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Mapping the Future of Primary Healthcare Research in Canada

A report to the Canadian Health Services Research Foundation

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TABLE OF CONTENTS

OVERVIEW	1
EXECUTIVE SUMMARY	2
1) BACKGROUND.....	5
2) THE STATE OF PRIMARY HEALTHCARE RESEARCH IN CANADA	9
3) LOOKING BEYOND THE HORIZON: PERSPECTIVES AND POLICIES FROM OVERSEAS	20
4) BRINGING IT ALL TOGETHER.....	24
5) RECOMMENDATIONS	25
6) CONCLUSION.....	30
7) REFERENCES	31
APPENDIX 1: METHODS.....	39
APPENDIX 2: CONTACT LETTER AND CONSENT FORM	42
APPENDIX 3: INTERVIEW TEMPLATES	45
APPENDIX 4: ACKNOWLEDGEMENTS	49

OVERVIEW

Canada is embarking on widespread reform to the organization and delivery of its primary healthcare (PHC) system. These reforms come at a time when there is increasing awareness of the link between quality PHC and important health outcomes. The resulting focus upon PHC brings with it a need to ensure PHC research capacity: the research skills and infrastructure required to answer the core PHC questions confronting policy makers, system managers, healthcare providers and the public.

To evaluate Canada's PHC research capacity, the Canadian Health Services Research Foundation (CHSRF) commissioned this study. Data were collected through a literature review and consultation with practitioners, researchers, policy makers and other experts from both Canada and abroad. We found widespread deficiencies in the sustainability and co-ordination of Canadian PHC research. PHC research has had little visibility with Canada's main federal health research funder, the Canadian Institutes of Health Research (CIHR). While there has sometimes been considerable support for PHC capacity at the provincial level, such capacity has often been tied to specific, time-limited initiatives. At an individual level, young clinicians and PhD scientists receive little encouragement to pursue PHC research careers. Those who do make a start have major problems securing mid-career support. Although the recent Primary Health Care Transition Fund led to the emergence of quality research teams investigating PHC issues, many of these teams dissolved following the fund's termination in March 2006.

Much of this situation could be traced back to the lack of dedicated funding support provided by national or provincial funding bodies for PHC research and career development.

Canada's approach to PHC research contrasts with that found overseas. Many western nations, in particular the U.K. and Australia, are beginning to reap the benefits of co-ordinated strategies designed to nurture PHC research capacity. Many of these strategies mirror current Canadian initiatives to develop research capacity in nursing.

Canada needs to reinvigorate its PHC research sector through a co-ordinated strategy involving two core initiatives. These are:

- 1) **Formation of a Canadian co-ordinating body** for primary healthcare research whose functions would include a **PHC research information system** to build on the current information dissemination activities of the CHSRF and of several provincial health research bodies.
- 2) **Targeted federal and provincial initiatives to fund PHC research.** For maximum impact these should aim to provide operating grants directed at critical PHC questions; **team grants** to allow experienced researchers to collaborate and address strategically important PHC issues; support for **PHC research chairs**; and, most importantly, a **co-ordinated program** to foster sustainable careers for PHC clinician researchers and research scientists.

EXECUTIVE SUMMARY

Canada is engaging in widespread reform of the organization and delivery of its primary healthcare (PHC) services. Provinces have begun to experiment with and/or implement major changes in the delivery of PHC, many of which require PHC practitioners to reconsider long-established methods of delivering services, prioritizing care and interacting with the community. These changes necessitate PHC research and evaluation that can inform decision-making by policy makers, health system managers, practitioners and members of the community.

This report examines Canada's capacity to generate and make good use of evidence emanating from a complex and dynamic PHC system. It results from a commissioned research project funded by the Canadian Health Services Research Foundation (CHSRF) and conducted between February and November 2006. A steering committee consisting of respected PHC researchers and a senior PHC policy maker helped guide the project.

The project had four key aims:

- 1) to identify the existing research capacity in the field of primary healthcare;
- 2) to examine how well this capacity is being used to create and communicate policy-relevant research in primary healthcare;
- 3) to assess the likely impact of the end of the Primary Health Care Transition Fund in March 2006 on primary healthcare research capacity and output; and
- 4) to examine strategies (including potential funding mechanisms and organizational models) for developing, supporting and enhancing policy-relevant research capacity and knowledge transfer activities in primary healthcare.

Information was collected through a literature review and interviews with researchers and policy makers in Canada and abroad. Preliminary findings were presented and further refined at regional meetings of PHC researchers and decision makers held in Western, Central and Atlantic Canada.

FINDINGS

Research capacity-building was seen as being dependent on a complex configuration of individual, organizational and institutional factors. Research outputs were considered in terms of knowledge generation and knowledge transfer and exchange (KTE). Findings suggested a substantial disconnect between the support for PHC renewal and that provided for PHC research in Canada. While there was clear evidence that Canada is continuing to be a leader in KTE, there was a concerning lack of support for PHC knowledge generation.

Many of these problems could be traced back to the lack of dedicated funding support for PHC research and career development. PHC research has had little visibility within the Canadian Institutes of Health Research (CIHR), Canada's main federal health research funder. While there has sometimes been considerable support for PHC capacity at the provincial level, that capacity has usually been tied to specific, time-limited initiatives. There was little indication that co-ordinated resources could be mobilized to address PHC issues that crossed provincial borders.

At an individual level, researcher needs differ depending on whether or not individuals have a clinical background. Clinician investigators have little support to pursue research training while research scientists have major problems securing mid-career support. Established PHC researchers are often isolated in their own organizations or in their area/region. Few have close links with policy makers and many are challenged by the requirements of KTE.

High-quality knowledge generation is further hampered by poor co-ordination of research efforts, limited availability of PHC-related health services data and problems with researcher access to the data that are available. While some professional organizations have agitated for greater PHC research support, governments, universities and key PHC professional bodies have not been able to generate a common vision for PHC. As a result, Canadian PHC never speaks with a common voice.

The findings indicate that the lack of capacity for generating PHC research may compromise Canada's ability to achieve meaningful PHC reform. Overseas experience shows that nations with a strong primary care orientation can implement multifaceted strategies to strengthen the capacity for the PHC sector to conduct high-quality, policy-relevant health services and clinical research. Co-ordinated initiatives have involved established funding for contextually relevant PHC research, sustainable high-quality research training for both clinician investigators and research scientists, and assured, long-term support for practice-based research networks.¹

RECOMMENDATIONS

This report contains specific recommendations designed to map the early steps in a strategy to strengthen the PHC research community in Canada. They call for the development of a co-ordinating agency, a research information system, a strategic funding program and a tailored approach to knowledge translation.

a) A Canadian co-ordinating body for primary healthcare research

This central recommendation addresses the fragmented nature of the Canadian PHC research community. It seeks a broadly representative body with interests including both clinical and health services research performed in the PHC context. The co-ordinating body would provide leadership, advocacy and policy representation in the area of PHC research and knowledge translation. It would need to work in close conjunction with government, professional organizations and academic bodies to secure stable funding to help advance Canada's PHC research agenda. The co-ordinating body could be hosted or sponsored by an existing federal agency. CIHR or CHSRF could fill such a role, either alone or in partnership.

It is further recommended that the co-ordinating body facilitate the development of a pan-Canadian PHC research strategy, establish a PHC research information system, co-ordinate Canada's practice-based research networks, advocate for improved data quality and access, champion appropriate academic recognition of knowledge translation activities and organize an annual PHC research conference. The PHC research information system, modeled on overseas initiatives, would build on the current information dissemination activities of CHSRF and of several provincial health research bodies. A core activity would be to develop and maintain an inventory of active PHC researchers and PHC projects.

b) Targeted federal and provincial PHC research funding initiatives for PHC-specific operating grants, research teams and personnel support

A pan-Canadian research funding initiative could be housed within an existing agency in an organizational framework similar to CHSRF's Nursing Research Fund. Targeted research funding initiatives – federal, provincial or both – could include:

- operating grants directed at critical PHC questions;

¹ A practice-based research network is defined as a group of ambulatory practices devoted principally to the primary care of patients, affiliated with each other in order to investigate questions related to community-based practice.

- team grants to allow experienced researchers to collaborate to address strategically important PHC issues;
 - a co-ordinated program to foster sustainable careers for PHC researchers;
 - PhD research scholarships for PHC clinicians and future research scientists;
 - postdoctoral awards for research scientists engaged in PHC research;
 - expansion of clinician scientist award opportunities for PHC clinician investigators;
 - support for MD/PhD programs oriented towards PHC; and
 - support for PHC research chairs.
- c) Knowledge translation and exchange activities tailored to the specific needs of PHC clinicians and policy makers.

1) BACKGROUND

1.1) PROJECT OUTLINE AND METHODOLOGY

This report addresses issues related to Canada's capacity to perform quality primary healthcare (PHC) research. It results from a commissioned research project funded by the Canadian Health Services Research Foundation (CHSRF). The project was overseen by a steering committee of the CHSRF and conducted between February and November 2006 by a team of investigators from the C.T. Lamont Primary Health Care Research Centre in Ottawa.

