HEALTHCARE

POLICY

Politiques de Santé

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

Volume 3 • Number 3

Data Matters • Discussion and Debate • Research Papers
Knowledge Translation, Linkage and Exchange

A LONGWOODS PUBLICATION Fonds WWW.HEALTHCAREPOLICY.NET

HEALTHCARE QUARTERLY: Best practices, policy and innovations in the administration of healthcare. For administrators, academics, insurers, suppliers and policy leaders. *Edited by* Dr. Peggy Leatt, University of North Carolina, Chapel Hill ✦ CANADIAN JOURNAL OF NURSING LEADERSHIP: Covering politics, policy, theory and innovations that contribute to leadership in nursing administration, practice, teaching and research. Peer reviewed. *Edited by* Dr. Dorothy Pringle, University of Toronto, Toronto ✦ HEALTHCARE PAPERS: Review of new models in healthcare. Bridging the gap between the world of academia and the world of healthcare management and policy. Authors explore the potential of new ideas. *Edited by* Dr. Peggy Leatt, University of North Carolina, Chapel Hill. ✦ HEALTHCARE POLICY: Healthcare policy research and translation. Peer reviewed. For health system managers, practitioners, politicians and their administrators, and educators and academics. Authors come from a broad range of disciplines including social sciences, humanities, ethics, law, management sciences, and knowledge translation. *Edited by* Dr. Brian Hutchison, McMaster University, Hamilton. ✦ ELECTRONIC HEALTHCARE: Best practices, policy and innovations exploring e-models, e-practices and e-products for e-health. For administrators, academics, insurers, suppliers and policy pundits. *Edited by* Dr. Michael Guerriere, University of Toronto, Toronto and Denis Protti, University of Victoria, Victoria. ✦ LAW & GOVERNANCE: Within the framework of the law and the role of governance providing policies, programs, practices and opinions for the providers, administrators and insurers of healthcare services. *Editorial Chair,* Dr. Kevin Smith, McMaster University, Hamilton. ✦ HRRESOURCES: Cases, commentary and policy reviews for healthcare clinicians, human resources managers and the policy leaders, insurers, academics, administrators, boards and advisors of all healthcare organizations. *Editorial Chair,* Dr. Louise Lemieux-Charles, University of Toronto, Toronto. ✦ JOURNAL OF WORLD HEALTH & POPULATION: Best practices, policy and innovations in the administration of healthcare in developing communities and countries. For administrators, academics, researchers and policy leaders. Includes peer reviewed research papers. *Edited by* Dr. John Paul, University of North Carolina, Chapel Hill. ✦ LONGWOODS.COM: Enabling excellence in healthcare. Providing electronic access to news, information, career opportunities, conference schedules, research, case studies, policy reviews and commentary that cover politics, policy, theory, best practices and innovations in healthcare.

HEALTHCARE
POLICY
Politiques de Santé

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

VOLUME 3 NUMBER 3 • FEBRUARY 2008

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

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

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

—

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

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

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

CONTENTS

Research Papers

Peer Reviewed Full text online

TABLE DES MATIÈRES

Du rédacteur-en-chef

L'économiste indiscipliné

Discussion et débat

Questions de données

Application des connaissances, liens et échanges

Documents de recherche

les centres de soins pour personnes âgées. Les auteurs tirent des enseignements stratégiques en comparant différentes approches.

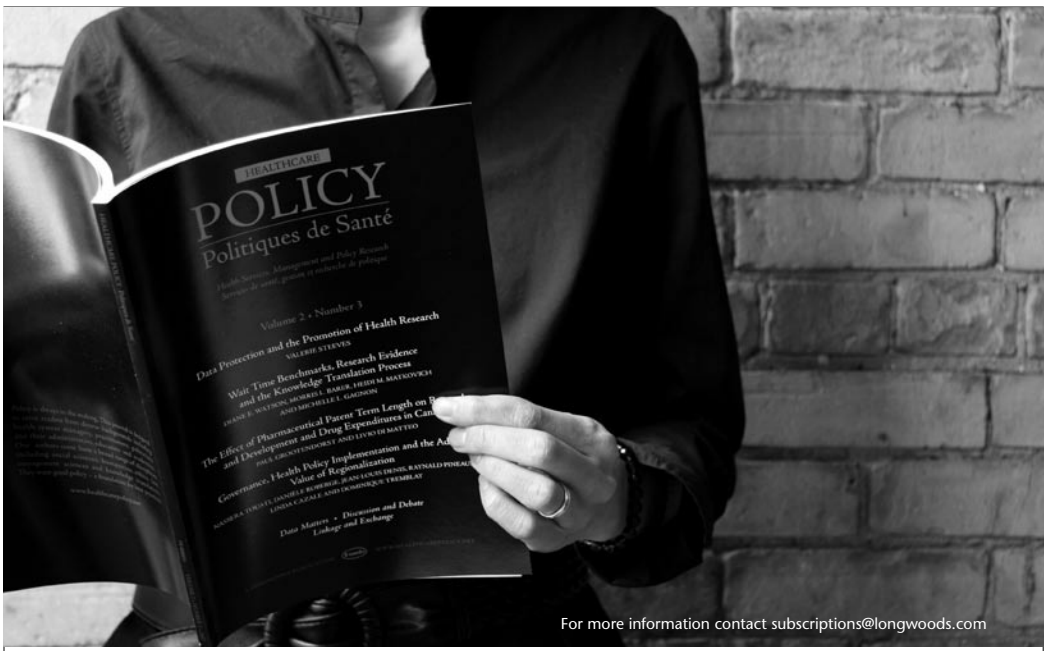
Dans quelle mesure les gens veulent-ils être consommateuristes? Rôle préféré des personnes atteintes de VIH/sida dans le processus décisionnel

SARA UROWITZ ET RAISA DEBER

La majorité des personnes vivant avec le VIH/sida cherchent à établir une relation avec leur fournisseur de soins de santé dans laquelle le processus décisionnel est une responsabilité commune.

Examen par les pairs

Texte intégral en ligne



For more information contact subscriptions@longwoods.com

Peer reviewed research and knowledge translation

Longwoods Publishing
Enabling Excellence

HEALTHCARE POLICY
Politiques de Santé
www.healthcarepolicy.net

The Canadian Institutes of Health Research Institute of Health Services and Policy Research (CIHR - IHSPR) is a proud supporter of *Healthcare Policy/Politiques de Santé*.

IHSPR provides financial and in-kind support for the publication of *Healthcare Policy/Politiques de Santé*, and has played a key role in the journal's inception and development.

Longwoods Publishing gratefully acknowledges the financial support of the following organizations:

Canadian Health Services Research **Foundation**
Fondation canadienne de la recherche sur les services de santé

Canadian Association for Health Services and Policy Research

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

HEALTHCARE
POLICY
Politiques de Santé

EDITOR-IN-CHIEF
BRIAN HUTCHISON, MD, MSC, FCFP
Professor Emeritus, Departments of Family Medicine and Clinical Epidemiology and Biostatistics, Centre for Health Economics and Policy Analysis, McMaster University

SENIOR EDITORS

FRANÇOIS BÉLAND, PHD
Professor, Department of Health Administration, Faculté de médicine, Université de Montréal, Member, Groupe de recherche interdisciplinaire en santé (GRIS), Co-Director, Groupe de recherche Université de Montréal-Université McGill sur les personnes agées, Montréal, QC

RICK ROGER, MHSA
Former Chief Executive Officer, Vancouver Island Health Authority, Former Associate Deputy Minister, Saskatchewan Department of Health, Victoria, BC

EDITORS

RAISA DEBER, PHD
Professor, Department of Health Policy, Management and Evaluation, Faculty of Medicine, University of Toronto, Toronto, ON

JOHN HORNE, PHD
Adjunct Professor, School of Health Information Science, University of Victoria and Former Chief Operating Officer, Winnipeg Health Sciences Centre, Victoria, BC

TERRY KAUFMAN, LLB
Montréal, QC

JOEL LEXCHIN, MSC, MD
Professor and Associate Chair, School of Health Policy and Management, Faculty of Health, York University, Emergency Department, University Health Network, Toronto, ON

ROBYN TAMBLYN, PHD
Professor, Department of Medicine and Department of Epidemiology & Biostatistics, Faculty of Medicine, McGill University, Montréal, QC

CHRISTEL A. WOODWARD, PHD
Professor Emeritus, Department of Clinical Epidemiology and Biostatistics, Centre for Health Economics and Policy Analysis, McMaster University, Hamilton, ON

CHAIR, EDITORIAL ADVISORY BOARD

ROBERT G. EVANS
Professor, Department of Economics, University of British Columbia, Member, Centre for Health Services and Policy Research, University of British Columbia, Vancouver, BC

EDITORIAL ADVISORY BOARD

TONI ASHTON
Associate Professor Health Economics, School of Population Health, The University of Auckland, Auckland, NZ

LUC BOILEAU, MD, MSC, FRCPC
President and Chief Executive Officer, Agence de la santé et des services sociaux de la Montérégie, Montréal, QC

PHILIP DAVIES
Government Social Research Unit, London, UK

MICHAEL DECTER
Founding and Former Chair, Health Council of Canada, Toronto, ON

KENNETH FYKE
Victoria, BC

STEFAN GREß
Department of Health Sciences, University of Applied Sciences Fulda, Fulda, Germany

CHRIS HAM
Professor of Health Policy and Management, Health Services Management Centre, The University of Birmingham, Birmingham, UK

PAUL LAMARCHE
Professor, Departments of Health Administration & Social and Preventive Medicine, Director, GRIS, Faculté de médicine, Université de Montréal, Montréal, QC

DAVID LEVINE
Président directeur général, Agence de développement de réseaux locaux de services de santé et de services sociaux de Montréal-Centre, Montréal, QC

CHRIS LOVELACE
Senior Manager, World Bank, Kyrgyz Republic Country Office, Central Asia Human Development, Bishkek, Kyrgyz Republic

THEODORE R. MARMOR
Professor of Public Policy and Management, Professor of Political Science, Yale School of Management, New Haven, CT

VICENTE ORTÚN
Economics and Business Department and Research Center on Health and Economics (CRES), Pompeu Fabra University, Barcelona, Spain

DOROTHY PRINGLE
Professor Emeritus and Dean Emeritus, Faculty of Nursing, University of Toronto, Toronto, ON

MARC RENAUD
Lisbon, Portugal (on sabbatical)

JEAN ROCHON
Expert associé, Systèmes de soins et services, Institut national de santé publique du Québec, Sainte-Foy, QC

NORALOU P. ROOS
Manitoba Centre for Health Policy
Professor, Community Health Sciences
University of Manitoba, Winnipeg, MB

RICHARD SALTMAN
Professor of Health Policy and Management, Rollins School of Public Health, Emory University, Atlanta, GA

HON. HUGH D. SEGAL, CM
Senator, Kingston-Frontenac-Leeds, Ottawa, ON

BARBARA STARFIELD
University Distinguished Professor, Department of Health Policy and Management, Johns Hopkins School of Public Health, Baltimore, MD

ALAN WOLFSON
South Africa

MANAGING EDITOR
REBECCA HART
rhart@longwoods.com

EDITORIAL DIRECTOR
DIANNE FOSTER-KENT
dkent@longwoods.com

COPY EDITOR
FRANCINE GERACI

TRANSLATOR
JOSEPHINE VERSACE

PROOFREADER
WAYNE HERRINGTON

PUBLISHER
ANTON HART
ahart@longwoods.com

ASSOCIATE PUBLISHER/ADMINISTRATION
BARBARA MARSHALL
bmarshall@longwoods.com

ASSOCIATE PUBLISHER/MEDIA
SUSAN HALE
shale@longwoods.com

DIRECTOR, DESIGN AND PRODUCTION
YVONNE KOO
ykoo@longwoods.com

GRAPHIC DESIGNER
JONATHAN WHITEHEAD
jwhitehead@longwoods.com

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

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

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

SUBSCRIPTIONS
Individual subscription rates for one year are [C] $105 for online only and [C] $155 for print + online. For individual subscriptions contact Barbara Marshall at telephone 416-864-9667, ext. 100 or by e-mail at bmarshall@longwoods.com.

Institutional subscription rates are [C] $460 for online only and [C] $562 for print + online. For institutional subscriptions, please contact Rebecca Hart at telephone 416-864-9667, ext. 105 or by e-mail at rhart@longwoods.com.

Subscriptions must be paid in advance. An additional 5% Goods and Services Tax (GST) is payable on all Canadian transactions. Rates outside of Canada are in US dollars. Our GST number is R138513668.

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

REPRINTS/SINGLE ISSUES
Single issues are available at $30. Includes shipping and handling. Reprints can be ordered in lots of 100 or more. For reprint information call Barbara Marshall at 416-864-9667 or fax 416-368-4443, or e-mail to bmarshall@longwoods.com.

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

EDITORIAL
To submit material or talk to our editors please contact Rebecca Hart at 416-864-9667, ext. 105 or by e-mail at rhart@longwoods.com. Author guidelines are available online at http://www.longwoods.com/pages.php?pageid=39&cat=247

ADVERTISING
For advertising rates and inquiries, please contact Susan Hale at 416-864-9667, ext. 104 or by e-mail at shale@longwoods.com.

PUBLISHING
To discuss supplements or other publishing issues contact Anton Hart at 416-864-9667, ext. 109 or by e-mail at ahart@longwoods.com.

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

No liability for this journal's content shall be incurred by Longwoods Publishing Corporation, the editors, the editorial advisory board or any contributors. ISSN No. 1715-6572

Publications Mail Agreement No. 40069375
Printed by Harmony Printing
© February 2008

EDITORIAL

Sequestered Evidence: Inaccessible Findings from Health Services and Policy Research

Perhaps surprisingly, a recent "special article" in the *New England Journal of Medicine* (NEJM) on the rather arcane subject of publication bias (Turner et al. 2008) generated considerable media attention in Canada. The paper showed that published reports of industry-sponsored trials of antidepressant drugs overstated the drugs' effectiveness by two means: trials with positive results were much more likely to be published than those with negative or ambiguous results, and, when they were published, trials with negative or ambiguous results were often portrayed as positive.

The study was made possible by the existence of a clinical trials registry and results database maintained by the United States Food and Drug Administration (FDA). Drug companies must register with the FDA all trials they plan to use in support of an application for marketing approval. In their subsequent application, they are required to report the results of each trial based on the analytic plan specified in the study protocol. Following corroborative analyses by FDA statisticians, the FDA classifies the results of each study as positive, negative or neither positive nor clearly negative. The authors of the NEJM study conducted a systematic search to identify publications that matched the placebo-controlled trials of antidepressants in the FDA database and compared the published outcomes with the FDA outcomes. While 94% of the published studies reported positive results, only 51% of the studies in the FDA database were positive. Of the 36 negative or ambiguous studies in the FDA database, three were published as negative, 22 were not published and 11 were published as positive.

What does this report have to do with health services and policy research – apart from the obvious message that, collectively, pharmaceutical manufacturers and those who conduct research under their sponsorship are not to be trusted? This study and the growing body of literature on publication bias focus on clinical research and on the specific issue of selective publication rather than the broader issue of non-publication of research results. However, they do give cause to reflect on the extent, genesis and effects of unpublished, and therefore largely inaccessible, research in the health services and policy domains.

Although the extent of unpublished health services research has not – at least to my knowledge – been documented, one has only to consider the roadblocks and detours on the road from research production to publication to appreciate that much of it is likely to be unavailable, or available only with difficulty, to health researchers, decision-makers and stakeholders. These impediments exist for both investigator-initiated research and for research commissioned by governments and health-related organizations, though the specific barriers differ.

Publications, along with research funding, remain the prime currency in academic tenure and promotion deliberations. However, within a few years of entering academe, most researchers reach a point of publication surplus, where their volume of publications exceeds the required threshold and incremental publications have little effect on academic advancement. At this point, the "publish or perish" imperative ceases to operate. Despite this lessening of the incentive to publish, many disciplined health services researchers – including several of my mentors – motivated by some combination of social responsibility, ambition or obsessiveness, invariably see their work through to publication. Others of us sometimes (or often) get distracted by grant submission deadlines, the demands of ongoing research projects, teaching or administrative responsibilities, a new partner, baby or grandchild, an aging parent or … I could go on, but I imagine you get the point. These distractions delay the preparation and submission of manuscripts. Eventually the study in question becomes stale dated, submission of the manuscript or would-be manuscript no longer seems appropriate and the researcher is left with nothing more than a guilty conscience to show for his or her good intentions. In other cases a brutal review, initial (or repeated) rejection or a request for extensive revisions of a manuscript may lead authors to abandon efforts to publish. Of course, some research appropriately goes unpublished because of inadequate methodology or trivial findings. However, my concern here is with the unpublished research that is of sufficient validity and relevance that it has the potential to expand existing knowledge and inform decision-making.

The barriers to the publication of commissioned health services and policy research are of a different sort. Much of this research is conducted by consulting firms that have no incentive and little inclination to publish their work. And when academics undertake commissioned research, they are often unable or limited in their ability to publish their findings by the terms of the research contract. The findings may be available to inform the decisions of the commissioning organization, but often not to anyone else.

What does it matter that some (probably a lot) of the health services and policy research conducted in Canada fails to see the light of day? To begin with, researchers, policy makers, health system managers, healthcare organizations, advocacy groups and the public are denied access to potentially relevant evidence to inform their thoughts and actions. In the extreme, bad policy decisions might be made or good ones forgone

because key pieces of relevant evidence are unavailable. In other situations, decisions might be made more hesitantly or on a smaller scale than would have been the case if more complete evidence were available.

If fuller access to the findings of health services and policy research is in the public interest, what correctives are possible? In the case of investigator-initiated research, several come to mind:

- attention by promotion and tenure committees and department chairs to the link between completed research projects and publications in researchers' curricula vitae; holding faculty members to account when research projects are not reflected in subsequent publications;
- a requirement by funding agencies that investigators report the publications arising from their funded projects, agency follow-up until the publication of final results is reported, and sanctions (e.g., withholding of funding or eligibility for future funding) for failure to publish or to justify that failure;
- greater emphasis in research training programs on the researcher's social responsibility to publish as part of knowledge transfer.

For commissioned research, a variety of measures could help to improve transparency and increase the probability of publication, for example:

- advocacy by research organizations and public-interest groups for research contracts that require public disclosure of reports from publicly funded contract research and that, with appropriate data privacy provisions, allow researchers to obtain data produced by consulting firms in the course of such projects[1];
- insistence by universities and individual researchers that research contracts assign intellectual property rights to the investigator(s) rather than the funder.

Ensuring the broad dissemination of findings from health services and policy research, including publication, is a social responsibility for researchers and an obligation for public funders of research. Decision-makers and the public deserve nothing less.

NOTES

[1] A precedent for the latter was set in a study conducted in 2002–2003 for the Ontario Ministry of Health and Long-Term Care by IBM Business Consulting Services (Ministry of Health 2005). The data from that study were made available to a McMaster University researcher who co-chaired the project steering committee.

REFERENCES

Ministry of Health and Long-Term Care. 2005 (January). *Report on the Integration of Primary Health Care Nurse Practitioners into the Province of Ontario*. Retrieved February 1, 2008. <http://www.health.gov.on.ca/english/public/pub/ministry_reports/nurseprac03/nurseprac03_mn.html>.

Turner, E.H., A.M. Mathews, E. Linardatos, R.A. Tell and R. Rosenthal. 2008. "Selective Publication of Antidepressant Trials and Its Influence on Apparent Efficacy." *New England Journal of Medicine* 358: 252–60.

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

La preuve sous séquestre : les résultats inaccessibles des recherches sur les services et les politiques de santé

Il peut paraître étonnant qu'un article spécial du *New England Journal of Medicine* (NEJM) paru récemment sur le sujet relativement obscur du biais de publication (Turner et coll., 2008) ait capté l'attention des médias au Canada. L'article démontrait que les rapports publiés sur les essais d'antidépresseurs commandités par l'industrie exagéraient l'efficacité des médicaments, et ce, de deux façons : les essais dont les résultats sont positifs ont beaucoup plus de chances d'être publiés que ceux aux résultats négatifs ou équivoques et, lorsque ces derniers sont publiés, ils sont souvent représentés comme étant positifs.

Cette étude a été rendue possible par l'existence d'une base de données sur les essais cliniques et leurs résultats entretenue par la *Food et Drug Administration* (FDA) des États-Unis. Les sociétés pharmaceutiques doivent déclarer à la FDA tous les essais qu'ils prévoient utiliser pour appuyer une demande d'approbation en vue de la mise en marché de leurs produits. Leur demande doit ensuite faire état des résultats de chaque essai en fonction du plan d'analyse indiqué dans le protocole d'étude. Une fois que ses statisticiens ont effectué une analyse corroborante, la FDA classe les résultats des études comme étant positifs, négatifs ou ni clairement positifs ni négatifs. Les auteurs de l'article du NEJM ont effectué une recherche systématique des études publiées sur les antidépresseurs qui correspondaient aux essais contrôlés apparaissant dans la base de données de la FDA et ont comparé les résultats publiés avec ceux de la base de

données. Alors que 94 p. cent des études publiées indiquaient des résultats positifs, ce n'était le cas que de 51 p. cent d'entre elles dans la base de données. Des 36 études négatives ou équivoques contenues dans la base de données de la FDA, seulement trois ont été présentées comme étant négatives à leur publication, 22 n'ont pas été publiées et 11 ont été présentées de façon positive.

En quoi ce rapport est-il lié à la recherche sur les services et les politiques de santé – outre le message clair qu'on ne peut généralement pas faire confiance aux fabricants de produits pharmaceutiques et à ceux qui effectuent des essais pour eux? Cet article, qui s'ajoute à une documentation croissante sur le biais dans les publications, porte sur la recherche clinique, plus précisément sur la question de la publication sélective et non sur celle plus générale de la non-publication des résultats de recherche. Malgré tout, il nous donne de bonnes raisons de réfléchir à l'origine, à l'étendue et aux effets de la non-publication des données de recherche dans le domaine des services et des politiques de santé, données qui restent donc pratiquement inaccessibles.

Bien que personne n'ait encore étudié, à ma connaissance, l'ampleur des résultats de recherche non publiés en matière de services de santé, on n'a qu'à penser aux obstacles et aux détours qui séparent l'étape de la recherche et celle de la publication des résultats pour comprendre qu'il est probable qu'une grande partie de ces résultats ne soient jamais mis à la disposition des chercheurs, des décideurs et des autres intervenants dans le domaine de la santé, ou alors qu'il soit très difficile d'y avoir accès. De tels obstacles existent autant dans la recherche entreprise par les chercheurs que pour les études commandées par les gouvernements et autres organismes du milieu de la santé, quoique la nature exacte des barrières diffère selon le cas.

Les publications et le financement obtenu pour la recherche sont encore la principale considération pour la titularisation et la promotion des professeurs d'université. Cela dit, quelques années après leur entrée dans le monde universitaire, la plupart des chercheurs atteignent un point de surplus de publication; le nombre d'articles qu'ils ont publiés excèdent le seuil requis, et leurs publications additionnelles ont un effet minime sur leur avancement professionnel. L'impératif de « publier ou périr » cesse alors de s'appliquer. Malgré cela, de nombreux chercheurs assidus du domaine des services de santé (y compris plusieurs de mes mentors), motivés par de multiples raisons, comme la responsabilité sociale, l'ambition et la compulsion, s'assurent invariablement de faire publier leurs travaux. D'autres parmi nous se laissent parfois, voire souvent, distraire par les échéances de demande de subvention, par les exigences des projets de recherche en cours, par les responsabilités administratives ou relatives à l'enseignement, par l'arrivée dans notre vie d'un nouveau conjoint, bébé ou petit-enfant, par un parent vieillissant… Je pourrais continuer, mais vous avez déjà sûrement compris. Le fait est que ces distractions retardent la préparation et la soumission des articles à publier. Les études concernées sont bientôt dépassées, il ne semble plus approprié de soumettre un article ou un projet d'article, et il ne reste plus alors au chercheur

que son sentiment de culpabilité pour refléter ses bonnes intentions. Dans d'autres cas, une révision brutale par les pairs, un refus initial (ou répété) et l'exigence de procéder à une révision étendue de l'article peuvent pousser ses auteurs à abandonner leurs efforts en vue de le faire publier. Bien sûr, certaines études ne méritent pas d'être publiées, soit à cause de la méthodologie inadéquate employée ou de l'insignifiance de leurs résultats, mais ce qui nous intéresse ici, ce sont les recherches non publiées en dépit de leur validité et de leur pertinence relatives qui leur donnent le potentiel d'accroître la somme des connaissances en la matière et de contribuer à la prise de décisions.

Les obstacles à la publication des études commandées sur les services et les politiques de santé sont d'une nature différente. La plupart d'entre elles sont effectuées par des sociétés d'experts-conseils qui n'ont aucune motivation et peu d'intérêt pour la diffusion de leur travail. De plus, lorsque des universitaires réalisent une étude commandée, les termes de leur contrat leur nient ou leur limitent souvent le droit de publier leurs résultats. Ces résultats sont donc uniquement mis à la disposition de l'organisme qui a commandé l'étude pour l'aider à orienter ses décisions; personne d'autre ne peut les consulter.

Quelle importance cela peut-il avoir pour certains (et probablement pour plusieurs) que des études sur les services et les politiques de santé effectuées au Canada ne soient jamais rendues publiques? Tout d'abord, cela empêche les chercheurs, les décideurs, les gestionnaires de systèmes de santé, les organismes de soins de santé, les groupes de défense des droits et la population d'avoir accès à des renseignements potentiellement pertinents qui pourraient influencer leurs opinions et leurs actions. Poussée à l'extrême, cette inaccessibilité peut entraîner de mauvaises décisions politiques ou l'abandon de bons projets à cause du manque de certains renseignements clés. Il est aussi possible qu'on prenne des décisions moins fermes ou à moins grande échelle que ce ne serait le cas si des données plus complètes étaient disponibles.

Si un meilleur accès aux résultats des études sur les services et les politiques de santé est dans l'intérêt de la population, quelles mesures correctives peut-on adopter? Dans le cas de la recherche entreprise par les chercheurs, plusieurs solutions sont envisageables :

- Les comités de titularisation et de promotion et les directeurs de département des universités devraient porter attention au lien entre les recherches complétées et les publications inscrites dans le curriculum vitæ des chercheurs, et demander des comptes aux enseignants qui ne publient pas les résultats de leurs projets.
- Les organismes de financement devraient exiger des chercheurs qu'ils indiquent toute publication découlant des projets financés, avec suivi jusqu'à la publication des résultats finaux et en imposant des sanctions (p. ex., retrait du financement ou de l'admissibilité à tout financement futur) en cas de non-publication des résultats ou d'incapacité de justifier leur non-publication.

- Les programmes de formation pour la recherche devraient accorder plus d'importance à la responsabilité sociale des chercheurs de publier leurs études pour favoriser la transmission des connaissances.

Pour ce qui est des études commandées, diverses mesures pourraient servir à améliorer la transparence et à accroître la probabilité qu'elles soient publiées, entre autres :

- Les organismes de recherche et les groupes de défense de l'intérêt public devraient exiger que les contrats de recherche et d'évaluation accordés par l'État incluent l'obligation de rendre publics les rapports de ces projets et qu'on permette aux chercheurs d'accéder aux données obtenues par des sociétés d'experts-conseils durant la réalisation de tels projets (en prévoyant les mesures appropriées pour assurer la confidentialité des données).[1]
- Les universités et les chercheurs devraient revendiquer qu'on accorde les droits de propriété intellectuelle des résultats des études commandées aux chercheurs plutôt qu'aux commanditaires de la recherche.

La diffusion étendue des résultats des études sur les services et les politiques de santé, y compris leur publication, est une responsabilité sociale des chercheurs et une obligation pour les organismes publics de financement de la recherche. La population et les décideurs y ont droit.

NOTES

[1] Un précédent a été établi en la matière avec une étude effectuée en 2002–2003 pour le compte du ministère de la Santé et des Soins de longue durée de l'Ontario par *IBM Business Consulting Services* (ministère de la Santé, 2005). Les données de recherche ont été mises à la disposition d'un chercheur de l'université McMaster qui avait coprésidé le comité directeur du projet.

BIBLIOGRAPHIE

Ministère de la Santé et des Soins de longue durée, *Report on the Integration of Primary Health Care Nurse Practitioners into the Province of Ontario*, janvier 2005. Téléchargé le 1er février 2008. <http://www.health.gov.on.ca/english/public/pub/ministry_reports/nurseprac03/nurseprac03_mn.html>.

Turner, E.H., Mathews, A.M., Linardatos, E., Tell, R.A. et Rosenthal, R., « Selective Publication of Antidepressant Trials and Its Influence on Apparent Efficacy », *New England Journal of Medicine*, 2008, nº 358, pp. 252–260.

