from first visit to a surgeon to surgery was 22.0 days and 87% were satisfied with their wait-time. Wait-related satisfaction was not associated with the length of wait but rather with the stage, severity of treatment, wait-time for a diagnosis and satisfaction with diagnosis-related wait. These findings highlight the importance of an early and timely diagnosis in patients' perceptions of breast cancer care wait-times.

## Résumé

Des temps d'attente plus courts pour une chirurgie du cancer du sein donnent-ils lieu à une plus grande satisfaction de la patiente quant aux temps d'attente? Au moyen d'un sondage et des données de références cliniques auprès de 99 patientes atteintes du cancer du sein à Terre-Neuve-et-Labrador, nous avons observé que le temps d'attente médian entre la première consultation chez le chirurgien et la chirurgie était de 22,0 jours; 87 % des patientes se disaient satisfaites du temps d'attente. La satisfaction quant au temps d'attente n'était pas liée à la durée de l'attente mais plutôt au stade du cancer, à la sévérité du traitement, au temps d'attente pour le diagnostic et à la satisfaction quant au temps d'attente pour obtenir le diagnostic. Ces résultats soulignent l'importance d'un diagnostic précoce et opportun dans la perception des patientes face aux temps d'attente pour obtenir des soins liés au cancer du sein.

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**W**AIT-TIMES FOR CANCER CARE HAVE RECEIVED MUCH ATTENTION FROM THE media and researchers. Prompted by the 2004 Health Accord, provincial governments began to post wait-times online for the priority conditions. Today, most Canadian provinces now post wait-time data for a variety of surgical and diagnostic procedures, including breast cancer surgeries (CIHI 2014; Wait Time Alliance 2014). Some of the sites allow the public to view region- or hospital-specific wait-time data.

A number of studies from Canada and elsewhere have described wait-times for breast cancer surgery (Gorey et al. 2009; Mayo et al. 2001; Olson and de Gara 2002; Reed et al. 2004; Simunovic et al. 2001, 2005). Researchers have examined outcomes related to wait-times and have found that excessive wait-times (greater than 12 weeks) for surgery were associated with poorer outcomes (Richards and Smith et al. 1999; Richards and Westcombe et al. 1999; Shin et al. 2013; Vujovic et al. 2009; Wagner et al. 2011). Although shorter wait-times are believed intuitively to lead to better wait-satisfaction, few studies in Canada have assessed the satisfaction of patients with breast cancer in relation to their wait-time experiences.

Using data from patient surveys and chart reviews, we examined the relationship between wait-times from first visit with a surgeon to surgery and wait-related satisfaction among patients with breast cancer in Newfoundland and Labrador. Specifically, we compared the wait-related satisfaction between patients with longer and those with shorter than average waits between first visit to a surgeon and surgery. We hypothesized that patients with shorter than average waits would be more satisfied than patients with longer than average waits. The study is part of a larger project examining patient perceptions of wait-times for cancer care. The study contributes to the understanding of public perceptions of wait-times and identifies ways of improving the timeliness of cancer care.

## Methods

The Newfoundland and Labrador Health Research Ethics Board approved of this study (HIC reference 09.37). We recruited patients presenting at regional cancer clinics across the province (St. John's, Gander, Grand Falls-Windsor and Corner Brook) and at Daffodil Place (the provincial cancer lodge). We also mailed study invitations to patients who were identified through the provincial cancer registry. These invitations asked interested patients to contact a research assistant to arrange for an interview.

The study used a retrospective design and recruited patients who had already been diagnosed with cancer and had either started or completed their treatment regimen. To be eligible for the larger study, patients had to be residents of Newfoundland and Labrador; 19 years of age or older; fluent in English; seeking or receiving treatment for their first cancer diagnosis; and diagnosed with breast, lung, colorectal or prostate cancer between 1 January 2009 and 30 June 2011. We excluded male patients with breast cancer and patients with multiple cancer diagnoses. In this article, we examine patients with breast cancer who underwent surgery as their primary form of treatment (as specified in their cancer clinic medical chart), had undergone surgery before other forms of treatment, knew the date of first visit to their surgeon and consented to the chart review.

Research assistants screened individuals for eligibility, obtained consent and conducted in-person surveys with patients. The research assistants received extensive training and used scripted prompts and visual aids (e.g., calendars for reference) during the interviews. The survey instrument was written in English at a Grade 8 level and included questions related to eligibility, dates in the care-seeking process (e.g., the onset of symptoms, first presentation to a healthcare provider, etc.), clinical and screening history and socio-demographic characteristics. In addition, respondents were asked to rate their satisfaction with specific wait-time intervals (e.g., from first visit with a surgeon until surgery, etc.) using a five-point Likert scale, where one was "not at all satisfied" and five was "very satisfied". A chart audit tool was used to review cancer clinic medical charts of surveyed patients. The audit tool gathered data of demographic characteristics (e.g., date of birth, community of residence, etc.), stage, availability of and completeness of needed clinical information (e.g., date of pathology report, diagnostic tests) and treatment (types, priority rating, date and site of initial consultation and start of treatments, etc.).

The items included in the survey and chart reviews were identified and selected based on in-depth literature reviews and consultations with cancer care providers, patients with cancer and representatives from the provincial division of the Canadian Cancer Society. In addition, we also conducted extensive pre-testing with patients and cancer care providers to ensure the face validity and comprehensibility of the questions prior to administering the survey. This pre-testing resulted in changes to the wording and ordering of questions, but not to the actual content of the instrument. We also pre-tested the chart audit forms to ensure that data were available in the charts and could be efficiently gathered. For example, the items were listed on the chart audit tool in the order of their appearance in the chart and described using the same terminology.

Survey and chart data were entered into a database using SPSS data entry software and analyzed using IBM SPSS Statistics software (version 20.0; IBM, Armonk, NY, USA). Data entry errors were identified using frequencies and cross-tabulations, and original surveys and chart reviews were consulted to correct errors. To assess the representativeness of the sample, we used chi-square tests to compare the age and community of residence of respondents to the data provided by the Cancer Registry (used to mail out study invitations).

The primary outcome considered in the analysis was satisfaction with the waiting time from first visit with a surgeon until surgery. Wait-related satisfaction was based on the question “Using a scale where 1 is ‘Very Dissatisfied’ and 5 is ‘Very Satisfied’, in general, how satisfied are you with the time from your first visit with a surgeon to the time of your surgery?” Because data were skewed, the variable was recoded into two categories: dissatisfied (responses 1–3) and satisfied (responses 4–5).

The independent variable was length of waiting time from first visit with a surgeon until surgery. The wait-time was calculated by subtracting the date of surgery (taken from the chart) from the date given in response to the survey question “When did you first see a surgeon?” Because the data were skewed, the variable was grouped into two categories: shorter than average wait (equal to or less than the median wait-time) and longer than average wait (greater than the median wait-time).

Other variables considered in the analyses included socio-demographic characteristics (age, community of residence, marital status, employment status and income), family history of cancer and cancer- and treatment-related characteristics (number of diagnostic tests, stage, type of surgery and location of surgery). Stage of cancer was coded into either early stage (0,1) or late stage (2,3,4). We also included variables on wait-time from first visit to a healthcare provider to diagnosis and satisfaction with this wait-time because preliminary analyses suggested that the wait-time for diagnosis may overlap with the wait-time from first visit to a surgeon and/or surgery (that is, a cancer diagnosis may only have been confirmed after consulting a surgeon or after having undergone surgery). The wait-time from first visit to a healthcare provider to diagnosis was calculated from the questions: “When did you first see a healthcare professional about these symptoms/screening results?” and “When did someone tell you that you definitely had cancer?”, and were coded as shorter than average wait (equal to or less than the median wait-time) and longer than average wait (greater than the median wait-time). Wait-time satisfaction was based on the question “Using a scale where 1 is ‘Very Dissatisfied’ and 5 is ‘Very Satisfied’, in general, how satisfied are you with the time from your first visit to a healthcare provider until you were told you definitely have cancer?” and coded as dissatisfied (responses 1–3) and satisfied (responses 4–5).

After describing the characteristics of the sample, we used chi-square tests (or Fisher’s exact tests, if applicable) to detect differences between patients with shorter and those with longer than average surgery wait-times and between patients who were satisfied and those who were unsatisfied with surgery wait-times. In supplementary analyses, we repeated this after removing outliers from the sample to assess the impact of extreme wait-times.

We used multiple logistic regression to identify significant ( $p < 0.05$ ) predictors of satisfaction with surgery-related wait-time. We selected potential predictor variables for the regression model on the basis of the chi-square tests. We decided the final model on the basis of change in the  $-2 \log$  likelihood value (Osborne 2015).

## Results

There were 652 patients who expressed interest in the study; 383 of these patients were eligible. Further, 335 (87.5%) of the 383 eligible patients completed the survey. We asked participants about cancer type during the survey and found 122 women to have breast cancer. We excluded 10 women who did not consent to a chart review, seven women who did not know when they first visited a surgeon and six women who had undergone surgery after some other form of treatment, thereby leaving 99 patients in the study. Characteristics of the study sample are shown in Table 1. The sample over-represented women under 65 years as well as urban residents (Table 1).

**TABLE 1.** Sample representativeness of patients with breast cancer

	Population* N (%)	Sample N (%)	p-value
<b>Age (years)</b>			<0.05
Under 65	252 (64.1)	87 (87.9)	
65 and over	141 (35.9)	12 (12.1)	
<b>Community of residence</b>			<0.05
Urban (>10,000 population)	165 (41.7)	50 (50.5)	
Rural (<10,000 population)	231 (58.3)	49 (49.5)	

\*Numbers are based on cancer registry data provided for the study; the sample includes all eligible patients with breast cancer (including those who did not undergo surgery as primary treatment).

Most of the patients in the study were under the age of 65 years (mean 55.20 years, median 56.0 years, standard deviation 9.74 years, range: 33–79 years). The majority of patients with breast cancer in the sample were married or equivalent, were educated with a high school diploma or more, had early-stage breast cancer and were satisfied with their waiting time from first visit to a healthcare provider to diagnosis and from first visit with a surgeon to having undergone surgery (Table 2). The most common surgical procedures were partial and total mastectomy.

The median wait-time from first visit with a surgeon to having undergone surgery was 24.5 days. The range was 0–214 days with a 90<sup>th</sup> percentile of 120.5 days. There were no differences in the proportion of patients with longer than and those with shorter than average wait-times among any of the variables considered, with the exception of wait-time from first visit to a healthcare provider and that for diagnosis (Table 3). Compared to patients

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with shorter than average wait-times for surgery, a larger proportion of patients who had longer than average waits for surgery also had longer than average waits for a diagnosis. After excluding outliers, similar differences were found between women with long and short waits.

**TABLE 2.** Characteristics of eligible patients with breast cancer

Characteristics	N* (%)	Characteristics	N* (%)
<b>Age (years)</b>		<b>Number of diagnostic tests taken</b>	
Under 65	87 (87.9)	1–2 tests	19 (19.2)
65 and over	12 (12.1)	3 tests	48 (48.5)
<b>Community of residence</b>		4+ tests	32 (32.3)
Urban	50 (50.5)	<b>Stage of cancer</b>	
Rural	49 (49.5)	Early stage (0, 1)	67 (77.0)
<b>Marital status</b>		Late stage (2,3,4)	20 (23.0)
Married or equivalent	81 (81.8)	<b>Type of surgery performed</b>	
Single	18 (18.2)	Partial mastectomy	43 (43.9)
<b>Employment</b>		Total mastectomy	40 (40.8)
Full-time work	20 (20.2)	Bilateral mastectomy	9 (9.2)
Part-time/seasonal	14 (14.1)	Axillary dissection	4 (4.1)
Sick leave	23 (23.2)	Sentinel lymph node biopsy	2 (2.0)
Unemployed/homemaker/student	16 (16.2)	<b>Location of surgery</b>	
Retired	26 (26.3)	St. John's	45 (46.4)
<b>Education</b>		Regional hospital in NL	49 (53.6)
Completed high school or less	39 (39.8)	Regional hospital outside NL	0 (0)
More than high school	59 (60.2)	<b>Waiting time HCP – Diagnosis</b>	
<b>Income</b>		Shorter than average waiting time	45 (47.9)
Less than \$30,000	18 (20.0)	Longer than average waiting time	49 (52.1)
\$30,000–\$59,999	34 (37.8)	<b>Satisfaction HCP – Diagnosis</b>	
More than \$60,000	38 (42.2)	Unsatisfied	29 (29.6)
<b>Family history of any cancer</b>		Satisfied	69 (70.4)
Yes	74 (75.5)	<b>Satisfaction surgeon – Surgery</b>	
No	24 (24.5)	Unsatisfied	14 (14.4)
		Satisfied	83 (85.6)

\*Numbers may not add to 99 because of missing answers; HCP = healthcare provider, NL = Newfoundland and Labrador.