The project was designed to address four aims:

- 1) to identify the existing research capacity in the field of primary healthcare;
- 2) to examine how well this capacity is being used to create and communicate policy-relevant research in primary healthcare;
- 3) to assess the likely impact of the end of the Primary Health Care Transition Fund in March 2006 on primary healthcare research capacity and output; and
- 4) to examine strategies (including potential funding mechanisms and organizational models) for developing, supporting and enhancing policy-relevant research capacity and knowledge transfer activities in primary healthcare.

In order to meet these objectives, data were collected through a literature review, key informant interviews and from three regional meetings attended by PHC researchers and policy makers.² The project methods were approved by the Research Ethics Board of the Ottawa Hospital and are fully described in Appendix 1. They comprised three strategies:

- a) A **literature review** incorporating a search of major English language databases using the terms "research capacity," "health services research," "primary care," "primary healthcare" and "building capacity." These data were combined with a review of research capacity-building initiatives undertaken through the Primary Health Care Transition Fund (PHCTF), and through universities, professional bodies, research funding agencies and government departments.
- b) Thirty-five **in-depth, individual interviews** were conducted in both major languages with a maximum variation sample of researchers involved in clinical and health services research in PHC and federal and provincial/territorial policy makers, Canadian-based research funders, representatives of professional bodies and international experts with skills or expertise in primary healthcare research capacity-building. Participants provided written consent to participate in the study (Appendix 2). Data were collected between April and October 2006. All but three interviews were conducted by telephone. Interview content loosely followed a written guide (Appendix 3) comprising questions determined following a review of the literature. Interviews and the interviewers' field notes were audio-taped, then transcribed verbatim. Analysis involved a constant comparative approach. Regular meetings of the research team were held at which emergent themes, patterns and

² Meetings were held in Calgary, Halifax and Ottawa.

connections were reviewed.

- c) Data were also gathered from three, one-day meetings held in Atlantic Canada (Halifax), Quebec/Ontario (Ottawa) and the Western provinces (Calgary). Each meeting comprised 20 to 25 individuals with diverse backgrounds related to primary healthcare services delivery and policy-making. Potential meeting participants were identified following discussions with members of the steering committee and from suggestions provided by interview participants. At these meetings, preliminary findings of the literature review and the interviews were presented to participants. Small group discussions allowed participants to highlight areas where the findings either matched or conflicted with their experience. Finally, the groups were given an opportunity to formulate recommendations based on the study findings.

The report has three sections. It begins with an overview of primary healthcare, health services research and primary care research. The next section shows how Canada has developed these concepts within its own health research landscape: we describe major federal and provincial initiatives in PHC research and then show how these shape the experiences of Canadian PHC policy makers and researchers. These experiences are then presented in the context of current international perspectives and policies relating to PHC research. The report concludes with project recommendations. Appendices include a description of the methodology, copies of relevant study materials and acknowledgements.

1.2) IMPORTANCE OF PRIMARY HEALTHCARE IN CANADA

In recent years, national and international bodies have increasingly stressed the importance of strong, comprehensive PHC in healthcare systems (1;2). Consistent with these positions, Canada, at both the federal and provincial levels, has recognized the contribution of quality PHC to equity, affordability and health outcomes (3), and has begun to embrace policies of primary healthcare renewal (4). Federal and provincial governments have made large investments in the service delivery sector of PHC. Much activity followed the launch of the Primary Health Care Transition Fund (PHCTF) in 2000. This \$800 million investment into primary healthcare gave provinces an opportunity to research and/or implement major changes in the delivery of PHC services. In the midst of the activity associated with the PHCTF, a number of provincial agencies began to support initiatives to strengthen the delivery of primary care services.

1.3) UNDERSTANDING PRIMARY HEALTHCARE HEALTH SERVICES AND CLINICAL RESEARCH

It is important at the outset to clarify the core concepts embedded within the questions being addressed by this project. For the purposes of this report, we define **primary healthcare (PHC)** as “a set of universally accessible first-level services that promote health, prevent disease, and provide diagnostic, curative, rehabilitative, supportive and palliative services” (5). We take Starfield’s 1998 definition of **primary care** as being “that level of a health service system that provides entry into the system for all new needs and problems, provides person-focused (not disease-oriented) care over time, provides care for all but very uncommon or unusual conditions, and co-ordinates or integrates care provided elsewhere by others” (3). The narrower term of primary care relates to services delivered by family doctors and other primary care providers such as nurse practitioners, while the broader term of *primary healthcare* relates to an approach to health policy and service provision which includes both services delivered to individuals and population-level “public health-type” functions (6).

While definitions of PHC and primary care are reasonably well established, it is much harder to clearly define three other important terms highly relevant to this report. The Institute of Medicine defines health services research as “a multidisciplinary field of inquiry, both basic and applied, that examines access to, and the use, costs, quality, delivery, organization, financing, and outcomes of healthcare services to produce new knowledge about the structure, processes, and effects of health services for individuals and populations” (2). AcademyHealth adds that “its research domains are individuals, families, organizations, institutions, communities, and populations” (7). The Canadian Health Services Research Foundation defines health services research as “research that is intended to inform policy development and decision-making regarding the governance, organization, funding, delivery of health services, or the allocation of resources dedicated to improving health”. While traditional healthcare research impacts on clinicians and patients, the outputs of health services research are, by definition, relevant to and often only able to be implemented by policy makers (8;9). From that perspective, clinical research,³ often defined as patient-oriented research, overlaps with the field of health services research when patient services are the object of study (11).

The term **primary care research** can be defined as “research directed toward the better understanding and practice of the primary care function” (10). While no definitions of primary healthcare research have been published, we consider that a reasonable approach would be to suggest that primary healthcare research is *research directed toward the better understanding, policy development, management and practice of PHC*.

1.4) LOCATING HEALTH SERVICES AND CLINICAL RESEARCHERS IN PRIMARY HEALTHCARE

Despite the contention that “primary care research brings a unique and important perspective to illuminating timely and important health services research questions” (12), there have been increasing concerns as to the fragile state of PHC research, particularly in the domain of general practice (13;14). In comparison to other healthcare disciplines, a disproportionately low number of practicing primary care physicians or nurses are involved in research (13;15). It is clear that few family physicians (FPs) obtain advanced research training and little funding is earmarked to address clinical or policy-related questions in family practice. As a partial result, only one academic paper is published each year per 1,000 practicing family practitioners, as compared to one per eight public health professionals and one per 10 internists (16). A comparable study of practitioners within British Columbia showed much the same results (17). Similar concerns have been expressed in the allied health professions and in the broader field of nursing (18). The recent reappraisal of the unique challenges faced by rural communities and their healthcare providers has highlighted a corresponding story with respect to the research needs of rural and remote practice, particularly in sparsely populated nations such as Australia (19;20) and Canada (21).

³ Clinical research: “a component of medical and health research intended to produce knowledge valuable for understanding human disease, preventing and treating illness, and promoting health.” ... “Clinical research embraces a continuum of studies involving interactions with patients, diagnostic clinical materials or data, or populations in any of the following categories: (i) disease mechanisms; (ii) bidirectional integrative research; (iii) clinical knowledge, detection, diagnosis, and natural history of disease; (iv) therapeutic interventions including clinical trials of drugs, biologics, devices, and instruments; (v) prevention (primary and secondary) and health promotion; (vi) behavioural research; (vii) health services research, including outcomes and cost effectiveness; (viii) epidemiology; and (ix) community-based and managed care trials.” (10)

In response to these concerns, governments and professional organizations have implemented significant funding and training initiatives oriented towards the needs of primary care practitioners (22) and their patients (23-28). The recognition of the effects of isolation of primary care providers has contributed to the expansion of practice-based research networks⁴ (29-33) as well as a variety of policies designed to improve interdisciplinary collaboration (27;34).

Some of these initiatives have set the groundwork for primary care researchers to build on the long tradition of practicing clinicians conducting or participating in community-based clinical research (35;36). Matched with this, and with implications for policy, primary care researchers are beginning to make substantial contributions towards the understanding of healthcare delivery systems (37). These are of particular relevance as policy makers are beginning to contemplate the economic and health benefits of reforming traditional methods for organizing primary care delivery.

1.5) DIMENSIONS OF CAPACITY-BUILDING

Several authors have considered dimensions of capacity-building in PHC disciplines. Cooke's review of the literature stresses that research capacity should be considered in terms of four developmental levels of activity (individuals, teams, organizations, and associations or networks among organizations) and six overarching principles (38). Four of these principles (**skills and confidence**, **appropriate dissemination**, the importance of **infrastructure**, and the elements of **sustainability and continuity**) are generic, important and cited in other literature on capacity-building. However, two principles, the building of **partnerships** and the idea of conducting research **close to practice**, are particularly relevant to interdisciplinary research in PHC. Each affords an opportunity for research questions to be generated in a place where their answers are most important. While this approach is clearly relevant to clinical research, it resonates with attempts to address specific barriers to the translation of appropriate research to policy (39-43).

Farmer and Weston took a different approach to capacity-building in PHC. While they also stressed the importance of partnerships and networking, they strongly advocated principles of **diversity** and a **whole system approach** to research capacity whereby "funding and resources [are directed] to one or more groups simultaneously" and multiple entry points into research careers are created, particularly for PHC clinicians (44).