BRIAN HUTCHISON, MD, MSC, FCFP
Rédacteur en chef

School of Nursing
The Faculty *of* Health Sciences

Canadian Health Policy Position

The School of Nursing in the Faculty of Health Sciences at The University of Western Ontario invites applications for a faculty position in the area of Canadian Health Policy. The successful candidate will be appointed at the rank of Assistant or Associate Professor and the appointment will be either a probationary (tenure-track) or a tenured position, depending on qualifications and experience. The incumbent will possess a Ph.D. degree in nursing or related field and a Masters degree in Nursing. The faculty member will hold a cross appointment in the Schulich School of Medicine and Dentistry and is expected to be actively involved with the campus Health Policy Initiative, a group that involves 85 professors drawn from seven different Faculties at The University of Western Ontario.

The focus of the position will be on Canadian Health Policy. The position has been designed to complement existing campus strengths in this area as well as those in the International Health Policy field. The incumbent will develop and deliver courses in the area of Canadian Health Policy congruent with School curricula, attract and supervise graduate students, and compete for peer-adjudicated research grants. Knowledge transfer and uptake with Provincial and National policy-makers is seen as a key component of the position. Also required are a learner-centered, adult-oriented philosophy of teaching and learning, and comfort with distributed learning technologies. Applicants eligible for a certificate of registration with the College of Nurses of Ontario are especially encouraged to apply.

The University of Western Ontario (www.uwo.ca) is one of Canada's leading research-intensive universities. It is located in London, Ontario, known as the "Forest City" with a population of 385,000. London is also a major academic health sciences centre. The School of Nursing is one of 5 schools in the research-oriented Faculty of Health Sciences. The School offers six educational programs at graduate and undergraduate levels. It also has healthy and active partnerships with leading practice centers in the city and region. The University regularly offers programs to enhance teaching. Educational and research programs are supported by excellent relationships with health care and community agencies.

The effective date of appointment is July 1, 2008. Please send a detailed *curriculum vitae*, a cover letter, and the names of three academic references to:

Dr. Mary-Anne Andrusyszyn, Acting Director
School of Nursing, Faculty of Health Sciences
Room H125, Health Sciences Addition
The University of Western Ontario
London, Ontario N6A 5C1
http://www.uwo.ca/fhs/nursing

The deadline for receipt of applications is **April 15, 2008**
Please quote number **HS 092** on all correspondence

Positions are subject to budget approval. Applicants should have fluent written and oral communication skills in English. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. The University of Western Ontario is committed to employment equity and welcomes applications from all qualified women and men, including visible minorities, aboriginal people and persons with disabilities.

Richard III, Barer–Stoddart and the Daughter of Time

Richard III, Barer–Stoddart et *La fille du temps*

by ROBERT G. EVANS
Professor of Economics
University of British Columbia
Vancouver, BC

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

Abstract

"Truth is the daughter of Time," said mystery writer Josephine Tey. This point, illustrated in her rehabilitation of the "villainous" King Richard III, is equally apt for a reconsideration of the 1991 Barer–Stoddart report on medical personnel. Canadian physicians have reviled these authors for "creating" a physician shortage by encouraging provincial cuts to medical school enrolment. Yet, data pre- and post-1991 are quite clear: their report did not and could not have had this effect. The physician-to-population ratio has been stable since 1989. Average physician hours of work have fallen, but per capita expenditures on physicians' services (inflation-adjusted) are rising rapidly. A flood of physicians from the major expansion of enrolments now in place threatens serious fiscal trouble over the next two decades, and is likely to pre-empt any significant system reform.

Résumé

« La vérité est la fille du temps », soutient l'auteure de romans-mystère Josephine Tey. Cet argument, illustré par sa réhabilitation du « méchant » roi Richard III, vaut tout autant pour un réexamen du rapport de 1991 de Barer–Stoddart sur le personnel médical. Les médecins canadiens ont reproché aux auteurs du rapport d'avoir « créé » une pénurie de médecins en encourageant les gouvernements provinciaux à réduire le budget consacré aux inscriptions dans les écoles de médecine. Pourtant, les données recueillies avant et après 1991 sont très claires : leur rapport n'a pas eu et n'aurait pas pu avoir un tel effet. Le nombre de médecins par rapport à la population est stable depuis 1989. Le nombre moyen d'heures de travail des médecins a diminué, mais les dépenses par habitant en services médicaux (ajustées en fonction de l'inflation) augmentent rapidement. L'arrivée massive de médecins à la suite d'importantes initiatives mises de l'avant pour accroître le nombre d'inscriptions dans les écoles de médecine pourrait créer de graves problèmes fiscaux au cours des 20 prochaines années et risque d'entraver toute réforme significative du système.

King Richard III has acquired rather a bad reputation. Coming to the throne by murdering everyone in his way, and in particular the two sons of his brother Edward IV ("the little princes in the Tower," Edward V and the Duke of York), was bound to excite some unfavourable comment. After all, Edward Sr. had appointed Richard their guardian. By the time Shakespeare was through with him, Richard was a monster of evil incarnate.

Shakespeare was a dramatist, not a historian. He was also writing during the reign of Elizabeth I. She was not only extremely popular – she is still great box office – but was also the granddaughter of Henry Tudor, who became King Henry VII after his supporters defeated and killed Richard. So Shakespeare knew how his bread was buttered when he had Richard declare his intention:

> "… since I cannot prove a lover [because of his physical deformity] … I am determined to prove a villain … ." (*Richard III*, act I, scene 1)

He does, in spades.

There is in fact no evidence that Richard was deformed, and Shakespeare has him strategically seducing and marrying Anne Neville, whose father and brother he had murdered. So the motivation for his bottomless evil is obscure. Poetic licence.

Over the centuries, however, historical revisionism has poked serious holes in the Shakespearian account, and there is today an entire society dedicated to the rehabilitation of Richard III, as at least innocent of the murder of the little princes. Certainly,

his successor was a master of political propaganda, and a large number of key documents seem to have disappeared during Henry's reign. Nor, strangely, did Henry ever produce the bodies. The mystery of the little princes has never been satisfactorily solved. The dissenting argument is put, very readably, as a detective novel by Josephine Tey in *The Daughter of Time*.

It is in this spirit that we revisit the work of two more recent villains, Morris Barer and Greg Stoddart, who in the notorious Barer–Stoddart report nearly 20 years ago recommended cuts to the enrolment in Canadian medical schools. They are accordingly held responsible, at least by prominent voices in Canada's medical community, for a severe shortage of physicians that persists to this day:

> Having your names associated with a report that has been universally blamed for leading health ministers to cut medical school enrolment by 10% is no way to make friends in the medical profession … [I]n terms of health economists who are reviled by Canadian physicians, Barer and Stoddart probably place second to the great Satan[1] himself, Robert Evans." (*The Medical Post* 1999: 12)

But Time has moved on, and his daughter now has more to say about the shortage of physicians, and the role of the villainous Barer and Stoddart. In retrospect, the conventional dramatization is a combination of myth and muddle. The myth is that Barer and Stoddart simply recommended enrolment cuts; the muddle is a confusion between medical school enrolment and the stock of physicians, and between the physician stock and the supply of physicians' services. (The relationship between any of these, and population health, never entered the debate.)

Barer and Stoddart summarized their 355-page report in a series of 12 papers in the *Canadian Medical Association Journal* during 1992 and 1993. Had they done no more than recommend a reduction in enrolments, they might have been more succinct. They may have hoped that a comprehensive and accessible presentation would prevent the generation of myths and misinformation. It didn't.

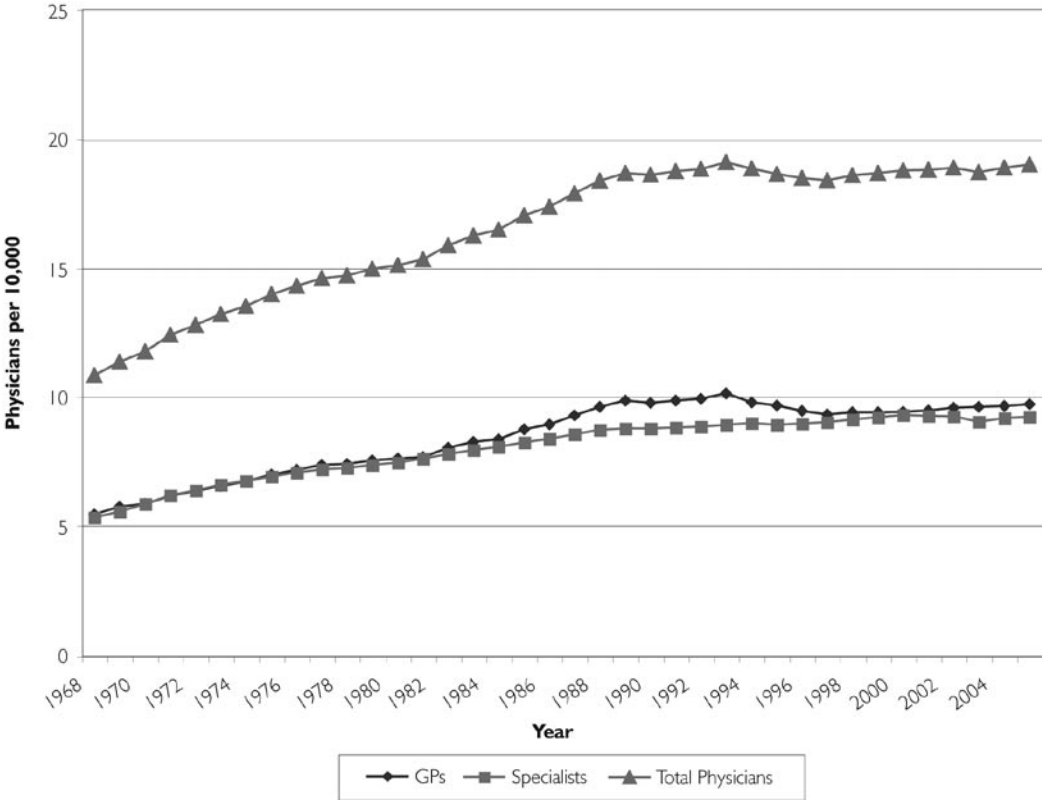
Their report was, as requested by the Federal/Provincial/Territorial Conference of Deputy Ministers of Health, a review of issues and policy options for assuring an adequate and appropriate supply of medical services for Canadians. These go far beyond counting physicians. The authors made 53 recommendations, in an integrated package, and emphasized that "cherry-picking" from this package could easily do more harm that good. Provincial governments promptly (and predictably) cherry-picked the easiest, in hopes of saving money.

The result? Figure 1 plots the Canadian physician-to-population ratios – generalists, specialists and total – from 1968 to 2005 (CIHI 2007b). The main messages of Figure 1 are twofold. First, there *was* a major change in the dynamics of physician supply at the end of the 1980s, wholly unrelated to Barer–Stoddart or to subsequent

enrolment cuts. And second, despite that shift, the supply of physicians has *not* been falling. The number of physicians per 10,000 population has been remarkably stable, with minor fluctuations, over the last two decades. The 2005 level of 19.0 was 1.6% above the 1991 level of 18.7.

Yet, reports that people cannot find a family physician, and face unacceptable waits for specialist care, persist despite what is in fact a growing supply. As Chan (2002) put it, "Why does it *feel like* we have a physician shortage?" If it is true that an increasingly severe shortage has been developing since the mid-1990s, it must be a shortage of physicians' services, not of physicians per se, perhaps reflecting declining average clinical workload per physician.[2] We address this issue below, noting here only that medical school enrolments have no direct effect on average physician workloads.

FIGURE 1. Canada, physicians per 10,000 population, 1968–2005



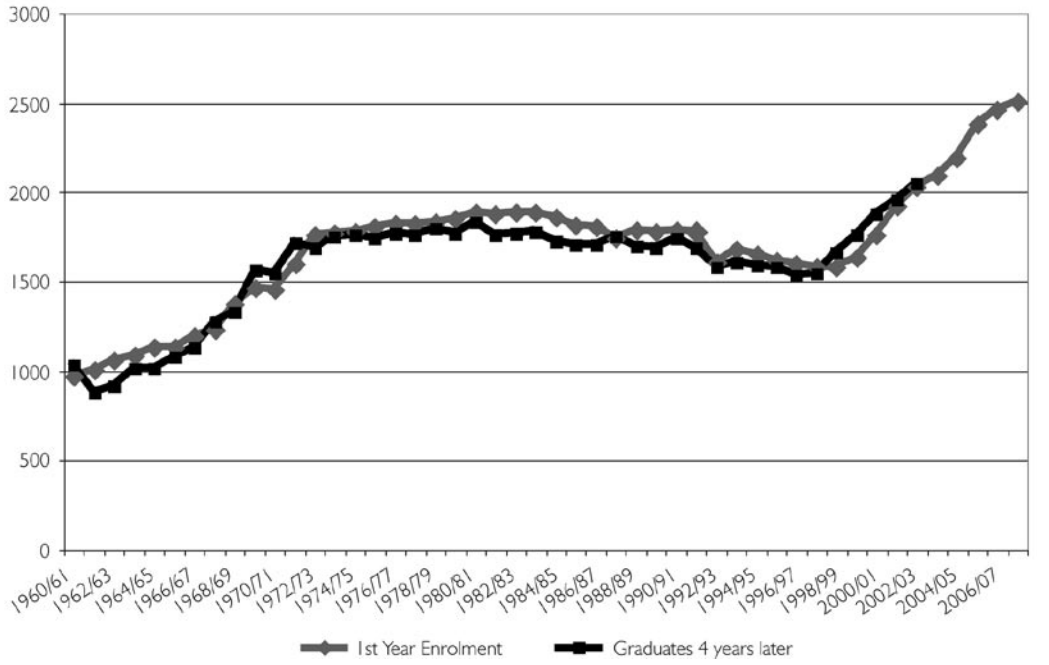
Source: CIHI 2007a.

Enrolments certainly fell after 1991 – and before. Figure 2 plots first-year enrolments by academic year along with calendar-year graduations four years later (ACMC 2007). First-year enrolments fell by 5.9% from their 1983/84 peak of 1,887 to 1,775

in 1991/92, and by a further 11.1% to 1,577 by 1997/98. Numbers of graduates correspondingly began to fall in 1987/88 and troughed in 2000/01 and 2001/02.

Graduation, however, does not mean entry to practice. There is a further residency period of two years for family practitioners (one year, prior to 1993) and significantly longer for specialists. Changes in first-year enrolment only begin to show up in the practitioner stock six years later, and may take eight to 10 years to have their full effect on practice entry. And since the currently practising stock is so much larger than the annual increment, changes in the annual numbers entering practice might not be noticeable for at least another decade.

FIGURE 2. Canadian medical schools, 1960/61–2007/08



Source: ACMC 2007.

Changes in training requirements that affect an entire cohort of students do show up in Figures 1 and 2. Eliminating the rotating internship in 1993, thus lengthening the family practice residency to two years, in effect delayed the entry to practice of an entire cohort by one year, and the effect shows up in Figure 1. Likewise, the shortening of undergraduate training at the University of Montreal eliminated an entire entering class and produced the drop in Figure 2 in 1992.

Media reports of physician shortages in the mid- and late 1990s are thus far too early to reflect the effects on the ground of recommendations made or actions taken in the early 1990s. The cuts made in the 1980s could conceivably be affecting the sup-

ply of physicians by now – but as Figure 1 shows, the doctor-to-population ratio still resolutely refuses to fall. So where's the shortage?

One obvious possibility is that physicians are, on average, providing less care than formerly. Medicine has become increasingly feminized, and females put in, on average, less time in practice over the year or the career. Moreover, and perhaps more significantly, the young physicians of today have different career expectations than their predecessors did. Physicians still work more hours than the average member of the labour force, but the younger generation do not, on average, match their elders.

Watson et al. (2006) and Crossley et al. (2006) both report declines in self-reported average weekly hours of direct patient care by GPs/FPs from national CMA surveys. Watson et al. find a decline of 8.5% between 1993 and 2003; Crossley et al. find a decline of 15.6% between 1982 and 2003. Preliminary data for British Columbia show declining annual (full-time) days worked for both GPs and specialists between 1994 and 2004. These results are consistent with a shortage emerging, not from a declining physician supply, but from declining labour input by physicians.

The findings also suggest a possible explanation for the emergence of "shortage" concerns in the 1990s. GPs/FPs per capita rose 22.5% between 1982 and 1989, considerably more than the decline in average hours of work found by Crossley et al. for the whole period 1982 to 2003. When the doctor-to-population ratio stabilized, the continuing decline in hours of work led to perceptions of a shortage. But it was, and is, a decline in physician work effort, not in physician numbers – and therefore wholly unrelated to enrolment cuts.

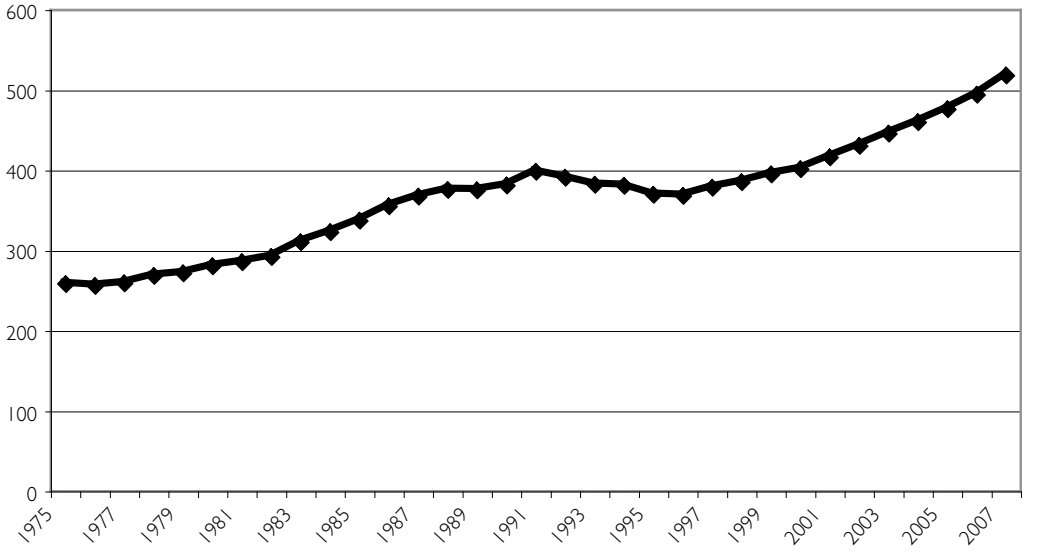
But if physicians are putting in less time, should not their average billings be falling? Figure 3 shows the trend in (inflation-adjusted) per capita expenditures on physicians' services between 1975 and 2007 (forecast, CIHI 2007). This measure of service volume per capita increased by 30% between 1991 and 2007. While markedly less rapid than the 54% increase from 1975 to 1991, this is still a respectable increase for a time when the physician-to-population ratio was stable and physician hours of work were falling. How are these figures reconciled with a general perception of shortage?[3]

Watson et al. (2004) suggest a possible explanation. Studying GPs in Winnipeg, they found declines between 1993 and 2003 in average service volumes provided by successive cohorts of younger physicians, but increases among older physicians. As physicians and their patients age together, the servicing per patient increases. But older physicians may be less willing to take on new patients, and younger physicians are carrying smaller patient loads. Thus new patients cannot find a practice to accept them, even though average billing (expenditure) rates are not falling. This bifurcation in workloads would suggest that, when the older physician cohorts retire, average workloads may drop significantly.

The hours-of-work studies focus only on GPs/FPs; Figure 3 reports total expenditures on both GPs/FPs and specialists' services. The ratio of generalists to

specialists has remained surprisingly constant over time; the data underlying Figure 1 show a ratio of 49.4% specialists in 1968 and 48.7% in 2005. But billings per specialist are both greater and increasing more rapidly. Barer et al. (2004) found that in British Columbia, expenditures per capita on GP/FP services (age-adjusted) rose only 3.3% between 1985/86 and 1996/97, while those for all specialists rose 15.7%. Expenditures for medical specialists rose 31.8%. "GP/FPs appeared to focus increasingly on less time-consuming (younger) patients, referring more complex (older) patients for specialty attention after initial contact" (Barer et al. 2004). Insofar as workload is being shifted from generalists to specialists, a focus on GPs/FPs alone may significantly underestimate trends in available primary care capacity.

FIGURE 3. Canada, physician expenditures per capita, inflation-adjusted, 1975–2007



Source: CIHI 2007a.

Like the fate of the little princes, there remains an air of mystery surrounding the Canadian physician shortage. The stabilization of the doctor-to-population ratio at the end of the 1980s suggests that population growth had finally caught up with the dramatic increase in first-year enrolments (81.8%) between 1960/61 and 1972/73. The previously rapid climb in (inflation-adjusted) expenditures per capita correspondingly slowed, and even fell back slightly, before beginning a new, rapid acceleration after 1996.

This recent surge implies an extraordinary growth in billings (and alternative payments) per physician – Figure 3 divided by Figure 1. Apparent "output" per physician grew by 22% between 1990 and 2005, twice the 11% rate from 1975 to 1990.

Yet, physicians report putting in fewer hours, and there is a widespread perception of shortage. Obviously, specialists must be factored into the mix, but if all physicians are working less and billing so much more, how do we interpret this discrepancy? What are they doing, why and with what consequences?

To call this trend increased "productivity" is to assume that increased billings correspond to increased provision of needed, effective services.[4] But if this "real output" per doctor – effective care – has been increasing by over 2.5% per year since 1996, why are there complaints of shortages, and why do we need more doctors? Conversely, if the surge in expenditures is a result of average fee increases outrunning inflation (see note 4), or more creative billing practices, then Canadians are simply paying more for less.

Will we be willing to continue paying physicians more to work less, as their numbers swell?

This point is critical in light of the right-hand side of Figure 2. The physician shortage, real or rhetorical, has had its political effect. In the decade from 1997/98 to 2007/08, first-year medical school enrolment has risen by 58.9%, from 1,577 to 2,506. This growth is remarkably similar to that from 1962/63 to 1972/73. Graduations are following with a four-year lag, and if there is no further expansion, should top out at about 2,500 in 2011.

The impact on practitioner numbers, starting in 2004/05, is almost imperceptible now but will build steadily for the next 20 years, placing steadily increasing pressure on medicare budgets. If per capita billings per physician also continue to grow at the rates observed after 1996, that pressure will be doubled.

There is serious fiscal trouble on the horizon if these new practitioners expect earnings similar to their predecessors'. Will we be willing to continue paying physicians more to work less, as their numbers swell? If they also each expect similar levels of practice support – hospitals, medical equipment and drugs – the cost pressures will be multiplied further. But if not?

One thing is crystal clear. Neither the alleged shortage nor the dramatic overreaction can be laid at the feet of Barer and Stoddart. This leaves one more little mystery. We may understand why Shakespeare demonized Richard – good politics and great theatre. But why, given the obvious disconnect between their report and the subsequently alleged physician shortage, did Barer and Stoddart become the whipping boys for that shortage? Force of habit, perhaps. But when otherwise-intelligent people say or do silly things, there is usually a deeper reason.

The hostility of the professional leadership based in medical schools is not hard to understand – reduced enrolments, reduced budgets, more limited research and career opportunities. But why would the rest of the profession support expansion? Consider what happened after the previous great surge.

The early 1970s were a time of great hopes for change in healthcare. Following the implementation of universal coverage, the next step would focus on how medical work was organized and paid for – Tommy Douglas's "second phase." John Hastings's (1970) report on community health centres and Thomas Boudreau's (1972) report on the nurse practitioner as substitute for general practitioners in primary care both drew on extensive and incontrovertible research on better, and more efficient, alternatives to traditional, independent, fee-for-service practice.

The early 1970s were a time of great hopes for change in healthcare.

All these hopes were washed away in the flood of new doctors. Provincial governments, hip-deep in physicians, had little energy or money left to focus on draining the medical swamp. They were too busy trying to cope with the cost implications of a 71.6% increase in physicians per capita between 1968 and 1989. Over those years, the share of GDP absorbed by physicians rose over 30%.

The stabilization of physician supply at the beginning of the 1990s opened a new opportunity to consider more diverse ways of providing medical care, and a number of these alternatives were considered in the Barer–Stoddart report. But they were kept off the public agenda by the exclusive focus on physician numbers and enrolments, and the report as a whole was discredited by the claim that it had caused a shortage. ("Don't listen to *those* guys!") Nothing is wrong with the status quo; we just need more of the same – and more money to pay them. The coming new flood of physicians is likely to wash away Douglas's second phase for another 20 years.

The earlier surge was a pure policy accident. Justice Emmett Hall's recommendations, in 1964, for a major expansion in training places were made on the assumption that the post-war baby boom would continue. The ink on his report was barely dry when the Great Obstetrical Contraction of 1964–1966 cut the birth rate by nearly 20%. Hall's population projections for 1991 were too high by 25%, but the medical school capacity built to meet those projections, like the Sorcerer's Apprentice, kept grinding out more physicians. By the late 1980s, headlines like "Doctor Glut Costs Millions" were becoming commonplace.

But it is striking – and this is a critical point – that service use, or at least billings, kept pace with the growing supply. There was no sign of saturation. This situation

might have raised questions as to the appropriateness of the extra services being provided. How were the additional physicians keeping themselves (gainfully) employed? Were they meeting previously unmet needs, or providing unnecessary services? Was anyone's health improved?

Any suggestion that physicians, while fully employed, are in oversupply thus raises potentially embarrassing questions. The view acceptable to the profession is that if services are being provided by well-trained physicians, then they must, by definition, be needed – *res ipse loquitur* – no matter how large the supply. If more doctors correlate with more servicing – and increased expenditures – so be it. Patients are benefiting. To suggest otherwise would be outrageous.[5]

Barer and Stoddart provided a convenient lightning rod for discharging this sense of outrage. The fact that, whether or not there was or is a physician shortage, their report did not and could not have had anything to do with it, was irrelevant.

As for Richard, his Tudor successors ruled England from 1485 to 1603, and *Richard III* is one of Shakespeare's most popular plays.

And we in Canada are now beginning the same physician supply cycle again, 40 years on.

NOTES

1. "Great Satan" is the term used by the Iranian ayatollahs to describe the United States, but the editor of the *Medical Post* surely did not intend to draw a parallel between Canada's physicians and Iran's ayatollahs.

2. Reports of shortages may also reflect distributional problems, or shortages in particular regions or specialties, misperceived as a general shortage.

3. A knee-jerk explanation, population aging, is (as always) too feeble an effect. The connection between age and physician use is much weaker than that for hospital or other institutional care. Aging per se would increase use by 0.3% to 0.5% per year, or 5% to 8% over 16 years. A more serious bias in Figure 3 is the deflation of physician expenditures by an index based on general price levels. National fee indexes are, unfortunately, no longer compiled. The measure of service volumes is thus downward- (upward-) biased over any period in which physicians' fees were rising less (more) rapidly than prices generally. A related problem arises from the expansion of alternative payment programs (APPs). Insofar as these, as in British Columbia, primarily cover on-call time or increased rural/isolation allowances rather than payments for increased services, they represent increases in prices, not quantities, but are not included in the deflator used in Figure 3.

4. Increased output of unnecessary or harmful services is counted as productivity in some of the more severely lobotomized reaches of economic analysis, but serious people do not take such measures seriously.

5. Dentists, by contrast, seem quite untroubled by reduced training capacity, and thereby hangs a tale.

REFERENCES

Association of Canadian Medical Colleges (ACMC). 2007. *Canadian Medical Education Statistics, 2007* (Volume 29). Ottawa: Author.

Barer, M.L., R.G. Evans, K.M. McGrail, B. Green, C. Hertzman and S.B. Sheps. 2004 (March 2). "Beneath the Calm Surface ...: The Changing Face of Physician Service Use in British Columbia, 1985/86–1996/97." *Canadian Medical Association Journal* 170(5): 803–7.

Barer, M.L. and G.L. Stoddart. 1991. *Toward Integrated Medical Resource Policies for Canada: Background Document.* HPRU 91:06D. Vancouver: Centre for Health Services and Policy Research, University of British Columbia. Retrieved January 27, 2008. <http://www.chspr.ubc.ca/files/publications/1991/hpru91-06D.pdf>.

Boudreau, T.J. 1972. *Report of the Committee on Nurse Practitioners.* Ottawa: Department of National Health and Welfare.

Canadian Institute for Health Information (CIHI). 2007a. *National Health Expenditure Trends, 1975–2007.* Ottawa: Author.

Canadian Institute for Health Information (CIHI). 2007b. *Scott's Medical Database.* Retrieved January 27, 2008. <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=hhrdata_smdb_e>.

Chan, B. 2002. *From Perceived Surplus to Perceived Shortage: What Happened to Canada's Physician Workforce in the 1990s?* Ottawa: Canadian Institute for Health Information.