TABLE 3. Surgery-related wait-times and wait-related satisfaction among patients with breast cancer

Characteristics	Surgery Wait-Time*			Surgery Wait Satisfaction*		
	Shorter Than Average Wait (N = 50) n (%)	Longer Than Average Wait (N = 49) n (%)	p-value	Unsatisfied (N = 14) n (%)	Satisfied (N = 83) n (%)	p-value
<b>Age (years)</b>			0.970			0.372
Under 65	44 (88.0)	43 (87.8)		11 (78.6)	74 (89.2)	
65 and over	6 (12.0)	6 (12.2)		3 (21.4)	9 (10.8)	
<b>Community of residence</b>			0.269			0.231
Urban	28 (56.0)	22 (44.9)		5 (35.7)	44 (53.0)	
Rural	22 (44.0)	27 (55.1)		9 (64.3)	39 (47.0)	
<b>Marital status</b>			0.570			0.261
Married or equivalent	42 (84.0)	39 (79.6)		10 (71.4)	70 (84.3)	
Single	8 (16.0)	10 (20.4)		4 (28.6)	13 (15.7)	
<b>Employment</b>			0.266			0.815
Full-time work	8 (16.0)	12 (24.5)		2 (14.3)	18 (21.7)	
Part-time/seasonal	9 (18.0)	5 (10.2)		1 (7.1)	13 (15.7)	
Sick leave	15 (30.0)	8 (16.3)		4 (28.6)	18 (21.7)	
Unemployed/homemaker/student	6 (12.0)	10 (20.4)		3 (21.4)	12 (14.5)	
Retired	12 (24.0)	14 (28.6)		4 (28.6)	22 (26.5)	
<b>Education</b>			0.966			0.854
Completed high school or less	20 (40.0)	19 (39.6)		6 (42.9)	33 (40.2)	
More than high school	30 (60.0)	29 (60.4)		8 (57.1)	49 (59.8)	
<b>Income</b>			0.767			0.515
Less than \$30,000	9 (19.6)	9 (20.5)		4 (30.8)	13 (17.3)	
\$30,000–\$59,999	19 (41.3)	15 (34.1)		4 (30.8)	30 (40.0)	
More than \$60,000	18 (39.1)	20 (45.5)		5 (38.5)	32 (42.7)	
<b>Family history of any cancer</b>			0.410			0.316
Yes	36 (72.0)	38 (79.2)		9 (64.3)	63 (76.8)	
No	14 (28.0)	10 (20.8)		5 (35.7)	19 (23.2)	
<b>Number of diagnostic tests taken</b>			0.075			0.359
1–2 tests	12 (24.0)	7 (14.3)		1 (7.1)	18 (21.7)	
3 tests	27 (54.0)	21 (42.9)		7 (50.0)	41 (49.4)	
4+ tests	11 (22.0)	21 (42.9)		6 (42.9)	24 (28.9)	

## Patient Satisfaction with Wait-Times for Breast Cancer Surgery in Newfoundland and Labrador

Characteristics	Surgery Wait-Time*			Surgery Wait Satisfaction*		
	Shorter Than Average Wait (N = 50) n (%)	Longer Than Average Wait (N = 49) n (%)	p-value	Unsatisfied (N = 14) n (%)	Satisfied (N = 83) n (%)	p-value
<b>Stage of cancer</b>			0.232			0.001
Early stage (0,1)	37 (82.2)	30 (71.4)		6 (42.9)	61 (85.9)	
Late stage (2,3,4)	8 (17.8)	12 (28.6)		8 (57.1)	10 (14.1)	
<b>Type of surgery performed</b>			0.338			0.022
Partial mastectomy	24 (48.0)	19 (39.6)		1 (7.7)	42 (50.6)	
Total mastectomy	20 (40.0)	20 (41.7)		9 (69.2)	30 (36.1)	
Bilateral mastectomy	3 (6.0)	6 (12.5)		2 (15.4)	6 (7.2)	
Axillary dissection	1 (2.0)	3 (6.2)		0 (0)	4 (4.8)	
Sentinel lymph node biopsy	2 (4.0)	0 (0)		1 (7.7)	1 (1.2)	
<b>Location of surgery</b>			0.936			0.386
St. John's	23 (46.0)	22 (46.8)		5 (35.7)	40 (48.2)	
Regional hospital in NL	27 (54.0)	25 (53.2)		9 (64.3)	43 (51.8)	
Regional hospital outside NL	0 (0)	0 (0)		0 (0)	0 (0)	
<b>Waiting time HCP – Diagnosis</b>			0.002			0.042
Shorter than average waiting time	30 (63.8)	15 (31.9)		3 (21.4)	41 (52.6)	
Longer than average waiting time	17 (36.2)	32 (68.1)		11 (78.6)	37 (47.4)	
<b>Satisfaction HCP – Diagnosis</b>			0.269			0.003
Unsatisfied	12 (24.5)	17 (34.7)		9 (64.3)	20 (24.4)	
Satisfied	37 (75.5)	32 (65.3)		5 (35.7)	62 (75.6)	
<b>Wait-time surgeon – Surgery</b>			–			0.900
Shorter than average waiting time	–	–		7 (50.0)	43 (51.8)	
Longer than average waiting time	–	–		7 (50.0)	40 (48.2)	

\*Numbers may not add to 99 because of missing answers; HCP = healthcare provider, NL = Newfoundland and Labrador.

A large majority (86.3%) of patients with breast cancer said that they were satisfied with their wait-time from first visit with a surgeon to having undergone surgery. Compared with those who were satisfied, a larger proportion of unsatisfied patients had late-stage cancer, had either a total or bilateral mastectomy, had longer wait-times for diagnosis and were unsatisfied with their wait-time for diagnosis. There were no other significant differences between

satisfaction with surgery-related wait-times, amongst those with longer than average and those with shorter than average wait-times for surgery. After excluding outliers, compared with those who were satisfied, a larger proportion of unsatisfied patients had late-stage cancer, had either a total or bilateral mastectomy and were unsatisfied with their wait-time for diagnosis. There was no significant difference in satisfaction with surgery-related wait-times and diagnosis-related wait-times.

Logistic regression showed that women with late-stage breast cancer were 8.33 times less likely (based on the inverse of 0.12) to be satisfied with their surgery-related wait-time than women with early-stage breast cancer (Table 4). Given the small sample size, the number of variables that we could include in the regression model was limited.

**TABLE 4.** Predictors of surgery-related wait times and wait-related satisfaction among patients with breast cancer

Variable	Satisfied with Surgery Wait OR (95% CI)
<b>Stage of cancer</b>	
Early stage (0,1)	1.00
Late stage (2,3,4)	0.12 (0.04, 0.43)

OR = odds ratio; 95% CI = 95% confidence interval.

## Discussion

We linked patient survey and chart data to examine the association between wait-time from first visit to a surgeon until surgery and wait-related satisfaction for patients with breast cancer in Newfoundland and Labrador. Contrary to our hypothesis, shorter wait-times for surgery did not produce greater interval-specific satisfaction. Instead, we found that satisfaction with wait-time for surgery was associated with the severity of the diagnosis and treatment and satisfaction with diagnosis-related waits. Although there was no difference in the wait-time of women with early- and late-stage breast cancer, women with late-stage cancer were more likely to be unsatisfied with their surgery-related wait-time. Likewise, a larger proportion of women who had either total or bilateral mastectomies were unsatisfied with surgery-related wait-times even though there was no difference in wait-times. Women with late-stage cancers or those requiring more severe treatments may believe that their wait-time to see a surgeon may have contributed to their disease progression. A significantly larger proportion of (75%) of women with late-stage cancer than early-stage cancer (41%) had long wait-times (greater than median) from their first visit with a healthcare provider (for symptoms) and their first visit to a surgeon. The median wait-time was 36.50 days; mode, 18 and 30 days; mean, 88.35 days; range 0–806 days; and a 90<sup>th</sup> percentile of 253.30 days.

The influence of the diagnosis-related wait on the perception of the surgery-related wait may be due in part to the overlap between the two intervals; only 35.4% of the women

in the study knew they “definitely” had cancer before their first visit with a surgeon, and 83.8% learned of their diagnosis before their surgery. However, surgery-related wait-time and diagnosis-related wait-time is weakly correlated ( $r = 0.22, p = 0.021$ ), so the overlap in itself does not fully explain why the wait-time for diagnosis colours the perception of the wait-time for surgery. The wait-time for diagnosis is typically the most anxious period for patients during the cancer care-seeking journey and the experiences during this interval can affect their decision-making, well-being and psychosocial outcomes during treatment and thereafter (Dore et al. 2013; Drageset et al. 2010, 2011). In a separate analysis, we examined the relationship between screening behaviours, wait-time for diagnosis and wait-related satisfaction and found that satisfaction was poorest among women who engaged in regular screening activities but whose screening activities did not detect their cancer (Mathews et al. 2014). These findings suggest that the experiences and expectations related to cancer diagnosis may have a greater impact on patients’ perception of the timeliness of surgery than the actual wait-time itself.

The surgery-related wait-times reported by women in this study are longer than the wait-times reported by the Newfoundland and Labrador wait-times (Newfoundland and Labrador Department of Health and Community Services 2014). The longer times reported in the study may be due to differences in the start date of the wait. Although the study used first visit to a surgeon, Newfoundland and Labrador, like other provinces, measures the start of the wait-time from the date that both the patient and surgeon agree to have a surgery (Newfoundland and Labrador Department of Health and Community Services 2014). Newfoundland and Labrador also only include wait-times for patients with a confirmed cancer diagnosis. As described above, roughly one in eight women only receive a confirmed diagnosis after having undergone surgery.

There were few differences in the characteristics of women with longer than average and those with shorter than average surgery-related wait-times. These findings echo findings from other studies in Canada that have found that wait-times are equitable relative to socio-demographic traits (Gorey et al. 2009; Katz et al. 1993). There was no difference in the wait-times of women with late- and early-stage cancer. Given that staging is usually done following surgery, it cannot be used to prioritize women for surgery.

### *Limitations*

Our ability to detect significant differences and conduct multivariate analyses is limited by the relatively small sample size of patients with breast cancer in the study. As a result, we may not have identified differences where they existed. Although the date of surgery was taken from the medical chart, we relied on survey data to establish the date of diagnosis and the date of first visit with a surgeon. Given the retrospective design, patients may not have accurately recalled dates. In addition, the design may influence reported satisfaction with wait-times, that is, once the stage and prognosis are better known. As a result, wait-times might not be accurate. Although a number of studies have noted that patients with cancer can reliably recall key dates in their cancer care, further research is needed to assess recall

reliability over the course of their illness (i.e., from symptom to treatment). The study examines a non-representative sample which may suffer from volunteer bias; patients with better prognoses may have been more likely to participate than those with poor prognoses, resulting in more positive perceptions of wait-times. We used a single item to capture satisfaction with each wait-time. Although there are a number of validated scales that measure satisfaction with cancer care, none of these scales captures satisfaction with wait-times as patients move across different healthcare sectors, from the onset of their symptoms through testing and various forms of treatment. Based on the results of these initial studies, we have identified dimensions of a wait-related satisfaction scale (Ryan et al. 2015). Finally, the study examines patients with breast cancer from one province and this may not be generalizable to other jurisdictions. Further research is needed to confirm these findings in other provinces.