We have drawn on these and other concepts⁵ in viewing PHC research capacity in Canada as having two core components: knowledge generation and *knowledge transfer and exchange*. We view research *capacity-building* as being dependent on a complex configuration of factors linking individual, organizational and institutional levels.

We will highlight throughout the report the factors that can enable or constrain the capacity of individual researchers and organizations to generate useful and relevant knowledge and to engage in knowledge transfer and exchange activities with policy makers and PHC providers.

In summary, primary healthcare and health services research are both relatively new applied health sciences. Advocates of each have written comprehensively of the need for strengthened research capacity in each discipline (3). This period of great change in the delivery of primary healthcare is an opportune time to reflect upon Canada's approach to PHC and health services research.

4 A practice-based research network (PBRN) is defined as a group of ambulatory practices devoted principally to the primary care of patients, affiliated with each other in order to investigate questions related to community-based practice. This definition includes a sense of ongoing commitment to the research endeavour, and an organizational structure that transcends a single study to employ research strategies and mechanisms that link research directly with clinical practice in geographically diverse locations throughout the country, including the use of "provider-based research networks...especially (in) primary care" (50).

5 For example, Trostle (1992) defines research capacity-building as "a process of individual and institutional development which leads to higher levels of skills and greater ability to perform useful research" (1). Similarly, the United Nations Development Programme defines research capacity development as a "process by which individuals, organizations and societies develop abilities (individually and collectively) to perform functions effectively and in a sustainable manner to define problems, set objectives and priorities, build sustainable institutions and bring solutions to key national problems" (1).

- Primary healthcare reform creates a pressing need for research evidence to inform system redesign.
- PHC research is directed towards understanding and evaluating policy development, management and practice of PHC.
- PHC research capacity in Canada has two core components: knowledge generation and knowledge transfer and exchange.
- Research capacity-building is dependent on a complex configuration of factors linking individuals, organizations and institutions.

2) THE STATE OF PRIMARY HEALTHCARE RESEARCH IN CANADA

2.1) FUELLING THE FIRE: FUNDING CANADIAN PRIMARY HEALTHCARE RESEARCH

Canada has a complex set of strategies for supporting healthcare research. This section will not attempt to exhaustively document this complex landscape. Instead, mindful of the study's orientation to PHC and health services research we will concentrate on outlining relevant details of important federal and provincial research support mechanisms.⁶

Two-thirds of total funding for health research in Canada originates federally. Much of this is concentrated within Canada's premier health research agency, the Canadian Institutes of Health Research (CIHR). Its operations are based on four pillars of research (biomedical; clinical; health services and policy; and population and public health) and delivered through 13 institutes (46). Most health services research initiatives are administered through the Institute of Health Services and Policy Research (IHSPR). In recent years, two-thirds of CIHR funds have been allocated to operating grants. The remainder is directed to training grants, operating costs for the institutes and the Canada Research Chair program (45).

CIHR provides around 10 percent of its budget for research training. Although it has been a major supporter of early career researchers since its inception, the organization has been criticized by several reviews for its lack of support for what has been called an "at-risk" population – mid-career investigators, clinician investigators and researchers based at institutions with large teaching loads (47;48). CIHR also funds a series of strategic training programs designed to increase research capacity. Although several of these conduct activities related to PHC and community health (49), only one (TUTOR-PHC), has direct relevance to PHC research.⁷ Tutor-PHC is a multi-university collaboration designed to train fellows from a wide variety of PHC disciplines. Training combines face-to-face symposia with an online curriculum and active mentoring (50). The program's 35 graduates have come from both clinical (including family medicine, pharmacy, occupational therapy and nursing) and social science (sociology and epidemiology) backgrounds.

⁶ We recognize that a substantial proportion of health research funding originates from the business community and Canada's 5,000 not-for-profit and charitable agencies. Our research suggests that this is, at present, not critical to the delivery of PHC and health services research. Readers wishing more detail on funding are referred to CIHR's document Balance of Funding in Canadian Health Research and Future Funding Requirements (45).

⁷ Transdisciplinary Understanding and Training on Research – Primary Health Care (TUTOR-PHC)

Primary healthcare research has not been a major beneficiary of CIHR's operating grant funding. Since its inception, CIHR has distributed \$20.4 million to projects having some association with primary healthcare. Less than one percent (\$3.52 million) of the \$516 million spent by the agency on research grant funding in 2004-2005 was devoted to PHC research.⁸ While CIHR's recent external review commended the IHSPR for its efforts in networking and in developing a new cadre of young investigators, the IHSPR was criticized for its lack of attention to primary care research (51).

The Canadian Health Services Research Foundation (CHSRF) was mandated in 1996 to promote and support management and policy research in health services and nursing to increase the quality, relevance and usefulness of this research for health system policy makers and managers (52). Its activities are oriented towards four themes: managing for quality and safety; management of the healthcare workplace; primary healthcare; and nursing leadership, organization and policy. Its total expenditure in 2006 was \$14.5 million.

While establishing itself as a leader in knowledge transfer and exchange (KTE), the Foundation has channeled significant resources into applied health services capacity development for researchers and decision makers. It has developed a Primary Healthcare Network designed to promote partnerships and knowledge exchange between decision makers, policy makers and researchers throughout Canada. The Foundation published a synthesis of PHC evaluation projects (53) and acted as a joint sponsor of a 2006 national conference that brought the PHC policy and research communities together (52).

With CIHR, the Foundation has funded a network of regional training centres and health services and nursing chairs as part of the Capacity for Applied and Developmental Research and Evaluation (CADRE) program (54). The regional training centres and chairs focus on delivering master's- and PhD-level training to applied health services and nursing researchers. Finally, and significantly, the Foundation has responded to an articulated need in nursing research capacity to support a co-ordinated initiative to foster nursing research and capacity development. The Nursing Research Fund receives \$2.5 million each year to support five nursing chairs, the nursing aspects of some of the regional training centres (FERASI, Centre for Knowledge Transfer) (55), a targeted research fund and a series of knowledge networks and dissemination activities (56). By contrast, since the inception of the CHSRF, an average of \$600,000 per year has been allocated to PHC initiatives across all sectors.⁹

Two other federal programs provide support for Canadian researchers. The **Canada Research Chairs (CRC)** program is a federal initiative aimed at generating 2,000 research professorships across the nation by 2008 (57). Chairs are nominated by universities and have a tenure ranging from five to seven years. By 2006 only three of more than 1,600 CRCs were held by individuals with a primary orientation to PHC research. Other PHC research chairs have been supported by a variety of sources. A few endowed chairs have originated from lobbying at the university level, and several have emerged from university departments associated with primary care. Only one nursing chair (the Dorothy Hall Chair in Primary Health Care Nursing at McMaster University) is specifically oriented towards PHC. The **Canada Foundation for Innovation (CFI)** is an independent corporation created by the government of Canada to fund material, laboratory and data-related components of research infrastructure (58). Several PHC researchers have received assistance from CFI to develop PHC-related databases.

⁸ That amount calculated by using the CIHR Funding database and running a search for "primary care" and "operating grant" and "2004-2005."

⁹ Personal communication CHSRF Primary Healthcare Research Program.

Provinces contribute around 25 percent of the total funding for health research in Canada (45). Unlike CIHR (where the majority of funding is allocated to operating grants), provincial health research funding is almost evenly divided between project grants, training and career awards, and support for infrastructure. Provinces show considerable variation in per capita health research funding (59). A number of provinces run their own research funding agencies, albeit none with a specific orientation towards PHC. These agencies are loosely associated under the National Alliance of Provincial Health Research Organizations. This organization provides a forum for interprovincial and federal collaboration.

A recent funding source had a major influence on the PHC landscape. The Primary Health Care Transition Fund (PHCTF) was an \$800 million federal government initiative developed following a First Ministers meeting on Health Renewal and Early Childhood Development in Ottawa in September 2000 (60). It followed the \$150 million Health Transition Fund (1997-2001) which focused on innovations in homecare, pharmaceutical issues, primary healthcare and integrated service delivery (61). The new fund represented a six-year federal commitment to help provinces and territories develop sustainable new approaches to primary healthcare delivery. Oriented around principles of universality, accessibility and inter-sectoral co-ordination, the PHCTF was intended to support the transitional costs of fundamental changes to primary healthcare delivery, particularly those relating to preventive and chronic disease care delivered by multi-disciplinary teams. The PHCTF comprised five administrative envelopes. The \$576 million federal-provincial envelope had most relevance to PHC health services research. Smaller programs (ranging from \$30 million to \$63 million) developed collaborative research, fostered local demonstration projects, and introduced a series of initiatives focused on needs of Aboriginal and official languages minority communities (61).

2.2) GENERATING KNOWLEDGE: ENABLING AND CONSTRAINING FACTORS

This section uses data from the key informant interviews and group discussions at the regional workshops to examine factors that enable or constrain the production of PHC knowledge in Canada. The following themes emerged from the consultation process:

- PHC researchers either feel isolated in their own organizations or, at least, in their area/region;
- access to reliable and relevant data is often problematic;
- research networks have the potential to facilitate and/or stimulate knowledge generation;
- research scientists and clinician investigators have distinct career paths that are, at times, poorly supported; and
- the PHCTF led to a transient, but not sustainable, increase in research capacity in PHC.

Each will be examined in turn.