Crossley, T.F., J. Hurley and S.-H. Jeon. 2006 (September 12). *Physician Labour Supply in Canada: A Cohort Analysis.* SEDAP Research Paper No. 162. Hamilton, ON: McMaster University. Retrieved January 27, 2008. <http://socserv.mcmaster.ca/sedap/p/sedap162.pdf>.

Hall, E. 1964. *Report of the Royal Commission on Health Services.* Ottawa: Queen's Printer.

Hastings, J.E.T. 1970. *The Community Health Centre in Canada: Report of the Community Health Centre Project to the Conference of Health Ministers.* Ottawa: Department of National Health and Welfare.

The Medical Post. 1999 (September 28). Editorial: p. 12. "Politicians can't live up to Barer-Stoddart ideals."

Watson, D.E., A. Katz, R.J. Reid, B. Bogdanovic, N. Roos and P. Heppner. 2004 (August 17). "Family Physician Workloads and Access to Care in Winnipeg: 1991 to 2001." *Canadian Medical Association Journal* 171(4): 339–42.

Watson D., S. Slade, L. Buske and J. Tepper. 2006. "Intergenerational Differences in Workloads among Primary Care Physicians: A Ten-Year, Population-Based Study." *Health Affairs* 25(6): 1620–28.

DISCUSSION AND DEBATE

Why Examining the Desirability of Health Technology Matters

L'importance d'examiner dans quelle mesure les technologies de la santé sont souhaitables

by PASCALE LEHOUX, PHD
Associate Professor, Department of Health Administration
University of Montreal
Researcher, Groupe de recherche interdisciplinaire en santé (GRIS)
Canada Research Chair on Innovation in Health
Montreal, QC

Abstract

Although technology is ubiquitous in healthcare, its impact on people's perceptions and lives is poorly understood. Fresh insights are required to meet current and future technology-related policy challenges. Keeping a population healthy requires considering not only technologies that are used in clinical settings (diagnostic, therapeutic, palliative), but also those used in the community (home care, self-care, technical aids) and those that affect health more broadly (health promotion technologies, occupational health technologies). At the policy making level, understanding the desirability of health technology may prove to be more important than simply appraising its affordability.

Résumé

Bien que la technologie soit très répandue dans le domaine de la santé, on saisit mal son incidence sur les points de vue et la vie des gens. Une meilleure compréhension s'impose si l'on veut relever les défis actuels et futurs en ce qui a trait aux politiques liés à la technologie. Maintenir une population en santé exige non seulement des technologies qui sont utilisées dans des cadres cliniques (diagnostiques, thérapeutiques, palliatifs), mais également des technologies utilisées dans la communauté (soins à domicile, soins auto-administrés, aides techniques) et celles qui touchent la santé dans son ensemble (technologies visant la promotion de la santé, technologies en milieu de travail). Sur le plan de l'élaboration des politiques, comprendre dans quelle mesure les technologies de la santé sont souhaitables pourrait s'avérer plus important que simplement évaluer leur caractère abordable.

This paper argues that the reasons technology matters in healthcare, and its impact on people's perceptions and lives, are poorly understood. Fresh insights are required to meet technology-related policy challenges. So far, applied health research has portrayed health technology as both a tremendous opportunity to improve the lives of patients and a major threat to the financial sustainability of public healthcare systems (Lehoux 2006). As a result, research has focused mainly on the measurement of cost and effectiveness – helping decision-makers ponder technology's affordability given the prevailing budget constraints – and has provided very little insight into the question of its desirability, e.g., the reasons for its being socially valuable or not.

Beyond "High-Tech" Medicine

For many observers, health technology is bliss – something that must be strategically embraced, not irrationally resisted:

> Technology has streamlined the administration of the hospital and the doctor's office, enabling more efficient and cost-effective processing and storage of patient medical and billing records. Telemedicine has advanced to the point where remote specialist consultation can take place through videoconferencing and the immediate transmission of X-ray and other images. Technology has brought noninvasive diagnostic and surgical tools to the physician's practice. And breakthroughs in medicine through computer-assisted research have

> reduced the half-life of medical knowledge to five or fewer years … . (Ellis 2000: xiii–xiv)

From such an overly optimistic perspective, technology evokes modernity; whatever is newest is supposed to be better. Furthermore, health innovation is usually equated with "high-tech" medicine, while social innovations (i.e., employment or housing policies) and public health interventions are left aside. This understanding is rooted in recent history. In the 1980s, "health technology" referred to all instruments, devices, drugs and procedures that were used in the delivery and organization of healthcare services (US Congress 1985: 3). This definition included technologies that were pivotal in supporting hospital work (e.g., information systems, surgical rooms, sterilization systems). Since then, technological developments have significantly reconfigured the centrality of the hospital in modern medicine by enabling new healthcare delivery models wherein the responsibility of patients and their relatives significantly increases (e.g., home and ambulatory care). This profound technology-driven change has not been fully acknowledged.

Table 1 provides examples of various technologies that are currently used in and around healthcare systems. Some of these technologies are not tools used by clinicians; rather, they are used in the workplace or community and affect health by preventing disease, injury or exposure to deleterious products or practices. In addition, several "mundane" technologies (e.g., blood glucose monitors, syringes) contribute profoundly to the effectiveness of healthcare (Lehoux et al. 2004). The emergence of Severe Acute Respiratory Syndrome (SARS) in Toronto, Canada, vividly illustrates how effective detection and control of contagious cases relies on the appropriate use of simple tools such as ear thermometers, hand washing and facial masks – and fails when such tools are inconsistently applied in practice (Poland et al. 2005).

Hence, a technology is rarely just a stand-alone "high-tech" device that generates measurable costs and benefits; it is one component of larger healthcare and social systems. Without an adequate conceptualization of the social embeddedness of health innovation, most research initiatives trying to understand and assess technology will remain incomplete. Policy questions cannot be answered through cost-effectiveness analyses alone. And, more importantly, the need to consider alternative policy options and pressing ethical questions calls for a different kind of research. Beyond clinical efficacy, what is the value of specific innovations? What impact do they have on clinical practice, population health and social development? Why do clinicians trust and use certain innovations instead of others? Why do patients expect, demand or reject specific interventions? And how does technology really affect the health and well-being of the population?

TABLE 1. Categories of health technology

Category	Examples
Screening tests	Cytological tests, blood tests, pre-natal testing, genetic testing
Diagnostic tests and imaging devices	X-rays, ultrasound, magnetic resonance imaging, computerized tomography
Monitoring systems	Blood glucose monitors, electrocardiograms, foetal monitoring
Implants	Cochlear implants, left ventricular assist devices, pacemakers
Surgery and therapeutic devices	Hip replacement, tonsillectomy, laparoscopic cholecystectomy, radiation therapy
Palliative technologies	Dialysis, ventilators, parenteral nutrition
Drugs	Caplets, patches, injections, inhalers
Health promotion technologies	Vaccines, helmets, condoms, smoking cessation strategies, playgrounds, sports facilities
Occupational health technologies	Protective equipment and clothing, work safety measures, ergonomic furniture and tools, preventive measures for pregnant women
Technical aids	Wheelchairs, hearing aids, prostheses
Information technologies	Telemedicine, electronic patient records, health cards, expert systems

Source: Lehoux 2006.

Understanding the Desirability of Health Technology through Social Scientific Insights

Figure 1 summarizes key reasons that integrating social sciences perspectives into research on health technology can help generate useful insights. Because understanding rationales (why?) and processes (how?) requires exploring the viewpoints of those involved in particular practices, qualitative research offers a distinctive advantage. (However, like other applied research fields, social scientific research draws on both quantitative and qualitative methods [Kazanjian 2004].)

Social scientific research has established the notion that technology is not simply a neutral tool (Brown and Webster 2004). Rather, it is a normative intervention in the social world, too often taken for granted. Technology deeply modifies how healthcare providers and patients interact and the paths of action they can and should take. For instance, because the belief that information is valuable in itself is such a powerful cultural norm, when screening tests are made available they easily become part of established practice and therefore difficult to oppose (even when an appropriate treatment does not exist). One example of this is the use of electronic foetal monitoring, which can play a significant role in medical liability suits if something goes wrong during a delivery (Johri and Lehoux 2003). Consequently, it is used extensively despite solid

evidence indicating that it is effective only in high-risk pregnancies. Hence, technology tacitly forces certain kinds of clinical practices and frames women's experiences of birth delivery.

FIGURE 1. Reasons for integrating social science perspectives into health technology research

- Technology structures the delivery, use and outcomes of healthcare.
- Non-medical variables influence the effectiveness of health technology (e.g., emotions, knowledge, values, beliefs, cultural practices, social interactions, organizational structures and processes, financial incentives, regulatory frameworks).
- Providers and patients do not use, perceive or value technology in any consistent way; outcomes therefore vary.
- The use of health technology triggers social changes and raises ethical concerns.
- Technology modifies the settings in which healthcare practices take place and influences the appropriateness and effectiveness of health technology.
- Because technology modifies the expectations of patients and the general public with respect to health and healthcare, its regulation requires a broad understanding of the policy arena.

Source: Lehoux 2006.

Another example comes from Greer et al. (2002), who examined how differences between physician–patient interactions in urban and rural locales could explain higher rates of mastectomy (versus lumpectomy) in breast cancer treatment in some parts of the United States. Greer's study is especially insightful because the researchers did not assume a priori that these women's rationality was deficient or that prioritizing health and bodily appearance over other life activities (e.g., taking care of the grandchildren, the farm) should drive their decisions. Its perspective was strongly rooted in an academic tradition – sociology – that observes and conceptualizes social practices. The study's goal was not to find ways of improving physician or patient "compliance," wrongly assuming that the role of social scientific research is to help clinical practice achieve its mission. Rather, Greer aimed to understand why gaps between clinical practice guidelines and actual practices are observed and how they are sustained. Only by maintaining an independent and conceptually committed sociological perspective can this form of research tell us about the extent to which providers' and patients' perceptions and values affect the real-world use and outcomes of health technology.

A common conceptual shortcoming in applied health research is to consider that ethical and social issues arise *after* a given innovation has been put to use, as if such issues could be divorced from the design process (Faulkner et al. 2003). Values are conceptualized as if they were located in society (or end users), not in the technologies themselves. However, technologies encapsulate values, and their design shapes user behaviour, thereby introducing new norms into practices (Oudshoorn and Pinch 2003). Compromises between the views of designers, CEOs, shareholders and clinicians are negotiated and generally rely on claims made on behalf of patients and soci-

ety, often without direct input from patient or community groups. Such negotiation means that innovations, when introduced into the clinical market, may not be aligned at all with what patients and communities value or are willing to endorse (as the case of cochlear implantation has vividly demonstrated).

There are many other, similar examples that underscore the relevance of turning to the social sciences to better understand technology's role in health and society (Brown and Webster 2004). Still, one fundamental reason to turn to the social sciences is for conceptually reframing what technology is and does, and what its desirability means for various groups. A technology can be considered desirable by certain groups (engineers) and not others (patients). And it can be considered *justifiably* desirable or not. Unreflective "desires" should not be confused with desirability. Desirability is an inter-subjective notion that requires a technology's purpose and impact to be examined, debated and established by applying several disciplinary and lay perspectives (Lehoux 2006).

Researchers thus need to make explicit, reflect on and confront the normative assumptions that underlie the "face value" desirability of various categories of technology (see Table 2). These assumptions remain tacit most of the time because, among others things, technology is considered (by most) a product of clinical and social progress.

Nevertheless, these assumptions drive the development, dissemination and use of health technology, which then plays a pivotal role in the transformation of our existence (Ihde 1990). The desirability ascribed to clinical interventions often evolves over time, rendering the social and technological unfolding almost invisible. For instance, pre-natal screening could not have emerged as a socially accepted clinical practice if the clinical, social and legal movements towards the recognition of abortion had not been achieved beforehand. These social and technical changes, plus the seemingly unrelated in vitro fertilization techniques, were all essential for today's stem cell research to grow.

It is thus necessary to examine critically the views and values of members of the public and patients. Jepson and colleagues (2007: 9), who examined experiences of screening programs for colorectal, breast and cervical cancers, argue: "Current strategy tends to concentrate on providing information on the benefits and limitations of screening. However, the findings from this qualitative research suggest that people want contextual information to make sense of the screening tests." This includes information on the severity of the disease and the broader context of self-management, such as risk factors and symptoms. For these authors, the term "informed consent" is problematic because the information provided seems to have little effect on choice, but greater effects on anxiety and satisfaction.

Hence, technology from a social scientific perspective actively mediates life and death, health and risk, knowledge and uncertainty, autonomy and mobility. Because we

are human, it generates wonder and sorrow, creates hope and anxiety (Callahan 1990) and generates power and authority (Blume 1992). Trying to ignore such influential socio-political dimensions will always prove deceptive.

TABLE 2. Assumptions underlying the desirability of health technologies

Health technologies	Where their desirability lies	
	What they do	What these actions imply
Screening tests	Provide information that requires a confirming procedure or test (diagnostic)	Information is valuable in itself and/or it leads to a diagnosis in a timely manner
Diagnostic tests and imaging devices	Provide information about the presence/absence of disease	Information is valuable in itself and/or it leads to an appropriate and timely action vis-à-vis disease
Monitoring systems	Provide information about various vital bodily functions, psychosocial well-being and compliance with treatments	Interpretation of the data is reliable and leads to its being acted upon in an appropriate manner; continuous surveillance does not alter identity and behaviour
Implants	Restore (temporarily) bodily functions (e.g., cardiac function, hearing)	Long-term risks, decreased quality of life and identity alteration are acceptable to the patient
Surgery and therapeutic devices	Stop or delay the pathological process and reduce symptoms	Risks, invasiveness and consequences are acceptable to the patient
Palliative technologies	Substitute (temporarily) natural bodily functions (e.g., breathing, nutrition, cardiac function)	Sustaining life when quality is compromised is valuable
Drugs	Stop or delay the pathological process; reduce symptoms	Side effects and decreased quality of life are acceptable to the patient
Health promotion technologies	Promote/discourage lifestyles and behaviour; protect from or reduce harm associated with risky practices (e.g., drugs, sexuality, sports)	Alteration of practices, identity and peer recognition are acceptable/meaningful to the individual/group
Occupational health technologies	Protect workers' health; promote/discourage work-related behaviour affecting health	Overall quality of work conditions and alteration of practices, identity and peer recognition are acceptable/meaningful to the individual/group
Technical aids	Facilitate autonomy, mobility and social integration	Aids are user-friendly and help overcome the social barriers associated with the disability
Information technologies	Record, archive, transmit and provide access to administrative and clinical information	Access to and use of information respect confidentiality and bring efficiency and quality to healthcare

Source: Lehoux 2006.

Why the Focus on Affordability Is Misleading

Because technology is often seen as the main cost driver (Cohen and Hanft 2004), applied health research, and more specifically Health Technology Assessment (HTA), has sought to better inform policy making by examining costs and benefits. The main assumption is that the budget for healthcare is a closed envelope (Banta and Luce 1993). Rational choices therefore must be made in order to sort out "good" innovations from "bad" ones, and in order to select only those that yield high value for money in terms of clinical effectiveness.

While this view is valid, it nonetheless frames the "problem of health technology" in a way that is misleading. The problem is reduced to questions of affordability and payment: Can healthcare systems absorb the costs of innovations? And who will pay for them?

The presumption that decision-makers – armed with HTA findings – can sort out affordability vis-à-vis budget constraints in a straightforward manner is contentious. Cost-effectiveness experts themselves do not believe that such information can provide a value-neutral ground for decision-making. A recent study by Gold and colleagues (2007: 70) shows that lay participants who were asked to act as "social decision-makers" and rank 14 condition–treatment pairs for coverage can be "clearly influenced by cost-effectiveness information." However, these authors report that the effect was not uniform and that "many behaviorally mediated illnesses were given less priority than would be expected on the basis of cost-effectiveness alone." This result suggests that perceptions and values may be more powerful in shaping one's judgments than data about costs and effectiveness. If this is the case, then it would be advisable that the values underlying technology-related decisions be made explicit and publicly accountable.

In fact, the affordability argument will always remain a slippery slope for Canadian decision-makers, especially in a context where pressures are growing for a greater role of the private sector in healthcare. Denying access to technology on the basis of a collective economic rationality will be resisted time and again because the few individuals who have the ability to pay will be powerful and convincing (Giacomini et al. 2003; Johri and Lehoux 2003). Thus, the ultimate question remains political: Who can afford innovations?

> In our view the growth of medical technology is accelerating and will continue to accelerate rapidly in the early part of the new millennium. Consumers will demand it and want the benefits. All of this will drive up health care spending, and consumers will be faced with the need to pay for access to the technology. We do not believe that any system of rationing access to demonstrably beneficial technology will be acceptable in the United States. (Coddington et al. 2000: 183)

Because there may be no limit to what wealthy societies (let alone individuals) are ready to invest in health, being able to define and justify what makes certain health technologies socially more desirable than others may prove to be more important than solely appraising their affordability.

Ways Forward

The approach this paper suggests requires both deliberative processes and new forms of empirical research in order to inform policy. A new policy-oriented research agenda can be developed by tapping the significant body of knowledge already produced by social scientists about the social dimensions of innovation and about ways to deal with policy issues. As suggested by Table 1, keeping a population healthy requires considering not only technologies that are used in clinical settings, but also those used in the community and those that affect health more broadly (in the workplace, for instance).

Because healthcare comprises competing and conflicting objectives, not all of which are worth pursuing, a more informed reflection on what people want from technologies is needed. Technology-related evaluation and decisions require making explicit the normative assumptions that stakeholders (patients, relatives, clinicians, managers, taxpayers, industry, regulatory bodies, researchers) hold about specific kinds of technological and social innovations and to put to test these assumptions.

Taking this perspective, Table 2 offers a series of assumptions that both researchers and policy makers can revisit when trying to ascertain whether innovations are justifiably valuable or not. Although technology appears ubiquitous in healthcare, a sharper understanding of its real-world use is required, one that is sensitive to, but also challenges, the perceptions and values of clinicians, patients and social groups. In what ways is a given innovation to be considered individually or socially desirable? Are those reasons publicly justifiable? Such questions can be tackled only by clinicians and health researchers who take seriously the social scientific perspective and the stakeholders' views.

Correspondence may be directed to: Pascale Lehoux, Associate Professor, Department of Health Administration, University of Montreal, P.O. Box 6128, Branch "Centre-ville," Montreal, QC H3C 3J7; tel.: 514-343-7978; fax: 514-343-2448; e-mail: pascale.lehoux@umontreal.ca.

ACKNOWLEDGEMENTS

This paper largely draws on the author's book (Lehoux 2006), where Figure 1 and Tables 1 and 2 first appeared.

During the preparation of the monograph (2003–2005), the author held a Career Award from the Institute of Health Services and Policy Research (CIHR). She now holds a Canada Research Chair.

Pascale Lehoux would like to thank two anonymous reviewers and Brian Hutchison and Raisa Deber for helpful criticism. Several colleagues and graduate students provided useful comments on various versions of the chapters of the book on which this paper draws.

REFERENCES

Banta, H.D. and B.R. Luce. 1993. *Health Care Technology and Its Assessment: An International Perspective*. New York: Oxford University Press.

Blume, S.S. 1992. *Insight and Industry – On the Dynamics of Technological Change in Medicine*. Cambridge: MIT Press.

Brown, N. and A. Webster. 2004. *New Medical Technologies and Society: Reordering Life*. Cambridge, UK: Polity Press.

Callahan, D. 1990. *What Kind of Life: The Limits of Medical Progress*. Washington, DC: Georgetown University Press.

Coddington, D.C., E.A. Fischer, K.D. Moore and R.L. Clarke, eds. 2000. *Beyond Managed Care: How Consumers and Technology Are Changing the Future of Health Care*. San Francisco: Jossey–Bass.

Cohen, A.B. and R.S. Hanft with W.E. Encinosa, S.M. Spernak, S.A. Stewart and C.C. White. 2004. *Technology in American Health Care: Policy Directions for Effective Evaluation and Management*. Ann Arbor: University of Michigan Press.

Ellis, D. 2000. *Technology and the Future of Health Care: Preparing for the Next 30 Years*. San Francisco: Jossey–Bass.

Faulkner, A., I. Geesink, J. Kent and D. Fitzpatrick. 2003. "Human Tissue Engineered Products – Drugs or Devices?" Editorial. *British Medical Journal* 326: 1159–60.

Giacomini, M., F. Miller and G. Browman. 2003. "Confronting the 'Gray Zones' of Technology Assessment: Evaluating Genetic Testing Services for Public Insurance Coverage in Canada." *International Journal of Technology Assessment in Health Care* 19(2): 301–16.

Gold, M.R., P. Franks, T. Siegelberg and S. Sofaer. 2007. "Does Providing Cost-Effectiveness Information Change Coverage Priorities for Citizens Acting as Social Decision Makers?" *Health Policy* 83: 65–72.

Greer, A.L., J.S. Goodwin, J.L. Freeman and Z.H. Wu. 2002. "Bringing the Patient Back In: Guidelines, Practice Variations, and the Social Context of Medical Practice." *International Journal of Technology Assessment in Health Care* 18(4): 747–61.

Ihde, D. 1990. *Technology and the Lifeworld: From Garden to Earth*. Bloomington: Indiana University Press.

Jepson, R.G., J. Hewison, A. Thompson and D. Weller. 2007. "Patient Perspective on Information and Choice in Cancer Screening: A Qualitative Study in the UK." *Social Science and Medicine* doi:10.1016./j.soscimed.2007.04.009.

Johri, M. and P. Lehoux. 2003. "The Great Escape? Health Technology Assessment as a Means of Cost Control." *International Journal of Technology Assessment in Health Care* 19(1): 179–93.

Kazanjian, A. 2004. "Reflections on the Social Epidemiologic Dimension of Health Technology Assessment." *International Journal of Technology Assessment in Health Care* 20(2): 167–73.

Lehoux, P. 2006. *The Problem of Health Technology. Policy Implications for Modern Health Care Systems*. New York: Routledge.

Lehoux, P., J. Saint-Arnaud and L. Richard. 2004. "The Use of Technology at Home: What Patient Manuals Say and Sell vs. What Patients Face and Fear." *Sociology of Health and Illness* 26(5): 617–44.

Oudshoorn, N. and T. Pinch. 2003. *How Users Matter: The Co-Construction of Users and Technology*. Cambridge, MA: MIT Press.

Poland, B., P. Lehoux, D. Holmes and G. Andrews. 2005. "How Place Matters: Unpacking Technology and Power Relations in Health and Social Care." *Health and Social Care in the Community* 13(2): 170–80.

US Congress. Office of Technology Assessment. 1985. *Medicare's Prospective Payment System: Strategies for Evaluating Cost, Quality, and Medical Technology*. Washington, DC: Government Printing Office.

Call to Authors

DISCUSSION AND DEBATE

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

Appel aux auteurs

DISCUSSION ET DÉBAT

La section « Discussion et débat » de *Politiques de Santé* offre un forum pour la publication de comptes rendus et de commentaires portant sur les sujets suivants : (1) d'importantes questions liées aux politiques de santé ou à la gestion du système de soins de santé; ou (2) des questions cruciales concernant les services de santé et la recherche sur les politiques. Les articles devraient être d'au plus 2 000 mots, sans compter les références (pas plus de 20). Les points saillants de l'article devraient être mis en évidence dans un résumé (sommaire) de 100 mots ou moins.

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

Pour de plus amples renseignements, veuillez communiquer avec Rebecca Hart, rédactrice, à rhart@longwoods.com.

DATA MATTERS

A General Method for Identifying Excess Revisit Rates: The Case of Hypertension

Méthode générale pour déterminer les taux de reconsultation excessifs : le cas des patients hypertendus

by NORMAN FROHLICH, PHD
Manitoba Centre for Health Policy
Faculty of Medicine, University of Manitoba
Winnipeg, MB

MARILYN CREE, PHD
Department of Mathematical and Statistical Sciences
University of Alberta
Edmonton, AB

K.C. CARRIERE, PHD
Department of Mathematical and Statistical Sciences
University of Alberta
Edmonton, AB

Abstract

Objective: To provide a description and application of a novel methodology for comparing actual to expected visit rates at the physician level (controlling for patient characteristics) that could be employed in healthcare monitoring and management.

Data Sources/Study Setting: Two fiscal years (1997/1998 and 1998/1999) of health utilization data extracted from linked administrative data sets on a population-based cohort of 13,688 patients (aged 25+ with hypertension) involving 157 physicians.
Study Design: We re-analyzed data from a previously published retrospective cohort study to develop and apply a new methodology for identifying higher or lower than expected physician visit rates for hypertension.
Data Collection/Extraction Methods: We matched each study physician's hypertensive patients on the basis of age, sex, income and co-morbidity to an equal number of control patients drawn from the cohort. We then compared visit rates between the actual practice and the matched control practice.
Principal Findings: Although the correlation between the visit rates of the two groups of practices was high (r=.87), there were notable differences in rates, suggesting substantial discretionary practice among physicians.
Conclusions: The methodology outlined in this paper provides a basis for identifying variations in visit levels related to discretionary practice patterns and patient preferences. Deviation from expected visit rates provides a potentially useful measure for performance feedback and quality improvement activities.

Résumé

Objectif : Décrire et appliquer une nouvelle méthodologie pour comparer les taux de reconsultation réels et attendus chez les médecins (en tenant compte des caractéristiques des patients) qui pourrait servir à la surveillance et à la gestion des soins de santé.
Sources des données/cadre de l'étude : Des données sur l'utilisation des soins de santé provenant de deux exercices (1997/1998 et 1998/1999) ont été extraites d'ensembles de données administratives couplées sur une cohorte stratifiée représentative de 13 688 patients hypertendus âgés de 25 ans et plus; en tout, 157 médecins étaient concernés.
Conception de l'étude : Nous avons ré-analysé les données d'une étude de cohorte rétrospective publiée antérieurement en vue d'élaborer et d'appliquer une nouvelle méthodologie pour repérer les taux de consultation plus ou moins élevés que prévu pour l'hypertension.
Collecte de données/méthodes d'extraction : Nous avons jumelé les patients hypertendus de chaque médecin participant à l'étude selon l'âge, le sexe, le revenu et la comorbidité à un nombre égal de patients témoins de la cohorte. Nous avons ensuite comparé les taux de consultation entre la pratique réelle et la pratique témoin assortie.
Constatations principales : Bien que la corrélation entre les taux de visite des deux groupes de pratiques soit élevée (r=.87), d'importantes différences ont été observées dans les taux, ce qui suggère des pratiques très discrétionnaires chez les médecins.
Conclusions : La méthodologie énoncée dans le présent document offre un fondement pour déceler les variations dans les taux de consultation liées aux pratiques discrétion-

naires des médecins et aux préférences des patients. L'écart entre les taux de consultation réels et attendus offre une mesure qui pourrait s'avérer utile pour la rétroaction sur le rendement et les activités d'amélioration de la qualité.

Access to primary care office revisits for patients with chronic conditions such as hypertension is chiefly determined by physician behaviour in designating revisit intervals. It is generally assumed that physicians will schedule follow-up appointments at equal intervals for patients of similar age (Rosenberg and Moore 1997), gender (Sayer and Britt 1996; Verbrugge 1985), income (Roos et al. 1998) and co-morbidity (Kravitz et al. 1992). However, this straightforward approach ignores the discretionary nature of physician practice patterns and patient preferences.

We previously reported an analysis of physician revisit frequencies in a group of 13,688 hypertensive patients of 157 general practitioners in Edmonton, Canada (Cree et al. 2001). Our model explained 28% of the total variation in physician visit frequencies of hypertensive patients, leaving much of the variation unexplained owing to the lack of adjustment for unmeasured characteristics. About 80% of the total explainable variation was accounted for by physician practice patterns and referrals to other physicians. We also found that over 80% of patients visited their physicians more frequently than recommended in the guidelines for hypertension management, and that this revisit rate varied substantially across physicians.

Although our results were consistent with those from other studies (DeSalvo et al. 2003; Schwartz et al. 1999; DeSalvo et al. 2000; Petitti and Grumbach 1993; Tobacman et al. 1992; Welch et al. 1999), the inability to adjust for important (unmeasured) characteristics produced a model of low predictive value.

The primary objective of this paper is to provide a description and application of a novel methodology for comparing actual to expected visit rates at the physician level that controls for patient characteristics and could be employed in healthcare monitoring and management. Our approach could inform policy development regarding the equitable distribution of healthcare resources based on needs and ensuring that patients have appropriate access to primary care.