## Conclusion

Satisfaction with surgery-related wait-times was not associated with the length of the wait-time from first visit with a surgeon to surgery among patients with breast cancer in Newfoundland and Labrador. However, satisfaction with surgery-related wait-time was associated with the severity of diagnosis and treatment, and satisfaction with the wait-time for cancer diagnosis. To the best of our knowledge, this study is one of the first in Canada to explore the relationship between surgery-related wait-times and wait-related satisfaction. Despite its limitations, the study highlights the importance of early and timely diagnosis in patients' perceptions of wait-times for breast cancer surgery.

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# Impact of Type of Medical Specialist Involvement in Chronic Illness Care on Emergency Department Use

## Impact du type d'implication du médecin spécialiste sur le recours aux services d'urgences dans les cas de maladies chroniques



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### Abstract

*Objectives:* Medical specialist physicians may act as either consultants or co-managers for patients managed in primary care settings. We assessed whether the type of specialist involvement affected emergency department (ED) use for patients with chronic diseases.

*Methods:* In total, 709 primary care patients with arthritis, chronic obstructive pulmonary disease, diabetes or congestive heart failure were followed for one year using survey and administrative data. Multivariate logistic regressions were used to compare all-cause ED use according to specialist involvement (none, co-manager or consultant).

*Results:* In total, 240 (34%) patients visited the ED. ED use did not differ between those with specialist involvement and those without it, either as co-managers (adjusted OR = 1.06, 95% CI = [0.61, 1.85]) or consultants (adjusted OR = 0.97, 95% CI = [0.63, 1.50]).

*Discussion:* The type of specialist involvement is not associated with all-cause ED use in primary care patients with chronic diseases. Indications for co-management should be further investigated.

## Résumé

*Objectifs :* Les médecins spécialistes peuvent participer, comme cogestionnaires ou consultants, à la gestion des patients dans les établissements de soins ambulatoires. Nous avons évalué dans quelle mesure le type d'implication du spécialiste influence le recours à l'urgence chez les patients atteints de maladies chroniques.

*Méthodes :* En tout, 709 patients atteints d'arthrite, de maladie pulmonaire obstructive chronique, de diabète ou d'insuffisance cardiaque ont été suivis pendant un an à l'aide de questionnaires et de données administratives. Des régressions logistiques multivariées ont servi à comparer le recours à l'urgence par rapport au type d'implication du spécialiste (aucune, cogestionnaire ou consultant).

*Résultats :* En tout, 240 (34 %) patients ont eu recours à l'urgence. Le recours aux services d'urgence n'était pas différent entre les cas où un spécialiste s'implique et ceux où il n'y a pas de telle implication, que ce soit comme cogestionnaire (RC ajusté = 1,06, IC à 95 % = 0,61–1,85) ou comme consultant (RC ajusté = 0,97, IC à 95 % = 0,63–1,50).

*Discussion :* Il n'y aurait pas de lien entre le type d'implication du spécialiste et le recours aux services d'urgence pour les patients atteints de maladies chroniques en soins ambulatoires. Les recommandations quant à la cogestion devraient être étudiées plus profondément.

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**T**HE IMPACT OF MEDICAL SPECIALIST INVOLVEMENT IN THE PROVISION OF ambulatory care for patients with chronic diseases (CDs) may vary depending on the role taken by the specialist (co-manager vs. consultant). Specialists are involved as co-managers when they act as regular care providers in the management of their patients, sharing responsibilities with the primary care physician (PCP) for long-term follow-up of the referred health problem (Forrest 2009). On the other hand, specialists are involved as consultants when their role is limited to providing diagnostic/management advice to PCPs or performing diagnostic/curative technical interventions without providing ongoing management for the health problem (Forrest 2009). For example, in the case of consultation, a PCP could refer a patient with knee osteoarthritis to the orthopaedist for an injection. Once the intervention would be completed, the patient would return to the PCP for follow-up and would only return to see an orthopaedist when further advice or intervention would be sought. In the case of co-management, the patient would return regularly to the orthopaedist for monitoring of his arthritis and adjustment of the treatment plan. The patient would still be attended by the PCP for management of other health needs.

Patients with CDs are often frequent users of emergency departments (EDs), and most of their direct costs are actually attributed to ED and hospital admissions (American Diabetes Association 2008; Bustacchini et al. 2011; Liao et al. 2008). This is mainly due to exacerbations/complications of their conditions requiring rapid access to advanced care; they also use the ED as an alternate source of primary care for their conditions when access to a PCP is limited (Ionescu-Ittu et al. 2007; McCusker et al. 2010; Saxena et al. 2006). In fact, for patients with CDs living in the community, ED use is considered a sensitive indicator of quality and efficacy of ambulatory care, especially for congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD) or diabetes, as a significant proportion of ED visits and hospitalizations could be prevented by proper ambulatory care (Ionescu-Ittu et al. 2007; Liu et al. 2010; McCusker et al. 2010; Roos et al. 2005; Saxena et al. 2006). However, little is known regarding the impact of specialist involvement in the ambulatory care of patients with CDs on ED use. Furthermore, it is not known whether co-management is superior to consultation with respect to preventing ED use. Such information is needed to improve CD management and consequently reduce adverse events leading to preventable ED visits for patients, as well as to decrease consequent healthcare costs and ED overcrowding/wait times for the whole healthcare system (Canadian Institute for Health Information 2007). Therefore, our objective was to determine the impact of the type of specialist involvement on all-cause ED use for patients with CDs managed in the primary care setting.

## Methods

### *Design, recruitment and data collection*

We followed a cohort of adults with CDs living in the Montreal and Montérégie regions of Quebec (Canada) between 2006 and 2008 (Feldman et al. 2012; Lemieux et al. 2011). Out of the 675 primary care organizations found in these regions (Gouvernement du Québec and Centre de recherche de l'Hôpital Charles LeMoine 2009), we contacted 90 primary healthcare practices providing services for patients with CDs, representing all types of primary healthcare practice arrangements (solo, Conventional group practices, Family Medicine Groups, Community health centres and Hospital-based family medicine units) and having at least four PCPs when being a group practice. In total, 33 primary healthcare practices referred 1,031 patients with diabetes, arthritis, CHF or COPD, of whom 776 provided written informed consent and entered the cohort. Patients were interviewed at baseline and subsequently at 6, 12 and 18 months using standardized questionnaires regarding socio-demographic/clinical characteristics, utilization and quality of care, as well as health and quality-of-life outcomes. We also linked patient data from the provincial physician reimbursement administrative database, including information over the period of 12 months prior to entry into the study until 12 months after entry. The entire population of Quebec is covered by provincial health insurance, and physicians bill the province for ambulatory services rendered to patients. A referral by a physician is usually required to consult a specialist physician, as there are financial incentives for specialists delivering services with a referral.

### *Specialist involvement*

Specialist involvement was determined using the physician reimbursement database and was defined as having at least one outpatient (ED excluded) encounter with a relevant specialist in the 12 months prior to entry in the study. Relevant specialists considered for each diagnosis were cardiologist for CHF, respirologist for COPD, endocrinologist for diabetes and rheumatologist or orthopaedist for arthritis. Patients with specialist involvement were further classified according to the type of involvement using the following question at baseline: *Which clinic mainly follows you for your (diagnosis)? (a) your primary care clinic, where your general practitioner is; or (b) your specialized clinic, where your specialist doctor is.* Those answering (b) were classified as being co-managed by a specialist. For those who answered (a), we used a second question asked at the 18-month follow-up to further determine the type of involvement: *In addition to being followed by a general practitioner for your (diagnosis), are you also followed by a specialist doctor? If yes, for how many years have you been followed by the specialist?* Participants who reported being followed by a specialist for at least two years were classified as being co-managed at entry into the study. All remaining participants were not considered as being co-managed – any previous contact with a specialist was considered to be on a consultant basis.

### *Covariates*

Age, gender, highest level of education completed, area of residency (Montreal = urban, Montérégie = rural), co-morbidity and disease-specific health-related quality of life (HRQoL) were measured (Feldman et al. 2012). Co-morbidity level was measured by the number of reported conditions from a list of 17 common CDs. We used disease-specific HRQoL as a proxy for disease severity, using the following tools: Health Assessment Questionnaire (HAQ) for arthritis (Bruce and Fries 2003; Maska et al. 2011), the Minnesota Living with Heart Failure (Garin et al. 2009; Sneed et al. 2001), the Chronic Respiratory Questionnaire for COPD (Lacasse et al. 1996; Schünemann et al. 2005) and the Audit of diabetes-dependant quality of life (ADDQoL) (Bradley et al. 1999). Scores were standardized on a common scale with a mean of 50 and a standard deviation (SD) of 10 (Streiner and Norman 2008), with lower scores representing less HRQoL (more severe cases). We also computed the number of outpatient physician encounters (ED excluded) in the previous 12 months using the physician reimbursement administrative database. For patients followed in community health centres or hospital-based family medicine units where PCPs are salaried instead of being paid on a fee-for-services basis, we added their self-reported number of PCP visits in the preceding year to those captured by the administrative database. We also estimated experience of PCP based on graduation year of the physician, using administrative data from the Quebec College of Physicians (licensing board).

### *Emergency department utilization*

We used the physician reimbursement database to record all-cause ED admissions (regardless of subsequent hospitalization or not) over the 12 months following entry into the study. Patients were classified as ED users if they had at least one ED admission during the follow-up period.

### Statistical analyses

Chi-square and Kruskal–Wallis tests were used to compare patient characteristics according to type of specialist involvement (none, consultant or co-manager). Crude rates and crude odds ratios (ORs) of ED use according to type of specialist involvement were computed along with their 95% confidence intervals (95% CI) across each diagnosis. Adjusted ORs of ED use according to type of specialist involvement were estimated with simple multivariate logistic regression models instead of multilevel ones, as exploratory analyses indicated that despite our nested sampling design, there was no clustering at practice level. Diagnosis, co-morbidity, HRQoL, physician outpatient visits, age, gender, education, area of residency and experience of PCP were entered to adjust for case mix. Experience of PCP was kept only if it modified ORs significantly (change  $\geq 5\%$ ). Interaction of the type of specialist involvement with diagnosis was further tested by adding a product term and using the likelihood ratio test. Data were analyzed using SPSS 15.0 (IBM, Chicago). The study was approved by the research ethics committees of the relevant institutions.

### Results

Out of the 776 patients who consented, 709 had complete data, which were used for analyses. There were no significant differences between participants and non-participants according to diagnosis, gender and age (results not shown). The majority of participants were at least 65 years old (54.2%, minimum = 22, maximum = 97) and had at least one co-morbidity (74.8%, minimum = 0, maximum = 13) (Table 1).

At baseline, 238 patients (33.6%) had at least one visit to a relevant specialist in the preceding year (median = 2.0 visits, minimum = 1, maximum = 21). Of these, 164 (68.9%) were co-managed and 74 others were classified as having visited the specialist on a consultation basis. The number of visits to the specialist in the previous year was higher for those who were co-managed (median = 2.0, interquartile range [IQR] = 1–4) than for those with consultation (median = 2.0, IQR = 1–3,  $p = 0.047$ ). Patients with CHF were more likely to be co-managed as were those who lived in an urban area, had lower HRQoL and more co-morbidities (Table 1).

There were 240 patients (34%) with at least one admission to the ED during the 12-month follow-up period (median = 1.0 visit, IQR = 1–2, maximum = 18). ED use varied across diseases (Table 2,  $p < 0.001$ ), with CHF and COPD patients having higher rates than those with arthritis or diabetes. This pattern was not present in the sub-sample of patients with specialist involvement either as co-manager ( $p = 0.962$ ) or consultant ( $p = 0.406$ ).