2.2.1) “Knowledge isolation” in PHC research

The process of consultation revealed PHC research being conducted by a dispersed and uncoordinated assortment of individuals and research teams, often housed in organizations seen as having little understanding of their specific needs.

Individual PHC researchers are scattered in pockets throughout the country, at times reaching a critical mass in those universities with a focus towards either PHC or health services research. Most researchers examining service delivery within the sector were situated in discipline-specific departments (such as family medicine or nursing) or in health services research centres. The service-oriented departments found it difficult to maintain a research presence with competing clinical and teaching requirements. As a result, many found it difficult to gain university recognition for their contributions.

“We have trouble convincing people that we’re doing as much as we are and that when we had our [internal] review of all our programs a few years ago, the ... reviewers said our [nursing faculty] was the best kept secret on campus.” (Clinician researcher, Central Canada)

More geographically remote researchers seemed to face additional barriers.

“If you are a rural researcher you’re probably at a small university like I am. What that means is that you don’t necessarily have the infrastructure support ... What happens is that people from big universities with big infrastructure machines end up taking on rural because they know they can get funding and do it rather than having the real passion and interest and understanding of the rural context.” (Rural researcher, Western Canada)

Research teams often seemed to lack either the inclination or the opportunity to learn from other regions. Indeed the regional meetings held as part of this project gave some participants what turned out to be a unique opportunity to meet their peers. It was evident that provincial health research agencies and the National Alliance of Provincial Health Research Organizations had managed to link some members of the broader research community, while others welcomed the community-building efforts of the CHSRF-sponsored Primary Healthcare Network.

Regionally based researchers and policy makers perceive a tension between central funding agency agendas and the regional need for locally relevant information.

“I still view a lot of granting agencies being very central Canada, um, without an appreciation for the needs of individual provinces. It doesn’t help build capacity in [remote regions] to say ‘Well this isn’t really novel.’ Well it might not be novel but it’s still very much needed here.” (Researcher, Eastern Canada)

2.2.2) Unco-ordinated access to scattered data

Health services research requires high-quality data. Several national reports have emphasized that Canada is still well short of having an efficient means of generating information of value. Problems with data reflect a general theme of poor co-ordination. Black’s recent review (41) commented on the numerous custodians, varied roles and differing mandates embedded within the Canadian population-based health and health services data environment.

The problems with co-ordination of data were reflected in the key informant interviews. A policy maker pointed to the deficiencies in both data collection and data sharing within the healthcare system:

“We have a very underdeveloped system in terms of data gathering when it compares to the banking industry and the airline industry. We are really quite a long way behind in terms of information technology and [we need to] feed the academic institutions who are involved in research... We would love for them to have access to more data, especially around primary healthcare.” (Policy maker, Central Canada)

By contrast, some saw the problem as being one of data accessibility. Data custodians seemed to lack the mandate to share administrative data with researchers.

“... you can characterize [Canada] as a place where we’ve got some of the richest data in the world ... And you’ve got increasing numbers of people with the skills and expertise to actually use the data and apply new and more sophisticated methods to those data. [But] you’ve got increasing problems with access and you’ve got increasing costs to get at the data ... Canada may still have a theoretical advantage here but it’s not clear to me that it has a real comparative advantage.” (Researcher, Western Canada)

Although several provincial research and professional organizations have developed directories designed to link health researchers with specific research expertise and interests (62), it seemed surprisingly difficult for the “community of communities” of health services and PHC researchers to learn of and benefit from each other’s activities. A number of informants gave examples where organizations had simultaneously embarked on projects addressing similar questions, often with no or minimal awareness of each other’s activities.

2.2.3) Dispersedness of knowledge: Research networks as an emerging solution

Both international and local family physician participants saw great opportunities in PHC practice-based research networks (PBRNs). These research-oriented local networks of PHC practices have emerged across the Canadian landscape over the last decade. PBRNs have been promoted as “research laboratories” and learning communities of primary healthcare, with some suggestions that they offer a link between research, quality improvement and knowledge translation (32).

Their roles vary. Some act as sentinel surveillance networks sponsored by professional bodies (63), university departments (64) or arise from collaborations between universities and hospitals (65). A more comprehensive PBRN is funded by Quebec’s *Fonds de la recherche en santé du Québec* (FRSQ). The FRSQ funds 14 networks that bring together regionally oriented research teams from community healthcare centres (CLSCs), regional health boards and private-sector companies. The only pan-Canadian PBRN is the National Research System (NaRes), run by the Canadian College of Family Physicians. Its 600 members have expanded their original activities in influenza surveillance to other projects involving pediatric cancer and chronic disease (63). Despite recent interest in linking PBRNs (66), the networks remain unco-ordinated and financially insecure, and have little meaningful infrastructure.

2.2.4) One size doesn’t fit all: lack of tailored support for clinician investigators and research scientists.¹⁰

Two distinct groups of researchers exist in the PHC field: those with and those without clinical responsibilities. While there is consensus that both groups are required in an effective health research enterprise (67), the interviews and workshops brought into focus the fact that each faces unique challenges in establishing and maintaining a research career.

Primary care clinician investigators tend to enter research after a number of years of exclusively clinical practice. A nurse researcher spoke of how while training opportunities were increasing, training organizations were *“...still real sticky about how you have to go full time, you have to do it their way. You know for a lot of mid-career women with a family and other responsibilities, that’s a struggle”* (Clinician investigator, Central Canada). Beyond this, past clinical experiences seem to flavour the clinician investigator’s research orientation: *“I knew that if I was going to do a PhD that I felt strongly about doing it in nursing”* (Clinician investigator, Central Canada).

¹⁰ For the purposes of this report we differentiate between two groups of PHC researchers. The term “clinician researchers” will refer to PHC clinicians who conduct research, usually when participating in some clinical practice. We use the term “research scientist” to refer to those PHC researchers without a clinical background. These almost always have a PhD.

Others spoke of the difficulties combining research training with family responsibilities or with ongoing clinical care. Notably, none of the nurse researchers continued clinical practice. By contrast, while clinician investigators from non-nursing disciplines spoke positively about their ongoing contact with practice, most mentioned the deleterious impact of clinical responsibilities on available research time. Several spoke of the lack of support provided by existing funding agencies for those wishing to make a mid-career transition to a research path. This was particularly apparent among family medicine clinicians, many of whom needed to maintain clinical practice as a condition of employment in a university department of family medicine.

“And the reality is that many family medicine researchers follow exactly that path. They finish, they get out there and practice. After 10 years they want to get some research training, then they want to become a part-time researcher. They’re thwarted in their efforts because none of the career paths that have been outlined by CIHR or any other funding body will let them do that. They have to do it completely on their own time, out of their own pocket” (Senior clinician investigator, Central Canada).

Similar disincentives exist for clinician scientists in other Canadian healthcare disciplines. More senior researchers spoke of their preoccupation with encouraging fellow clinicians to take an interest in research. *“My greatest frustration in being a research director is my singular inability to get my colleagues to do more research” (Senior clinician investigator, Western Canada).*

These experiences mirror a world-wide concern about the future of academic medicine (45;68). Within the academic clinical departments in a number of nations, recruitment of young faculty has been greatly complicated by constraints on licensing, billing numbers, fee-for-service income and research funding (60).

By contrast research scientists follow a more traditional academic career path, many being supported by federal or provincial agencies with doctoral and immediate postdoctoral studies. However many junior researchers expressed concerns about their difficulties in accessing stable mid-career salary support. *“In the research world you just are getting going with the first five years and then all of a sudden, if you don’t get another award, that support drops off” (Research scientist, Central Canada).* They were highly sensitive to the mechanisms used to evaluate progress in a traditional university environment – mechanisms that were sometimes at odds with the need for health services research to have an impact on policy.

“...we don’t get a lot of credit for this type of work. I mean, we’re still expected to publish, we’re still expected to get grants and that’s the basis of our promotion and tenure. So, you’re asking us to take a lot of risk...” (Research scientist, Eastern Canada).

While a number of research scientists have taken leadership roles in Canadian PHC research, it was clear that, by and large, non-clinician health services researchers were not as closely bound to PHC as were many of their clinician investigator colleagues. *“I mean we don’t have a lot of active investigators and you know primary care is only one of several themes that have recently emerged...” (Senior research scientist, Western Canada).*

This experience also revealed a third core theme within the data: the lack of sustainability of the PHC research enterprise. With little access to core funding, much of the sector was dependent on the ebb and flow of project support. This was exemplified with research activities associated with the recent Primary Health Care Transition Fund.

2.2.5) The Primary Health Care Transition Fund: Building non-sustainable capacity

This report is not designed to evaluate the PHCTF. However our methods allow us to represent the experience of varied members of the PHC research and policy-making community concerning the fund's impact on research capacity. It was notable that most comments concerning the impact of the fund on research capacity came from researchers and policy makers based in Ontario. Other provinces devoted less PHCTF money to health services research projects and more to program implementation.

Notwithstanding this, it was clear that the PHCTF had positive effects on PHC capacity and on visibility of the whole sector:

"I'm thinking there's a lot more people out there now who have a sense of what primary healthcare research is.... there has been a lot of information collected; some of it, as I've said, I think will be very useful, some not" (Clinician investigator, Central Canada).

For researchers from allied health professions, the fund provided a unique opportunity to conduct research in their professional discipline. Some felt it acted to validate their professional experiences.