Methods

Sample

This is a retrospective cohort study involving linked administrative health databases maintained by Alberta Health. The patient selection and variable validities for this

study have been detailed elsewhere (Cree et al. 2001). Briefly, hypertensive patients were identified based on an ICD-9 code of hypertension in the primary diagnosis field on the physician claim for reimbursement. Our study period extended over two fiscal years from 1997/1998 to 1998/1999. Patients were aged 25+ years, had at least one hypertension-related physician visit in each of the two study years, and had at least two visits to their primary physician in each of the two years. The patient's primary physician was a general practitioner, practising at least 10 months of each study year and seeing at least 50 hypertensive patients during 1998/1999. The original cohort was used as the basis for constructing control groups for each physician's practice.

Variables

The *outcome of interest* was the total number of unreferred physician visits made by all patients to each physician in 1998/1999. Input variables included patient demographic and health data as well as physician information.

PATIENT DEMOGRAPHIC VARIABLES

We collected data on patients' sex and age, grouping age into the intervals 25–44, 45–64, 65–74, 75–84 and 85+. Socio-economic status was defined by assigning each patient to an income quintile based on the income of his or her neighbourhood of residence.

PATIENT HEALTH VARIABLES

The number of referrals in 1998/1999 was categorized as 0, 1 or 2, 3 or more, and the number of co-morbidities was dichotomized into <3 or ≥ 3.

PHYSICIAN CHARACTERISTICS

Data were collected from the Alberta Physician Claims and Physician Stakeholder databases, from which we extracted physicians' sex and age. Altogether there were 157 physicians in the sample, 115 male and 42 female. Relatively few were aged less than 35 years (three physicians) and over 60 years (16 physicians), with the remainder spread fairly evenly across the remaining age spectrum. Their practice characteristics varied, but they were relatively equally distributed in terms of the average number of patients seen daily. Twenty-nine physicians saw fewer than 24 patients per day, 42 had average daily visit levels of 24–29 patients, 30 physicians had 30–34 visits per day, 23 had 35–39 visits per day and 33 physicians saw more than 40 patients per day. Physicians were also classified into three groups based on their total payments received: those billing less than a full-time equivalent (FTE) general practitioner

($150,000; n=66); those billing average to high ($150,000 to $272,600; n=72); and those billing at a high level (>1.5 FTE or $272,600; n=19). Based on the area of residence of the majority of the physician's patients, practice location was dichotomized into lower-income area (comprising the two lowest of the five neighbourhood income groups) with 70 physicians, and higher-income area (comprising the top three neighbourhood income groups) with 87 physicians.

Construction of comparison practices

Using the data from the previously published study, the present study employed a new methodology designed to estimate excess (or insufficient) revisit rates by constructing control groups at the level of the physician's practice against which one can compare actual visit rates. The pool for the construction of the control groups was the 13,688 hypertensive patients in the initial study. For each of the 157 physicians in the study we constructed a simulated control practice of equal size consisting of patients randomly matched for age, sex, income and co-morbidity. Each physician was assigned two patient groups: his or her actual patients and the controls matched to the actual patients. Thus, the patient composition of the simulated practice shadowed the physician's actual patient practice, reflected a wide sampling of physician practice styles throughout the system and provided a measure of expected visit levels.

To bring a broader perspective to discrepancies between the actual number of visits delivered and visits expected to be delivered based on the simulated practices, the procedure was repeated a total of 10 times for each practice, redrawing matched samples from the population and constructing 10 different control practices. The creation of multiple control practices allowed an associated distribution of "expected visit levels" for each physician.

Statistical analysis

We first calculated the expected total visit levels for each physician by computing the average from the 10 simulated control practices. We compared the visit levels between the actual and control practices using the Pearson's correlation.

At the practice level, the 10 control practices provide the distribution of the expected visit levels for each physician. The 10 shadow practices were used to calculate mean expected levels of visits for a physician with the given patient profile. The actual visit level in each physician's practice was then compared to the distribution for that physician to determine the match between actual and expected visit levels. We were thus able to identify physicians whose practice visit rates were either above or below the range of expected visits as characterized by the 10 simulated practices.

FIGURE 1. Actual visit rates, by practice, in relation to the visit rates in the 10 simulated practices

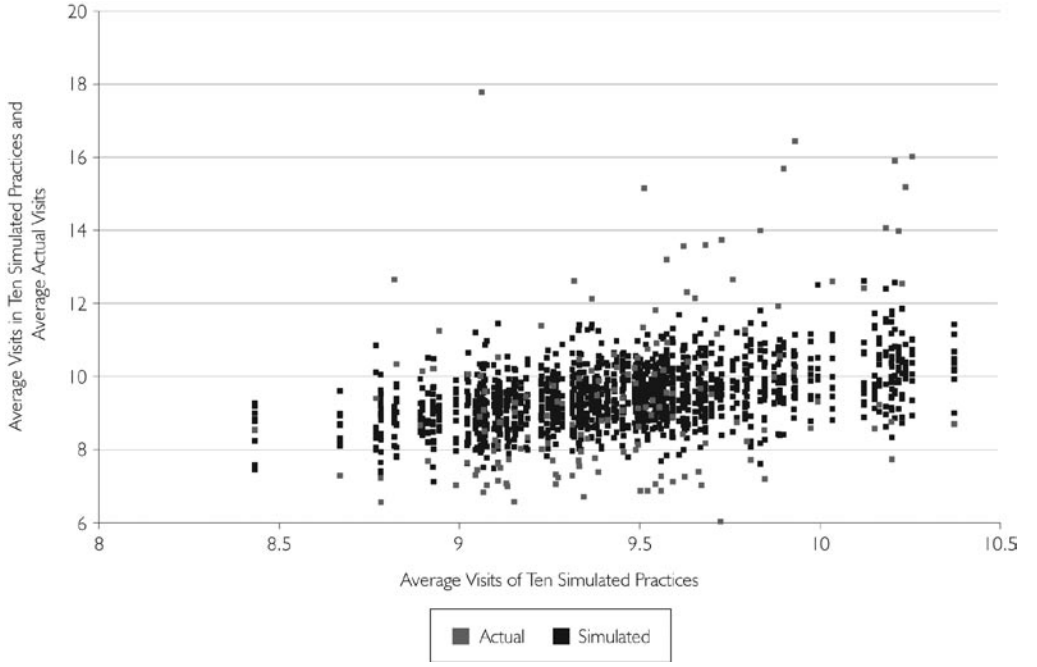
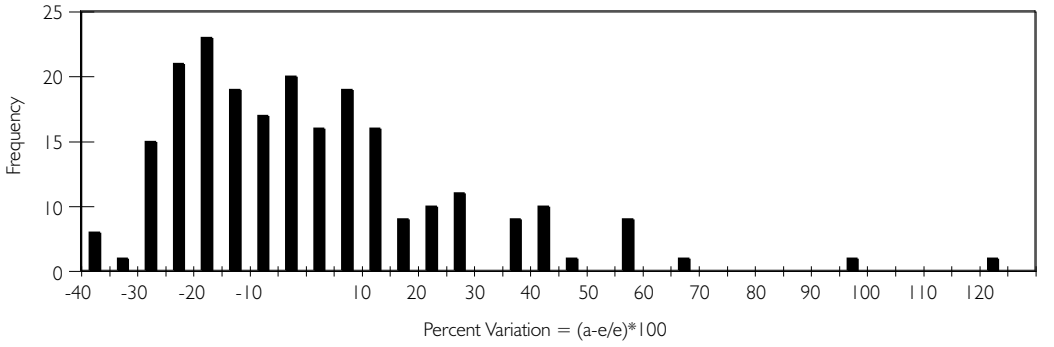


FIGURE 2. Percentage variation of actual average visit levels from average of 10 simulated practices



Results

The physician-level correlation between the total number of visits made by the actual and control groups was quite strong (r=.87). However, Figure 1 shows that many of the physicians had average visit rates that were beyond the range of those in the 10 simulated practices. Each vertical band of points represents the range of visit levels of the 10 simulated practices for a single physician. The lighter points represent the average visit rate for the physician's actual practice. Forty-one physicians had actual visit rates in excess of the highest rate in a simulated practice. Sixty-one had rates lower than the lowest simulated practice, while only 55 had rates that fell within the range of the 10 simulated practices.

To put the findings into a more concrete context, we considered relative deviations of the actual practices from the expected level, based on the average level obtained from the 10 simulated practices. Figure 2 depicts the departure from the expected visit levels in percentage terms. It demonstrates that 17 physicians provided visit levels that were more than 35% above the level to be expected from their average shadow practice visit levels. One physician provided 120% and another almost 100% more than the expected level. By contrast, only three physicians provided 35% fewer visits than would be expected from shadow practice averages.

The 17 physicians who provided the highest levels of visits were notably different from their 140 peers. Compared to the rest of the physician sample, they were more often aged over 60 years (24% vs. 9%) and more of the 17 were male (94% vs. 71%). Physicians who saw their patients most frequently tended, on average, to see more patients per day. Forty-one per cent of them saw more than 40 patients per day, compared to 19% of the remaining physicians. Correspondingly, the 17 physicians with the highest revisit rates were disproportionately concentrated in the highest income bracket (35% vs. 9%). Finally, almost two-thirds (65%) of the top 17 practised in lower-income neighbourhoods, compared to less than half (42%) of the remaining physicians.

Discussion and Conclusion

The purpose of this study was to provide a description and application of a novel methodology for comparing actual to expected visit rates at the physician level (controlling for patient characteristics) that could be employed in healthcare monitoring and management. Despite the relatively high correlation between the visits made by the patients of the actual and control practices, our results suggest that discretionary practice patterns and patient preferences exert a substantial influence on the number of follow-up visits. There is a wide variation in the actual number of visits in relation to the expected number as represented by simulated practices.

We used a random matching strategy to control for the existence of undue influences that plague the determination of expected visit levels for physicians. By matching key characteristics of patients in each physician's practice, we shadowed their patients with a matched set: a simulated control practice. By redrawing control practices multiple times, we constructed a distribution of expected visit levels at the practice level. Comparing those control practices to the actual practices, we were able to identify physicians with unexpectedly high or low numbers of visits.

Although most studies are constrained by the limited information contained in administrative databases, the one consistent finding across all studies has been the wide variation in physician recall/revisit rates despite the physician's efforts to provide high-quality, efficient care to patients. Yet, even the best explanatory models have

left half of the variance unexplained, perhaps because physician scheduling of return appointments is so complex as to be virtually unexplainable (Schwartz et al. 1999). The methodology outlined in this paper identifies excess or insufficient visit rates after patient characteristics are taken into account. Some physicians provide more visits to their patients than expected and others provide less. While some variation is inevitable, this methodology allows one to identify which practices deliver more or less than average quantities of care. In particular, we were able to identify some characteristics associated with tendencies to provide very high numbers of revisits compared to expected levels. While just suggestive, those characteristics provide clues for targeting education regarding practice guidelines and existing practice norms. Moreover, healthcare managers could provide physicians with a comparison of their actual to expected revisit rates, based on the practice norms of their peers. By constructing control practices matched for patient characteristics, including morbidity, we provide a retort to physicians with high revisit rates who tend to believe that their behaviour is due to the higher morbidity of the patients in their practices.

Of course, the optimal number of visits should be based on a careful study of outcomes. But in the absence of such a gold standard, our results point to the need for further research to explore reasons for the variation in the observed rates. Indeed, it may be possible to use deviation from expected visit levels, as identified here, as a basis for evaluating the effect of visit levels on various outcomes. For example, one might examine the association between mortality rate differences and visit rate differences among patients in physicians' actual practices compared to those in the corresponding simulated practices. One could do similar analyses for other outcomes, including stroke and other cardiovascular events.

Correspondence may be directed to: K.C. Carriere, Professor of Statistics, Heritage Health Scientist, University of Alberta. Tel.: 780-492-4230; Fax: 780-492-6826. E-mail: kccarrie@ualberta.ca.

ACKNOWLEDGEMENTS

We would like to thank Alan Katz, Bogdan Bogdonovitch, Natalia Dik and Ruth-Ann Soodeen of the Manitoba Centre for Health Policy and Joe Oppenheimer of the University of Maryland who offered support and/or helpful suggestions in the early development stages of this technique.

REFERENCES

Cree, M., N. Roos, Q. Yang and K.C. Carriere. 2001. "Hypertensive Patients and Their General Practitioners." *Healthcare Management Forum* 14(2): 33–40.

DeSalvo, K.B., J.P. Block, P. Muntner and W. Merrill. 2003. "Predictors of Variation in Office Visit Interval Assignment." *International Journal for Quality in Health Care* 15(5): 399–405.

DeSalvo, K.B., B.E. Bowdish, A.S. Alper, D.M. Grossman and W.W. Merrill. 2000. "Physician Practice Variation in Assignment of Return Interval." *Archives of Internal Medicine* 160(2): 205–8.

Kravitz, R.L., S. Greenfield, W. Rogers, W.G. Manning Jr., M. Zubkoff, E.C. Nelson, A.R. Tarlov and J.E. Ware Jr. 1992. "Differences in the Mix of Patients among Medical Specialties and Systems of Care. Results from the Medical Outcomes Study." *Journal of the American Medical Association* 267(12): 1617–23.

Petitti, D.B. and K. Grumbach. 1993. "Variation in Physicians' Recommendations about Revisit Interval for Three Common Conditions." *Journal of Family Practice* 37(3): 235–40.

Roos, N.P., K.C. Carriere and D. Friesen. 1998. "Factors Influencing the Frequency of Visits by Hypertensive Patients to Primary Care Physicians in Winnipeg." *Canadian Medical Association Journal* 159(7): 777–83.

Rosenberg, M.W. and E.G. Moore. 1997. "The Health of Canada's Elderly Population: Current Status and Future Implications." *Canadian Medical Association Journal* 157(8): 1025–32.

Sayer, G.P. and H. Britt. 1996. "Sex Differences in Morbidity: A Case of Discrimination in General Practice." *Social Science and Medicine* 42(2): 257–64.

Schwartz, L.M., S. Woloshin, J.H. Wasson, R.A. Renfrew and H.G. Welch. 1999. "Setting the Revisit Interval in Primary Care." *Journal of General Internal Medicine* 14(4): 230–35.

Tobacman, J.K., R.R. Zeitler, A.M. Cilursu and M. Mori. 1992. "Variation in Physician Opinion about Scheduling of Return Visits for Common Ambulatory Care Conditions." *Journal of General Internal Medicine* 7(3): 312–16.

Verbrugge, L.M. 1985. "Gender and Health: An Update on Hypotheses and Evidence." *Journal of Health and Social Behavior* 26(3): 156–82.

Welch, H.G., M.K. Chapko, K.E. James, L.M. Schwartz and S. Woloshin. 1999. "The Role of Patients and Providers in the Timing of Follow-up Visits." *Journal of General Internal Medicine* 14(4): 223–29.

Call to Authors

Data Matters presents brief, focused papers that report analyses of health administrative or survey data that shed light on significant health services and policy issues. Submissions to Data Matters should be a maximum of 1,500 words, exclusive of abstract (max. 100 words), tables, figures and references, and should include no more than three tables or figures.

Appel aux auteurs

« Questions de données » présente de brefs articles ciblés portant sur des analyses de données administratives ou d'enquêtes sur la santé ou de données d'enquête et qui font la lumière sur d'importantes questions liées aux services et aux politiques de santé. Les articles soumis à « Questions de données » doivent être d'au plus 1 500 mots, excluant le résumé (100 mots au plus), les tableaux, diagrammes et références et ne doivent pas comprendre plus de trois tableaux ou diagrammes.

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

Pour de plus amples renseignements, veuillez communiquer avec Rebecca Hart, rédactrice, à rhart@longwoods.com.

Full Text Online

Using Health Technology Assessment to Identify Research Gaps: An Unexploited Resource for Increasing the Value of Clinical Research

Utiliser l'évaluation des technologies de la santé pour déceler les lacunes dans la recherche : une ressource inexploitée pour rehausser la valeur de la recherche clinique

N. ANN SCOTT, CARMEN MOGA, CHRISTA HARSTALL AND JACQUES MAGNAN

Abstract

Health technology assessments (HTAs) are an as yet unexploited source of comprehensive, systematically generated information that could be used by research funding agencies to formulate researchable questions that are relevant to decision-makers. We describe a process that was developed for distilling evidence gaps identified in HTAs into researchable questions that a provincial research funding agency can use to inform its research agenda. The challenges of moving forward with this initiative are discussed. Using HTA results to identify research gaps will allow funding agencies to reconcile the different agendas of researchers who conduct clinical trials and healthcare decision-makers, and will likely result in more balanced funding of pragmatic and explanatory trials. This initiative may require a significant cultural shift from the current, mostly reactive, funding environment based on an application-driven, competitive approach to allocating scarce research resources to a more collaborative, contractual one that is proactive, targeted and outcomes-based.

Résumé

Les évaluations des technologies de la santé (ETS) sont une source encore inexploitée d'information détaillée et produite de façon systématique. Elles pourraient être utilisées par les organismes qui financent la recherche pour formuler des questions de recherche pertinentes pour les décideurs. Un processus a été élaboré pour transformer les lacunes dans les preuves décelées dans les ETS en questions de recherche qu'un organisme provincial de financement peut utiliser pour orienter son propre programme de recherche. On discute des défis liés à la mise en œuvre d'une telle initiative. L'utilisation des résultats des ETS pour repérer les lacunes dans la recherche permettra aux organismes de financement de concilier les différents objectifs des chercheurs et des décideurs du domaine de la santé et mènera probablement à un financement plus

équilibré des essais pragmatiques et explicatifs. Cette initiative pourrait nécessiter un important virage culturel, soit l'abandon du cadre de financement actuel, qui est principalement réactif et fondé sur une approche concurrentielle axée sur les applications, dans la répartition des maigres ressources de recherche, au profit d'une approche contractuelle, proactive, ciblée et davantage axée sur la collaboration et les résultats.

To view the full article, please visit
http://www.longwoods.com/product.php?productid=19558

Listen and learn.

Longwoods Radio available now at www.longwoods.com

Engaging Front-Line Staff: How a Long-Term Care Home Is Using Evidence to Build a Quality Improvement Culture

Mobilisation du personnel de première ligne : Un établissement de soins de longue durée utilise des données probantes afin de créer une culture axée sur l'amélioration de la qualité

by CANADIAN HEALTH SERVICES RESEARCH FOUNDATION

Abstract

St. Peter's Residence at Chedoke in Hamilton, Ontario, a 210-bed long-term care facility, is building the capacity of front-line employees to become engaged in quality improvement. With training and tools, teams made up of front-line and other staff are becoming engaged in creating a quality improvement culture. This innovative initiative was recently featured in *Promising Practices in Research Use*, a series produced by the Canadian Health Services Research Foundation highlighting organizations that have invested their time, energy and resources to improve their ability to use research in the delivery of health services. Tell the Foundation your own stories and visit the *Promising Practices* inventory at http://www.chsrf.ca/promising/index_e.php.

Résumé

La résidence St. Peter de Chedoke, à Hamilton, Ontario, un centre de soins de longue durée de 210 lits, vise la mobilisation des employés de première ligne afin d'améliorer la qualité des soins. La formation et des outils de perfectionnement permettent à des équipes formées d'employés de première ligne et d'autres membres du personnel de se mobiliser afin de créer une culture axée sur l'amélioration de la qualité. Cette initiative novatrice a fait l'objet d'un article dans *Pratiques prometteuses dans l'utilisation de la recherche*, une série mensuelle produite par la Fondation canadienne de la recherche sur les services de santé, qui présente des organismes ayant investi temps, argent et ressources afin d'améliorer leurs capacités à utiliser la recherche dans la prestation des services de santé. Vous pouvez nous suggérer des idées d'article et consulter la liste des numéros de *Pratiques prometteuses dans l'utilisation de la recherche* au http://www.chsrf.ca/pratiques/index_f.php.

—

Front-line staff members in healthcare organizations who provide direct care and services are vital resources to improve quality of care. These resources are being tapped at St. Peter's Residence at Chedoke in Hamilton, Ontario, a 210-bed long-term care facility where an initiative supported by the Canadian Health Services Research Foundation is building the capacity of front-line employees to become engaged in quality improvement.

St. Peter's has been shifting from its high-growth start-up mode to a phase of sustained quality improvement in resident care and services. As part of this transition, a group of employees – mostly front-line staff – are being equipped with quality improvement tools they can apply in their everyday work.

"Quality improvement is usually approached on a project-by-project basis," explains John Ruetz, former vice-president of long-term care at St. Peter's and a fellow in the Foundation's Executive Training for Research Application (EXTRA) program. "The residence is doing it differently. The goal is to establish a quality improvement mindset among front-line employees so that they approach all their work – not just a particular project – through a quality improvement lens. We believe that ultimately this will result in not only ongoing improvement in quality of care, but also increased staff engagement and satisfaction."

The capacity-building initiative began with a review of the evidence on quality improvement and cultural change. Several studies in long-term care settings identified education and staff empowerment as factors in the process of quality improvement, as well as in the actual quality of life for residents. The literature review also emphasized the importance of facilitation in successful quality improvement and cultural change.

Around that time, Charles H. Goldsmith, emeritus professor of clinical epidemiology and biostatistics at McMaster University, approached the organization with an offer to facilitate its quality improvement work. "This was serendipitous," says Mr. Ruetz, who is now with Bridgepoint Health in Toronto. "Dr. Goldsmith is not only an expert in the field, he also epitomizes the personal characteristics of drive, enthusiasm and credibility that a good facilitator needs."

An existing team (set up to pursue accreditation through the Canadian Council on Health Services Accreditation) made up of 10 clinical, housekeeping, food services and management staff became the quality team. With the guidance of Dr. Goldsmith, the team began learning about group processes and healthcare quality improvement.

The training used concepts developed by Dr. Goldsmith for a graduate-level course in health quality improvement. "Given the high proportion of unregulated caregivers in long-term care settings, most team members do not have university educations," says Mr. Ruetz, "yet they have absorbed and used graduate school learning and tools. This is a real confidence booster."

The quality team undertook 16 training sessions and applied newly acquired knowledge and tools to a pilot project on patient lifts and transfers. Two surveys were subsequently conducted to measure the team's progress towards its primary short-term goal of increased awareness and knowledge of quality improvement and change management initiatives. The surveys found that participants generally had good recall of the quality improvement tools they had learned about and used. Participants also felt the team members had good dynamics and worked well together, and that they understood the importance of their work and its potential to improve resident care. The surveys also revealed some areas for further work, such as additional learning on the change process, priority consultation and selection, and the use of data once collected.

Mr. Ruetz is pleased with the survey results and also with the fact that two new members have joined the quality team, allowing it to split in two. "The short-term goal of increased interest and engagement has been achieved," he says. "The next goal is participation in specific quality improvement projects, and this is starting to happen. I'm confident that employees are increasingly able to engage in quality improvement, and at the same time, that a quality improvement culture is emerging at the residence."

For more information about this promising practice, contact Karen Pow at kpow@stpetes.ca.

RESEARCH PAPER

The Effect of Evidence-Based Drug Coverage Policies on Pharmaceutical R&D: A Case Study from British Columbia*

Effet des politiques d'assurance-médicaments fondées sur des preuves sur la R&D pharmaceutique : étude de cas de la Colombie-Britannique

by STEVE MORGAN, PHD
Assistant Professor
Department of Health Care and Epidemiology
University of British Columbia
Research Lead, Program in Pharmaceutical Policy
UBC Centre for Health Services and Policy Research
Vancouver, BC

COLLEEN CUNNINGHAM
Former Co-op Student
UBC Centre for Health Services and Policy Research
Graduate Program in Economics
Simon Fraser University
Vancouver, BC

**This is a abridged version of a longer paper available online at http://www.longwoods.com/product.php?productid=19524*

Abstract

Background: To manage public expenditures in the mid-1990s, British Columbia implemented evidence-based drug coverage policies, including "reference pricing." Industry lobbied against the province's policy, arguing that reference pricing harms patients and that it is inconsistent with federal and provincial legislation. Researchers and the courts have studied and rejected industry's claims. However, industry also threatened to halt R&D investment in British Columbia and continues to so threaten other provinces contemplating evidence-based drug coverage policies. The purpose of this study is to review evidence regarding these threats.

Methods: Provincial-level R&D data for 1988–2006 were used to analyze the impact of BC PharmaCare's policies on pharmaceutical R&D in British Columbia. We used statistical analyses to determine whether the province's policies affected BC-based R&D as expressed in two ways: (1) as inflation-adjusted expenditure per capita in British Columbia and (2) as the ratio of expenditure per capita in the province to expenditure per capita in the rest of Canada.

Results: Evidence-based drug coverage policies had no statistically significant negative effects on BC-based pharmaceutical R&D. BC R&D was slightly above expected trends in 1997 and slightly below expected trends in 1998 and 1999 (though not statistically significantly in either case). From 2001 to 2003, BC R&D was (statistically significantly) above expected trends.

Conclusions: While they are part of the politics of the pharmaceutical sector, claims and threats regarding connections between coverage policy and location of R&D investment are not borne out in British Columbia's experience. This is likely because, as suggested by business and economic literature, firms locate R&D based on the expected cost-to-firm and productivity of the R&D investment itself. Prudent policy would therefore manage pharmaceutical expenditures using evidence-based policies and pursue scientific and economic development goals through direct and strategic government investment in local scientific capacity.

Résumé

Contexte : Afin de gérer les dépenses publiques au milieu des années 1990, la Colombie-Britannique a mis en œuvre des politiques d'assurance-médicaments fondées sur des preuves – y compris l'établissement du coût en fonction du produit de référence. L'industrie s'est élevée contre la politique de la province, soutenant qu'elle était nuisible pour les patients et qu'elle contrevenait aux lois fédérales et provinciales. Des chercheurs et des tribunaux ont examiné puis rejeté les revendications de l'industrie. Toutefois, cette dernière a également menacé de mettre fin aux investissements en R&D en Colombie-Britannique et continue de menacer d'autres provinces qui envisagent d'adopter des politiques d'assurance-médicaments fondées sur des

preuves. La présente étude vise à examiner les preuves relatives à ces menaces.
Méthodes : Nous avons utilisé des données provinciales en R&D de 1988 à 2006 pour analyser l'incidence des politiques d'assurance-médicaments de la Colombie-Britannique sur la R&D pharmaceutique dans la province. Nous nous sommes servis d'analyses statistiques pour déterminer si les politiques de la province influençaient la R&D en C.-B. – la R&D étant exprimée de deux manières : (1) les dépenses par habitant ajustées en fonction de l'inflation en Colombie-Britannique et (2) le rapport des dépenses par habitant dans la province et des dépenses par habitant dans le reste du Canada.
Résultats : Les politiques d'assurance-médicaments fondées sur des preuves n'ont pas eu d'incidence négative statistiquement importante sur la R&D pharmaceutique en C.-B. La R&D dans cette province dépassait légèrement les attentes en 1997 et était juste en deçà de celles-ci en 1998 et en 1999 (bien que ces différences soient statistiquement négligeables dans les deux cas). De 2001 à 2003, la R&D en C.-B. a dépassé les attentes, et ce, d'une manière statistiquement significative.
Conclusions : Bien qu'elles fassent partie de la politique du secteur pharmaceutique, les revendications et les menaces concernant les liens entre les politiques d'assurance-médicaments et l'emplacement des investissements en R&D ne se sont pas corroborées par l'expérience de la Colombie-Britannique. C'est probablement parce que, comme le suggère la documentation économique et industrielle, les sociétés choisissent l'emplacement des projets de R&D en fonction des coûts prévus et de la productivité des investissements en R&D proprement dits. Une politique prudente permettrait donc de gérer les dépenses pharmaceutiques avec des politiques fondées sur des preuves, et de poursuivre des objectifs scientifiques et de développement économique grâce à des investissements gouvernementaux stratégiques dans les capacités scientifiques locales.

—

Governments around the world struggle with the need to manage pharmaceutical expenditures in ways that provide equitable and sustainable access to necessary medicines. They are also mindful that the pharmaceutical industry is a major sector for economic and scientific activities (Jacobzone 2000; Morgan et al. 2008). In the 1990s, BC PharmaCare – the public drug plan in British Columbia – began to manage public expenditure on pharmaceuticals using a series of coverage policies focused on paying only for scientifically established health outcomes (Morgan et al. 2004). These policies are best represented by BC PharmaCare's reference pricing policy, which was implemented for three drug classes in 1995 (nitrate drugs, histamine-2 blockers and nonsteroidal anti-inflammatory drugs [NSAIDs]) and two additional drug classes in 1997 (angiotensin-converting enzyme [ACE]

inhibitors and calcium-channel blockers). In effect, reference pricing limits public subsidies for drugs in select classes based on the price of lowest-cost alternatives within those classes. Any product would be exempted from British Columbia's reference pricing policy if the manufacturer could provide scientific evidence to substantiate claims of superiority in terms of clinically relevant patient health outcomes (Morgan et al. 2004).