Co-managed patients had higher odds of visiting the ED than those who did not see a specialist (crude odds ratio [OR] = 1.65, 95% CI = [1.14, 2.38], Table 3). Patients with specialist involvement as a consultant presented a similar trend (crude OR = 1.46, 95% CI = [0.88, 2.43]). Crude ORs did not vary across diagnoses for co-management ( $p = 0.168$ ) or for specialist involvement as a consultant ( $p = 0.750$ ).

**TABLE 1.** Characteristics of participants according to type of specialist involvement ( $N = 709$ )

Characteristics	Overall* ( $N = 709$ )	Type of Specialist Involvement*			Difference Between Types ( $p$ -value)
		None ( $n = 471$ )	Consultant ( $n = 74$ )	Co-manager ( $n = 164$ )	
Diabetes	34.6	44.2	20.3	14.0	<0.001 <sup>†</sup>
Congestive heart failure	19.4	12.1	28.4	37.2	
Chronic arthritis	26.8	24.2	39.2	27.4	
COPD	19.3	19.5	12.2	21.3	
Co-morbidity, Median (IQR) count	3.0 (1–4)	3.0 (1–4)	3.0 (2–5)	3.0 (2–5)	0.017 <sup>§</sup>
HRQoL, Mean (SD) score	50.1 (9.9)	50.4 (10.2)	50.9 (8.6)	48.3 (9.9)	0.043 <sup>§</sup>
Ambulatory physician utilization, Median (IQR) encounters	9.0 (6–15)	8.0 (5–12)	14.0 (9–19)	13.0 (8–20)	<0.001 <sup>†</sup>
Female	54.8	54.6	50.0	56.7	0.630
Male	45.2	45.4	50.0	43.3	
Age, Mean (SD) years	66.9 (11.7)	66.5 (12.0)	69.3 (10.9)	67.1 (11.1)	0.164
Education < High school	47.6	48.8	50.0	42.1	0.159
High school/vocational diploma	28.5	29.7	28.4	26.8	
Education > High school	23.9	21.4	21.6	31.1	
Urban area of residency	58.9	51.8	64.9	75.0	<0.001 <sup>†</sup>
Rural area of residency	41.1	48.2	35.1	25.0	
Experience of PCR, Mean (SD) years	27.2 (8.5)	27.0 (8.3)	27.2 (8.9)	27.7 (8.9)	0.686

\*Values are in % unless otherwise indicated. <sup>§</sup>Patients with specialist co-management are significantly different from non-users ( $p < 0.05$ ). <sup>†</sup>Both groups with specialist involvement are significantly different from non-users ( $p < 0.05$ ). COPD = chronic obstructive pulmonary disease; IQR = interquartile range; SD = standard deviation; HRQoL = health-related quality of life.

**TABLE 2.** Rates in percentage of all-cause emergency department use according to type of specialist involvement and main diagnosis

Type of Specialist Involvement	Main Diagnosis				Difference Across Diagnoses ( $p$ -value)
	Arthritis $n = 188$ % (95% CI)	Diabetes $n = 246$ % (95% CI)	CHF $n = 139$ % (95% CI)	COPD $n = 136$ % (95% CI)	
None ( $n = 471$ )	21.1 (13.6, 28.5)	25.0 (19.1, 30.9)	42.1 (29.3, 54.9)	47.8 (37.6, 58.0)	<0.001
Consultant ( $n = 74$ )	34.5 (17.2, 51.8)	26.7 (4.3, 49.0)	52.4 (31.0, 73.7)	44.4 (12.0, 76.9)	0.406
Co-manager ( $n = 164$ )	40.0 (25.7, 54.3)	39.1 (19.2, 59.1)	44.3 (31.8, 56.7)	42.9 (26.5, 59.3)	0.962
Overall ( $n = 709$ )	27.7 (21.3, 34.1)	26.4 (20.9, 31.9)	44.6 (36.3, 52.9)	46.3 (37.9, 54.7)	<0.001

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; 95% CI = 95% confidence interval.

**TABLE 3.** Crude odds ratios of all-cause emergency department use according to type of specialist involvement and main diagnosis

Main Diagnosis	Type of Specialist Involvement*	
	Consultant OR (95% CI)	Co-manager OR (95% CI)
Arthritis	1.97 (0.81, 4.80)	<b>2.50 (1.18, 5.28)</b>
Diabetes	1.09 (0.33, 3.57)	1.93 (0.79, 4.72)
CHF	1.51 (0.55, 4.13)	1.09 (0.53, 2.26)
COPD	0.87 (0.22, 3.46)	0.82 (0.37, 1.79)
Overall	1.46 (0.88, 2.43)	<b>1.65 (1.14, 2.38)</b>

\*The reference category is no specialist involvement. Bold = ratio differs significantly from 1.00 ( $p < 0.05$ ). OR = odds ratio; 95% CI = 95% confidence interval; CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease.

Multivariate analyses indicated that patients with specialist involvement as a consultant (adjusted OR = 1.06, 95% CI = [0.61, 1.85]) or a co-manager (adjusted OR = 0.97, 95% CI = [0.63, 1.50]) were not more or less likely to visit the ED than those who had no contact with a specialist (Table 4). We constructed a regression model that included interaction of specialist involvement and primary diagnosis. Because the impact of either co-management or consultation on ED use was similar, we calculated the model with a binary-level independent variable of any specialist involvement versus no contact with a specialist. We found a significant interaction of specialist involvement with diagnosis ( $p = 0.03$ ) and proceeded to perform stratified analyses. For patients with COPD, specialist involvement tended to have a protective effect on ED admission (adjusted OR = 0.47, 95% CI = [0.19, 1.20]), whereas for arthritis (adjusted OR = 1.94, 95% CI = [0.91, 4.16]) and patients with diabetes (adjusted OR = 1.30, 95% CI = [0.55, 3.08]), it tended to have a detrimental one. There was no effect for patients with CHF (adjusted OR = 1.10, 95% CI = [0.48, 2.55]).

## Discussion

We found that the type of specialist involvement (co-management or consultant) did not have a differential effect on all-cause ED use for patients with CDs who were managed in the primary care setting. However, we found that impact of specialist involvement (irrespective of specialist's role) on all-cause ED use varied across diagnoses, with a tendency to have a protective effect only for patients with COPD.

We expected that co-management would present a greater advantage regarding optimizing treatment plans and possibly reducing ED visits; however, this hypothesis was not corroborated. Although co-management implies that both the specialist and the PCP share responsibility for patient management (Forrest 2009), it does not necessarily imply shared care, i.e., formalized collaboration between providers (Smith et al. 2008). We had no information regarding the quality of primary–specialty care coordination, which may explain the present findings. Another possible explanation is that our patients,

recruited in primary care settings, were actively followed by their PCP who was, for the most part, capable of managing the condition appropriately on their own. Several authors contend that for conditions frequently encountered in the primary care setting, patients should be followed by their PCP and specialist involvement should be on a consultation basis only (i.e., not as a co-manager) (Forrest 2009; Jiwa et al. 2008; O'Malley and O'Malley 2007; Starfield 2010). Our results support this notion. Specialist involvement as a consultant (associated with fewer visits to the specialist) could potentially free up some valuable time for the specialist to see more patients (Valderas et al. 2009a).

**TABLE 4.** Results of multivariate logistic regression analyses of the impact of the type of specialist involvement on annual all-cause emergency department use in patients with chronic diseases ( $N = 709$ )

Predictors*	Levels	Adjusted OR	95% CI
Specialist involvement	None	1	–
	Co-manager	0.97	0.63, 1.50
	Consultant	1.06	0.61, 1.85
Diagnosis <sup>§</sup>	Arthritis	1	–
	CHF	1.94	1.17, 3.20
	Diabetes	1.12	0.71, 1.77
	COPD	2.35	1.45, 3.81
Number of co-morbidities	0–1	1	–
	2–3	1.32	0.84, 2.06
	≥4	1.60	1.01, 2.55
HRQoL <sup>§</sup>	–	0.97	0.95, 0.99
Number of ambulatory visits <sup>§</sup>	–	1.04	1.02, 1.07
Gender	Male	1	–
	Female	1.05	0.75, 1.49
Age (years)	≤63	1	–
	64–73	0.83	0.55, 1.30
	≥74	1.18	0.77, 1.80
Education level	<High school	1	–
	High school	0.79	0.53, 1.18
	>High school	0.90	0.58, 1.38
Area of residence <sup>§</sup>	Urban	1	–
	Rural	0.67	0.47, 0.96

\*Experience of PCP is not included in the model, as it did not modify estimates. <sup>§</sup> $p < 0.05$ . OR = odds ratio; 95% CI = 95% confidence interval; CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; HRQoL = health-related quality of life.

Irrespective of the type of involvement, respirologist utilization showed a trend (although non significant) towards reduced risk of ED admission for patients with COPD. This is consistent with decreased mortality observed with respirologist involvement (Nie et al. 2007) and may be due to higher conformity to guidelines and use of the most up-to-date management approaches often associated with specialist involvement (Arnold-Worner et al. 2008; Cook et al. 2009; Gnani et al. 2009; Shah et al. 2005; Widdifield et al. 2011). We did not find reduction in ED visits for patients with CHF who had contact with a cardiologist in our sample, which contrasts with results in the literature (Ezekowitz et al. 2005; Lee et al. 2010). A possible explanation is that our participants were not recruited following ED or hospital admission for CHF (unlike those in the other studies) and may, therefore, be less apt to profit from cardiologist involvement, which would particularly benefit more severe cases (Ansari et al. 2003). Surprisingly, specialist involvement tended to be associated with increased ED use in patients with diabetes and arthritis. Although endocrinologist/diabetologist involvement prevents diabetic-specific complications (e.g., ketoacidosis or retinopathy) (Booth and Fang 2003; Liu et al. 2011; Zgibor et al. 2002), all-cause mortality was found to increase with endocrinologist involvement (McAlister et al. 2007). It is possible that involvement of the specialist could unintentionally increase fragmentation of care, contributing to higher use of ED for all causes (Liu et al. 2010; McAlister et al. 2007). Fragmentation of care may have a greater impact on all-cause ED use for patients with diabetes and arthritis in which co-morbidities (rather than the disease itself) usually account for more morbidity and mortality than in patients with CHF and COPD (Deshpande et al. 2008; Halpin and Miravittles 2006; Mosterd and Hoes 2007).

### *Strengths and limitations*

Strengths of our study include having information from physicians on patient diagnosis; patient-reported information regarding socioeconomic, co-morbidities, HRQoL and services use; and administrative data on utilization of services. To the best of our knowledge, this is the first study to consider the role of specialists in terms of consultant or co-manager and its association with ED use in patients with CDs. Although we were able to control for many potential confounders and to use multiple sources of data to minimize measurement errors, some limitations need to be addressed. We did not have either clinical or physiologic indicators of illness severity to adjust for case mix. Though proxies were used (HRQoL and number of ambulatory visits), there may be residual confounding by indication. A co-morbidity index considering severity of co-morbidities (e.g., Charlson Co-morbidity Index) would have adjusted for case-mix in terms of burden of disease (Charlson et al. 1987; Valderas et al. 2009b). However, our data were less compatible with these types of indices for a third of our sample followed in community health centres or hospital-based family medicine units, where PCPs are salaried instead of being paid on a fee-for-services basis, and we, therefore, opted for disease count. Nevertheless, sensitivity analyses using the Johns Hopkins ACG System (Johns Hopkins University, Baltimore), which captures disease burden,

yielded similar results (not shown) in a sub-sample of participants with compatible data. Our participation rates were relatively low for both practices (37%) and patients (68%). Although we cannot completely exclude a selection bias, participating practices did not differ from non-participating ones regarding type of arrangement, number of PCPs or propensity for quality of care for CDs (results not shown). Additionally, participating patients did not differ from non-participating ones regarding main diagnosis, age and gender (results not shown). Finally, prospective studies are needed that would have more information on clinical data (such as disease burden) and other patient characteristics (such as patient expectations) to better assess the impact of adding a specialist in co-management on ED use.