"The whole Primary Health Care Transition Fund has been very transformative in terms of being able to do a piece of work, get it out there, get it published and then that sort of set the direction. . . Without the transition fund we wouldn't have been able to make that leap in credibility I think we're able to make now and we've gone from being... one of those groups always yapping at the edge (of the other professions)" (Occupational therapist researcher, Central Canada).

A number of policy makers welcomed the opportunity given by the fund to generate relevant findings and to bring the provincial research and policy-making communities together:

"The value of the PHCTF was that it did fund very applied research... through it we've managed to bridge that gap and the research that is coming out is quite relevant" (Policy maker, Central Canada).

However throughout the country, policy makers (and some researchers) had reservations as to whether the PHCTF would have a lasting impact. A number of their comments reflected on the rapidly changing policy environment:

"I think we're already fearful with the end of Primary Health Care Transition Fund. You know, I'm fearful it's getting lost on all the focus on wait times and access. It's very worrisome. Once we've moved onto the next big priority area we forget about what we were focusing on last week, last month or last year" (Policy maker, Western Canada).

Researchers felt overwhelmed by the timelines and frustrated by demands the PHCTF made on a fragile research infrastructure:

"To invest that kind of money in creating something and then five years later there's just this magical end to the project ... I hope nobody thinks you can spend money in that way on research and that it's a wise investment" (Researcher, Central Canada).

They were particularly frustrated by the cessation of PHCTF funding and the consequent loss of capacity. As one decision maker told us:

“The problem is there’s no infrastructure. ...here’s a big pot of money and here’s all this primary healthcare stuff and then poof! It disappears... You lose all the expertise, you lose all the methodology, you have no one to help you continue your projects unless you’re a faculty with a salary and part of your role is to be a researcher” (Decision maker, National).

Informants were uncertain about the post-fund environment. Few had any ideas about plans for dissemination or about plans to build on the achievements of the fund. While frustrated, researchers and policy makers both spoke with resignation of the long-term outcomes in terms of future capacity. Both groups were preparing for a return to the pre-fund environment where it was *“sort of ad hoc and ‘catch what you can’...” (Funder).*

2.3) KNOWLEDGE TRANSFER AND EXCHANGE IN CANADIAN PRIMARY HEALTHCARE RESEARCH

Research dissemination and uptake have been central concerns of educators and healthcare planners for more than two decades. Canada is becoming a world leader in promoting *knowledge transfer* and *knowledge exchange* strategies and activities in health. The term knowledge exchange (69) describes interactions between decision makers and researchers that can result “in mutual learning through the process of planning, producing, disseminating, and applying existing or new research in decision-making” (70). Similarly, *knowledge-to-action (KTA)* encapsulates the optimal use of research knowledge by practitioners, policy makers, patients and the public (69). In this report, we define knowledge transfer and exchange (KTE) as part of the core business of researchers and universities. Improving the KTE processes could increase the demand for PHC research among provincial and national stakeholders which, in turn, could help “fuel the fire” in terms of funding opportunities.

In this section, we will provide an overview of the KTE process and barriers related to 1) collaboration between researchers and policy makers; 2) knowledge translation and evidence-based primary healthcare; and 3) the role and place of consumers in knowledge transfer and exchange activities. The interviews focused mainly on the first theme, the collaboration between researchers and policy makers. Issues around the KTE processes still need to be publicly discussed and debated in order to cement the position of PHC researchers as major players in supporting and informing PHC reform efforts. This report provides such an opportunity.

2.3.1) Two communities: Knowledge exchange between researchers and policy makers

Our findings supported previously documented barriers preventing policy makers from making effective use of health services research: lack of personal contact between researchers and policy makers; and the lack of timeliness and relevance of research (71). Both contribute to a situation where *“efforts by researchers and decision-makers seem to proceed largely independently”* (39), often with little understanding of each other’s goals (42). These two comments reflect the distance between the two worlds:

“I’m not sure that the (researchers have) a realistic concept of the way policies and decisions get made in a democratic process” (Policy maker, Central Canada).

And from a researcher:

“...everybody talks about it (knowledge exchange) but I don’t think that anyone is particularly good at connecting with health policy makers because, in part, we don’t really know how those decisions are ultimately made... more often than not I have the impression that we are either communicating with the wrong people or we are communicating wrong messages. In terms of policy makers, I have to tell you, I’m not overly impressed. I have the impression that most of the time I’m talking to people who are not likely to be influenced by what I’m saying. Or if they are they are certainly keeping it a secret” (Researcher, Central Canada).

Strategies to bring the two communities together (72) are not without risk. Junior researchers may find it difficult to engage in such a process, especially since the number of peer-reviewed publications remains the standard indicator of performance in universities:

“I know there’s a lot of pressure from CHSRF to say, get out there and disseminate, get out and make these connections but I think that it creates a lot of vulnerability for new or relatively isolated researchers and it’s quite demanding. I mean, I don’t think you would expect that of other people...” (Research scientist, Eastern Canada).

Recent work at the CHSRF and CIHR have emphasized how helping the two groups work on common issues can help researchers understand the fact that research evidence “effectively competes with other forms of evidence (e.g., budgetary constraints and the legal code)” (73).

“... we’re still dreaming in technicolour if we think the decisions are based on rational analysis of the available information... decisions are seldom made that way. And sometimes we’re getting better at using information to help us understand the impacts of our decisions and, ah, perhaps to help us modify the way a decision gets implemented but we’re (all)... a long way away from evidence-based decision-making” (Policy maker, Eastern Canada).

CHSRF has also tried to make health managers more aware of the potential of health services research. The Foundation’s EXTRA program (Executive Training for Research Application) (74) has been designed to develop capacity and leadership to optimize the use of research evidence in managing Canadian healthcare organizations. Since 2004 and until 2014, up to 24 fellows are accepted annually in the two-year EXTRA training program (52).

2.3.2) I want the results now! Timeliness and knowledge exchange

The issue around timeliness and relevance is more complex. To many policy makers, the slow pace of academic research acts to diminish the impact and relevance of the eventual findings. This comment reflected the time-sensitive demands of healthcare policy: *“Obviously my needs are applied research – I have to answer a specific question... within a certain timeframe. Curiosity-driven research may meet my needs and my timeline, but the odds of that are not terrific” (Policy maker, Central Canada).*

The time pressures were magnified by the difficulties in distilling clear messages from expanding sources of information: *“You know I have a stack of research articles on my desk – I just haven’t got the time to wade through them” (Policy maker, Central Canada).* While personal contact eased the process, some have suggested that the problem may be more about tailoring the message to the audience (69) and to the particular policy setting (42).

Some researcher informants suggested that even if they identify the right policy targets, they can’t always find a sympathetic ear.

“I think that I would describe the commitment to primary care in (province X) as less than enthusiastic... and so we have maintained contact with a single decision maker who does seem to think primary care is important but that’s a very rare perspective right now at the Ministry of Health” (Researcher, Western Canada).

Policy makers interviewed for the study also commented on other means through which they get the evidence they need to inform decisions. A number valued the succinctness and clarity of the CHSRF newsletters and wondered whether there would be value in expanding the access to more web-based knowledge exchange strategies. One policy maker linked partnerships and timeliness. The respondent spoke of falling back on a group he had worked with when he had an urgent need for information:

“... senior bureaucrats wanted answers, like within the hour. I didn’t have time to go searching on the Internet. You know what the best strategy for me was? It was to e-mail a couple of my research colleagues from the (PHC integration) group and say, do you have anything on this? So, networks, networks that are relevant, are really critical because you can get the information just like that” (Policy maker, Central Canada).

2.3.3) Bringing in other knowledge users: PHC providers and consumers

We complete this section by acknowledging that knowledge transfer and exchange also involve primary healthcare providers and consumers. The former group has been directly affected by the movement towards evidence-based healthcare (EBHC). EBHC has revolutionized the approach to clinical decision-making since the early 1990s. Notwithstanding, it has been far from easy to translate the principles of EBHC into primary care practice with many practitioners viewing one of the core strategies of EBHC (clinical practice guidelines) as being “a square peg to fit in the round hole of the patient’s life” (75). Recent initiatives have had more success (76) in shortening “the journey from evidence to effect” (77) through a greater understanding of the balance between the type of knowledge in question and the complex world of the knowledge user (78).