Industry strongly opposed BC PharmaCare's approach to coverage policy and, in particular, the use of reference pricing. Manufacturers launched advertising campaigns suggesting that reference pricing would have negative effects on patient health and the healthcare system and initiated a lawsuit challenging the legality of the policy (Coutts 1995; Mullens 1997; Brunt et al. 1998). Several independent research studies and the BC courts have vindicated government on these counts (Grootendorst and Holbrook 1999; Hazlet and Blough 2002; Morfitt et al. 2002; Schneeweiss, Soumerai et al. 2002; Schneeweiss, Walker et al. 2002; Schneeweiss et al. 2003, 2004). Industry also argued that British Columbia would lose on investment because BC PharmaCare's policies were "unfriendly" towards patented pharmaceutical manufacturers. This contention has been less thoroughly investigated and is the subject of this paper.

Impact of BC PharmaCare Policies on R&D in BC

Data

Patented Medicine Prices Review Board (PMPRB) data on pharmaceutical company R&D expenditures provide information necessary to determine whether British Columbia's evidence-based drug coverage policies, and in particular its reference pricing policy, had a significant effect on local R&D investment. The PMPRB collects industry self-reported data on amounts that pharmaceutical companies spend on R&D activities in each province. While firms may have incentives to overstate R&D amounts – in order to appear to have lived up to promised levels of R&D (Kalant and Shrier 2006) – such incentives should not affect this analysis of BC PharmaCare's policy impacts. For example, in their analysis of the national impact of changes in drug patent policy, Grootendorst and Di Matteo (2007) found comparable results using the PMPRB data versus data from Statistics Canada. We used PMPRB data because publicly available Statistics Canada data on pharmaceutical R&D are not available at a regional level. PMPRB reports R&D expenditures by companies marketing patented drugs that belong to the brand-name industry association (Canada's Research-Based Pharmaceutical Companies, or Rx&D) and by all pharmaceutical companies marketing patented drugs. For this analysis we used the latter set of data.

Methods

We searched for evidence of an impact of PharmaCare policy in BC-based R&D by pharmaceutical companies in two ways. First, we searched for changes in inflation-adjusted pharmaceutical R&D expenditure per capita in British Columbia, controlling for pre-policy time trends. Second, just as researchers use other economic sectors to control for general trends in R&D when studying total pharmaceutical sector R&D (Grootendorst and Di Matteo 2007), we used trends in pharmaceutical R&D in the rest of Canada to control for factors that might be affecting BC-based R&D in ways other than the specific PharmaCare policies studied here. To do this, we looked for changes in the ratio of expenditure per capita in British Columbia to expenditure per capita in the rest of Canada, controlling for pre-policy time trends in that ratio.

We performed time series analyses (using SAS for Windows v.9) to test for changes in trends or levels of BC-based pharmaceutical R&D. The models computed were linear ordinary least squares regressions with co-variance matrices adjusted for autocorrelation. In separate regressions (owing to lack of statistical degrees of freedom), we tested for policy impacts following 1995 (the year reference pricing was initiated for three drug classes) and following 1997 (the year the program was expanded to two further classes). Finally, after visual inspection of the data, we tested for temporary changes in BC-based R&D during the periods of 1998 to 2000 and 2001 to 2003 because BC-based R&D in those periods appeared to be below and above trends, respectively. There was an as-yet-unexplained 36% decrease in pharmaceutical company spending on BC-based R&D in 2006. Findings of our statistical analysis were not affected by the exclusion of that data point.

Results

Figure 1 illustrates pharmaceutical R&D expenditure for British Columbia in inflation-adjusted (year 2006) dollars per capita and as a ratio relative to R&D expenditure per capita in the rest of Canada. The figure also illustrates forecast data based on a best-fitting time series regression model using the pre-policy data spanning 1988 to 1997. Forecasts from 1988 to 1995 are similar, but suggest a more modest policy impact because the increase in BC-based R&D from 1995 to 1997 was more rapid than pre-policy trends. We chose to illustrate the 1988 to 1997 model in order to increase the chance of detecting a negative impact of BC PharmaCare's policies.

There were no statistically significant changes in either the level or the trend of BC-based pharmaceutical R&D in absolute terms or relative to the rest of Canada following the implementation (1995) or expansion (1997) of reference pricing. However, per capita investment in British Columbia plateaued from 1998 to 2000. While the decline is not statistically significant ($p=.51$ for per capita levels, $p=.17$ for ratios rela-

tive to the rest of Canada), if the fall in BC-based R&D from 1998 to 2000 were attributable to BC PharmaCare's policies, the potential R&D lost (in comparison to trend) would be valued at $6.5 million (year 2006 dollars), or roughly $2 million per year for three years. From 2001 to 2003, BC-based R&D increased to statistically significant levels above trends ($p<.01$ for per capita levels and for ratios relative to the rest of Canada). The increase in BC-based R&D investment by patent-holding drug companies from 2001 to 2003 would be valued as a windfall (in comparison to trend) of $28.5 million (year 2006 dollars), or about $9 million per year for three years.

FIGURE 1. Per capita R&D expenditure in British Columbia by patent-holding pharmaceutical companies in inflation-adjusted (year 2006) dollars and as a ratio of per capita expenditure in the rest of Canada, 1988 to 2006

Source: Authors' calculations based on data from the Patented Medicine Prices Review Board, Ottawa.

Relative to the rest of Canada, pharmaceutical company R&D in British Columbia was low and on a slightly – though not statistically significant – downward trend through the pre-policy era (1988 to either 1995 or 1997). During the pre-policy period, per capita spending on R&D in the province was approximately 75% to 80% lower than per capita spending on R&D in the rest of Canada. The relative size of BC-based R&D investment trended slightly – though not statistically significantly – upward through the post-policy period. From 2001 to 2005, per capita pharmaceutical R&D was approximately 70% lower in British Columbia than in the rest of Canada.

Discussion

Policy analysis is often challenging because of the difficulty of finding valid counterfactuals against which to compare policy experience. In this case, it is hard to know with certainty what R&D investment would have been without reference pricing policy. Evidence suggests that reference pricing in British Columbia did not cause any significant changes in R&D expenditures in the province by the pharmaceutical industry, either in absolute terms or compared with the rest of Canada. BC-based pharmaceutical R&D continued to grow following the implementation of evidence-based drug coverage policies – indeed, it did so slightly more quickly following these policies than preceding them. Industry will, however, continue to claim the policy created a hostile environment that decreased investment potential. Pharmaceutical companies have long cited local market conditions as influences on R&D investment decisions (Taggart 1991; OECD 2006). Taggart (1991) describes this as surprising "because there seems to be no prima facie reasoning that would immediately lead to this conclusion"; in other words, it defies basic economic logic.

An increasing amount of research suggests that the most important consideration in R&D investment decisions – even more than tax breaks – is the availability, accessibility and quality of local technical infrastructure and scientific capacity

How so? Pharmaceutical companies are businesses before anything else. As such, they make investment decisions based on expected costs and benefits. For example, literature on location of R&D from this sector and others states that, on the cost side of R&D investments, firms will consider such factors as the effect of tax breaks on the cost-to-firm of local R&D spending (Taggart 1991; Cornet and Rensman 2001; Davis and Meyer 2004; OECD 2006; Pazderka 2007). It is notable that Canada's R&D tax breaks are among the most generous in the world (OECD 2005). However, as evidenced by Canada's relatively poor R&D performance (Guellec and de la Potterie 2001; Harris 2005; Conference Board of Canada 2007; Howitt 2007), tax breaks are not sufficient to make significant local R&D investment of value to firms.

An increasing amount of research suggests that the most important consideration in R&D investment decisions – even more than tax breaks – is the availability, accessibility and quality of local technical infrastructure and scientific capacity (Jaffe 1989; Cockburn and Henderson 1996; Mansfield and Lee 1996; Porter 1998, 2000; Kuemmerle 1999; Davis and Meyer 2004). These factors are critical insofar as they

relate to the research productivity and therefore expected return from a firm's R&D investments. Across many studies, the availability and cost of high-quality labour ranks as a crucial determinant of R&D location (Taggart 1991; Cornet and Rensman 2001; OECD 2006); also important is the location of productive universities and related laboratories (Jaffe 1989; Cockburn and Henderson 1996; Mansfield and Lee 1996; Kuemmerle 1999; Davis and Meyer 2004).

Thus, firms may never have intended to cut R&D in British Columbia or to increase R&D investment in the province more quickly than they actually did over the past decade. However, they may find that the rhetoric of punishment serves to build opposition to evidence-based drug coverage policies in other jurisdictions. For threats of punishment to be credible, pharmaceutical companies must be united in their local "boycott" and must sustain their support for it for sufficiently long to make it clear to local and foreign decision-makers that firms will punish themselves (by forgoing otherwise profitable local scientific endeavours) in order to punish governments that employ certain drug coverage policies. Such coordination among competing firms may be unsustainable if the area in question is otherwise attractive for R&D investment.

Conclusion

Despite industry claims, we found no evidence to suggest that pharmaceutical manufacturers pulled R&D investment from British Columbia following BC PharmaCare's implementation of evidence-based policies, and reference pricing in particular, in the mid-1990s. The reason: threats of punishment do not stand up against business fundamentals. Industry will invest in local R&D based on the costs and benefits incurred from that scientific investment. Such factors are totally independent of local coverage policy except to the extent that firms try to associate them through the rhetoric of rewards and punishment. Even in the case of a policy as harshly opposed as reference pricing in British Columbia, the threats are not credible because firms will maintain their R&D investments as long as R&D fundamentals are unchanged.

Government policies most likely to affect R&D investment are those concerning the availability and cost of specialized researchers and facilities and proximity of academic research facilities. Prudent public policy would therefore manage pharmaceutical expenditures using evidence-based policies – which evidence from British Columbia shows can achieve cost-control and patient health goals – and pursue scientific and economic development goals through direct and strategic government investment in local scientific capacity. Provinces like British Columbia would be well advised to consider strategic support of scientific research in other areas, such as biotechnology, rather than competing (at significant cost to taxpayers) to overcome the pull of historical concentration of pharmaceutical investments in other, distant locations.

Correspondence may be directed to: Steven Morgan, UBC – Centre for Health Services and Policy Research, #201 – 2206 East Mall (LPC), Vancouver, BC V6T 1Z3, Canada; tel.: 604-822-7012; fax: 604-822-5690; e-mail: morgan@chspr.ubc.ca.

ACKNOWLEDGEMENTS

This project was supported by the Centre for Health Services and Policy Research (CHSPR) at the University of British Columbia. CHSPR is supported in part by the BC Ministry of Health and a Research Unit Award from the Michael Smith Foundation for Health Research (MSFHR). Steve Morgan is supported by a New Investigator award from the Canadian Institutes of Health Research (CIHR) and Scholar Award from MSFHR. The views presented here are solely those of the authors and not necessarily those of CHSPR, the BC Ministry of Health, CIHR or MSFHR.

REFERENCES

Brunt, H.J., N.L. Campbell, M. Maclure and A. Cassels. 1998. "Assessing the Effectiveness of Government and Industry Media Campaigns on Seniors' Perceptions of Reference-Based Pricing Policy." *Journal of Applied Gerontology* 17(3): 19.

Cockburn, I. and R. Henderson. 1996. "Public–Private Interaction in Pharmaceutical Research." *Proceedings of the National Academy of Sciences of the United States of America* 93(23): 12725–30.

Conference Board of Canada. 2007. *How Canada Performs: A Report Card on Canada* (p. 154). Ottawa: Author.

Cornet, M. and M. Rensman. 2001. *The Location of R&D in the Netherlands: Trends, Determinants and Policy*. CPB Document. The Hague: CPB Netherlands Bureau for Economic Policy Analysis.

Coutts, J. December 19, 1995. "Drug Makers Taking BC's War on Prices to Court: Provincial Policy Instructs Doctors to Prescribe Cheapest Remedies for Three Common Problems." *The Globe and Mail*: p. A.10.

Davis, L.N. and K.E. Meyer. 2004. "Subsidiary Research and Development, and the Local Environment." *International Business Review* 13(3): 359–82.

Grootendorst, P. and L. Di Matteo. 2007. "The Effect of Pharmaceutical Patent Term Length on Research and Development and Drug Expenditures in Canada." *Healthcare Policy* 2(3): 63–84.

Grootendorst, P. and A. Holbrook. 1999. "Evaluating the Impact of Reference-Based Pricing." *Canadian Medical Association Journal* 161(3): 273–74.

Harris, R. 2005 (May). "Canada's R&D Deficit – And How to Fix It." *Commentary* 211: 1–24. Toronto: C.D. Howe Institute.

Hazlet, T.K. and D.K. Blough. 2002. "Health Services Utilization with Reference Drug Pricing of Histamine (2) Receptor Antagonists in British Columbia Elderly." *Medical Care* 40(8): 640–49.

Howitt, P. 2007 (April). "Innovation, Competition and Growth: A Schumpeterian Perspective on Canada's Economy." *Commentary* 246: 1–15. Toronto: C.D. Howe Institute.

Jaffe, A.B. 1989. "Real Effects of Academic Research." *American Economic Review* 79(5): 957.

Kalant, N. and I. Shrier. 2006. "Research Output of the Canadian Pharmaceutical Industry: Where Has All the R&D Gone?" *Healthcare Policy* 1(4): 21–34.

Kuemmerle, W. 1999. "Foreign Direct Investment in Industrial Research in the Pharmaceutical and Electronics Industries – Results from a Survey of Multinational Firms." *Research Policy* 28(2–3): 179–93.

Mansfield, E. and J.-Y. Lee. 1996. "The Modern University: Contributor to Industrial Innovation and Recipient of Industrial R&D Support." *Research Policy* 25(7): 1047–58.

Morfitt, G.L., J. Esdaile, A. Gladstone, M. Moleschi and A. Saxton. 2002. *Report of the Reference Drug Program Consultation Panel* (p. 6). Victoria, BC: Ministry of Health.

Morgan, S., K. Bassett and B. Mintzes. 2004. "Outcomes-Based Drug Coverage in British Columbia." *Health Affairs* (Millwood) 23(3): 269–76.

Morgan, S., M. McMahon and D. Greyson. 2008 (in press). "Balancing Health and Industrial Policy Objectives in the Pharmaceutical Sector: Lessons from Australia." *Health Policy*.

Mullens, A. October 28, 1997. "Report on Health and Pharmaceuticals: BC's Contentious Drug Policy in Spotlight. Reference-Based Pricing Draws Praise, Criticism." *The Globe and Mail*: p. C1.

Organisation for Economic Co-operation and Development (OECD). 2005. *R&D and Innovation: Creating and Diffusing Knowledge.* Paris: Author.

Organisation for Economic Co-operation and Development (OECD). 2006. *Trends and Recent Developments in Foreign Direct Investment.* Paris: Author.

Pazderka, B. 2007. "Commentary: The Effect of Pharmaceutical Patent Term Length on R&D and Drug Expenditures in Canada." *Healthcare Policy* 2(3): 85–89.

Porter, M.E. 1998. "Clusters and the New Economics of Competition." *Harvard Business Review* 76(6): 77–90.

Porter, M.E. 2000. "Location, Competition and Economic Development: Local Clusters in a Global Economy." *Economic Development Quarterly* 14(1): 15–34.

Schneeweiss, S., C. Dormuth, P. Grootendorst, S.B. Soumerai and M. Maclure. 2004. "Net Health Plan Savings from Reference Pricing for Angiotensin-Converting Enzyme Inhibitors in Elderly British Columbia Residents." *Medical Care* 42(7): 653–60.

Schneeweiss, S., S.B. Soumerai, R.J. Glynn, M. Maclure, C. Dormuth and A.M. Walker. 2002. "Impact of Reference-Based Pricing for Angiotensin-Converting Enzyme Inhibitors on Drug Utilization." *Canadian Medical Association Journal* 166(6): 737–45.

Schneeweiss, S., S.B. Soumerai, M. Maclure, C. Dormuth and R. J. Glynn. 2003. "Clinical and Economic Consequences of Reference Pricing for Dihydropyridine Calcium Channel Blockers." *Clinical Pharmacology & Therapeutics* 74(4): 388–400.

Schneeweiss, S., A.M. Walker, F.J. Glynn, M. Maclure, C. Dormuth and S.B. Soumerai. 2002. "Outcomes of Reference Pricing for Angiotensin-Converting Enzyme Inhibitors." *New England Journal of Medicine* 346(11): 822–29.

Taggart, J.H. 1991. "Determinants of the Foreign R&D Locational Decision in the Pharmaceutical Industry." *R&D Management* 21(3): 229–40.

RESEARCH PAPER

Emergency Planning in Ontario's Acute Care Hospitals: A Survey of Board Chairs

La planification des services d'urgence en Ontario : enquête auprès des présidents des conseils d'administration

by NEIL SEEMAN, JD, MPH
Adjunct Professor, Health Services Management
Ryerson University
**Research Associate, Department of Health Policy, Management & Evaluation*
University of Toronto Faculty of Medicine
Toronto, ON
*(*at time of manuscript preparation)*

G. ROSS BAKER, PHD
Professor, Department of Health Policy, Management & Evaluation
University of Toronto Faculty of Medicine
Toronto, ON

ADALSTEINN D. BROWN, DPHIL
Assistant Deputy Minister (Health System Strategy Division)
Ontario Ministry of Health and Long-Term Care
Adjunct Professor, Department of Health Policy, Management & Evaluation
University of Toronto Faculty of Medicine
Toronto, ON

Abstract

Background: Effective hospital governance depends on proactive board leadership to minimize risk.
Study Aim: To survey hospital board chairs about governance practices, particularly with respect to approval processes for oversight of management preparedness for unforeseen emergencies.
Methods: A 2004 survey of hospital managers initially suggested greater board leadership in risk management as a desired strategic priority for Ontario's acute care hospitals. Our literature review and panel process defined 34 best practices in board governance, including two practices explicitly addressing the board's role in preparing for risk.
Results: Our findings revealed that some boards may not be actively engaged in ensuring that adequate processes are in place to protect against risk. More than one-quarter (n=28, 26.9%) of board chairs reported that they had not approved a management plan to address emergencies. Thirty respondents (28.8%) said they had not approved a process to identify, manage and minimize risks to the hospital's sustainability. Forty-seven respondents (45.2%) said they had not approved both of these two processes. A significant association emerged between boards that had approved both risk preparation strategies and boards that had implemented six key governance practices relating to accountability for leadership and stakeholder communication.

Résumé

Contexte : La gouvernance hospitalière efficace dépend des mesures proactives que prennent les conseils d'administration pour atténuer les risques.
But de l'étude : Mener une enquête auprès des présidents des conseils d'administration des hôpitaux sur les pratiques de gouvernance, en particulier les processus d'approbation liés à la surveillance de l'état de préparation de la direction aux situations d'urgence imprévues.
Méthodes : Une enquête menée en 2004 auprès des gestionnaires d'hôpitaux a initialement suggéré qu'un rôle de leadership accru des conseils d'administration dans la gestion des risques constituait une priorité stratégique souhaitable pour les hôpitaux de soins actifs de l'Ontario. Notre examen de la documentation et les travaux d'un groupe d'étude spécial ont permis de définir 34 pratiques exemplaires liées à la gouvernance des conseils d'administration, dont deux qui ont trait au rôle explicite de ces derniers dans la préparation au risque.
Résultats : Nos constatations révèlent que certains conseils d'administration ne jouent peut-être pas un rôle actif dans la protection de leur établissement contre les risques. Plus d'un quart (n=28, 26,9 %) des présidents des conseils d'administration ont indiqué qu'ils n'avaient pas approuvé de plan de gestion en cas d'urgence. Trente

répondants sur 104 (28,8 %) ont dit qu'ils n'avaient pas approuvé de processus visant à cerner, à gérer et à minimiser les risques pour la durabilité de l'hôpital. Quarante-sept (45,2 %) répondants ont dit n'avoir pas approuvé les deux processus. On a relevé un lien important entre les conseils d'administration qui avaient approuvé les deux stratégies de préparation aux risques et ceux qui avaient mis en œuvre six pratiques de gouvernance clés ayant trait à l'imputabilité en matière de leadership et des communications avec les intervenants.

Risk management means being prepared for harm – including financial loss and damage to reputation – that might arise from high-threat events such as disease outbreaks. In Ontario, hospital board responsibility for risk identification and oversight – i.e., for identifying unusual risks to the organization and for ensuring that plans are in place to prevent and manage such risks – is enshrined in Regulation 965 (section 2) of the *Public Hospitals Act* (PHA), which states, in subsection 2(3)(e)(i): "The board shall … ensure that the administrator, medical staff, chief nursing executive, staff nurses and nurses who are managers develop plans to deal with emergency situations that could place a greater than normal demand on the services provided by the hospital or disrupt the normal hospital routine" (*Public Hospitals Act* 1990).

Two successive outbreaks of Severe Acute Respiratory Syndrome ("SARS 1" and "SARS 2") in Toronto during the spring and summer of 2003 provide examples of such unforeseen system shocks. How well did Ontario hospitals respond? Judge Campbell's (2006) commission of inquiry into the SARS crisis reported that Ontario's health protection system was "broken, neglected, inadequate and dysfunctional." Forty-four people died of SARS, and an estimated 331 others (45% of whom were health workers) suffered serious lung disease. The final Campbell report underscored inadequate leadership and coordination at the hospital and system levels.

Infectious epidemics are not the only source of emergencies. System shocks include fires, floods, earthquakes, electrical blackouts or, every citizen's nightmare, potential bio-terrorist attacks – all natural and unnatural occurrences that present significant risks to a hospital. Since boards bear fiduciary responsibility for the hospitals they serve (Corbett and Mackay 2005; *Corporations Act* 1990) and, thus, have an ethical and legal mandate to oversee management risk plans, we decided to survey board chairs at Ontario's acute care hospitals to determine whether they had, in fact, approved such plans. We hoped that lessons learned in Ontario would be useful to hospital boards across Canada.

Literature Review

In the aftermath of SARS, the Naylor (2003), Walker (2004) and Campbell (2006) reports were unanimous in pointing to inadequacies in institutional outbreak management protocols, infection control and infectious disease surveillance, but the specific risk mitigation duties of hospital boards were not prescribed. In the Pointer and Orlikoff (1999) model of board governance, boards are responsible for policy formulation, decision-making and oversight across five discrete domains that minimize risk: responsibility for organizational ends, responsibility for executive management performance, responsibility for quality, responsibility for finances and responsibility for the board itself.

A comprehensive online search of reported case law in two compendia, LawSource and the Canadian Legal Information Institute, indicates that the legislated obligations of boards with respect to risk management under the PHA have not yet been judicially interpreted in Ontario (Canadian Legal Information Institute 2007). However, under common-law principles of institutional liability, a hospital might be found negligent if a patient plaintiff who suffers damages (e.g., loss of employment after falling ill) could successfully prove, on the balance of probabilities, that the board had never properly turned its attention to the issue of emergency planning, either through undertaking a formal approval process or via a regular review of management implementation procedures (i.e., *de facto* approval).

Best practices in managing risk are still evolving, but the emerging practice principle is that boards need to be aggressively proactive in their preparation. In the North American private sector, there are no precise survey data about the prevalence of board policies to mitigate risk, but the *Sarbanes–Oxley Act* (2002), intended to reduce the frequency of inaccurate and fraudulent financial reporting in US private firms, has had a salutary impact on board awareness of the power of risk management policies to obviate sudden financial shocks. The increased attention to risk management by investors and the media has led many private firms to upgrade their risk management and monitoring systems against fraud and unethical business practices (Kambil and Mahidhar 2006). In light of empirical findings showing that some of the greatest value losses for US publicly traded companies stem from "low-frequency, high-impact events" such as the September 11, 2001, terrorist attacks, one Web-based report has recommended that firms continually employ "stress testing" to ensure that internal controls and business continuity plans can withstand the shock of a high-impact rare event (Kambil and Mahidhar 2006). Ongoing stress testing of this nature is a board-led activity that would, in the Ontario hospital context, ensure compliance with the emergency preparedness (EP) provisions of the PHA.

There have been few previous surveys of hospital risk management strategies. A national survey of 1,300 respondents in the non-profit sector found that only 28% of respondents in the hospital subsector (13% of the total sample) had a formal crisis

plan in place, while 71% had a formal risk management strategy (Bugg et al. 2006). In the Canadian non-profit sector as a whole, the survey found a formal risk management policy in 60% of organizations and a formal crisis management plan in 65% (Bugg et al. 2006).

Survey Methodology

Following a literature review, and drawing on the results of a 2004 strategic priorities survey (Brown et al. 2005) of the same acute care hospitals, we identified 80 separate board policies and practices that theoretically contribute to good corporate governance.

Nine corporate governance experts familiar with the Ontario hospital context – including lawyers, hospital CEOs, directors and (current and former) board chairs – individually ranked these 80 measures (on a five-point scale) against the following criteria:

- *Actionability:* The practice/policy under consideration is under the control of Ontario hospital boards.
- *Quality:* This practice/policy is a useful measure of the quality of hospital corporate governance in Ontario.
- *Utility:* Hospital boards would find reports comparing the rate of use for this practice useful for benchmarking.

A consensus among the experts resulted in 34 best practices that could be framed as yes/no questions. Two of the 34 questions related directly to board approval of management's risk preparation plans and thus reflected risk management requirements in the PHA. We were interested in the responses to these two questions: First, had the board "approved a management plan that addresses the handling of potential emergency situations (e.g., a SARS outbreak, power shutdown or bio-terrorist attack) which could place a greater than normal stress or demand on hospital services"? Second, had the board "approved a risk management plan that includes a process to identify, manage and minimize risks to the hospital's sustainability"? Beyond discovering rates of response to these two questions, we were interested in the association between an affirmative response to these questions and endorsement of other best practices assessed in the survey.

Researchers at the Canadian Institute for Health Information (CIHI) and the Hospital Report Research Collaborative (HRRC) based at the University of Toronto sent the survey and accompanying instructions via e-mail to hospital board chairs at 122 Ontario general acute care hospital corporations in November 2005. Hospital CEOs were notified by a separate letter, also sent electronically, describing the nature

of the survey. Board chairs were given four weeks to complete the survey online, and were advised that a "snapshot" of overall provincial, local health integration network (LHIN) and peer group breakdowns (based on the 2005 Joint Policy and Planning Committee formula) of some of the data (but not individual hospital data) would be published in *Hospital Report 2006: Acute Care* (HRRC 2006). Responses to questions related to EP are reported in this paper for the first time.

Results

The overall response rate was 86.8% (106/122). Hospitals with multiple boards were given the opportunity to respond as one entity or as distinct boards; in the rare instances where there were variations in subboard responses (i.e., variation in policy as reported by board chairs at different sites), scores on individual question elements were averaged among the sites to reflect an aggregate score for the hospital (e.g., 2/3 "yes" responses = "yes").

Survey respondents included 110 board chairs or their designates, representing 106 separate acute care hospital corporations in Ontario. (Three multi-site hospitals chose to respond individually, which explains the discrepancy in the numerator.) For the two questions addressing board risk management approval and oversight, there were two missing values, representing a response rate of 85.2% (104/122) for these response items.

More than one-quarter (26.9%) of responding board chairs (n=28) reported that their hospital board or a committee of the board had not, as of November 2005, "approved a management plan that addresses the handling of potential emergency situations (e.g., a SARS outbreak, power shutdown or bio-terrorist attack) which could place a greater than normal stress or demand on hospital services." A slightly higher proportion of board chairs (28.8% or 30/104) reported that their board had not "approved a risk management plan that includes a process to identify, manage and minimize risks to the hospital's sustainability." Altogether, 47 of 104 boards (45.2%) had failed to approve both risk management plans.

Affirmative answers to both of the two EP questions were associated with six of the remaining 32 best practices/processes in the survey (Table 1). These six measures are of interest because they help to ensure the continuity of the corporation's leadership through careful succession planning for board members (items 1–3) and ensure accessibility, review and transparency of its procedures (items 4–6). It makes sense that, in order to discharge the responsibility of risk assessment, board members pay close attention to leadership roles and that they require and share high-quality information on putative risk from a broad set of sources (Quigley and Scott 2004; Treasury Board Secretariat 2000).

The complete survey, with associated response frequencies and responses from acute care hospital board chairs, is included in an Appendix (available online at http://www.longwoods.com/product.php?productid=19557).