In terms of external validity, it is important to underline that the patients with arthritis probably had mainly osteoarthritis, which is the most frequent form of arthritis (Lagacé et al. 2010), and, therefore, our results may not be generalized to populations limited to inflammatory arthritis where specialist involvement is optimal (Lacaille et al. 2005; Widdifield et al. 2011). Furthermore, our participants came from practices formally providing services for CDs and had a regular PCP. Association between the type of specialist involvement and ED use may differ in patients followed in other practices or without a regular source of primary care.

## Conclusion

For patients living in the community with CDs and who were followed by their PCP, there was no difference in all-cause ED utilization between those with specialist involvement as a co-manager and those with consultant as a co-manager. The impact of the type of specialist involvement for patients with common CDs should be investigated with other outcomes (e.g., physiological, patient-reported or economic) to further understand indications for co-management. Nevertheless, overall specialist involvement regardless of its type tended to be associated with decreased risk of visiting the ED only for patients with COPD. Greater emphasis on coordination of care may be needed to prevent all-cause ED admission.

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# Inappropriate Ambulance Use: A Qualitative Study of Paramedics' Views

## Utilisation inadéquate de l'ambulance : étude qualitative du point de vue des ambulanciers



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## Abstract

*Introduction:* Existing studies of inappropriate ambulance use focus on its extent, employing clinical criteria. Little is known about how front-line paramedics assess appropriateness. This study investigates how paramedics view and judge appropriate versus inappropriate ambulance use.

*Methods:* We conducted interviews with 19 paramedics working in two regions in southwestern Ontario that were analyzed using grounded theory methods.

*Findings:* While blatantly “inappropriate” use is extraordinary, “misuse” is more common, and paramedics determine misuse largely by interpreting patients’ abilities to cope with their situations. Paramedics assess this using multiple patient attributes: patient’s age, knowledge of the system, system failures, social support available, presence of transportation alternatives, patient’s ability to walk and trial of treatment with home remedies.

*Conclusion:* In the future, paramedic-informed, contextual and non-clinical criteria might supplement clinically based criteria for emergency service-use evaluation and may inform more patient-centred policy interventions to reduce ambulance misuse and inappropriate use.

## Résumé

*Introduction :* Les études actuelles sur l’utilisation inadéquate de l’ambulance se concentrent sur son étendue, en employant des critères cliniques. On connaît peu la façon dont les ambulanciers de première ligne en évaluent le caractère approprié. Cette étude se penche sur la façon dont les ambulanciers perçoivent et jugent le caractère approprié, ou non, de l’utilisation de l’ambulance.

*Méthodes :* Nous avons interviewé 19 ambulanciers qui travaillent dans deux régions du sud-ouest ontarien. Les entrevues ont été analysées au moyen de méthodes théoriquement probantes.

*Résultats :* Bien qu’une utilisation « inadéquate » flagrante relève de l’exception, le « mauvais usage » est plus fréquent. Les ambulanciers définissent habituellement un « mauvais usage » en fonction des capacités du patient de prendre en main sa situation. Pour ce faire, ils emploient plusieurs caractéristiques : l’âge du patient, sa connaissance du système, les failles du système, la disponibilité d’un soutien social, la présence d’autres moyens de transport, la mobilité du patient et l’utilisation de remèdes maison.

*Conclusion :* À l’avenir, des critères éclairés par les ambulanciers, contextuels et non cliniques pourraient supplanter les critères cliniques pour l’évaluation de l’utilisation des services d’urgence et pourraient éclairer des politiques d’intervention davantage centrées sur le patient afin de réduire le mauvais usage et l’usage inadéquat de l’ambulance.

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**I**NAPPROPRIATE AMBULANCE USE INVOLVES THE USE OF EMERGENCY MEDICAL SERVICES (EMS) transport for non-urgent medical conditions, or when the patient does not use alternative transportation available (Richards and Ferrall 1999). Inappropriate use has serious repercussions.

When non-urgent patients are triaged to lower emergency department (ED) priority, they may wait many hours for care. If they arrived by ambulance, the paramedics may need to wait with them, delaying response to other emergency calls, and depriving the paramedics of opportunities for meals, sleep and education (Marks et al. 2002; Pennycook et al. 1991). The inappropriate use of EMS drains health system resources and undermines paramedic morale (Palazzo et al. 1998; Ting and Chang 2006; Zachariah 1999). For non-urgent patients, ED care may be less effective than primary care, and can ultimately delay their appropriate care (Drummond 2002; Gill 1994).

Health services research on ambulance usage, to date, has relied largely on clinical definitions and criteria for appropriateness. The extent of inappropriate ambulance use ranges from 11.3% (Billittier et al. 1996) to 51.7% (Morris and Cross 1980) of calls; most estimates approximate 30%. Most studies rely on the judgement of the ED physician (Billittier et al. 1996; Camasso-Richardson et al. 1997; Gardner 1990; Little and Barton 1998; Palazzo et al. 1998) or attending nurse (Frank and de Villiers 1995) to assess appropriateness. Only two studies have involved the perspective of paramedics, but these used pre-specified (Hjalte et al. 2007) or unspecified (Richards and Ferrall 1999) indicators of inappropriateness. No study has developed a definition or measure of inappropriate ambulance use that draws on the expertise and experiences of paramedics.

The Ontario ambulance billing policy presents an interesting context for the study of the meaning of inappropriate ambulance use. In Ontario, medically necessary ambulance transports are funded under the Ontario Health Insurance Plan, with patients normally being responsible for a \$45 co-payment. Some users are exempt from the co-payment, including those receiving social assistance, living in a long-term care facility or home for special care or being transferred from one health facility to another. If the attending ED physician deems the ambulance use to have been medically non-essential, patients are billed \$240 for the ambulance service (MOHLTC 2015). The hospitals bill for and collect the fees; \$15 is remitted to the province for each type of call, while the remainder is kept by the billing hospital (MOHLTC 1992).

For health system evaluation and quality improvement, reducing inappropriate emergency service use requires meaningful definitions and measures that reflect valid professional, patient and societal perspectives on why ambulance care and transport might be needed, as well as misused. This study focuses on the typical first steps of the patient's journey to the ED – the ambulance call and transport – and provides insights into how paramedics' perceptions of appropriate versus inappropriate cases might differ from existing conceptualizations. Paramedic perspectives provide especially rich insights into underappreciated non-clinical and contextual factors that both heighten emergencies for patients and legitimize them in the eyes of paramedics. We present a theory of inappropriate ambulance use according to paramedics' perceptions, which could be useful to improve future evaluations of EMS use and interventions to control inappropriate use.

## Methods

### *Study design*

We used constructivist grounded theory methodology (Charmaz 2006). This inductive and exploratory method is well-suited for pursuing new insights without imposing pre-existing constructs (i.e., about the nature of inappropriate ambulance use). This study received research ethics approval from the Hamilton Integrated Research Ethics Board (#10-373).

### *Study sample and recruitment*

Paramedics were recruited from two regions in southwestern Ontario that include urban municipalities and rural townships, each with a population of approximately 500,000. Paramedics were invited to participate in the study through e-mail invitations. The only inclusion criterion was that the participant had to have worked as a paramedic responding to patient calls within the last year. Within each region, several paramedics initially responded to the e-mail, and additional participants were recruited through snowball sampling (Patton 2002). New participants were recruited and interviews continued until theoretical saturation (Charmaz 2006).

### *Data collection*

Semi-structured telephone interviews were conducted between March 2011 and June 2012 with 19 paramedics. Interviews lasted between 27 and 64 minutes (average 38 minutes) and were audio-recorded and transcribed verbatim. Each interview involved open-ended questions about the role of paramedics in the healthcare system, perceptions of appropriate ambulance use, beliefs about ambulance billing policies and factors believed to contribute to inappropriate use.

### *Data analysis*

Data were gathered from interviews, transcribed verbatim and coded in stages to build a theory of inappropriate use from the paramedic perspective (Charmaz 2006). This paper reports the aspect of the theory addressing coping, specifically. Interviews were conducted and analyzed in an iterative process, according to grounded theory conventions (Charmaz 2006). One author coded all transcripts; a second author analyzed a sample of transcripts independently to compare initial coding categories. Differences were resolved by consensus. HyperResearch® software was used to manage data.

## Findings

### *Appropriate and inappropriate uses*

Perhaps not surprisingly, notions of the appropriate use of ambulances tend to be focused most prominently on the typical “lights and sirens” emergency responses. Examples of appropriate ambulance use shared by paramedics were often the most obvious life-threatening cases such as heart attacks, strokes, motor vehicle collisions or severe allergic reactions.

Although all respondents agreed that these situations justify emergency response, there was less agreement about non-emergent situations. Paramedics noted that the appropriateness of a call can be quite subjective and “varies from person to person” (P#4). The variability of appropriateness is partially due to personal definitions and experiences of an emergency. Many paramedics acknowledged that appropriateness is a subjective concept and that patients might experience “personal emergencies” (P#16), even if they do not fit within the more objective understandings of an “emergency.”

Comparable to the cited examples of appropriate use, the most prominent examples of inappropriate use described by paramedics were often the most extreme. We characterize these unambiguous situations of inappropriate use as *abuse* of the system. The concept of *abuse* refers to patients who knowingly manipulate the system, particularly those who feign medical emergencies simply for transportation to a destination near the hospital.

There are frequent flyers who deliberately abuse the system for a transport. Just to get into an area that they want to go to. That is a willful and clearly, I mean, they know. They've been informed, either by the EMS system or the paramedics themselves, that this is a manipulation and it's inappropriate, and they continue to do so. (P#12)

The *misuse* of ambulance services is much harder to define, and often arises because of external circumstances or genuine misunderstandings about how the ambulance system works. While the extreme examples of appropriate use and abuse engendered universal agreement about classifications, the more moderate examples of ambulance misuse elicited more nuanced definitions of appropriateness.

### *Distinguishing inappropriate use through perceived coping*

Paramedics relied on their perception of the patients' ability to cope with the situation that provoked the call to 911 to determine the appropriateness of ambulance use. Recognition of the patient's (lack of) ability to cope is typified by the following paramedic's reaction to calls for minor (and potentially inappropriate) issues:

So a lot of times we get really minor calls for things, and although to us it seems like, oh my god, what a waste of our time, that I didn't go to school for all this time and whatever, and I don't have all this equipment on my truck to, like, pat you on the back and tell you that it's okay, and, you know, be your taxi essentially. But we do that all the time. But it's because to that person, they've reached their limits of coping. (P#3)

Paramedics cited four perceived factors that contribute to the patients' inability to cope with their situations and that might justify the use of the ambulance: the patient's age, lack of knowledge of the system, system failures and lack of social support.

### *Patient's age*

Some paramedics suggested that the appropriateness of an ambulance call could vary depending on the age of the patient, even for the same medical condition. An example of this is the occurrence of respiratory illness:

[I]t really is particular to certain age groups. You've got your 90-year-olds who have pneumonia that, you know, they can't move and when they get pneumonia, they don't have enough people with them, they don't have family or they don't have – you know, they need to go to the hospital, they need to get treatment. Now you bump that down into your 30-, 40-, 50-year-olds that, you know, are coughing up green phlegm and they have a fever, and their family is all around when we get there, I mean, you don't need us. Yes, I understand that you're feeling ill, but you don't need to call 911. (P#13)

Paramedics noted that age often affected their perception of the appropriateness of the call because it contributes to the patient's ability to physically cope with illness. In the example above, the effects of respiratory illness left untreated might be much more dire in an elderly patient than in a healthy adult. Similarly, paramedics considered the presence of a fever to be more serious in the paediatric population than in the adult population, and more likely to warrant emergency response.

### *Lack of knowledge of the system*

Patients sometimes misuse the ambulance system because they are experiencing a health or social need, but are unsure of how to seek help. Paramedics described being called simply to offer reassurance to patients or to act as "information providers" (P#4) who could direct the patient to more appropriate resources. Even when patients are aware that the ED might not be the appropriate course, if their 911 call stems from uncertainty about the system and a genuine need, it is more likely to be considered appropriate.