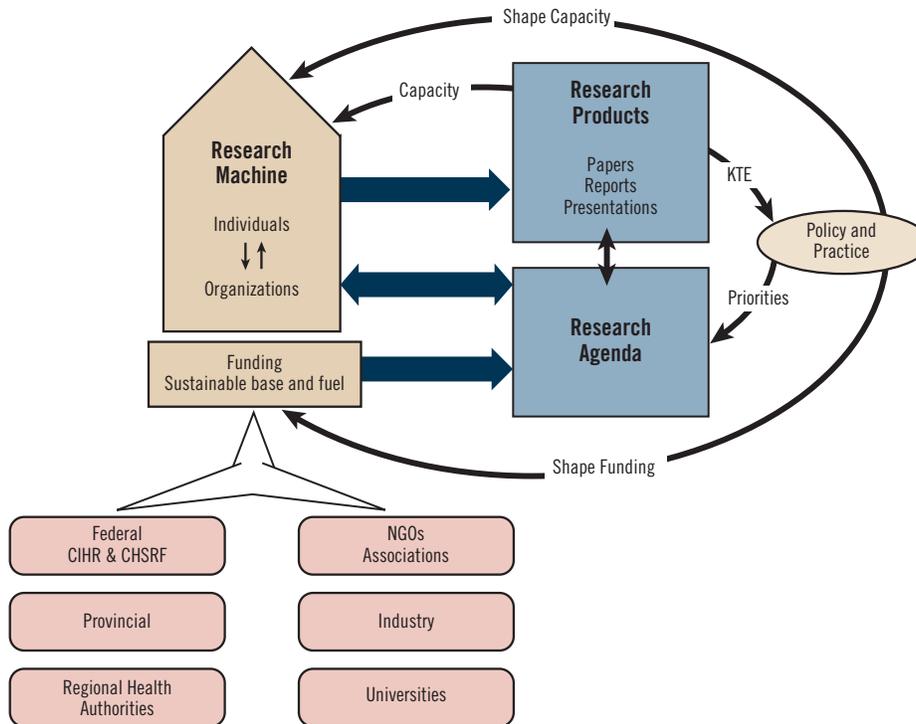
Knowledge transfer is also sometimes seen as a tool for the empowerment of consumers and communities. There is, however, a paucity of literature in the primary care field on the roles of consumers and the public in general in the knowledge-to-action process. There is growing consensus that consumers should not be confined to detached and passive roles (79). Some health services researchers, following the principles of action research, are also engaging consumers and communities in all phases of their studies rather than only as a target audience for the dissemination of their findings. One of the key informants notes:

“...it’s investigator-driven but that doesn’t mean that the questions come from the investigators all the time. We encourage front-line people to talk to us and indicate where they would like help” (Researcher, Central Canada).

Figure 1 reflects the complex reality of Canadian PHC research and proves a visual aid to consider the project’s recommendations. It highlights the interdependence of research capacity and the twin domains of health policy and clinical practice. The core concept is that quality research produces timely and relevant evidence for both policy makers and clinicians. The “research machine” refers to the capacity of individual researchers and organizations to engage in high-quality PHC research. While numerous government, professional and private

organizations act to support research capacity, support from provincial and federal agencies is essential. Funders can have a direct influence on the PHC research agenda, while the effectiveness of KTE processes can enhance the ability of researchers to develop fundable research questions and designs. Increasing the usefulness and uptake of PHC research among national and provincial stakeholders can help guarantee a sustainable funding base and further shape capacity.

FIGURE 1: CANADIAN PRIMARY HEALTHCARE RESEARCH



- PHC research remains under-funded despite the fact that primary healthcare is often presented as the cornerstone of healthcare reforms.
- Knowledge generation is hampered by 1) lack of tailored and sustainable support for clinician investigators and research scientists; 2) limited and unco-ordinated access to health data; and 3) suboptimal co-ordination among PHC researchers.
- Further consolidation of knowledge transfer and exchange processes between PHC researchers and policy makers is needed in order to increase the visibility, impact and desirability of PHC research.

3) LOOKING BEYOND THE HORIZON: PERSPECTIVES AND POLICIES FROM OVERSEAS

The previous section outlined the structure and function of PHC research capacity in Canada. Many comparable nations have begun to investigate methods of optimizing research capacity in primary care and/or health services research (44;80;80-82). This section presents case studies of capacity-building strategies from three comparable western nations.¹¹

3.1) THE UNITED KINGDOM: MAJOR INVESTMENTS AND CENTRAL CO-ORDINATION

In 1997 a national working group conducted a major review of the primary care research capacity in the U.K.'s National Health Service (NHS). The resulting Mant report (83) advocated that any increase in NHS research and development activity would require 1) co-operation between the NHS, Medical Research Council,¹² universities, and other funding organizations; 2) a parallel expansion in research and development (R&D) capacity in the university sector; and 3) effective collaboration between NHS service providers and universities. The report gave careful consideration to the differences between *research in primary care* (where at least one principal investigator is a primary care professional), *research through primary care* (where others initiate the research but gather data in the primary care setting) and *research on primary care* (where the question formulation and data collection are carried out by others, but the focus is the activities of primary care professionals). Recommendations were designed to deliver an evidence-based culture in primary care with a focus on recruiting, developing and retaining primary care research leaders, increasing the number of clinical staff with research expertise and increasing the primary care research involvement of non-clinical primary care researchers.

Implementation of the report saw a ministerial commitment to increase the R&D spending on primary care research from £30 million to £50 million by 2002-2003 (84). Specific initiatives included the development of primary care career scientist positions, the provision of primary care-specific research grants and a series of policies designed to foster practice-based research networks (PBRNs). A number of initiatives were designed to make the most of collaborations between researchers and regional primary care networks.

The success of the strategy was reflected in the Research Assessment Exercise of 2001, where 88 percent of U.K. academic departments of general practice and primary care had achieved a national level of research excellence. Five of these had achieved an international standard (85). Small PBRNs expanded following the Mant report. These have been instrumental in providing an infrastructure for research in primary care, for collecting morbidity data, and in facilitating research training (30).

The NHS has, since 1995, funded a centre of excellence in primary care health services research at the National Primary Care Research and Development Centre (NPCRDC). This collaboration between the universities of Manchester and York aims to 1) develop and communicate policy- and practice-relevant research; 2) develop research capacity in primary care; and 3) communicate research findings to promote the development of evidence-based PHC. Its research themes reflect current NHS priorities concerning the evaluation of quality primary care, the management of chronic disease and the exploration of how the configuration of primary care teams can improve quality and cost-effectiveness. The NPCRDC is linked with local PBRNs and is part of the Institute of Health Sciences (IHS), a networked organization of groups involving more than 500 academics and clinicians across healthcare disciplines.

11 The three nations (and Canada) have been the subject of much of the focus in recent literature. A Medline search using terms of "research capacity" AND (primary care OR primary health care) produced 64 articles, more than 90 percent of which originated from the United Kingdom, the United States, Australia or Canada.

12 The U.K. equivalent of CIHR

Interestingly, while the centre runs a comprehensive internal educational program, it has no real mandate to support research infrastructure beyond its walls and has been criticized for its lack of effective communication of findings to health policy makers (42). Substantial funding from the NHS facilitates the orientation of the centre's output to NHS priorities, but does leave it exposed to external budgetary constraints (86-88).

The Department of Health has recently announced a five-year Research and Development Strategy for the NHS in England (89). The "centre of excellence" principle enshrined within the NPCRDC has been expanded with the formation of the National Institute for Health Research's Institute for Primary Care Research. The proposed institute will be comprised of the leading academic centres of primary care research in England (90). Despite the potential for the strategy to further strengthen high-quality research in U.K. PHC, concerns have been expressed as to the impact of the policies on smaller research centres and on some successful PBRNs. These highlight a philosophical move away from grassroots PHC research initiatives into a broader NHS vision of a responsive, competitive and high-quality research enterprise.

3.2) AUSTRALIA: CHANGING NEEDS, EVOLVING PROGRAMS

The Australian government has made significant investments in PHC research capacity since the early 1990s. Research support began with the launch of the nation's General Practice Evaluation Program (GPEP) in 1990. The federal government provided A\$12 million (C\$10 million) in the following decade for two sorts of grants, specifically, small seeding grants to give novice researchers an opportunity to explore new questions and innovative methods, and more substantial project grants for evaluation of the nation's evolving PHC system. The government began to fund a national conference for dissemination of GPEP and other findings (91) and began to provide PhD and master's scholarships for clinicians and others to improve their PHC-specific research and evaluation skills.

A 1998 review of GPEP (and broader PHC strategies) set the groundwork for the launch of the Primary Health Care Research and Evaluation Development (PHC-RED) strategy. This federal initiative began in 2000 with an overall aim of embedding a research culture in Australian general practice specifically and in the broader domain of Australian PHC. Following a positive evaluation after the first five years of the strategy, a budget of A\$61 million (C\$52 million) for 2006-2009 supports its aims of expanding the pool of PHC researchers and of supporting research relevant to PHC practice and policy. The PHC-RED strategy has four components (92).

- *The Australian Primary Health Care Research Institute (APHCRI)*: APHCRI is a "virtual institute" with a mandate to conduct and facilitate research and research uptake in primary healthcare policy and practice and to enhance research capacity through strategic partnerships with other relevant national and international groups. It is predicated upon a "hub and spoke" model where the Australian National University is the home for a small hub – co-ordinating and facilitating activities in a series of spokes (corresponding to individual projects running through a variety of departments of general practice and rural health). APHCRI activities have focused upon critical PHC questions relating to the organization, delivery and financing of care. Funded work has had a broad range: studies have included examinations of mental healthcare delivery, chronic condition management, models of PHC delivery, PHC workforce, and indigenous and rural healthcare.