TABLE 1. Significantly associated practices of boards engaged in risk management

Board Attribute	Domain of Analysis	Chi-Square Value	Pearson's Chi-Square (Asymp. Sig. 2-sided)†
1. "The Board has an articulated succession plan for the chairs of all Standing Committees of the Board."	Board composition, nomination and succession	8.099	0.004
2. "The Board has an articulated succession plan for the Board chair which includes a maximum term limit for the chair."	Board composition, nomination and succession	4.308	0.038
3. "The Board's director nominations process takes into consideration the diversity of the hospital's community (including gender, age, ethnicity and cultural background) when selecting potential nominees."	Board composition, nomination and succession	4.161	0.041
4. "All Board processes of Standing and other committee procedures and terms of reference are in writing and are publicly accessible."	Responsibilities and processes of the Board and Board committees	4.161	0.041
5. "The Board uses a review process to ensure the adequacy of the information which it receives, such as briefing notes, agendas, minutes of prior Board meetings, CEO and committee reports, upcoming motions, financial reports, recent media reports and relevant journal articles."	Board information and communication	5.916	0.015
6. "The Board publishes reports (quarterly or more frequently) describing organizational performance for its community and stakeholders."	Board information and communication	12.683	<0.001

† With Yates correction for continuity applied to improve precision of approximation ($df = 1$)

Discussion

Almost two years after a 2004 survey (Brown et al. 2005) concluded that senior managers see disaster planning and emergency preparedness as important to their organization's strategic directions, the findings here indicate that not all hospital boards had shown a proportionate response at the time of our survey. The lack of reported adherence to two risk management approval practices may be explained by various factors. It is possible that board chairs, the respondents in this survey, were not fully aware of

all board approval and oversight practices, the responsibility for which can, at times, be delegated to outside legal counsel, to a hospital committee or to a subcommittee of the board. This in itself would, however, suggest a gap in internal communication among board members and/or between outside legal counsel and the board, a gap that presents an obstacle to effective governance.

It is also possible that those boards that did not approve EP plans believe that risk planning activities are best left entirely to senior management, with the board available for advice when needed (i.e., with recommending authority only). Boards may have an approval process whereby a manager in charge of EP is required to report to a governance committee, a committee of the full board or both on a regular basis. Should EP plans be deemed inadequate, the board then has the power to intervene and demand improvement. Such a *laissez-faire* process may have elicited a "no" answer to the survey questions.

Since this is the first time these specific approval practices have been systematically surveyed for publication among a large sample of Ontario hospital boards, and since no jurisdiction has published norms, it is not possible to estimate the degree to which the findings reflect general characteristics of public hospital boards. However, the findings are consistent with recent data suggesting that there is potential for improvement in risk management practices at Canadian hospitals and in the non-profit sector generally (Bugg et al. 2006).

A limitation of our findings is the lack of nuance in the questions posed. In particular, it is possible that boards answering "no" to approving management plans were in the process of approving them (one board chair indicated as much to explain why this response was missing). Another board chair who left the EP question blank advised that the board is apprised of all management plans/operational issues either via regular monitoring/reporting or via the CEO's monthly reports to the board on salient issues. This response suggests the board might possibly ensure that management has contingencies in place for emergencies for "greater than normal stress or demand" without the board's formally approving an operational plan; i.e., adherence to the PHA and fiduciary requirements could theoretically be satisfied by regular updates on related issues from the CEO or other executives. Greater nuance in the survey questions could have allowed for response options that reflected gradations of implementation.

Further, no audits were conducted of the validity of board chair responses. An audit process could have helped to determine the degree to which the responses given matched processes or practices approved and in place at the hospitals. A follow-up analysis could identify a subsample of hospitals willing to provide such input for a subsequent survey and audit.

Despite the lack of nuance in the questions posed, the language of the PHA and fiduciary legal obligations do require explicit, ongoing board approval and oversight of

management's EP protocols. This requirement provides our rationale for the survey language used. This interpretation is also consistent with standard rules of statutory interpretation, suggesting that the words "shall … ensure" in the PHA require active board approval of such policies (*Interpretation Act* 1990). The responses of those boards that had not approved management plans for EP appear to be at odds with the high strategic importance placed on risk planning by senior management at the same hospitals in the earlier January 2004 survey.

According to the report of the Ontario Hospital Association (Corbett and McKay 2005), the board needs to take additional steps to "ensure the board's behaviour and processes are in line with respect to risk," which, in the context of emergencies such as epidemics, require the board to react quickly and to direct management to respond. The report recommends other types of oversight a board should consider, including processes to ensure that management has implemented a proper risk identification and assessment mechanism; has maintained sufficient insurance programs given identified and assumed risks; and has established effective budget and capital planning processes. In short, it would be insufficient for the board to wholly delegate risk planning to a management committee; the board must approve and review the appropriateness of the management plan. This is consistent with the emerging consensus on the role distinction between the board and management, summarized in a 2001 Toronto Stock Exchange report whose conclusions are equally applicable to the non-profit sector: "the Board cannot be too accepting of management's views. It has the responsibility to test and question management assertions, to monitor progress, to evaluate management's performance and, where warranted, to take corrective action" (Saucier et al. 2001: 12).

A board is required by law to make itself aware of the material and foreseeable risks of all aspects of the business in which the corporation is engaged. To this end, the hospital board must actively concern itself with risks potentially arising from high-threat events that will "disrupt the normal hospital routine." Other less obvious risks to which the board should be sensitive include anything that might be prejudicial to the sustainability of the hospital in the near or long term, including reputational risks arising, for example, from unfavourable media coverage. Sensitivity to these risks is consonant with the concept of enterprise risk management, where risk is seen from a broad perspective and includes both financial, quantifiable losses, as well as intangible reputational losses.

Conclusion

The findings reported here suggest that some boards may not be as engaged in risk management approval activities as they could be. The board of a hospital should be directly accountable to staff, to the patients and communities served and to the government funding authority (Hundert 2003). Our findings suggest that risk manage-

ment plan approval on the part of the board may be predictive of the more general concept of public accountability. As suggested in our analysis, board engagement in risk planning is associated with increased attention to succession planning; a more proactive attempt to nominate a diverse set of directors; the documentation and public accessibility of board and committee processes; better information-gathering on the board; and more regular reports to the community and to stakeholders regarding organizational performance.

Future research should probe these associations to determine whether linkages exist between risk management engagement on the board and other areas of performance for the organization – e.g., indicators of financial performance or patient satisfaction – particularly following times of system stress. Case study interviews at different sites are needed to explore the diversity of risk management oversight practices among hospital boards, and to determine whether there are special directors' skills in risk management that may be needed to implement those practices effectively.

Before directors can adopt truly effective risk management oversight plans, they need more information about the diversity and feasibility of different models to determine which is most suitable for their board's unique governance structure and strategic directions. Finally, the emergence of LHINs in Ontario may provide an ideal opportunity to standardize region-wide governance policies in relation to emergency preparedness, which, in turn, could lead to improved system readiness in the event of a future system-level destabilizing event. Whatever the overarching governance authority, our study suggests that fiduciaries should be proactive to ensure that management has enacted proper organizational protection against unforeseen risk.

Correspondence may be directed to: Neil Seeman, c/o Ryerson University, School of Health Services Management, Sally Horsfall Eaton Centre for Studies in Community Health, Room 574, 99 Gerard St. East, Toronto, Ontario, M5P 2K8. E-mail: nseeman@ryerson.ca.

ACKNOWLEDGEMENTS

The Hospital Report Research Collaborative (HRRC) acknowledges, with thanks, funding from the Ministry of Health and Long-Term Care and the Ontario Hospital Association. The authors are grateful for the data quality checks and survey distribution led by Jennifer Wagg and Joanne Tse of the Canadian Institute for Health Information (CIHI). The HRRC is now part of the Health System Performance Research Network, HSPRN, a network of researchers working on projects to identify, validate, implement and exploit performance information of value to the health system in Ontario.

REFERENCES

Brown, A.D., L.M. Alikhan, G.A. Sandoval, N. Seeman, G.R. Baker and G.H. Pink. 2005. "Acute Care Hospital Strategic Priorities: Perceptions of Challenge, Control, Competition and

Collaboration in Ontario's Evolving Healthcare System." *Healthcare Quarterly* 8: 36–47.

Bugg, G., S. Dallhoff and P. Speevak-Sladowski. 2006. *National Study of Board Governance Practices in the Non-Profit and Voluntary Sector in Canada.* Toronto: Strategic Leverage Partners.

Campbell, A.G. and the Commission to Investigate the Spread of SARS in Ontario. 2006 (December). *Spring of Fear: The SARS Commission Report.* Toronto: Government of Ontario. Retrieved January 13, 2008. <http://www.sarscommission.ca/report/index.html>.

Canadian Legal Information Institute. 2007. *Databases.* Retrieved January 13, 2008. <http://www.canlii.org>.

Corbett, A. and J. Mackay. 2005. *Guide to Good Governance.* Toronto: Ontario Hospital Association.

Corporations Act, RSO 1990, c. C.38.

Hospital Report Research Collaborative (HRRC). 2006 (June). *Hospital Report 2006: Acute Care.* Toronto: Canadian Institute for Health Information. Retrieved January 13, 2008. <http://www.hospitalreport.ca/downloads/2006/ac/acute_report_2006.pdf>.

Hundert, M. and R. Crawford. 2003. "Issues in the Governance of Canadian Hospitals, Part 1: Structure and Process." *Hospital Quarterly* 6: 63–67.

Interpretation Act, RSO 1990, c. I.11, s. 29(2).

Kambil, A. and V. Mahidhar. 2006. *Disarming the Value Killers: A Risk Management Study.* Boston: Deloitte Services.

Naylor, D. and the National Advisory Committee on SARS. 2003 (October). *Learning from SARS: Renewal of Public Health in Canada.* A report of the National Advisory Committee on SARS and Public Health. Ottawa: Public Health Agency of Canada. Retrieved January 13, 2008. <http://www.phac-aspc.gc.ca/publicat/sars-sras/naylor>.

Pointer, D.D. and J.E. Orlikoff. 1999. *Board Work: Governing Health Care Organizations.* San Francisco: Jossey–Bass.

Public Hospitals Act, RSO 1990, c. P.40; Hospital Management Regulation, RRO 1990, Reg. 965 to the *Public Hospitals Act*, s. 2(3)(a).

Quigley, M.A. and G.W.S. Scott. 2004 (April). *Report on Hospital Governance and Accountability in Ontario.* Toronto: Ontario Hospital Association.

Sarbanes-Oxley Act of 2002, Pub. L. No. 107-204, 116 Stat. 745.

Saucier, G. and the Joint Committee on Corporate Governance. 2001 (November). *Beyond Compliance: Building a Governance Culture.* Toronto: Toronto Stock Exchange. Retrieved January 13, 2008. <http://www.goodgovernance-bappenas.go.id/publikasi_CD/cd_penerapan/ref_cd_penerapan/download/unfolder/Building%20a%20Governance%20Culture.pdf>.

Treasury Board Secretariat. 2000 (April 18). *Accountability Expectations and Approaches.* Ottawa: Government of Canada. Retrieved January 13, 2008. <http://www.tbs-sct.gc.ca/rma/account/account_e.asp>.

Walker, D. and the Ontario Expert Panel on SARS and Infectious Disease Control. 2004 (April 16). *For the Public's Health: A Plan of Action.* Final Report. Toronto: Ministry of Health and Long-Term Care.

RESEARCH PAPER

Reducing Wait Times through Operations Research: Optimizing the Use of Surge Capacity

Réduire les temps d'attente grâce à la recherche opérationnelle : optimiser l'utilisation des capacités en cas de hausse subite de la demande

by JONATHAN PATRICK, PHD
Assistant Professor, Telfer School of Management
University of Ottawa
Ottawa, ON

MARTIN L. PUTERMAN, PHD
Research Director, UBC Centre for Health Care Management
Professor, The Sauder School of Business
University of British Columbia
Vancouver, BC

Abstract

Widespread public demand for improved access, political pressure for shorter wait times, a stretched workforce, an aging population and overutilized equipment and facilities challenge healthcare leaders to adopt new management approaches. This paper highlights the significant benefits that can be achieved by applying operations

research (OR) methods to healthcare management. It shows how queuing theory provides managers with insights into the causes for excessive wait times and the relationship between wait times and capacity. It provides a case study of the use of several OR methods, including Markov decision processes, linear programming and simulation, to optimize the scheduling of patients with multiple priorities. The study shows that by applying this approach, wait time targets can be attained with the judicious use of surge capacity in the form of overtime. It concludes with some policy insights.

Résumé

Les demandes du public concernant l'accès amélioré, les pressions exercées sur les décideurs en vue de réduire les temps d'attente, une main-d'œuvre poussée au-delà de ses capacités, une population vieillissante et du matériel et des installations surutilisés obligent les dirigeants du domaine de la santé à adopter de nouvelles méthodes de gestion. Le présent article met l'accent sur les avantages significatifs que procure l'application des méthodes de recherche opérationnelle (RO) à la gestion des soins de santé. Il montre comment la théorie des files d'attente permet aux gestionnaires de mieux comprendre les causes des temps d'attente excessifs et la relation entre les temps d'attente et les capacités. Il fournit une étude de cas sur l'utilisation des méthodes de RO, y compris les processus décisionnels de Markov, la programmation linéaire et la simulation pour optimiser l'établissement des horaires des patients avec des priorités multiples. L'étude montre qu'en appliquant cette méthode, on peut atteindre les temps d'attente cibles grâce à une utilisation judicieuse des capacités en cas de hausse subite de la demande sous forme d'heures supplémentaires. L'article se termine par quelques remarques générales sur les politiques.

—

Healthcare systems throughout the world face long and increasing wait times for medical services (Willcox et al. 2007; Siciliani and Hurst 2004; Hurst and Siciliani 2003; Blendon 2002). Sometimes these waits may have little medical impact, but excessive delays may be detrimental to patients' health (CIHR 2007). As a result, there is growing public and patient pressure on political leaders to reduce wait times to acceptable levels.

The First Ministers' Meeting on the Future of Health Care (2004) committed Canada to a program of determining, and then meeting, wait time benchmarks for cancer care, cardiac care, diagnostic imaging, joint replacement and sight restoration. These benchmarks provide "evidence based goals that express the amount of time that clinical evidence shows is appropriate to wait for a particular procedure or diagnostic test" (Postl 2006). Postl (2006), in his final report as Federal Advisor on Wait Times,

noted that "we [in healthcare management] have not sufficiently exploited the academic resources available to us from business management schools or industrial engineering." In particular, he singled out operations research (OR) as especially relevant.

Operations research is the science of developing and applying mathematical models to provide decision-makers with better strategies to plan and operate systems. Through systems models and "what if?" analyses, it enables investigation of the impact of system changes prior to implementation. This paper uses OR methods to provide insight into the relationship between wait times and capacity. Through a case study, it also shows how our basic research on patient scheduling algorithms (Patrick et al. 2007) can reduce wait times by judiciously using surge capacity in the form of overtime.

Why Are There Waits for Access to Healthcare?

Wait times for health services arise because

- capacity does not match demand,
- capacity or demand is not well managed and
- there is significant variability over time in the demand for healthcare services.

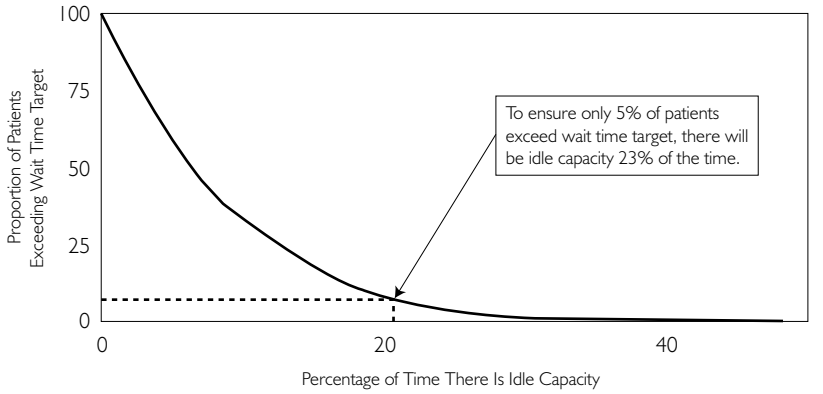
By capacity, we mean the maximum rate at which a resource can deliver a service when operating at peak efficiency (Anupindi et al. 2005). Capacity is controlled through investment in and scheduling the use of people, physical plant and equipment. Setting capacity levels entails an unavoidable trade-off between wait times and resource utilization.

- When capacity significantly exceeds average demand, queues will be short and wait times minimal. Unfortunately, because of *variability* in the demand over time, resources will be idle a large portion of the time (Figure 1).
- When capacity is significantly below average demand, system resources will be fully utilized, but wait times will be excessive and will grow over time.
- Even when capacity equals or slightly exceeds average demand, queuing theory (Hillier and Lieberman 2001) implies that there will be long waits (in theory, they will be infinite in the limit). In this case, resources will be utilized most of the time.

Decisions regarding investment in capacity must explicitly account for the trade-off between capacity, idleness and wait times. The relation depicted in Figure 1 derives from fundamental queuing theory (Hillier and Lieberman 2001: 854–55). It shows that to ensure that a low proportion (percentage) of patients' wait times exceed specified targets, capacity must be set sufficiently high so that idle time is inevitable. The specific case indicated by the dotted line shows that to ensure that only 5% of patients exceed

their wait time targets, there will be idle capacity 23% of the time. Ingolfsson and Gallup (2003) developed the Queueing ToolPak, which is an easy-to-use Excel add-in that facilitates a wide range of queuing calculations that are useful for capacity planning.

FIGURE 1. Theoretical relationship between wait time targets and idle capacity (calculations based on a single server exponential queueing model with arrival rate of 10 patients per week, service rate varies between 10 to 16 patients per week and a target of one week service time)



The Challenge of Measuring Wait Times

There are a number of complex issues that affect both the setting and achieving of wait time targets. They include the following:

- *Patients are not homogeneous.* Patients requiring urgent care must receive services more quickly than those requiring less urgent care. Hence, wait times must be assessed against appropriate benchmarks for each priority class. A report by the Health Council of Canada (2005) suggests using the terminology "urgency" instead of "priority" to avoid the negative connotations sometimes associated with the latter term. Further, it suggests using three patient urgency classes.
- *Wait times, as currently measured, do not tell the whole story.* Usually, wait times are measured and reported from the time at which a request for service (requisition) reaches the service provider until the service is provided. They do not account for upstream delays between the time at which a service is first needed and the points at which the series of referring physicians can see and enter the patient into the appropriate queue.
- *Averages are not enough.* Wait times vary among patients, over time and among sites and measures. This variability must therefore be part of any performance measurement system. Further, wait time distributions tend to be skewed. We strongly recommend using metrics of the form: "What proportion of patients of a

specific priority class receive the service within a specific, clinically desirable time?" The advantage of such metrics is that they provide meaningful guarantees to decision-makers and system users.

- *Accurate wait time data are not readily available*. Most data systems we have encountered do not provide complete wait time data. The biggest challenges are that time stamps are not accurate, data reside in different offices and databases are not linked. Further, relevant data are often not available in electronic form.

Levers for Managing Capacity: The Impact of Operations Research

Operations research methods can help health systems managers plan and manage capacity to meet wait time targets in the following ways:

- *Capacity planning* addresses the issue of how much capacity is needed to meet current and future wait time targets. Systemwide planning models based on linear and integer programming (Santibanez et al. 2007) can determine where and when to add system capacity.
- *Capacity management* addresses the question of how to assign demand to capacity to ensure that it is used as efficiently as possible. Levers to manage capacity efficiently include improved patient scheduling, improved staff scheduling and modelling the entire system to account for and manage all resources a patient will need when scheduling services. Simulation, linear programming and Markov decision processes support such analyses.
- *Surge capacity management* provides a hybrid approach to planning and controlling capacity. Surge capacity refers to extra capacity (such as overtime) that can be sourced when needed to meet excess demand. Often, surge capacity is more expensive than base capacity, but its advantage is that it is not needed all the time. As noted above, when capacity is set sufficiently high so that wait time targets are achieved, capacity will be idle a significant fraction of the time. On the other hand, if capacity is set so that it is fully utilized, then a large fraction of patients will not achieve their wait time targets. A way around this trade-off is to have additional flexible or surge capacity that allows the system to function with less base capacity, and therefore less unused capacity, while still meeting demand. Managing surge capacity requires both determining an appropriate base capacity and developing rules that specify when and how much surge capacity should be used.

Postl (2006) stresses the need for research to explore the use and benefits of surge capacity. This paper answers that call. It provides a case study that illustrates how

operations research methods can help a manager develop rules to use surge capacity, in the form of overtime, to achieve wait time targets. It does not address the issue of setting base capacity levels, which we shall address in future work.

The Need for Optimal Scheduling

In 2003, a team of investigators from the University of British Columbia (including the authors) began a study with the Vancouver Coastal Health Authority aimed at improving diagnostic imaging processes at several Vancouver hospitals. The team identified porter services and patient scheduling as promising areas for investigation. As a result, we reviewed porter services (Odegaard et al. 2007) and sought to develop new methods to improve patient scheduling (Patrick and Puterman 2007; Patrick et al. 2007). This paper translates the latter research into a decision-making context.

In most healthcare settings, patient scheduling is carried out by schedulers who must make complex trade-offs in the absence of intelligent software and precise decision rules to support their decisions. This activity becomes especially challenging and complex when

- patients are categorized into priority classes with different service time targets,
- there are multiple types of equipment with different capabilities on which a patient can be scheduled,
- patients must be booked for a course of treatment requiring several days or weeks or
- resources are spread across a wide geographic region.

Our research focused on the first issue and provides a foundation for investigating the other challenges. The specific problem our research investigated follows.

Each day, a random number of appointment requests arrive. A scheduler reviews these requests and assigns them to a pre-specified number of future appointment slots of constant length. Each request has a priority assigned to it. Patients with different priorities have different maximum recommended wait times. The challenge that the scheduler faces is that lower-priority patients must be booked "today" (for an appointment slot some time in the future) prior to knowing future demand. If patients are booked too far in the future, their maximum recommended wait times may be exceeded and staff and equipment may sit idle. If patients are booked too soon, then there may not be sufficient capacity to meet wait time targets for higher-priority patients arriving at a later date. Our research provides precise decision rules to enable schedulers to make these booking decisions and meet wait time targets for all priority classes. We refer to such rules as *optimal schedules*. We will clarify what we mean by "optimal" below.

Problems of this type have received some attention in the operations research literature. Related papers within the healthcare field include the work of Gerchak et al. (1996) on allocating surgery time between elective and emergency surgeries, Gupta and Wang's (2008) paper on scheduling in a primary care clinic with multiple priority levels and the study by Green et al. (2006) on managing patient demand for a diagnostic facility. Our work differs from the first paper in that it considers more than two priority classes. In the two other papers, the objective is to maximize revenue, allowing the authors to focus on a single day rather than the entire planning horizon. Our interest in achieving wait time targets forces us to consider how actions taken on one day affect future decisions so that we cannot look at a single day in isolation. McGill and Van Ryzin (1999) summarize related research on customer scheduling in the airline industry, and Bassamboo et al. (2006) consider similar challenges facing call-centre managers when scheduling operators. As far as we know, there is no research on multi-class scheduling within healthcare, where the goal is to achieve wait time targets.

Methodology

The results and policy insights of our research are based on a Markov decision process (MDP) scheduling model. An MDP models a system in which decisions are made sequentially over time, and future decisions and outcomes depend on current and past decisions (Puterman 1994). Applying an MDP provides an optimal policy that prescribes how best to manage the system in any contingency. It offers a systematic alternative to the "guess and check" approach that underlies using simulation on its own to determine good policies. In our setting, the system is described by the number of appointment slots available on each future day and the number of patients of each priority class waiting to be booked. A policy provides the scheduler with a set of rules specifying when in the future to schedule each waiting patient. Unfortunately, to determine optimal policies for realistic-sized systems, the MDP model becomes challenging, if not impossible, to apply.

Over the past decade, researchers in operations research, engineering and computer science (Bertsekas and Tsitsiklis 1996; Sutton and Barto 1998) have developed a new branch of operations research called *approximate dynamic programming* (ADP) that seeks to overcome such computational challenges. ADP methods produce good but not necessarily optimal solutions to the underlying problem. Policies obtained through ADP must be evaluated by testing them in a system simulation model. We use a simulation model to compare the optimal scheduling rules derived from the ADP with a range of alternatives, including current practice. As we will show below, the policy derived from our research outperforms both current practice and reasonable alternative policies. In this paper, we will use the expression "optimal" to refer to the

policy obtained from the application of the ADP. However, how to quantify the proximity of this policy to the true optimal solution of the underlying problem remains a research challenge.

Optimal Scheduling Policy

The optimal scheduling (OS) policy assumes an externally determined fixed number of appointment slots of fixed length each day and the potential to use overtime as surge capacity. We find it by formulating an MDP model of the scheduling problem and using ADP methods to solve it. In this application, the policy has an intuitively appealing form, which we describe in Table 1. This policy can be easily integrated in a decision support tool, or communicated directly to schedulers as a set of easy-to-follow rules.

TABLE 1. Optimal scheduling policy

- Fill any unused capacity for the next day by assigning patients to that day in priority order.
- Schedule any remaining high-priority demand to the earliest available time slots before the maximum recommended wait time for this class.
- If there is outstanding high-priority demand that cannot be scheduled prior to its maximum recommended wait time, serve it through overtime.
- Schedule all other priority classes starting from the last available day that does not exceed the maximum recommended waiting time for that priority class, scheduling patients in priority class order.
- If there is insufficient capacity to schedule demand prior to its target date after all higher-priority classes have been allocated in the order described above, use overtime to serve this demand.

Our research shows that it is never advisable to book patients beyond their wait time targets. Doing so does not avoid the need for overtime; instead, it just delays when it is needed. For lower-priority patients, scheduling them as late as possible without exceeding the wait time target for their priority class gives the scheduler maximum flexibility to account for future demand variability.

Our research also shows that OS policy remains optimal regardless of the number of priority classes, the specific wait time targets for each priority class and the length of the booking horizon. Also, it remains optimal for all reasonable overtime (OT) costs and as long as capacity is not significantly greater than average demand. In the unlikely circumstance that there is a large amount of excess capacity, then the optimal policy becomes instead a first come, first served policy. If capacity is significantly below average demand, the same policy remains optimal but OT costs may become excessive.

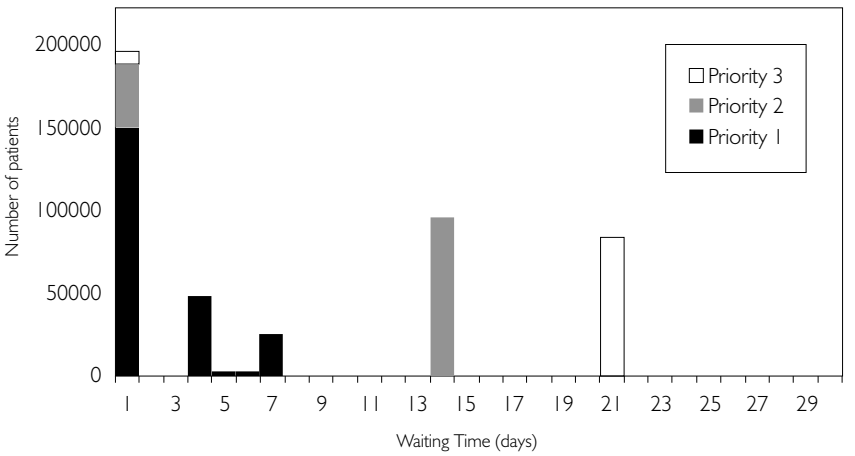
Comparison with Other Policies

To illustrate the benefits of using the OS policy, we focus on scheduling outpatient (OP) demand for a single diagnostic resource. We assume three OP priority classes;

that regular hour capacity equals the average demand; that the three OP priority classes have maximum recommended waiting times of 7, 14 and 21 days, respectively; and that unlimited overtime capacity is available. Each day, the scheduler may assign patients to any day up to 30 days into the future (the booking horizon). We developed and used a simulation model of the patient arrival and scheduling process to compare the performance of different policies.

Figure 2 summarizes output for the simulation model and shows that the OS policy achieves all wait time targets. Additional output from the simulation (not shown here) indicates that fewer than 1.5% of patients are served through overtime. This percentage is equivalent to one overtime scan every 20 days (but the need for overtime comes in batches). Thus, the judicious use of surge capacity, in the form of overtime, achieves target wait times without adding costly base capacity. Though surge capacity may be more expensive to supply on a per case basis, using it in the manner described above will prove less costly over the long term than maintaining a base capacity that is sufficiently high to achieve wait time targets. Of course, managers face the challenge of ensuring that a sufficient number of staff are available to work overtime.