A lot of times, people don't necessarily need to go to the hospital, but they're not sure what to do. Or their family's not sure what to do with them. And so we end up filling that gap in the healthcare system, you know, maybe helping them to facilitate CCAC [Community Care Access Centre] or other homecare services. (P#3)

### *System failures*

While patients sometimes misuse ambulance services because they are unaware of the alternatives available to them, other times they have tried and have been failed by those alternatives. Paramedics are more likely to consider these cases appropriate when caused by gaps in the healthcare system. In particular, the paramedics interviewed consistently noted the number of individuals left waiting for placement in a long-term care facility.

The needs of patients living at home because they are unable to secure more appropriate care environments can be quite draining on the ambulance system, but they are seen as legitimate needs because the patients are unable to cope in the home setting.

But there's kind of a huge gap right now in healthcare where people will ... you know, they're not coping well at home anymore and they're waiting for placement into a long-term care facility or an assisted living facility. And until they have a tragic accident like they fall and break their hips, they don't really qualify. Like they're so far down on the waiting list that they're waiting for years for placement. (P#3)

Paramedics also expressed sympathy for patients who entered the healthcare system via the ambulance and ED, but whose medical needs were not appropriately addressed. The most notable examples of these situations were patients with mental health issues, who often present to the ED but, from the perspective of paramedics, are not given adequate support when discharged from the hospital:

[T]hey are in crisis a lot of the time. Even if it is kind of daily and painful. So, I don't think it's so much saying it's non-essential, I think maybe the system is failing them somewhere else and that's why they're getting out and they're calling because they need to be back and back and back. They're not getting any answers to their problems, that's why they keep coming back to us. So I don't know if I would call them non-essential ... (P#7)

The emergency system itself can also fail patients when wait times feel unbearable. The quintessential example of an inappropriate use of ambulance services is when the patient has already been transported to the hospital and calls 911 from the waiting room in the hopes of being seen more quickly. While calling from the hospital can be considered a clear abuse of the ambulance system, if paramedics recognize that it is caused by a failure of the system, it can be seen as an understandable misuse rather than blatant abuse. Indeed, paramedics perceive travelling to the ED as an attempt to cope with the situation, and if the wait for care lengthens, the patient's ability to cope may subsequently change. One paramedic, who expressed sympathy for a call placed from the hospital waiting room, explained this concept:

We can give them something, they're not sitting on a chair, they're on a bed. If it's a fracture, we'll mobilize and they're given pain relief, depending on the service they called, some services can't give pain relief. So, yeah, that I could understand. Yes, it would be appropriate for you to go in the door and get treated but I can understand how that avenue hasn't worked too well for you, so you're trying something else. (P#16)

### *Lack of social support*

Finally, the existence or presence of other social support might contribute to the patient's ability to cope with their situation. For example, the appropriateness of lift assists depends on whether the patient has family or friends who might help instead:

I know some medics get upset about [lift assists], but the way I see it, well I mean, you can't just ... like, say someone has a fall and they have no family in the area. They kind of fall through the cracks of who's going to help them get up, right? (P#10)

In the absence of formal or informal caregivers to assist the patient, lift assists are perceived as appropriate uses of the ambulance system. In other cases, patients may have support, but caregiver limitations push them to unnecessarily use the ambulance because they are unable to safely transport the patient. For example, an elderly woman might be too frail to assist her spouse to the car and drive to the doctor's office.

In some cases, the patient and the family don't actually want to go to the ER, if they need some assistance to get somewhere but they themselves realize that they're not needing to go to the ER, but that's the only option that we're able to provide, therefore that's what we provide. Again, it's not somebody who's abusing the system or making inappropriate calls. It's somebody who legitimately needs some level of assistance but not necessarily direct medical assistance at that time, and definitely not the time and the resources of the ER. (P#17)

Although the use of the ambulance (and the ED, subsequently) is traditionally considered inappropriate in these situations, paramedics perceived it as appropriate because they recognized that the families and patients had no other way of coping with a legitimate medical need. They noted that one of the gaps filled by paramedicine is the absence of the traditional house call; patients who are unable to leave the house rely on the emergency system for both urgent and non-urgent needs.

[W]e're really the only profession that provides any house calls anymore, you know when these doctors used to go and they'd have a group of patients and they'd provide house calls. Well there's very few family physicians that provide house calls, [...] really we're the only ones that if you call, we will come. And we will provide you with care at home, wherever your home may be. So, it's kind of one of those, you know, that safety net. (P#8)

While the aforementioned factors contribute to paramedics' perceptions of appropriate ambulance use, other cues highlight the patients' inadequate attempts to cope with their situation. In particular, paramedics were more likely to perceive an ambulance call

as inappropriate if there was alternative transportation available, if the patient was ambulatory or if the patient did not attempt any home remedies.

#### *Alternative transportation available*

Many paramedics, when asked to describe inappropriate use, remarked on the presence of “cars in the driveway” as a sign that the patient might be misusing their services. In particular, they expressed frustration when the family followed them to the hospital in a private vehicle.

Um, you know, let's say “I pulled a muscle in my back” say, yesterday, they call us today and they walk to the vehicle and we bypass two or three cars sitting in the driveway. I've picked up patients where they shovel the sidewalk for us to walk a patient to the vehicle with a back injury, and they were warming up a car to follow us to the hospital. And this patient sat in our vehicle. I remember this call precisely, it was the middle of January, two in the morning, car was running and they were defrosting their car. But you couldn't say to them “why wouldn't you just take this person in the vehicle with you?”, that was not my job, my job is to bring them in. (P#11)

#### *Ambulatory*

The presence of alternative transportation alone is not a sufficient marker of inappropriate use; paramedics' perceptions of inappropriateness are exacerbated when the patient is also able to walk to the ambulance. Paramedics take the ability to walk as a sign that the patients might have been able to transport themselves to the hospital or to another care destination:

Especially the ambulatory patients. Like, people that we honestly, we don't even have to get out the stretcher for them because they meet us at the end of their driveway or they meet us at the front door, right? I mean, the way I see it personally is if we're not giving you a drug and you're able to walk yourself, well, I mean there's really no reason for you to be taking an ambulance then. (P#10)

Other paramedics, despite being frustrated by patients who appear to be able to transport themselves to the hospital, acknowledged that transportation of patients is part of their role, as one explained, “Yeah, I think whether we like it or not, sometimes we are just a bus or a taxi service, I think that is reality, and transportation is part of it.” (P#6)

#### *No attempt at home remedies*

Paramedics expressed frustration when it did not appear that patients had attempted to care for themselves at home before calling the ambulance system. They cited the flu as an example of a medical condition that could be considered an appropriate use of the ambulance if it progressed to the point where the patient could no longer cope with the symptoms.

If the patient had not attempted to cope using common home remedies, the use was more likely to be considered inappropriate. The perception of inappropriateness stems from the notion that the patient should have known how to cope with the situation, which is highlighted in the following passage that juxtaposes two potential responses to flu-like symptoms:

Even when it comes down – as an example, somebody with the flu. I had a retired nurse who was like 57 years old, otherwise healthy who had had nausea, vomiting and diarrhea for like two hours. She hadn't done anything to help herself and now was calling an ambulance to go to the emergency department, where somebody else who has been sick for two and a half days and has been trying fluids and Gravol and Tylenol and all the stuff that you are supposed to do and staying home and trying to run it out, and is now not coping and is severely dehydrated and needs some help, then no problem, even if you are twenty-five and perfectly healthy. If you have done what you are supposed to do and it hasn't worked out and now you need help, then that is what we are here for, right? But when you know better and you haven't bothered to try to help yourself, it is frustrating when you now inappropriately deplete resources because you couldn't help yourself, for no good reason other than you haven't bothered. (P#5)

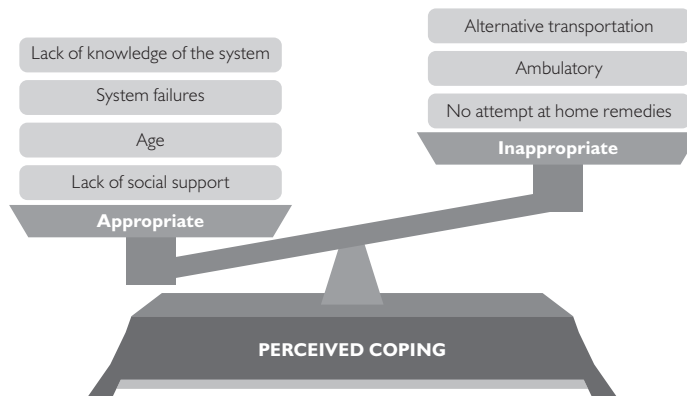
Although the causative medical condition described is identical, the patients' attempts and ability to cope with the situation before accessing 911 clearly swayed paramedics' perceptions of the appropriateness of ambulance use.

Taken together, these cues contribute to the paramedics' perception of whether the patient was able to cope with their situation and, in turn, differentiate appropriate and inappropriate ambulance uses. When there are sufficient factors that suggest that the patient was unable to cope, paramedics are likely to perceive the ambulance use as appropriate (Figure 1). Conversely, certain cues are used to judge whether the patient should have been able to cope, and lead to a perception of inappropriate use. Paramedics use these non-clinical cues to assess the patients' ability to cope, so, unlike traditional definitions of appropriateness that rely on clinical criteria, patients presenting with the same clinical symptoms could be characterized as either appropriate or inappropriate use.

## Discussion

Along the continuum of inappropriate to appropriate ambulance use, the extremes can be characterized with little dispute. Paramedics typified *appropriate* ambulance use as those cases appropriate for "lights and sirens" responses to life-threatening emergencies, such as heart attacks, strokes and motor vehicle collisions. At the other extreme, paramedics characterized *inappropriate* uses in terms of the most blatant abuses, for example, patients who fabricated symptoms or exited at the ED but walked away from the hospital. These cases are extraordinary but memorable.

FIGURE 1. Factors that contribute to paramedics' perceptions of patients' attempts and ability to cope



Between these indisputable opposites, however, lies a large area of ambiguity where paramedics must interpret appropriateness. Most ordinarily, inappropriate use takes the form of ambulance *misuse*: improper use that is unintentional or unavoidable. In this case, the health condition is not emergent, but the patient or family perceives no other way to access the healthcare system – either because of their own limitations or because of barriers to a more appropriate level of service. Misuse is challenging to identify, and requires paramedics to interpret the patient’s situation holistically and beyond clinical criteria. In addition to the health condition, paramedics assess both the patient in context (e.g., age and physical environment) and whether the patient has attempted to cope with their condition and made use of the resources available to them (e.g., access to other types of healthcare, social support, alternative transportation or care). In the absence of these resources – whether because the patient has been failed by their social network or the healthcare system more broadly – paramedics are inclined to judge ambulance transport as “appropriate” for urgent but non-emergency conditions.

This study is, to the best of our knowledge, the first in-depth analysis of paramedics’ perceptions of inappropriate ambulance use. It gives voice to those at the front-lines of ambulance services, who interpret appropriateness of use in patient-centred contexts. It is interesting that, when talking about misuse and inappropriate use, paramedic participants in this study often lapsed from talking about patients, in general, in third person to more pointed admonishments for “you,” in second person (e.g., “*I don’t have all this equipment on my truck to, like, pat you on the back and tell you that it’s okay [...]*”) – sharing judgments in the context of this study that they do not voice directly to the patients they serve. These interior monologues provide important input for health service administrators and policy makers.

Our findings about paramedics’ perceptions of coping complement the few studies that have examined patient and caregiver decision-making when calling for an ambulance. Patients describe their experience of the situation as “intolerable” (Ahl et al. 2006) and cite feelings of anxiety before calling (Ahl et al. 2006; Booker et al. 2013). Booker et al.’s (2013) study of patients who called an ambulance for primary care problems revealed a misunderstanding of options in the healthcare system or previous negative experiences seeking care as factors influencing the decision to call, which is consistent with the cues we found that paramedics use to identify a patient’s inability to cope.