- *The Research Capacity-Building Initiative (RCBI)* revolves around activities that provide sustainable support to early- and mid-career researchers in PHC. Each of 25 departments of general practice and rural health is provided with funds to run a variety of capacity-building initiatives. These have included research mentoring and supervision (particularly of higher research degrees), short courses and workshops, small research bursaries and support for PBRNs. In recent years departments have pooled funds to create state-based consortia which have developed vibrant research networks, some of which have crossed state and territory borders. Now in its second iteration, the RCBI has begun to forge links with key bodies/policy makers in the planning, implementation and dissemination of RCBI-supported research.
- *Training Awards:* These awards are administered by Australia's health research funding body, the National Health and Medical Research Council (NH&MRC). Fellowships and project grants are directed at early-, mid- and senior-level primary care researchers. They support both investigator- and priority-driven research in the clinical as well as health services domains. The NH&MRC also refers highly rated but unfunded investigator-driven primary care project grants for consideration by a specific primary care funding panel (93).
- *The Primary Health Care Research and Information Service (PHCRIS)* supports research dissemination and knowledge exchange. PHCRIS co-ordinates knowledge dissemination through a range of written and web-based publications. It conducts Australia's major primary care research conference and has an ongoing mandate to connect producers and users of research.

There has been steady growth in the number and size of the grants received by PHC-RED-supported researchers. After four years of the PHC-RED strategy, research grant funding has increased by 300 percent in departments of general practice and by 500 percent in departments of rural health. Similar improvements have been seen in collaboration between health professionals, consumers, policy makers, project and program co-ordinators, PHC researchers and academics (94).

3.3) THE U.S.: TARGETED FUNDING, MANY SOURCES

The U.S. has a more decentralized approach to research capacity. Sustainability has been aided by the diversity of public and private funding sources. Individual funding has supported clinician investigators and research scientists from a variety of disciplines and PBRNs have helped promote linkages and networks both within primary care and between providers and policy makers. Notwithstanding this, although U.S. healthcare spending on research exceeds US\$34 billion, this represents 2.2 percent of total healthcare spending. Only five percent of this amount is spent on health services research (95).

Targeted funding: There are multiple sources for funding and capacity-building for PHC research in the U.S. These include federal and state government agencies, private foundations and healthcare organizations. At a federal level PHC and health policy research funding is the responsibility of the Agency for Healthcare Research and Quality (AHRQ), one of nine agencies forming the Department of Health and Human Services, the main federal government department overseeing healthcare. The AHRQ houses the Center for Primary Care, Prevention, and Clinical Partnerships (CP3), whose research priorities currently include primary care, PBRNs, clinical informatics and a variety of workforce initiatives (96). The AHRQ has made formal links with state governments (97) as well as with a number of PHC disciplines, and with federal, private sector, and non-profit organizations with common interests in primary care.

Individual capacity-building: More than two-thirds of the AHRQ's US\$318 million budget is allocated to research and training grants (95). The AHRQ receives funding through the National Research Service Award Program to promote a range of doctoral and postdoctoral positions. Of interest, two-thirds of postdoctoral awards went to candidates with clinical doctorates (52 percent of these coming from internal medicine, 16 percent from pediatrics and eight percent from family practice) (98).

Private foundations are major players in research capacity-building in the U.S., the most prominent of these being the Robert Wood Johnson Foundation (RWJF). Three RWJF initiatives have been particularly relevant to individual primary care researchers. The clinical scholars program supports the ongoing development of scholarly clinicians, with a health policy and health services focus. Both career development and research grants are available to primary care clinicians and others. A GP scholars program (now terminated) was a specific career development program targeted towards family practice, general internal medicine and general pediatrics (99). Between 1993 and 2004, they awarded 175 career development grants to junior faculty in those disciplines. Finally, since 1992, the foundation has invested more than US\$39 million in 113 investigator awards in health policy research. Some of these have had specific relevance to PHC (100).

Other initiatives (including those from the Robert Graham Center for Policy Studies in Family Medicine and Primary Care and the Commonwealth Fund) offer internships to providers interested in health policy development (101;102).

Networks: There is significant organizational infrastructure supporting primary care research capacity in the U.S. The Kaiser Permanente Center for Health Research (CHR) is one of a number of organizational networks acting to link disciplines and jurisdictions. Although originally developed to study health maintenance organizations (HMOs), this independent, non-profit research institute has a mission of improving individual health and informing health policy. It now plays a major role in building primary care research capacity in part through a PBRN comprising 13 research centres affiliated with non-profit HMOs. It has 25 million members throughout the nation, with a mandate to pursue new population-based approaches for treating and preventing diseases (103). Kaiser's PBRN is one of more than 100 such networks in the U.S. These act to link 13,000 physicians and 14.7 million patients (104). A four-fold increase in PBRNs in the past decade has been facilitated by ongoing links with supportive academic departments, a commitment from the AHRQ for infrastructure funding, and a focus from the National Institutes of Health on translation and clinical research (104).

Unlike Canada, the U.K., Australia and the U.S. have provided targeted support for capacity development in PHC research. Policies have included:

- co-ordination of national and regional PHC research capacity-building policies;
- sustainable, adequate, and at times targeted funding for contextually relevant PHC research;
- support for clinicians to achieve doctoral qualifications in research oriented to PHC;
- sustainable career paths for both clinician investigators and research scientists; and
- support for practice-based research networks.

4) BRINGING IT ALL TOGETHER

Reflection on the Canadian experience in the context of the conceptual and international background reveals several key messages. The move to PHC reform brings with it a pressing need for research strategies to understand and inform issues surrounding delivery model redesign, workforce, quality and safety, illness prevention and care of chronic disease. Furthermore, an increasing system-wide focus on PHC highlights the importance of examining prevalent PHC clinical research topics within the primary care setting. Finally, Canadian work shows the importance of linking quality research with creative strategies in the new area of KTE.

Findings of this review reveal a disconnect between the political support for PHC renewal and the resources allocated to PHC research. While Canada has been refining approaches to optimize knowledge translation, it has not systematically supported the PHC research community or the generation of new knowledge related to PHC. Experiences from the PHCTF, from our key informants and from overseas suggest that research of quality will emerge if there is *sustainable* funding delivered in supportive environments. Neither the funding nor the research environments have been sufficiently supportive of the Canadian PHC research community. Barriers to knowledge exchange pale in relation to those of knowledge generation.

The recent PHCTF is an exemplar of the poor co-ordination and sustainability of many initiatives in the field. Many of its initiatives were, appropriately, tailored to provincial needs, facilitating links between policy makers, researchers and the community. Many led to transient increases in research capacity and in dialogue between researchers and decision makers. Yet within months of the conclusion of the fund, most of its benefits to capacity had faded away.

The deficiencies in knowledge generation are most pronounced at the federal level. Despite welcome successes in building relationships between policy makers and researchers, CIHR (Canada's principal federal healthcare research agency) has been of little assistance to the PHC sector. These concerns are magnified by the system-wide challenges of a lack of co-ordinated funding for research and infrastructure, inefficiencies in health data access and linkages, and the absence of sustainable research funding (49;51).

The international experience suggests that Canadian clinician investigators have less access to early research immersion and rigorous research training than many of their international counterparts. Established clinician researchers have some financial security with the potential for clinical earnings, but in some disciplines have significant competing educational and clinical responsibilities. By contrast, early career opportunities are more plentiful for research scientists (most of whom have a doctoral degree in a social science discipline). Some have been able to access postdoctoral fellowships; however, sustainable careers become compromised at the mid-career level. Few externally funded chair positions focused on PHC are held by leaders within the community.

We found the strongest support for PHC capacity at a provincial level. While a number of provincial ministries and health research funding agencies are matching research to emergent PHC problems, capacity-building seems tied to specific, time-limited initiatives. There was little indication that co-ordinated resources could be mobilized to address PHC issues that crossed provincial borders. Partnerships that have formed are mainly regional, and are themselves relatively flimsy.

PHC professional bodies have made little impact on the research landscape. While some (in particular the College of Family Physicians of Canada) have spent much energy appealing for discipline-specific research support, their efforts have to date been unrewarded. Indeed we found little evidence that key professional bodies had been able to generate a common vision

for primary care. As a result, Canadian PHC never speaks with a common voice. By contrast, the hospital sector has strong leadership and representation for many of the highly specialized services delivered within academic health science centres.

It is difficult to escape from a conclusion that the lack of capacity for generating PHC research compromises Canada's ability to achieve meaningful PHC reform. Overseas experience shows that countries with a strong primary care orientation can implement multifaceted strategies to strengthen the capacity for the PHC sector to conduct high-quality health services and clinical research. Common themes have included national or regional co-ordination, targeted PHC research funding and support for practice-based research networks. At an individual level such nations have actively promoted higher research degrees for PHC clinicians and ensured sustainable career paths for active PHC researchers. Capacity-building must be linked with evolving needs. While initial PHC capacity-building in both Australia and the U.K. was oriented towards family practice, both nations' programs now embrace broader models of service delivery. With strengthening capacity, recent policies have moved to promote centres of excellence and address issues of KTE with both policy makers and the clinical community.

5) RECOMMENDATIONS

These recommendations are targeted at federal and provincial agencies, ministries of health, universities and PHC professional organizations. They are underpinned by capacity-building concepts of sustainability, linkages and proximity to practice. Organization of the recommendations follows three overarching strategies to address the identified PHC research problems within Canada: 1) improve the co-ordination of PHC research; 2) support knowledge generation; and 3) embed principles of knowledge translation and exchange. These recommendations are designed to map the early steps in a program to invigorate the PHC research community. Hence we have chosen not to make recommendations concerning funding requirements of the initiatives and have not attempted to advise target numbers or frameworks for evaluation.