FIGURE 2. Waiting times by priority class for the OS policy (based on a simulation of 450,000 patients)



We also used the simulation model to compare the OS policy to a booking limit (BL) policy and an overtime "only as a last resort" policy (OTLR), that is, a policy that uses overtime only when there is no available capacity over the booking horizon. BL policies have been widely used in the airline industry to reserve seating capacity for late-arriving, high-priority demand. A BL policy will book a patient on a given day only if the available unused capacity for that patient's priority class on that day exceeds a predetermined booking limit. The amount of reserved capacity varies with the priority class of the patient; the lower the priority class, the more space needs to be avail-

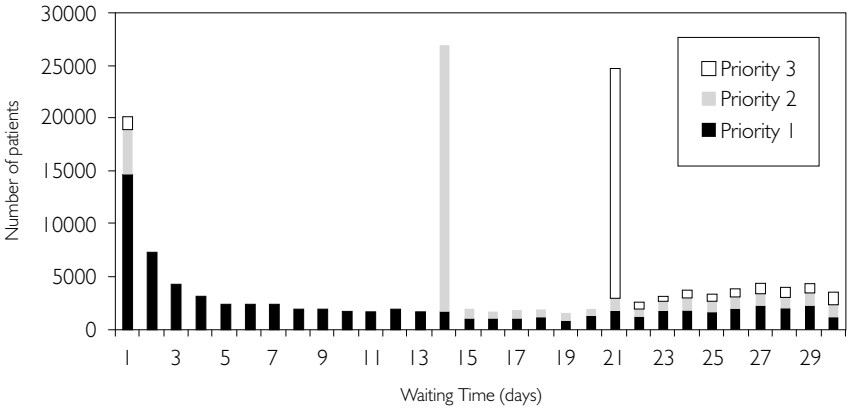
able before a booking will be made. Determining optimal booking limits requires solving another optimization problem, or enumerating all possibilities and evaluating them with simulation (Patrick et al. 2007). A BL policy will use overtime only if there is no available space for the priority class of the waiting patient over the planning horizon. The OTLR policy has appeared in some collective agreements. Comparisons are summarized in Table 2.

TABLE 2. Comparison of the OS, BL and OTLR policies based on simulation

Policy	% Late			% Served through OT			
	Priority 1	Priority 2	Priority 3	Priority1	Priority 2	Priority 3	Total
OS	0	0	0	1.44	0	0	0.72
BL	0	0.02	49.52	0	0	20.57	4.13
OTLR	53.17	35.77	24.85	0.08	0.43	0	0.17

Clearly, the OS policy not only requires less overtime than the BL policy but also results in shorter wait times for all priority classes. The OTLR policy requires significantly less overtime but at the cost of a significant number of late bookings. Figure 3 provides the waiting time distribution by priority class for the OTLR policy showing that a large proportion of patients of all priority classes do not achieve wait time targets. The dramatic improvement in wait times at the expense of low overtime costs clearly demonstrates the value of the OS policy over the OTLR policy from the perspective of meeting wait time targets.

FIGURE 3. Waiting times by priority class for the OTLR policy (based on a simulation of 150,000 patients)



Current practice appears to address outpatient demand through overtime. Instead, the booking horizon is pushed farther into the future. The OS policy provides a practical alternative to current practice without extending the booking horizon. As long as not scheduling a patient past a wait time target is an important criterion, the OS policy will significantly outperform current practice.

Including Inpatient Demand

Although the OS policy described in Table 1 remains "optimal" when inpatients are included in the model, there is a significant increase in overtime. This is because the highest-priority patient class must now be served the day the request is placed (current practice for inpatient demand), whereas in the setting described above, the highest-priority class could be served any time in the first week. This approach significantly affects a scheduler's ability to manage variability in demand. We therefore investigated the potential benefits of introducing flexibility into inpatient scheduling. In fact, in the setting we investigated, there was already flexibility in inpatient scheduling that was not being utilized. The priority scheme for inpatients implemented in Vancouver in 2003 designated a category of inpatients who can wait one day to receive a scan. Current practice ignores this flexibility and schedules all inpatient scans on the day of the request.

To apply our approach we used the OS policy with five priority classes, the three described above and one- and two-day targets for inpatients. Evaluating this policy through simulation showed that if only 10% of patients can wait one day for service, the average number of overtime scans per day was reduced from 4.27 to 2.67. Furthermore, overtime was required only for the highest-priority inpatients. Of course, if delaying a diagnostic procedure delayed inpatient release time, the resulting additional cost might offset any benefit.

These results run contrary to the current practice of seeking to improve wait times by pushing the wait time target of the lowest-priority class farther into the future. In fact, though there may be a temporary relief to the system from doing so, there is no long-term benefit to be gained from manipulating the wait time target of the lowest-priority class. Rather, it is the wait time target of the highest-priority class that is the driving factor in determining the required amount of overtime. Admittedly, there may be little flexibility in the scheduling of the highest-priority class, but the above results suggest that any amount of flexibility is worth pursuing.

When Is Optimal Scheduling Beneficial?

The OS policy proposed here manages the trade-off between unused capacity and overtime. When base capacity far exceeds average demand, the scheduler can use a

first come, first served policy because capacity is unlikely to be fully utilized. However, in such a case, capacity will be underutilized, and resources will be idle a significant portion of the time. Conversely, if capacity is far below average demand, then a wide range of scheduling policies will probably do equally well, as there is likely to be little unused capacity. In such a case, overtime costs will be large.

As Figure 1 suggests, providing sufficient base capacity to meet all demand is unlikely to be cost effective. Nor is setting base capacity so low that average demand significantly outstrips capacity. We suggest setting base capacity to minimize expected total costs of overtime and base capacity costs. Our limited exploration of this issue suggests that the base optimal capacity would be below average demand, the precise amount depending on overtime costs and demand rates.

We emphasize that two factors cause excessive waiting times: the amount of demand and its variability. Optimal scheduling can help mitigate the effect of variability. If average demand outstrips available capacity (regular and overtime), then no optimal schedule will help. However, even if base capacity is sufficient to meet average demand, there will still be increasing wait times owing to the variability in demand unless overtime is used appropriately. It is in such a scenario that the optimal scheduling policy will allow the resource manager to minimize unused capacity (which implicitly minimizes wait times) with the least amount of overtime.

Conclusions

When we began our study for the Vancouver Coastal Health Authority, the question posed to us was, "Where should a new CT scanner be located?" What our analysis revealed was that there was a significant amount of capacity that could be recovered by utilizing existing resources more efficiently. We recognized that one way to achieve this efficiency was through better patient scheduling. This finding led to our research on patient scheduling methods, which produced the OS policy, which in turn was shown through simulation to achieve wait time targets. Thus, even if more capacity is required, managers must first ensure that current capacity is used to its fullest potential.

In addition to developing the OS rule, we drew the following policy implications from our research:

- In the absence of surge capacity (in the form of overtime), there will either be significant wait times or significant idle capacity.
- With the judicious use of a small amount of overtime, wait times can be maintained within the targets without significant excess capacity.
- The amount of overtime required depends heavily on the wait time target for the highest-priority class; if it is short, overtime needs are likely to be high. Classifying

high-priority patients carefully and seeking subclasses with different targets could be useful levers for reducing overtime costs.

We hope that this work will prove useful to healthcare managers and policy makers and, as well, whet their appetite for further healthcare operations research studies.

Correspondence may be directed to: Martin L. Puterman, Research Director, UBC Centre for Health Care Management, 2053 Main Mall, Vancouver, BC, V6T 1Z2. Tel.: 604-822-8388; e-mail: marty@chcm.ubc.ca.

ACKNOWLEDGEMENTS

We thank Robert Smith, Education Director, UBC Centre for Health Care Management, for insightful comments on several earlier versions of this paper.

REFERENCES

Anupindi, R., S. Chopra, S. Deshmukh, J.A. Van Miegham and E. Zemel. 2005. *Managing Business Process Flows: Principles of Operations Management.* Englewood Cliffs, NJ: Prentice Hall.

Bassamboo, A., J.M. Harrison and A. Zeevi. 2006. "Design and Control of a Large Call Center: Asymptotic Analysis of an LP-Based Method." *Operations Research* 54: 419–35.

Bertsekas, D.P. and J. Tsitsiklis. 1996. *Neuro-Dynamic Programming.* Nashua, NH: Athena Scientific.

Blendon, R. 2002. "Inequities in Health Care: A Five-Country Survey." *Health Affairs* 21: 182–91.

Canadian Institute of Health Research (CIHR). 2007. "CIHR Releases Research Results to Inform the Development of Benchmarks for Wait Times. Backgrounder for Wait Times for Joint Replacement Surgery." Retrieved January 12, 2008. <http://www.cihr-irsc.gc.ca/e/29904.html>.

First Ministers' Meeting on the Future of Health Care. 2004. "A 10-Year Plan to Strengthen Health Care." Retrieved January 12, 2008. <http://www.hc-sc.gc.ca/hcs-sss/delivery-prestation/fptcollab/2004-fmm-rpm/index_e.html>.

Gerchak, Y., D. Gupta and M. Henig. 1996. "Reservation Planning for Elective Surgery under Uncertain Demand for Emergency Surgery." *Management Science* 42: 321–34.

Green, L., S. Savin and B. Wang. 2006. "Managing Patient Demand in a Diagnostic Medical Facility." *Operations Research* 54: 11–25.

Gupta, D. and L. Wang. 2008. In press. "Revenue Management for a Primary-Care Clinic in Presence of Patient Choice." *Operations Research*.

Health Council of Canada. 2005 (November). "Ten Steps to a Common Framework for Reporting Wait Times." Retrieved January 12, 2008. <http://www.healthcouncilcanada.ca/docs/papers/2005/WaitTimesEn.pdf>.

Hillier, F. and G. Lieberman. 2001. *Introduction to Operations Research* (7th ed.). New York: McGraw Hill.

Hurst, J. and L. Siciliani. 2006. *Tackling Excessive Waiting Times for Elective Surgery: A Comparison of Policies in Twelve OECD Countries.* OECD Health Working Papers 6. Paris: Organisation for Economic Co-operation and Development.

Ingolfsson, A. and F. Gallup. 2003. University of Alberta School of Business. "Queueing Toolpak 4.0." Retrieved January 12, 2008. <http://www.business.ualberta.ca/aingolfsson/qtp>.

McGill, J. and G.J. van Ryzin. 1999. "Revenue Management: Research Overview and Prospects." *Transportation Science* 33: 233–56.

Odegaard, F., L. Chen, R. Quee and M.L. Puterman. 2007. "Improving the Efficiency of Hospital Porter Services, Parts 1 and 2." *Journal for Health Care Quality* 29: 4–18.

Patrick, J. and M.L. Puterman. 2007. "Improving Resource Utilization for Diagnostic Services through Flexible Inpatient Scheduling: A Method for Improving Resource Utilization." *Journal of the Operational Research Society* 58: 235–45.

Patrick, J., M.L. Puterman and M. Queyranne. 2007. Under review. "Dynamic Multi-Priority Patient Scheduling." *Operations Research.*

Postl, B. 2006. "The Final Report of the Federal Advisor on Wait Times." Retrieved January 12, 2008. <http://www.hc-sc.gc.ca/hcs-sss/pubs/system-regime/2006-wait-attente/index_e.html>.

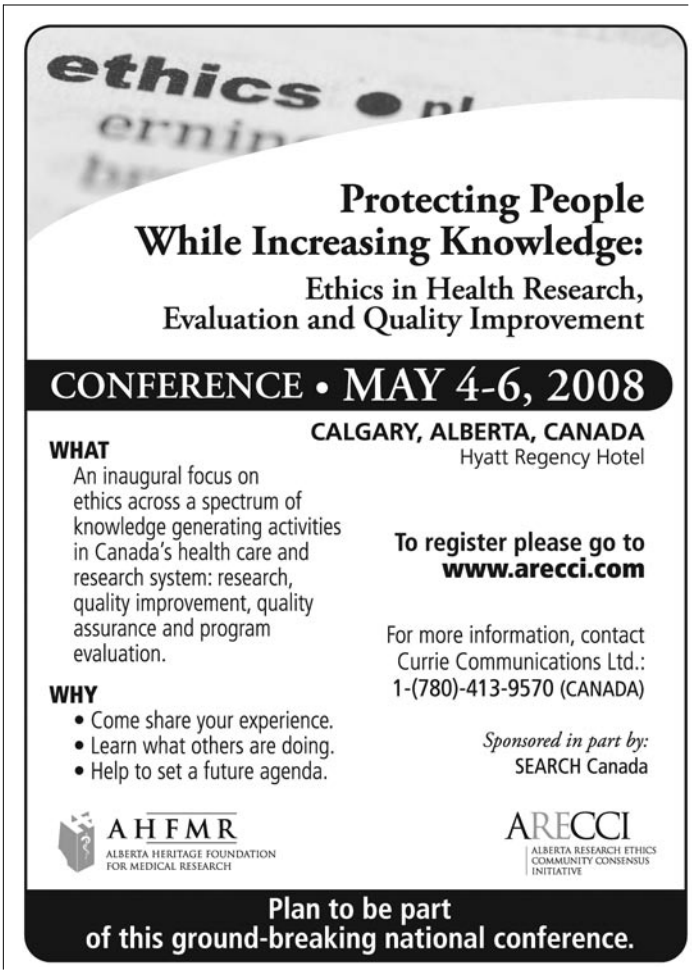
Puterman, M. 1994. *Markov Decision Processes.* New York: John Wiley and Sons.

Santibanez, P., M. Begen and D. Atkins. 2007. "Surgical Block Scheduling in a System of Hospitals: An Application to Resource and Wait List Management in a British Columbia Health Authority." *Health Care Management Science* 10: 269–82.

Siciliani, L. and J. Hurst. 2004. "Explaining Waiting-Time Variations for Elective Surgery across OECD Countries." *OECD Economic Studies* 38(1): 95–123.

Sutton, R.S. and A.G. Barto. 1998. *Reinforcement Learning: An Introduction.* Cambridge, MA: MIT Press.

Willcox, S., M. Seddon, S. Dunn, R. Tudor Edwards, J. Pearse and J.V. Tu. 2007. "Measuring and Reducing Wait Times: A Cross-National Comparison of Strategies." *Health Affairs (Millwood)* 26(4): 1078–87.



RESEARCH PAPER

What Do People Think Is Important about Primary Healthcare?

Qu'est-ce qui est important pour les gens dans les soins de santé primaires?

by SABRINA T. WONG, RN, PHD
School of Nursing Culture, Gender and Health Research Unit
Centre for Health Services and Policy Research
University of British Columbia
Vancouver, BC

DIANE E. WATSON, MBA, PHD
Centre for Health Services and Policy Research, University of British Columbia
Health Council of Canada
Vancouver, BC

ELLA YOUNG, MHA
Centre for Health Services and Policy Research, University of British Columbia
Vancouver, BC

SANDRA REGAN, RN, MSN
Centre for Health Services and Policy Research, University of British Columbia
Vancouver, BC

Abstract

The purpose of this study was to inform quality improvement and performance measurement initiatives in primary healthcare based on the perceptions of British Columbia residents. Key features of care were identified during focus group discussions on important areas in primary healthcare, particularly those that could be improved.

Eleven focus groups (n=75) were held. Ninety-six per cent of participants reported that they had a regular primary healthcare provider and had been with that provider for an average of 8.5 years. We conducted a thematic content analysis using a coding scheme based on a logic model for this sector.

Analysis revealed the importance of six domains: accessibility (geographic location and timeliness of appointments), continuity, responsiveness, interpersonal communication, technical quality and whole-person care. Although participants discussed accessibility most frequently, domains more often associated with satisfaction were interpersonal communication and continuity.

Résumé

Cette étude visait à orienter les initiatives d'amélioration de la qualité et de mesure du rendement dans les soins de santé primaires d'après les perceptions des résidents de la Colombie-Britannique. Lors de groupes de discussions, des caractéristiques clés des soins ont été cernées sur les aspects importants des soins de santé primaires, en particulier ceux qui pourraient être améliorés.

Onze (n=75) groupes de discussion ont été mis sur pied en Colombie-Britannique. Quatre-vingt-seize pour cent des participants ont indiqué qu'ils avaient un fournisseur de soins primaires régulier et qu'ils le voyaient depuis 8,5 ans en moyenne. Nous avons effectué une analyse du contenu thématique en utilisant un système de codage fondé sur un modèle logique pour ce secteur.

L'analyse a révélé l'importance de six domaines : l'accessibilité (emplacement géographique et moment des rendez-vous), la continuité, la réceptivité, les communications interpersonnelles, la qualité technique et les soins holistiques. Bien que l'accessibilité ait été le sujet le plus discuté, les domaines procurant le plus de satisfaction étaient les améliorations dans les communications interpersonnelles et la continuité.

In September 2000, Canada's First Ministers agreed to an Action Plan for Health System Renewal that included a commitment to catalyze reform in primary healthcare (PHC). In response, the Government of Canada (2004) announced the creation of the Primary Healthcare Transition Fund to "support the transitional costs of implementing sustainable, large-scale, PHC renewal initiatives." At

that time, leaders agreed to provide regular, comprehensive and public reports to their respective citizens using jointly agreed-upon comparable indicators on health status, health outcomes and quality of service. Over the next six years, initiatives in quality improvement and performance measurement accelerated in this sector. Investments through the Health Accord in 2003 and the 10-Year Plan in 2004 further fuelled these activities.

Quality of healthcare is a multifaceted concept, and measuring it requires assessment from many different perspectives. The Institute of Medicine (2001) identifies six domains of quality: healthcare must be *safe* (avoiding adverse events to patients from the care intended to help them), *effective* (providing services based on scientific knowledge to all who could benefit), *patient-centred* (providing care that is respectful of and responsive to individual patient preferences, needs and values), *timely* (reducing waits for those who receive care and healthcare providers who give care), *efficient* (avoiding waste of equipment, supplies, ideas and energy) and *equitable* (providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location and socio-economic status).

One of these six quality domains, patient-centred care, focuses on "the patient's experiences of illness and healthcare and on the systems that work or fail to work to meet individual patients' needs" (Institute of Medicine 2001). Information about patient experiences with PHC and their views on what could be improved can be used, therefore, to identify priorities for quality improvement as well as to create public reports that account for investments in healthcare renewal (Davis et al. 2005).

Increasingly, healthcare decision-makers in Canada and abroad are actively seeking public involvement in health policy decisions regarding healthcare renewal (BC Ministry of Health 2006; Crawford et al. 2002; Ontario Ministry of Health and Long-Term Care 2007; Telford et al. 2004). The involvement of the public in offering their perspectives on care can result in positive changes in organizational culture, quality of care and satisfaction (Crawford et al. 2002; Davis et al. 2005; Donabedian 1992).

Public reports on healthcare system performance are most useful and more likely to be used when they include indicators relevant to target audiences. In order to establish priorities for information among healthcare decision-makers about the progress of PHC renewal, the Canadian Institute for Health Information (CIHI) was commissioned by Health Canada in 2005 on behalf of all governments to achieve national consensus on a core set of indicators for this sector. A broad range of PHC experts from multiple levels of the health system and regions across Canada identified 105 indicators as important. Currently, only 15 could be populated with existing information systems (CIHI 2005). Members of the public were not engaged to determine what was important to them about PHC, although this type of information would now be useful for priority-setting regarding the development of new information systems to measure and monitor this sector.

Evaluation of healthcare involves defining the objective of care, monitoring PHC inputs, measuring the extent to which expected outcomes have been achieved and the occurrence of unintended consequences (Sitzia and Wood 1997). Evaluation of healthcare quality, as perceived by patients, can be one way of measuring performance (Risser 1975; Sitzia and Wood 1997; Van Maanen 1984). Thus, PHC evaluation, or monitoring of PHC performance from a patient perspective, can be undertaken using two different types of feedback: (a) asking about people's experiences with PHC and (b) asking about patients' satisfaction with the service delivered. These types of evaluations can be one way in which to identify problem areas. Moreover, a qualitative examination of patients' experiences may move ideas towards amenable solutions. While qualitative methodologies have been increasingly used to evaluate patient care (Avis et al. 1997; Kirby 2002; Romanow 2002; Wensing et al. 1998), much of what we know about Canadians' perspectives on the quality of PHC is from surveys (Schoen et al. 2004). Therefore, the purpose of this study was to inform quality improvement and performance measurement initiatives in PHC by identifying the features of care that people consider important and could be improved.

Methods

Seventy-five people were recruited to participate in 11 focus groups held across British Columbia in 2005. The locations of groups were selected in consultation with representatives from each of the health authorities, and to ensure variation in population health status and expenditures on PHC services. Premature mortality rates ranged from 2.01 to 7.33 per 1,000 population, and expenditures on general practice services ranged from $172 to $246 per 1,000 population (Watson et al. 2005). Based on site selection, a random sample of telephone numbers from the Canadian Sampler Survey was obtained (ASDE n.d.).

Each telephone number was called a maximum of 10 times at different times of the day and on weekends. Telephone interviewers used a standardized script for recruitment. Participants were eligible if they were English-speaking, 18 to 90 years of age and had visited a PHC provider within the past two years. Prior research indicates that 95% of Canadians visit a general practitioner within this time period (Watson et al. 2004). Participants were given $20 each in appreciation of their time. All procedures were approved by University of British Columbia's Behavioural Ethics Review Board.

Each focus group of six to nine participants averaged 90 and 120 minutes in duration and was conducted according to standard procedures (Krueger 1994). Participants were told that the purpose of the focus group was to hear from them what was important about British Columbia's PHC system. Participants were then asked about the features of care that were important to them when making an appointment and visiting healthcare providers. Important features relative to place of

care were also probed. Participants were then asked about ways in which PHC could be improved. We sought and incorporated feedback on the focus group guide from expert researchers who had previously conducted focus groups with members of the public regarding PHC in Canada.

After all the focus group questions were asked, the team member taking notes during the session summarized and read back to participants what was discussed. In order to ensure accuracy, participants then agreed to, added or modified any parts of the summary. All discussions were audio-taped and transcribed. To ensure transcription accuracy, a random selection of the transcripts was compared to audio-tape content. Throughout this manuscript, quotations are attributed to participants from the following health authorities: Fraser Health (FH), Interior Health (IH), Northern Health (NH), Vancouver Island Health (VIHA) and Vancouver Coastal Health (VCH).

PHC was defined for participants as the first point of contact with the healthcare system and as the setting where short-term, acute health issues are resolved and the majority of chronic health conditions are managed (Watson et al. 2004). We used a Results-Based PHC Logic Model (Watson et al. 2004) to guide the development of a coding scheme because it establishes the inputs, activities, outputs and outcomes of this sector, and also defines domains appropriate to understanding efficiency and effectiveness. Each team member independently coded the transcripts using qualitative software (Atlas TI); coding was iterative, and refinements were made based on consensus among authors until a final code definition was established. Next, we independently produced a preliminary thematic content analysis of each of the top 20 codes. The final content analysis combined each member's independent analyses based on consensus of the team. The codes and coded text were verified using both inductive and deductive methods (Strauss 1995).

Text units (TUs), defined as continuous coded text of one focus group participant, are reported in order to provide some perspective on the order of importance among the domains discussed. TUs for the top 20 codes were organized into coding reports using Atlas TI. Coding reports were analyzed to ensure that the themes reported in this paper were present across all focus groups. Moreover, the transcripts were analyzed to examine the extent of text coded in two different domains. "Double-coding" of text was found to be less than 10%. Domains with more TUs were deemed more important than those with fewer TUs. Frequency counts of TUs for each PHC domain were examined to understand which domains were most often addressed in discussions regarding factors that could be improved.

Results

Sixty-five per cent of participants were female; more than half (62%) were 50 years or older. Most participants (96%) had a regular provider and had been with that provider

for a mean of 8.5 years. Table 1 summarizes the socio-demographic characteristics of participants.

TABLE 1. Socio-demographic characteristics of focus group participants (n=75)

n=75	% of Participants
Female	65
Age	
20–34	9
35–49	29
50–64	43
≥65	19
Ethno-cultural group	
Caucasian	89
First Nation	4
Other	4
Education	
<Grade 12	8
Grade 12	16
Some secondary	37
Diploma or degree	37
Married/co-habiting	66
* Chronic diseases	
Arthritis	41
Hypertension	32
Depression	29
Chronic pain	23
Diabetes	15
Have a regular provider	96
How long with current provider	
Mean months (SD)	102 (90)
+General health (1–5 scale)	
Mean (SD)	2.44 (0.81)
+Satisfaction with usual provider (1–7)	
Mean (SD)	5.3 (1.3)

Note: Where the percentage groups do not add up to 100%, the remaining amount is for no answer.
* Does not add up to 100% since participants could have more than one chronic disease. On average, participants reported having two chronic diseases.
+ A higher score = more of the concept.

Six global domains emerged in all focus group discussions: accessibility (geographic accessibility to and timeliness of services), continuity (informational, relational and management), responsiveness, interpersonal communication, technical effectiveness and whole-person care. Table 2 shows the frequency of text units for each domain and provides some quotations illustrating participants' experiences with these domains.

TABLE 2. Dimensions of primary healthcare important to the public

Primary Health Care Dimensions	Examples (Quotations)	Total Text Units
Accessibility (total)		**130**
Timeliness of scheduling an appointment	"Getting services in a timely manner is the greatest thing we can hope for" (NH); "I don't mind if it's something that's not pressing for a week, but generally I think getting an appointment within two to four days [is acceptable]" (VCH).	69
Geographic accessibility	"I needed physical therapy on my foot in order to qualify for my worker's insurance … however, I had to go to Prince George [where many of the health services are centralized] in the middle of winter. … I refused to go because I'm not driving the highway with something wrong with my foot in the middle of winter" (NH).	61
Continuity (total)		**99**
Information	"Why doesn't the hospital have access to the files at my doctor's office and how come the doctor's office can't access the hospital computer?" (VIHA); "… having one computer system where if I was ill in a different part of the province they could look me up, my history … that would be wonderful" (NH).	44
Relationship	"That's why I don't really like to go to walk-in clinics because you get a different doctor all the time. … they give you a different treatment – sometimes it works and sometimes it doesn't" (IH).	35
Management	"… it's no good seeing somebody different every time. … you start all over again, they change your medication. … it's important to have ongoing care" (all focus groups); "I had my purse stolen, all my medication was stolen … but I couldn't get in to see my doctor to get the prescriptions replaced. I had to see another doctor and he refused to give me my medications. … I had to wait to see my regular doctor" (VIHA).	20

TABLE 2. Continued

Primary Health Care Dimensions	Examples (Quotations)	Total Text Units
Responsiveness (time waiting in office, time spent with provider)	"… the timing is the worse thing … it doesn't matter if you make the first appointment of the day, I know I'll wait" (NH); "I had three little minor issues, I mentioned the first and he [doctor] gave me a prescription. I went on to mention the second and third one and he said, 'Sorry, only one complaint per visit now, you'll have to make another' [appointment]" (VIHA); "… they take you in and kick you out as fast as they [doctors] can" (IH).	**97**
Interpersonal communication	"He [the doctor] wasn't taking certain things seriously. … he was kind of treating me like I had no real concerns" (VCH); "I was being treated … but my problem wasn't being addressed, so I get this new doctor who is questioning very seriously, he gives me a new prescription and my problem changed right around" (IH).	**63**
Technical effectiveness		**46**
Whole-person care	"I would rather do natural stuff, so, even though my doctor is not a big promoter of the natural stuff, he will sometimes suggest it. He knows some of my beliefs and how I feel as a person, not just [see me] as another patient" (NH).	**37**
Other areas of importance		
Additional PHC providers	"I'd back my midwife 100% for anybody having a baby. … if they're properly trained, there's absolutely no reason why they can't practice …" (VIHA).	94
System efficiencies (e.g., drug refills, doctor's notes, employer-required visits)	"… you can only get a prescription for three months, so every three months you have to go back even though it's an ongoing prescription" (NH); "… one of the forms I had to get filled out cost $130 and I had to pay, in cash, before I could get it …" (VIHA).	43

Accessibility

Participants discussed accessibility more often than any other domain of PHC and focused their comments on issues regarding the timeliness of scheduling and geographic accessibility. Waiting time for an appointment ranged from being seen the same day (urgent problems) to one week. Participants agreed that waiting more than one week to visit their provider was unacceptable. Waiting time once in the office was discussed in the context of a provider's responsiveness. Thus, this issue was coded accordingly and is described below. Being able to see their usual provider was important, especially to those who had a chronic illness.

Participants, mainly those living in smaller communities (e.g., <50,000), discussed how geography affected their access to preferred providers and necessary services. People needed to drive to adjacent communities in order to access services: "I have to drive [to another community] to find a woman doctor; there are only about four in this community … and they're not taking any new patients. … it's 45 minutes if I go like mad down the highway" (VIHA). Transportation for people who did not or physically could not drive was seen as an accessibility issue. Travelling for necessary services was a particular concern in winter driving conditions, especially in areas with no street lights and sporadic cell phone coverage. Additionally, sometimes appointments for PHC-related services at regional centres were such that the person had the additional cost of staying overnight and taking time off work.

Continuity

After accessibility, participants spoke most about continuity of care. We coded text units as relating to this domain using a definition that recognizes the following dimensions of continuity: informational (ongoing relevant information exchanged between providers regardless of the site of care), relationship (continuous long-term patient–provider relationship) and management (ongoing management of a health condition) (Haggerty et al. 2003). Participants identified gaps in communication and information among different providers, stating that information technology that permitted access to their health information at any point of care (e.g., provider office, hospital or specialist) across the province would make more efficient use of everyone's time.