This study also builds on previous studies that have examined the perceived prevalence of inappropriate use by asking paramedics to characterize cases of appropriate and inappropriate use while presupposing the criteria that should be used to make that distinction. These empirical studies of inappropriate ambulance use have focused primarily and often solely on clinical criteria. Our examination of how paramedics view and judge appropriate versus inappropriate ambulance use found that paramedics also tend to characterize the appropriateness of ambulance use according to contextual information gathered on scene.

Ultimately, addressing the problem of ambulance misuse requires asking fundamental questions about what the role of paramedics and ambulances should be in the healthcare system. In the Ontario context, the patient initiates ambulance use, and paramedics are unable to refuse transportation or to transport patients to alternative care settings. In addition to the patient attributes noted in this study, more research is needed about the effect of organizational and systemic factors on ambulance use and perceptions of appropriateness.

Traditionally, ambulance service was designed to provide rapid transport to the hospital ED for patients experiencing a medical emergency (Shah 2006). Where the role of paramedics expands to fill other gaps in the healthcare system, conceptions of appropriateness also change in response. Policy responses could either reframe the role of ambulance services to meet the needs of those patients (e.g., through increased community paramedicine initiatives [Bigham et al. 2013]) or target those inconsistencies with mechanisms for deterrence such as user fees and education campaigns. To date, there has been no empirical evaluation of the impact of the co-payments and billing policies on appropriate use in Ontario. However, our findings suggest that paramedics' definition of inappropriate use can conflict with the traditional role, and that they recognize the needs of patients beyond the clinical criteria typically used to define appropriate use.

## Conclusions

The results of this study contribute to shared understandings of appropriate and inappropriate ambulance use. Specifically, the cues that paramedics use to define and identify inappropriate use differ from the clinically focused definitions prominent in the emergency health services literature. Paramedics have unique voices and perspectives to offer health policy makers and system administrators, with their broader view of the social and organizational context within which the patient is seeking help. Their understanding of appropriate ambulance use is more holistic than the information considered in other assessments. For health services research into use patterns and inappropriate use rates, clinical diagnoses or hospital admission status may only offer a limited portrayal of the patient's experience. In the future, paramedic-informed, contextual and non-clinical criteria might supplement clinically based criteria for emergency service use evaluation, and inform more patient-centred policy interventions to reduce ambulance misuse and inappropriate use.

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# Appropriateness for Total Joint Replacement: Perspectives of Decision-Makers

## Pertinence de l'arthroplastie totale : point de vue des décideurs



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## Abstract

*Background:* Improving access to total joint replacement (TJR) has been a priority. Without robust mechanisms to ensure appropriateness, these procedures may be overused, incurring substantial costs. In that context, decision-makers are particularly concerned with the appropriateness of TJR.

*Objective:* While our previous research focused on the appropriateness of TJR from clinical and patient perspectives, this study is aimed at understanding decision-makers' perspectives.

*Methods:* Using a semi-structured guide, we interviewed a convenience sample of decision-makers in four Canadian provinces (Alberta, Manitoba, Nova Scotia and Quebec) between February and March 2013. For the purposes of this study, a decision-maker was defined as a manager, institutional leader or policy maker.

*Results:* Fifteen interviews were conducted with decision-makers at ministry ( $n = 3$ ), regional ( $n = 6$ ) and institutional levels ( $n = 8$ ). Decision-makers see themselves as having a key role in the appropriateness discourse, that of optimizing resource allocation and efficient delivery of services for TJR, to improve population outcomes.

*Conclusion:* The decision-makers' view of appropriateness recognizes the importance of the clinical view, but it offers a very different input into the appropriateness discourse, more closely aligned with appropriateness of setting, which refers to cost-effectiveness considerations.

## Résumé

*Contexte :* L'amélioration de l'accès à l'arthroplastie totale de la hanche et du genou est devenue une priorité. Sans mécanismes solides pour en assurer la pertinence, ces procédures pourraient être surutilisées, ce qui engendrerait des coûts importants. Dans ce contexte, les décideurs sont particulièrement concernés par la pertinence des prothèses totales de la hanche et du genou.

*Objectif :* Alors que notre recherche antérieure portait sur la pertinence de l'arthroplastie totale de la hanche et du genou du point de vue clinique et du point de vue du patient, la présente étude vise à mieux comprendre le point de vue des décideurs.

*Méthodes :* Sur la base d'un échantillon de convenance et à l'aide d'un guide semi-dirigé, nous avons interviewés des décideurs provenant de quatre provinces canadiennes (Alberta, Manitoba, Nouvelle-Écosse et Québec) entre février et mars 2013. Pour les besoins de cette étude, un décideur était défini comme un gestionnaire, un dirigeant d'institution ou un responsable de politiques.

*Résultats :* Nous avons mené 15 entrevues auprès de décideurs travaillant dans un ministère ( $n = 3$ ), au niveau régional ( $n = 6$ ) et au niveau institutionnel ( $n = 8$ ). Les décideurs considèrent qu'ils jouent un rôle important dans le discours qui porte sur la pertinence, à savoir l'optimisation des ressources et l'efficacité de la prestation de services pour l'arthroplastie totale de la hanche et du genou, et ce, dans le but d'améliorer les résultats pour la population.

*Conclusion :* Pour ce qui est de la pertinence de l'intervention, les décideurs reconnaissent l'importance du point de vue clinique, mais ils offrent une toute autre perspective dans le discours sur la pertinence, plus près de celui des établissements qui s'intéressent aux aspects liés au rapport coût-efficacité.

**E**ARLIER RESEARCH ON APPROPRIATENESS FOCUSED ON UNWARRANTED VARIATIONS in treatment and practices (Blais 1993; Casparie 1996; Wennberg 2002, 2011; Wennberg and Cooper 1998), geographic variations (Bernstein et al. 2011; Birkmeyer et al. 2013), appropriateness of interventions (Brook and Kamberg 1993; Caulfield 1996; Wennberg 2002), criteria for appropriate care and methods to assess appropriateness (Brook et al. 1986; Hicks 1994; Kahan et al. 1994; Kahn 1988). Traditionally, appropriateness has been seen as a determination of net clinical benefit, but, over time, it has become more directly linked to cost-effectiveness and efficiency. This perspective focuses on ensuring that services are realized in the most efficient way (i.e., lowest cost and maximum effectiveness) (Lavis and Anderson 1996; Sanmartin et al. 2008). In the context of scarce resources, there is pressure on policy makers to deliver a set of rational rules that decision-makers can use to determine what care is considered appropriate (World Health Organization 2000). Consequently, many countries have started to develop priority-setting mechanisms based on criteria such as cost of services, potential impact (health impact and cost effects) and cost-effective alternatives (Elshaug et al. 2009; Holm 1998; Tromp and Baltussen 2012).

In Canada, pressures to reduce waiting times and increase access have led to an expansion in the supply of total joint replacement (TJR) surgery. Acknowledging that supply-induced demand can occur, it is reasonable to question whether, without robust mechanisms to ensure appropriateness, these procedures may be overused or misused, thereby incurring substantial costs with either no or little improvement in patients' health status (Fisher et al. 2003; Sirovich et al. 2006). Studies in Spain and Canada have demonstrated that 60–80% of TJRs were considered appropriate, according to established evidence-based criteria (Quintana et al. 2008; van Walraven et al. 1996). Another Canadian study demonstrated that the implementation of routine evaluation of indications for TJR surgery can largely improve patients' outcomes and quality of life (Wright et al. 2002). While the appropriateness of TJR is currently based on clinical criteria, at the system level, there are no criteria and mechanisms to ensure that these services are appropriately delivered. In that context, it seems particularly important to know what decision-makers think of the issue of appropriateness for TJR.

Our previous research elicited both surgeons' and patients' perspectives on appropriateness of TJR. These two studies informed clinical criteria to guide appropriateness for surgery, for example, levels of pain and mobility, co-morbidities and patients' expectations and motivation (Frankel [in preparation]; Frankel et al. 2012). While these studies have addressed the clinical and patient perspectives of the appropriateness of TJR, the decision-maker perspective is required. Hence, the purpose of this qualitative study is to understand decision-makers' perspectives on appropriateness of TJR. For the purposes of this study, a decision-maker was defined as a manager, institutional leader or policy maker.

## Methods

Using a semi-structured guide, we interviewed a convenience sample of decision-makers in four Canadian provinces (Alberta, Manitoba, Quebec and Nova Scotia) between February and March 2013.

Members of the research team identified 27 potential interviewees at the provincial ministry, regional and institutional levels. All potential candidates were initially contacted by the principal investigator (TN) to alert them of the project. Within days, each of the provincial team members sent formal invitations and consent forms to the potential participants in their respective province. The consent form included a fax-back sheet, indicating consent to participate.

Telephone interviews were scheduled to take approximately 30 minutes. Interview questions were sent in advance to permit decision-makers the time to reflect on the questions (Appendix 1, available at: <<http://www.longwoods.com/content/24522>>). For the Quebec interviews, the questions were translated into French. Consent to record the interviews was obtained for all respondents. Recorded calls were transcribed and assigned a unique identification number. French interviews were first translated to English and then transcribed. To protect privacy, interviewers avoided using names during the interview.

In compliance with criteria for methodological rigour in qualitative research (Creswell 2003; Patton 2002), two techniques were used for coding: primary open coding, followed by thematic and selective coding. Initially, two authors independently coded three transcripts, developed relevant codes and themes independently, and then met to discuss and reach consensus on the relevant codes and themes. Three additional transcripts were independently coded using the established codes and themes, and then compared to assess reliability. Subsequently, all transcripts were coded separately by both coders. Data were then analyzed using NVivo (Version 9).

This study was approved by the Conjoint Health Research Ethics Board of the Faculty of Medicine at the University of Calgary.

## Results

In total, 15 interviews were conducted with decision-makers from Alberta, Manitoba, Quebec and Nova Scotia, representing the provincial ministry of health (three), regional health system (six) and institutional (eight) levels. Two respondents operated at both regional and institutional levels. Two respondents at the institutional level were also physicians. Responsibilities of the respondents included monitoring of quality and standards of care; allocation of resources; and measurement, reporting and interpretation of data on access to TJR. To protect privacy, the quotes below refer only to the type of decision-makers (ministry, regional and institutional).

### *Defining appropriateness and related issues*

All respondents recognized that appropriateness included clinical factors, such as pain, mobility and quality of life. Decision-makers stated that appropriateness for surgery for an individual patient was a decision between the surgeon and the patient. They did not see themselves involved in that decision ( $n = 6$ ). Instead, decision-makers saw their key role with respect to appropriateness of TJR as being focussed on efficient allocation of resources, to provide a range of services and to maximize patient outcomes ( $n = 7$ ). By monitoring population outcomes, creating ways to improve the efficient use of resources and monitoring clinical standards, decision-makers saw that scarce resources would be allocated appropriately to meet population need.

We have a really big role. I think our role is to do what we're trying to do, and that is really to do the exploration into not individual patient level data, but high system level data, and start looking at, from a population perspective, what are the criteria for which it is appropriate to go for surgery? What are the appropriate times to do interventions? What are the outcomes of those interventions? (*Regional*)

In defining appropriate delivery of TJR, decision-makers provided insights regarding current trends and practices, some of which may be contributing to the inappropriate use of TJRs. These are primarily associated with a focus on the supply of TJR versus the need for services. This focus is due, in part, to the need for reducing waiting times. As a result, much of the strategy has been on increasing volumes “without casting doubt on appropriateness.” (*Institutional*)

We're growing the number of cases at an alarmingly high rate and maybe that's just not appropriate. We've been so hung up on wait times, with good reason, that we've forgotten that maybe we're doing too many people. (*Ministry*)

From the decision-makers' point of view, this focus raised several issues mostly related to budget allocation ( $n = 8$ ). They raised concerns that if payment mechanisms continue to reward the volume of surgery, it could be to the detriment of preventive programs or other medical or less invasive options.

We end up driving volume to keep orthopaedic surgeons productive on doing activity that maybe is not where the most benefit for the patient would be. (...) we aren't necessarily incenting our system always in the best way. (*Ministry*)

The focus on increasing the supply of TJR services has several consequences. Decision-makers ( $n = 5$ ) raised concerns that TJRs may sometimes be considered prematurely or without offering all alternative non-surgical options. While this may not have been a problem in Canada in the past because of excessively long waiting times, with facilitated access to TJR, timing is emerging as an important appropriateness issue.

We have had some patients where they may have been offered or encouraged to have hip or knee joint replacement perhaps prematurely, and they've ended up suffering more pain and frustration post-op than they were experiencing pre-op. (*Regional*)

Opportunity costs were also identified as a key issue ( $n = 9$ ). Decision-makers recognized that money spent on TJR could not be spent on other needed services, and that prioritizing TJR could have a crowding-out effect on other things. While trade-offs were seen as necessary, what was being traded off was often not explicit. Decision-makers wanted

to get it right, wanted to spend money where there was demonstrable need and, furthermore, allocate it to maximize population outcomes.

One of the things that we do get challenged with is balancing our budgets (...). How do you balance out elective joints versus massive trauma? (*Regional and Institutional*)

Finally, decision-makers ( $n = 3$ ) also raised cost-effectiveness of TJR as an appropriateness issue. It was noted that there were many prostheses on the market and that efficacy evidence was not always available to guide decisions. Over time, some prostheses have been shown to exhibit relatively high failure rates, thus exposing the patient to a higher-risk revision procedure. Beyond efficacy considerations, decision-makers were also concerned about the costs associated with the prostheses.

What we're really lacking is information around the outcome associated with different types of joints. That's a huge issue: do we have to buy the most expensive joint, or would a lesser-cost joint do the trick? What are the outcome studies that have been done to prove that we need a fancier kind of joint with fancier materials so that it really does make a substantive difference and makes economic sense? (*Regional*)

#### *Toward efficient delivery of services*

When decision-makers defined appropriateness of TJR, they all addressed efficiency. Efficiency is one of the components of appropriateness from their system-level perspective. For them, efficient allocation of resources and delivery of services involved several aspects, including educational programs for patients to inform them about their options and choices, centralized intake to reduce variation in waiting lists among surgeons, implementation of care pathways or trajectories resulting in the best use of surgical and supportive resources, sharing and monitoring of clinical standards and analyzing population benefits. All of these activities lead to improved efficiencies, and decision-makers suggested that it was part of their role to ensure that these programs and strategies are in place ( $n = 12$ ).

*Patient Preparation:* Educational programs were said to be important to ensure that the patient and family understood the risks and benefits of TJR, what to expect both during and after their hospital stay and to explain some of the alternative options and treatments (like weight loss, physiotherapy and pain management) ( $n = 8$ ).

From a more system point of view and appropriateness to us also speaks to the patient has received all of the options (...) to move forward with the most appropriate options for them and to make those options available to them so that we're not driving only one solution. (*Ministry*)

*Central Intake:* Central intake was one method to apply standards and reduce variation. Having one intake ensures that the process for referral is the same for every surgeon and helps to distribute referrals evenly among surgeons. Most decision-makers ( $n = 9$ ) stated their perception that overuse and misuse were not major problems, as access has been so constrained, albeit they reported that confirming overuse or misuse is difficult, since clinical criteria are not explicit.

We created a central intake, so the referrals come through it now, as opposed to directly from the family physician, or primary care physician, to the orthopaedic surgeon. We screen if all the referral information is included before it goes off to the orthopaedic surgeon, and if it's appropriate. (*Regional*)

*Care Pathways:* Decision-makers ( $n = 5$ ) identified the need to standardize and optimize the care pathway for patients undergoing TJR. Incorporating guidelines, standardized care maps and checklists not only ensures that all patients receive the care that they need but also makes the best use of surgical and supportive resources. Sharing and monitoring of clinical standards was also important in maximizing resources and reducing variation.

We tried to isolate each of the variables so the duration of the stay in the ER, the time pre-surgery, the type of surgery required, the percentage of costs related to the patient post-surgery, or the load also placed on the hip if the patient can't bear with a certain load, and complications in post-op. We tried to isolate each of the variables, and then we sent letters to all orthopaedists signed by Orthopaedic Heads in order to tell them how we might adopt the best hip replacement surgery process and practices. (*Institutional*)

### *Information needs*

In their efforts to improve appropriateness of TJR, decision-makers identified several information needs including better information on the need for services, outcomes and cost-effectiveness evidence.

Decision-makers wanted to know that money was being allocated among the population based on need, not just demand. They wanted to be able to estimate need better within a local population in order to better forecast and adjust volumes ( $n = 3$ ). But decision-makers are also thinking about estimating the need for surgery and projecting that into the future.

It goes into some of our decision-making when we're looking at the demand of a population and the rate of need in a population and where we see a higher rate of need in a smaller population. It does raise questions about why is this population looking at a higher incidence of joint replacement than the region next door. (*Ministry*)

Decision-makers also wanted ( $n = 2$ ) information on patient outcomes (like quality of life, readmission rates, functional scores, revision rates or patient satisfaction) that could be aggregated into a regional or provincial view. Patient outcomes also permitted decision-makers to monitor quality and clinical standards ( $n = 3$ ). Even though the perspective of decision-makers was at a system or population level, patient data enabled a better understanding of clinical appropriateness of TJR and helped with decision-making at a system-level perspective.

While I don't want to explore every individual patient's journey individually to try to analyze it, we need individual level data from patients in order to aggregate it and to actually do the analysis that we need to do. (*Regional*)

To support their allocation decisions, decision-makers ( $n = 3$ ) wanted information on indicators that permitted comparisons between surgeons, sites or regions. They also needed evidence of outcomes to plan for the level of resources that would permit patients to access TJR appropriately in the future.

We need to understand the variability in the services that we provide from region to region or clinician to clinician to really understand if we have a consistent provision of that service. In many cases it's more in terms of a regional clinician management point of view, so ensuring as a medical standard that the clinicians providing those services within the region are providing those services equitably. (*Ministry*)

Decision-makers also identified the need for cost-effectiveness evidence, not only the cost-effectiveness of devices used for the surgery but also economic evaluations of TJR for different population groups, especially in relation to age, and the cost-effectiveness of alternative treatment options ( $n = 5$ ).

#### *Usefulness of a decision-support tool*

When asked about the usefulness of a decision-support tool for TJR appropriateness, all decision-makers stated that a tool would be useful to facilitate clinical decisions between surgeons and patients. Such a tool would assist in educating patients and in standardizing indications for surgery. It would also assist in understanding the appropriateness of clinical criteria, and help in co-managing priorities between managers and clinicians.

If there was an objective tool to look at indications, then I think decision-makers would be quite eager even now to have that tool applied so that it provides further reassurance that we're practicing within an acceptable norm. (*Regional*)

Gathering the data from the components of a decision-support tool would help to develop standards and guidelines for surgery. Three decision-makers stated that the information could also be useful to family physicians to help them in making appropriate referrals, and to share in the decision-making between the patient, the family doctor and the surgeon.

But once those policy guidelines are established (...) patients need to be made acutely aware of that too, as does primary care. I think that it's very important to develop decision-support aides and criteria, how frequently should these patients be seen? How effectively are they being managed and by whom? (...) Maybe we have the services, but they're not well used or we are not providing the caregivers with better tools to help manage those patients. (*Ministry*)

Another use for a decision-support tool would be to assess and monitor patients who are currently on waiting lists. The tool would give decision-makers some assurance that patients who are waiting for surgery are appropriate and ready for the procedure.

Tool sounds like it would be extremely useful ... what I would particularly love about it is that we would then have a higher level of confidence, that the patients who are on the wait list are in fact, ready for surgery, and appropriate for surgery. We don't currently have that confidence. (*Ministry*)

## Discussion

Decision-makers recognized their need to be a part of the appropriateness issue. In keeping with their systems' perspective, they wanted to be assured that surgeons were applying clinical criteria or guidelines in determining clinical appropriateness for surgery and that patients who were on the waiting list for surgery were appropriate candidates. Nevertheless, decision-makers did not see themselves as having a role in the individual surgeon-patient determination of appropriateness for surgery. They also see themselves as having a key role in optimizing resource allocation to improve population outcomes, especially in regard to the standardization of care processes (or ways that patients received care). Decision-makers struggled with lack of information to better inform resource allocation decisions, especially concerning need for services, patients' outcomes and cost-effectiveness evidence on prostheses. While some of this lack of information may be related to the absence of data, some of it is no doubt related to having analytical products that are better designed to convey needed information. Supporting high-quality care requires decision-makers to have timely and accurate information (Braine 2006) regarding clinical effectiveness and cost-effectiveness of treatments and services (Elliott 2006; Elshaug et al. 2008, 2009).

### *Decision-makers and clinicians cooperation for appropriateness issues*

Decision-makers clearly wanted a bigger role in the appropriateness issue and were in favour of closer cooperation with clinicians. This type of concern is found in the implementation of clinical governance initiatives, showing that managers need to ensure that clinical decision-making is informed by evidence-based criteria (Arulkumaran 2010; Braine 2006) to support continuous quality improvement (Brault et al. 2008; Pomey et al. 2008; Vanu Som 2004).

In terms of efficiency (i.e., optimization of resources allocation) decision-makers felt a responsibility to spend money wisely – to offer the right procedure for the right patient in the right place and in the right time (Donaldson and Gray 1998; Lavis and Anderson 1996). Efficiency principles are increasingly advocated to optimize the use of limited resources (Elshaug et al. 2009; Institute of Medicine 2013). From a clinical governance perspective, seeking efficiency requires managers to document procedures to guide all critical aspects of clinical care processes, ensuring integrated and standardized processes and pathways (Halligan and Donaldson 2001). To achieve efficiency, managers within healthcare organizations are encouraged to redesign processes by the identification of non-value-added activities (Chadha et al. 2012).

### *Strengths and limitations of the study*

While TJR appropriateness was previously studied from a clinical perspective, this is the first study on appropriateness of TJR from a decision-maker's perspective, providing a system view of that issue. The qualitative method used allowed in-depth examination of perspectives (Lincoln and Guba 1985; Rubin and Rubin 2004) and provided rich data regarding appropriateness. However, there are some limitations to this research. First, our sample was relatively small in keeping with the objective of the study to gain an understanding of decision-makers' perspectives. Second, our sample was not necessarily representative, although the themes we extracted from the four provinces and the three decision-maker levels yield broad and valuable insights. The number of decision-makers at the provincial level was also a limitation, since only three were interviewed. Finally, decision-makers' opinions were likely influenced by current-day constraints and circumstances; they represent the lens of decision-makers from a particular perspective, at one point in time. For these reasons, our findings may not be generalizable to other settings.

### *Implications for policy and practice*

In the context of resource scarcity, there is pressure on policy makers and decision-makers to develop a set of rules or criteria that could be used to determine what is appropriate from an efficiency perspective (Elshaug et al. 2009; Tromp and Baltussen 2012). This may also be termed the appropriateness of setting, that is, the least expensive mix of services to deliver the service (Lavis and Anderson 1996). A recent report (Ministère des affaires sociales et de la santé, direction générale de l'offre de soins 2012) offers a methodological guide for decision-makers in order to improve healthcare appropriateness.

It focuses on three areas for appropriateness improvement in terms of effectiveness and efficiency: clinical practices, healthcare pathways and models of care management.

Our previous research on patient and provider perspectives of appropriateness showed that their views reside in the domain of clinical appropriateness or appropriateness of service. The decision-makers' view of appropriateness recognizes the importance of the clinical view, but it offers a very different input into the appropriateness discourse, more closely aligned with appropriateness of setting. They expressed their need to take a greater part in the appropriateness issue, not to be directly involved in clinical decisions, but rather to ensure that the clinical decision-making process is informed by evidence-based criteria and also to ensure the optimization of resources allocation.

Our group is merging the patient and surgeon perspectives into a multi-faceted tool to guide both patients and surgeons. While decision-makers did not see themselves as directly part of that clinical decision, they expressed a thirst for such a guideline to inform their understanding of issues, such as access and equity, to collect data that will contribute to the development of clinical standards and to contribute to the understanding of patient outcomes.

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