RELATIONSHIP CONTINUITY

Building a relationship, over time, with a regular provider was important for participants to feel comfortable receiving care, to have confidence in the provider's treatment recommendations and to build trust. A long-term relationship was seen to create a shared history of interactions and understandings between participants and their providers. This relationship enabled some participants to share information about their health habits or "admit to things done to others" (VCH) that they did not otherwise feel comfortable sharing. Relationship continuity was particularly important for those with an ongoing health problem.

MANAGEMENT OF CARE

Having someone be responsible for and actively manage a participant's overall health was especially important to those who were older and had a chronic condition. Moreover, those who had complex management plans due to multiple co-morbidities,

or a complicated medical condition or social situation, did not want to explain this information to multiple providers. Participants wanted their usual provider to manage and plan their ongoing care based on a continuous relationship and their particular health history. Some participants voiced concerns that even though information about their care may be on their chart (e.g., medication for migraine) or relayed to the locum, the actual management and responsibility of their care was left until their usual provider returned.

Responsiveness

Responsiveness of the PHC sector or the ability of the system and usual provider to meet people's healthcare needs was discussed by participants in terms of waiting in the office and the amount of time spent with the provider. Issues related to scheduling those appointments were considered in the accessibility domain. Participants reported waiting in the office anywhere from 25 minutes to three hours. Depending on the context of why people had to wait (e.g., someone needed immediate attention because of an asthma attack, or the provider was delivering a baby), they were more or less willing to wait up to 30 minutes. However, participants felt that advance notification of office waiting times in excess of 30 minutes would increase office responsiveness.

Another aspect of responsiveness was at the provider–patient interface. Participants expected to visit their provider and discuss all or most of their concerns; some participants were asked to discuss only their main health issue. Not being able to do this resulted in participants' perception that providers were not responsive to their needs. Having their provider gain insight into the whole situation or context of the immediate health issue was also deemed important to participants.

Interpersonal communication

Interpersonal communication is a multidimensional domain consisting of communication, shared decision-making and a provider's interpersonal style (Stewart et al. 1999). If providers were perceived as eliciting and understanding concerns, participants felt they were heard and that the provider was caring. It was important that their usual provider actively listen to their concerns. Moreover, participants valued providers who "explained things in a non-medical way" (NH) and did not make them feel rushed during the visit. There was little explicit discussion about shared decision-making; however, participants wanted to be treated respectfully and to have their concerns taken seriously. Participants appreciated providers who addressed their specific situation.

Technical effectiveness

Technical effectiveness refers to tests, treatments and technical competence in performing diagnostic and therapeutic procedures (Donabedian 1992). Participant comments indicate that providers were assumed to be technically effective by virtue of having a medical degree: "… she listens very well, she does the testing, I mean you have to help her sometimes, you know, but she's a fantastic doctor, I mean she's great …") (NH). Participants saw ordering tests or changing a treatment plan based on new information about symptoms as indicating technical effectiveness. All participants agreed that the provider's technical competence was more than just "pushing pills" or ordering blood work, and might entail more extensive testing. Interestingly, providers were more often described as having high technical effectiveness if they had good interpersonal communication skills and a long-term relationship with the participant. When participants believed their concerns or knowledge about their health were not being listened to, or they did not have a long-term relationship with the provider, they perceived the provider as having less technical competence.

Whole-person care

One important aspect of receiving episodic care, regardless of length of relationship with a usual provider, was being viewed by the provider as a person. Participants emphasized that they were people who were connected to families and communities and living within various life circumstances. They did not want to be judged by their provider for having a certain disease or lifestyle, and did not want to be seen as "just a number." To these participants, receiving whole-person care meant the provider was not only treating symptoms but also trying to get to the "root of the problem" (IH).

Satisfaction with care

During focus group discussions, participants most often discussed being satisfied, or not, when they talked about interpersonal communication or the continuity of their care. Participants were satisfied with their care when the provider was friendly, unhurried and respectful. The longer the length of the relationship, the more satisfaction participants had with the provider. Participants mentioned that they were more satisfied with the delivery of services if the provider was perceived as organized. Conversely, participants mentioned dissatisfaction with services when there were questions about the treatment being recommended. For example, one participant said, "I basically had an infection in my finger, this guy [doctor] wanted to take my fingernail off and possibly do minor surgery. … I've had enough infections to know this is not necessary, so I went to another doctor who just gave me some antibiotics and it cleared up in a matter of two weeks" (NH).

Discussion and Conclusions

Across the country, there have been substantive investments and activities to renew PHC in response to growing concerns among Canadians and healthcare providers. Many of these initiatives focus on improving the accessibility and quality of care. We find these efforts align with features of care that people think are important. Adults in British Columbia place importance on accessibility of care. They also mention the following dimensions of the care process as important to quality: continuity, responsiveness, interpersonal communication, technical effectiveness and whole-person care.

In terms of accessibility, participants focused on issues regarding the timeliness of scheduled appointments and geographic accessibility. Interestingly, objectives of the Primary Healthcare Transition Fund (PHCTF) (Government of Canada 2004) relate to 24/7 availability and are silent on issues regarding delays in scheduling appointments or geographic accessibility. However, change management is possible at the clinic level to provide advanced access, thereby reducing waiting times and delays once an appointment is made (Murray and Berwick 2003). More work is needed in helping providers achieve effective advanced access strategies (Goodall et al. 2006).

Our findings suggest that informational, relational and management continuity are also important. Past studies show that younger patients, commuters and those with urgent needs are more willing to trade continuity for faster access to primary care services (Coulter and Magee 2003). Future work is warranted to determine the nature or extent of trade-offs that people are willing to make, such as faster access to care versus information, relationship and management continuity and the impact of this trade-off on health outcomes. As Canada progresses towards increased use of interprofessional teams, a common policy priority, our work suggests that monitoring the degree to which PHC offers a high degree of continuity will assume greater importance.

Participants described relationship continuity and whole-person care as important, and indeed, these are considered distinguishing features of the PHC sector (Stewart 2004). For example, participants emphasized the importance of receiving whole-person care and building a long-term relationship based on mutual respect and trust (Roter 2000; Saba et al. 2006) in which the provider knows the patient's family and situational context. They wanted to develop a relationship with their provider in order to address the underlying cause(s) of their health problem together and not simply treat the disease. As the number of people with chronic diseases increases, along with the trend towards larger group practices in an effort to increase efficiency and services, methods to preserve continuity between the patient and provider will be even more important. Discontinuities in appropriate knowledge and skills, trust and ongoing observation may negatively affect continuity and quality of care (Woodward et al. 2004).

Similar to past studies, these findings suggest that interpersonal processes of care – such as being listened to, cared for and respected – are associated with the perception of high-quality care (Concato and Feinstein 1997; Gerteis et al. 1993; Ngo-

Metzer et al. 2003). Surprisingly, the stated objectives of PHCTF investments in Canada do not address the domains of provider continuity and interpersonal processes of care (Government of Canada 2004). Our findings suggest that quality improvement initiatives and performance reports to Canadians should include these matters. Moreover, given that participants most often discussed satisfaction when they talked about interpersonal communication and continuity of care, these results suggest that interpersonal communication and continuity of care may have the greatest impact on people's reported experiences and satisfaction with the PHC sector.

It may also be that satisfaction with PHC could be influenced by public perception of whether providers delivering team-based care are technically effective. While other PHC constructs identified by participants were also associated with satisfaction, more work needs to be done to determine the associations between patient satisfaction with PHC and Ware's (1983) multidimensional classification of satisfaction, which includes interpersonal manner, continuity of care, technical effectiveness, accessibility/convenience, finances, efficacy/outcomes of care, physical environment and availability. Such research could enable the political, policy, management and practice communities to renew healthcare in ways that align with Canadians' expectations.

A domain important to our participants, but not identified by Canadian experts or stakeholders as a core PHC attribute (Haggerty et al. 2007), was responsiveness of the PHC system. While responsiveness was identified in the PHC logic model (Watson et al. 2004), the examples given by our participants suggested how this construct might be measured. The complexity of the PHC system's responsiveness was evidenced by participants' discussion of the multiple and interrelated PHC domains. These domains were often discussed in relationship with one another, such as accessibility and interpersonal communication or continuity and whole-person care.

This study has several limitations. Even though we used random digit dialling and held focus groups at convenient times, participants had health service utilization profiles more akin to higher than lower users of PHC (Schoen et al. 2004; Watson et al. 2004). Our sample contained more people aged 65 years and older (19%), compared to 13.2% of British Columbians aged 65 years and older (Watson et al. 2005), and most participants (96%) reported having a regular family doctor, compared to 89% of British Columbians reported in the Health Services Access Survey (SanMartin, Gendron, Berthelot et al. 2004). Thus, our results are likely representative of those with more experience with PHC services. Only participants who spoke English and lived in British Columbia were included in this study. Despite these limitations, our results can be used to inform quality improvement and public reports regarding performance, as the participants represent those most likely to require care and to read reports about the PHC sector.

Our results provide evidence from Canadians regarding the features of PHC that are important to them and the ways in which these can be improved. While this

information can help in targeting quality improvement initiatives, it could also be used in priority-setting exercises regarding performance measurement to support public reporting. To date, much of the evidence and consensus-based PHC indicators developed by experts and stakeholders across Canada, the United States and the United Kingdom are finely tuned measures of technical quality of care (American Medical Association 2001; CIHI 2005; Healthcare Commission 2006). While information on the technical quality of care is a priority and useful to those responsible for improving the process of care, the results provided by studies such as ours highlight the patient-centred dimension of quality, and augment discussions on measuring Canada's health system performance. These priority domains should be addressed in reports to the public on the performance of the PHC sector.

Correspondence may be directed to: Sabrina T. Wong, Assistant Professor and Faculty, University of British Columbia, School of Nursing Culture, Gender and Health Research Unit and Centre for Health Services and Policy Research, 2211 Wesbrook Mall, T-161, Vancouver, BC V6T 2B5; tel.: 604-827-5584; fax: 604-822-7466; e-mail: sabrina.wong@nursing.ubc.ca.

ACKNOWLEDGEMENTS

This study was made possible by funding from the British Columbia Ministry of Health. Dr. Wong was also supported by a career award from the National Institute of Aging (444918-31259). We would like to acknowledge Drs. C. Woodward, J.-F. Levesque and J. Haggerty for their valuable feedback on our draft focus group guide. We would also like to acknowledge all focus group participants and those who helped facilitate this study in their communities. Conclusions are those of the authors, and no official endorsement by the Ministry or Institute is intended or should be inferred.

REFERENCES

American Medical Association. 2001 (October). "Introduction to Physician Performance Measurement Sets. Tools Developed by Physicians for Physicians." Compiled by the Physicians Consortium for Performance Improvement. Retrieved January 17, 2008. <http://www.ama-assn.org/ama/upload/mm/370/introperfmeasurement.pdf>.

ASDE Survey Sampler, Inc. n.d. *ASDE Survey Sampler.* Retrieved January 17, 2008. <http://www.surveysampler.com>.

Avis, M., M. Bond and A. Arthur. 1997. "Questioning Patient Satisfaction: An Empirical Investigation in Two Outpatient Clinics." *Social Science and Medicine* 44: 85–92.

BC Ministry of Health. 2006. *Conversation on Health.* Retrieved January 17, 2008. <http://www.bcconversationonhealth.ca>.

Canadian Institute for Health Information (CIHI). 2005. "Primary Healthcare Indicator Development Project." PowerPoint presentation. Toronto: Author.

Concato, J. and A. Feinstein. 1997. "Asking Patients What They Like: Overlooked Attributes of

Patient Satisfaction with Primary Care." *American Journal of Medicine* 102: 399–406.

Coulter, A. and H. Magee. 2003. *The European Patient of the Future*. Maidenhead, UK: Open University Press.

Crawford, M., D. Rutter, C. Manley, T. Weaver, K. Bhui, N. Fulop et al. 2002. "Systematic Review of Involving Patients in the Planning and Development of Healthcare." *British Medical Journal* 325: 1263–67.

Davis, K., S. Schoenbaum and A.-M. Audet. 2005. "A 2020 Vision of Patient-Centred Primary Care." *Journal of General Internal Medicine* 20: 953–57.

Donabedian, A. 1992. "Quality Assurance in Healthcare: Consumers' Role." *Quality in Healthcare* 1: 247–51.

Gerteis, M., S. Edgman-Levitan, J. Daley and T. Delbanco. 1993. *Through the Patient's Eyes: Understanding and Promoting Patient-Centred Care*. San Francisco: Jossey–Bass.

Goodall, S., A. Montgomery, J. Banks, C. Salisbury, F. Sampson and M. Pickin. 2006. "Advanced Access in General Practice: Postal Survey of Practices." *British Journal of General Practice* 56(533): 918–23.

Government of Canada. 2004. *Primary Healthcare Transition Fund*. "Objectives of the PHCTF." Retrieved January 16, 2008. <http://www.hc-sc.gc.ca/hcs-sss/prim/phctf-fassp/object_e.html>.

Haggerty, J., F. Burge, D. Gass, J.-F. Levesque, R. Pineault, M.-D. Beaulieu et al. 2007. "Operational Definitions of Attributes of Primary Healthcare to Be Evaluated: Consensus among Canadian Experts." *Annals of Family Medicine* 5: 336–44.

Haggerty, J., R. Reid, G. Freeman, B. Starfield, C. Adair and R. McKendry. 2003. "Continuity of Care: A Multidisciplinary Review." *British Medical Journal* 327(7425): 1219–21.

Healthcare Commission. 2006. *The Better Metrics Project, Version 7*. Retrieved January 17, 2008. <http://www.healthcarecommission.org.uk/_db/_documents/Healthcare_Commission_7th_version_better_metrics_28July06.pdf>.

Institute of Medicine. 2001. *Crossing the Quality Chasm: A New Health System for the 21st Century. Committee on Quality Healthcare in America*. Washington, DC: National Academy Press.

Kirby, M. 2002. *The Health of Canadians—The Federal Role, Volume 6: Recommendations for Reform*. Ottawa: The Standing Senate Committee on Social Affairs, Science and Technology.

Krueger, R. 1994. *Focus Groups: A Practical Guide for Applied Research* (2nd ed.). Thousand Oaks, CA: Sage.

Murray, M. and D. Berwick. 2003. "Advanced Access: Reducing Waiting and Delays in Primary Care." *Journal of the American Medical Association* 289(8): 1035–40.

Ngo-Metzer, Q., M. Massagli, B. Clarridge, M. Manocchia, R. Davis et al. 2003. "Linguistic and Cultural Barriers to Care: Perspectives of Chinese and Vietnamese Immigrants." *Journal of General Internal Medicine* 18: 44–52.

Ontario Ministry of Health and Long-Term Care. 2007. "McGuinty Government Holding Public Consultation on Future of Health Care. Government Wants to Hear from Ontarians on 10-Year Strategic Plan." Retrieved January 17, 2008. <http://www.health.gov.on.ca/english/media/news_releases/archives/nr_07/feb/strategic_plan_chatham_nr_02_20070209.html>.

Risser, N. 1975. "Development of an Instrument to Measure Patient Satisfaction with Nurses and Nursing Care in Primary Care Settings." *Nursing Research* 24: 45–52.

Romanow, R. 2002. *Building on Values: The Future of Healthcare in Canada*. Retrieved January 17, 2008. <http://www.hc-sc.gc.ca/english/care/romanow/index1.html>.

Roter, D. 2000. "The Enduring and Evolving Nature of the Patient–Physician Relationship." *Patient Education and Counseling* 39(1): 5–15.

Saba, G., S. Wong, D. Schillinger, A. Fernandez, C. Somkin, C. Wilson et al. 2006. "Shared Decision Making and the Experience of Partnership in Primary Care." *Annals of Family Medicine* 4: 54–62.

Sanmartin, C., F. Gendron, J.-M. Berthelot, K. Murphy and the Health Analysis Measurement Group. 2004. *Access to Health Care Services in Canada, 2003*. Retrieved January 27, 2008. <http://www.statcan.ca/english/freepub/82-575-XIE/2003001/pdf/report.pdf>.

Schoen, C., R. Osborn, P. Huynh, M. Doty, K. Davis, K. Zapert et al. 2004. "Primary Care and Health System Performance: Adults' Experiences in Five Countries." *Health Affairs* 28 (Web exclusive): 487–503.

Sitzia, J. and N. Wood. 1997. "Patient Satisfaction: A Review of Issues and Concepts." *Social Science and Medicine* 45: 1829–43.

Stewart, A., A. Napoles-Springer and E. Perez-Stable. 1999. "Interpersonal Processes of Care in Diverse Populations." *Milbank Quarterly* 77(3): 305–39.

Stewart, M.A. 2004. "Continuity, Care, and Commitment: The Course of Patient–Clinician Relationships." *Annals of Family Medicine* 2: 388–90.

Strauss, A. 1995. *Qualitative Analysis for Social Scientists*. New York: Cambridge University Press.

Telford, R., J. Boote and C. Cooper. 2004. "What Does It Mean to Involve Consumers Successfully in NHS Research? A Consensus Study." *Health Expectations* 7: 209–20.

Van Maanen, H. 1984. "Evaluation of Nursing Care: Quality of Nursing Evaluated within the Context of Healthcare and Examined from a Multinational Perspective." In L. Willis and M. Linwood, eds., *Measuring the Quality of Care* (pp. 3–43). Edinburgh: Churchill Livingstone.

Ware, J. Jr., M. Snyder, W. Wright and A. Davies. 1983. "Defining and Measuring Patient Satisfaction with Medical Care." *Evaluation Program Planning* 6(3–4): 247–63.

Watson, D., A. Broemeling, R. Reid and C. Black. 2004. *A Results-Based Logic Model for Primary Healthcare: Laying an Evidence-Based Foundation to Guide Performance Measurement, Monitoring, and Evaluation*. Vancouver: Centre for Health Services and Policy Research.

Watson, D., H. Krueger, D. Mooney and C. Black. 2005. *Planning for Renewal: Mapping Primary Healthcare in British Columbia*. Vancouver: Centre for Health Services and Policy Research.

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

Woodward, C., J. Abelson, S. Tedford and B. Hutchison. 2004. "What Is Important to Continuity in Home Care? Perspectives of Key Stakeholders." *Social Science and Medicine* 58(1): 177–92.

RESEARCH PAPER

Full Text Online

Improving Use of Medicines for Older People in Long-Term Care: Contrasting the Policy Approach of Four Countries

Améliorer l'utilisation des médicaments chez les personnes âgées recevant des soins de longue durée : comparaison des politiques de quatre pays

CARMEL M. HUGHES, ELIZABETH ROUGHEAD AND NGAIRE KERSE

Abstract

The quality of nursing home care for older people, including medication use and related outcomes, has been problematic in a number of developed countries. This paper compares the policy approaches to drug prescribing and administration in nursing homes adopted by four countries. The United States has led the way in terms of regulating and inspecting nursing homes, with strict requirements for prescribing psychotropic medications, commonly known as "chemical restraints." These requirements have been facilitated by detailed data collection mandated by the US government. Although regulation has led to marked reductions in the prescribing of these agents, underused medications have received little attention. Despite similar problems with the use of psychotropic drugs, the United Kingdom, Australia and New Zealand have adopted a more generic approach to drug use in the nursing home setting, a situation that may reflect the different organization and ethos of healthcare systems in these countries. Developments in systematic medication data capture, greater collaboration and more educational feedback to prescribers and facilities would represent a major step forward in long-term care policy in these latter three countries, while a broader educational focus would further support improvements in the US setting.

Résumé

La qualité des soins dispensés dans les foyers pour personnes âgées est problématique dans plusieurs pays développés, et cette préoccupation s'est étendue à l'utilisation des médicaments et aux effets connexes. Le présent article compare les politiques adoptées par quatre pays à ce chapitre. Les États-Unis ont pris les devants en matière de réglementation et d'inspection des foyers pour personnes âgées et ont adopté des exigences strictes concernant la prescription de médicaments psychotropes, communément appelés « contraintes chimiques ». Ces exigences s'appuient sur une collecte de données détaillées, effectuée à la demande du gouvernement américain. Bien que la réglementa-

tion ait mené à une réduction marquée du nombre d'ordonnances de ces agents, les médicaments sous-utilisés n'ont pas fait l'objet d'une promotion très musclée. Même s'ils ont eu des problèmes semblables avec l'utilisation des médicaments psychotropes, le Royaume-Uni, l'Australie et la Nouvelle-Zélande ont adopté une approche beaucoup plus générique en ce qui concerne l'utilisation des médicaments dans les foyers pour personnes âgées – approche qui reflète peut-être l'organisation et l'éthos différents qui caractérisent les systèmes de santé de ces pays. Les progrès réalisés dans la capture systématique des données sur les médicaments, une collaboration accrue et une rétroaction plus informative aux prescripteurs et aux établissements constitueraient un grand pas en avant dans les politiques sur les soins de longue durée dans ces trois pays, tandis qu'un accent accru sur l'éducation favoriserait l'apport d'améliorations dans le contexte états-unien.

To view the full article, please visit
http://www.longwoods.com/product.php?productid=19560

RESEARCH PAPER

Full Text Online

How Consumerist Do People Want to Be? Preferred Role in Decision-Making of Individuals with HIV/AIDS

Dans quelle mesure les gens veulent-ils être consommateuristes? Rôle préféré des personnes atteintes de VIH/sida dans le processus décisionnel

SARA UROWITZ AND RAISA DEBER

Abstract

Background: North American bioethics emphasizes autonomy, but do care recipients want an autonomous role in treatment decision-making?
Participants: We surveyed people living with HIV/AIDS (PHAs) treated at 12 clinics affiliated with the HIV Ontario Observational Database (HOOD).
Design: The clinics distributed 809 surveys. Demographic information was merged from the HOOD database.
Measurements: The survey included questions about preferred role, satisfaction with role, trust in physicians, and use and helpfulness of information sources.
Results: The 431 responses (response rate 53.3%) reflected the group believed most consumerist (well-educated gay men). Most (87%) had high/moderate trust in physicians and were satisfied with their level of involvement in treatment decision-making. They sought information from many sources (mean 8.2), particularly health providers, but also the Internet (used by 42%, seen as somewhat helpful). Nonetheless, only one respondent (0.2%) was categorized as autonomous/consumerist; 20.9% were passive, while 78.9% wanted a shared role.
Conclusions: Consumerist rhetoric, with its emphasis on patient autonomy, is oversimplified. Even in this knowledgeable population, respondents wanted to understand their disease and options, but not to take on the provider's role. To our respondents, the optimal doctor–patient relationship is best characterized by a shared, trusting relationship between informed patients and expert providers.

Résumé

Contexte : La bioéthique nord-américaine met l'accent sur l'autonomie, mais les bénéficiaires de soins veulent-ils jouer un rôle dans le processus décisionnel lié au traitement?
Participants : Nous avons interrogé des personnes vivant avec le VIH/sida (PVAS)

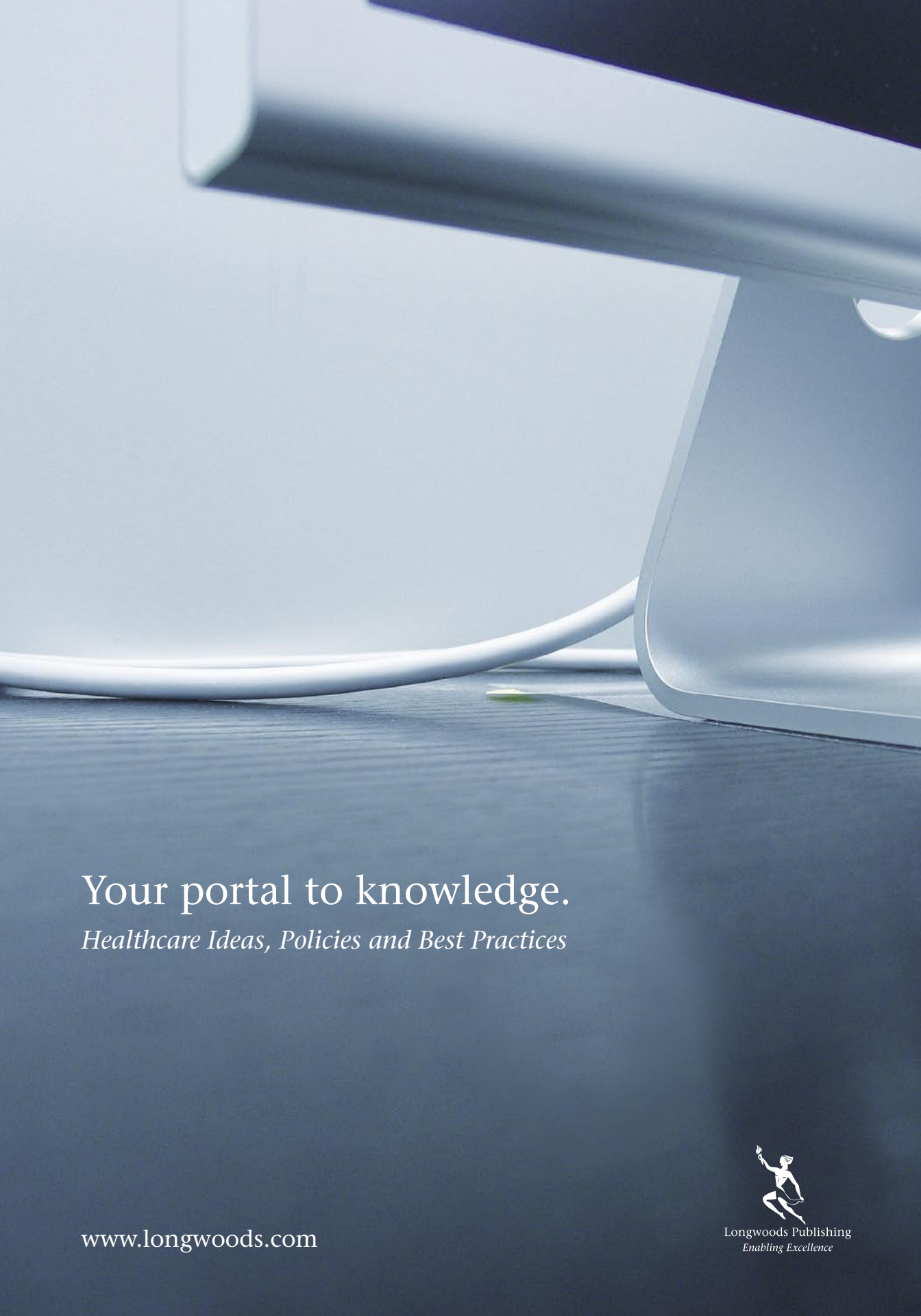
traitées dans 12 cliniques affiliées à la Base de données d'observation de l'Ontario sur le VIH (BOOVIH).
Conception : Les cliniques ont distribué 809 questionnaires, auxquels ont été ajoutés des renseignements démographiques extraits de la BOOVIH.
Mesures : Le sondage comprenait des questions sur le rôle préféré, la satisfaction à l'égard du rôle, la confiance envers les médecins ainsi que l'utilisation et l'utilité des sources d'information.
Résultats : Les 431 réponses (TR=53,3 %) reflétaient le groupe considéré comme étant le plus consommateuristes (hommes homosexuels instruits). La majorité (87 %) des répondants avaient une confiance élevée ou moyenne à l'égard des médecins et étaient satisfaits de leur niveau de participation au processus décisionnel lié au traitement. Ils ont cherché à obtenir des renseignements auprès de plusieurs sources (moyenne : 8,2), surtout auprès des intervenants en soins de santé, mais également sur Internet (utilisé par 42 % des répondants, jugé relativement utile). Néanmoins, seulement un répondant (0,2 %) a été classé comme étant autonome ou consommateuristes; 20,9 % avaient une attitude passive, tandis que 78,9 % voulaient un rôle partagé.
Conclusions : Avec l'accent qu'il place sur l'autonomie des patients, le discours consumériste est simplifié à l'extrême. Même au sein de cette population renseignée, les répondants voulaient comprendre leur maladie et les choix qui s'offraient à eux, mais ils ne souhaitaient pas assumer le rôle du fournisseur de soins de santé. Pour nos répondants, la relation optimale médecin-patient se caractérise le mieux par un rapport de confiance mutuelle entre des patients informés et des fournisseurs experts.

To view the full article, please visit
http://www.longwoods.com/product.php?productid=19559

Available online free to our readers

Published for the Canadian Patient Safety Institute,
Canadian Council on Health Services Accreditation
and Health Council of Canada

To receive your print copy subscribe to Healthcare Quarterly
at www.longwoods.com/subscribe or call 416-864-9667


Your portal to knowledge.
Healthcare Ideas, Policies and Best Practices
www.longwoods.com
Longwoods Publishing
Enabling Excellence

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

www.healthcarepolicy.net