5.1) IMPROVE THE CO-ORDINATION AND EFFECTIVENESS OF PHC RESEARCH AND KNOWLEDGE TRANSLATION

The first recommendation addresses the fragmented nature of the Canadian PHC research community and its associated research capacity initiatives.

Recommendation 1: Establish a Canadian co-ordinating body for primary healthcare research

This central recommendation provides an opportunity for PHC researchers, clinicians and policy makers to find common ground in creating a consistent vision for PHC research in Canada. We see the body having representatives from provincial and federal policy makers, researchers and members of the community. Its sphere of interest would include clinical and health services research conducted in the PHC setting. The body would have a mandate to provide leadership, advocacy and policy representation in the area of PHC research and knowledge translation. The co-ordinating body would need to work in close conjunction with the provinces and with other organizations that have a stake in PHC research. These include:

- federal and provincial funding agencies;
- the Health Council of Canada;
- the Canadian Health Services Research Foundation's Primary Healthcare Network;

- the North American Primary Care Research Group;
- key PHC professional bodies (in particular family practice, community nursing, community pharmacy); and
- university departments oriented towards PHC.

The body would concentrate activities in a series of key initiatives, all relating to PHC research. Main priorities would involve liaison with key federal and provincial bodies; co-ordination and advocacy for capacity-building; securing of funding from varied sources to address significant pan-Canadian PHC research issues; securing of infrastructure support for PBRNs; and strengthening pan-Canadian and provincial PHC-related data sources.

The body would require stable funding for at least five years. We anticipate that funding could come from multiple sources including, but not restricted to, federal government, provinces and professional organizations. Notwithstanding this, it would be important that an existing federal agency act as a sponsor or host organization for the co-ordinating body. CIHR or CHSRF could fill such a role, either alone or in partnership with each other.

The co-ordinating body should orient its functions around the following six initiatives:

- **Develop a pan-Canadian strategy for PHC research and capacity development**

Unlike other countries, Canada lacks an articulated strategy for primary healthcare research. Although the *Listening for Direction* process involving IHSPR and CHSRF helped articulate a broad vision for health services research, the results lack specific relevance for PHC. While mindful of the fact that PHC services are delivered at a provincial level, an articulated pan-Canadian strategy for PHC research would help orient funding bodies, researchers and policy makers to a set of core research priorities.

- **Establish a Canadian PHC research information system linking PHC research and policy initiatives**

The PHC research information system would be designed to build on the current information dissemination activities of the CHSRF and of several provincial health research bodies (107;108). Its activities would be specifically oriented to the needs of researchers, decision makers and clinicians working within the domain of PHC. The function of this body could be similar to that of Australia's Primary Health Care Research and Information Service (92;109). A core activity would be to develop and maintain an inventory of active PHC researchers and PHC projects. This could build on pre-existing databases already developed by a variety of federal, provincial and professional bodies (110).

- **Co-ordinate and support Canada's practice-based research networks**

Co-ordination of Canada's PHC practice-based research networks (PBRNs) offers major benefits in disease surveillance, monitoring of regional variation and in the potential to address significant questions requiring large community-based samples. The process of co-ordination would require a stepwise process where early stages would be devoted towards advocacy at a provincial and regional level combined with strategies to link pre-existing networks. Further evolution should include the co-ordination of initiatives to further the governance, infrastructure, data management and funding of the PBRNs.

- **Advocate for enhanced quality and accessibility of PHC-related data**

The introduction of capacity-building initiatives in an area with the complexity of PHC research is complicated by the difficulty in measuring performance of the PHC sector. Similar recommendations have resulted from a number of previous national reports. We endorse the recommendations of the IHSPR recent review concerning access to population health and health services research data in Canada (41).

- **Work with universities and funding agencies to move beyond traditional methods for assessing academic progress**

Canada's PHC research community is, by and large, embedded in the university sector. Promotion and tenure is heavily weighted in favour of those researchers who are successful in obtaining large research grants and multiple publications. There is a dawning realization that this policy may act to disadvantage researchers working to translate evidence into practice (105). We would urge the co-ordinating body to support the work of CHSRF and knowledge translation sectors of CIHR and the provinces to help identify and advocate for alternative ways for universities and federal funding agencies to recognize such activities.

- **Co-ordinate an annual conference on Canadian primary healthcare research**

Conferences are an important way for scientific and policy communities to gain knowledge and, importantly, to initiate and sustain collaborative relationships (106). The 2006 CHSRF Primary Healthcare Network Symposium "Sustaining Primary Healthcare Renewal" forms a good model for the future.

5.2) SUPPORT KNOWLEDGE GENERATION IN PHC RESEARCH

Other nations have allocated substantial, secure funding for the ongoing exploration of important PHC questions. Canada has not. Although federal and provincial funding is available for operating grants, little of that funding is earmarked for addressing PHC problems. The PHCTF was an example of how important hitherto under-examined questions in the PHC sector can begin to be explored given sufficient funding.

Our recommendations are framed as a basis for federal and provincial agencies to strengthen PHC research capacity in their areas of influence. We believe that Canada's PHC research requires targeted support at both federal and provincial levels.

Recommendation 2: Introduce targeted federal and provincial PHC research funding initiatives for PHC-specific operating grants, research teams, research training and personnel support

PHC research funding initiatives could be delivered at the regional, provincial/territorial and federal levels. The co-ordinating body for PHC research would have a key role in linking with funding agencies to identify priority areas for support.

Several pre-existing models could inform the organizational structure of these PHC research funding initiatives. Consultations within this project suggest several possibilities:

- At a federal level, a PHC research funding initiative could be delivered along the lines of the Nursing Research Fund within the CHSRF (56).
- A series of strategic competitions could be held through the CIHR where highly rated but unfunded proposals enter a second process of review by special PHC committees. CIHR has used a similar process to match provincial funding initiatives, particularly in smaller provinces (106).

- Funding could also be delivered through provincial initiatives, potentially administered by provincial/regional health research organizations. Decentralization of research funds provides one way to ensure that research initiatives address local needs and stay grounded in local priorities.

PHC research funding initiatives should include programs to provide:

- **Operating grants directed at critical PHC questions.**

Federal operating grant funding should be reserved for exploration of issues of pan-Canadian relevance, including health services and policy research questions that are best answered by collaborative, inter-provincial approaches. Provinces will continue to have a major interest in understanding and evaluating systems for delivering effective PHC and in initiatives to address significant PHC-related community needs.

- **Team grants to allow experienced researchers to collaborate to address strategically important PHC issues.**

Our findings have highlighted the isolation and lack of critical mass of PHC researchers. This, combined with the complexity of the field and the importance of multidisciplinary perspectives points to the need for the support of research teams. Programs should bring together experienced and novice researchers to foster high-quality knowledge generation, knowledge translation and mentorship. CIHR's team grant program (111) provides a good model.

- **A co-ordinated program to foster sustainable careers for PHC researchers.**

These recommendations address the needs of the two main cohorts of researchers in Canadian PHC: clinician investigators and research scientists. Other jurisdictions have successfully designed strategies to provide PHC research career paths for both cohorts. Again, needs should be addressed at a pan-Canadian and provincial level and conducted in close consultation with the proposed CCB. Priorities would include:

- a) **Doctoral and postdoctoral fellowships for PHC clinicians and future research scientists**

This recommendation addresses the needs of early-career PHC researchers. It offers potential clinician investigators access to high-quality research training and would provide early exposure to PHC for future research scientists. While two logical entry points exist for research training for Canadian PHC clinicians (at the pre-registration level and in early mid-career) research scientists are more likely to enter with the commencement of their doctorate.

We recommend a fellowship program with two streams: one for future clinician investigators and the other for future research scientists. The clinician stream would require flexibility to allow continuation of some clinical practice and should also be mindful of the social context of this generally older cohort (68). The research scientist stream would be similar to other fellowships for early researchers but would be awarded based in part on the proposal's relevance to PHC.

- b) **Career awards for research scientists involved in PHC research**

Our consultations have revealed a significant mid-career gap in salary support for research scientists. We view with concern the withdrawal of support for CIHR investigator and senior investigator salary support programs. This has a greater impact on research scientists by

virtue of their inability to access clinically linked sources of salary support. There is a critical need for federal and provincial research bodies to support this level of training, particularly with the complexity of many of the health services research issues in the domain of PHC.

c) Expansion of clinician scientist award opportunities for PHC clinician investigators

This report recognizes the importance of clinicians with research training to the PHC research enterprise. Training for clinician investigators requires both provincial and federal support. It also recognizes that the small pool of PHC clinicians with research skills may require more extensive support than that provided to individuals from more mature research disciplines.

d) Development of MD/PhD programs oriented towards PHC

Nine Canadian medical schools currently run MD/PhD programs, most of them being oriented to basic biomedical science. With appropriate funding support, universities with a pre-existing PHC research infrastructure could develop suitable programs for PHC clinicians. All programs would benefit from skilled mentoring and inter-university links at a provincial and pan-Canadian level. Similar programs could be developed for other PHC disciplines.

e) Support for PHC research chairs

A strong academic community demands high-quality leadership. The PHC research funding initiative would be substantially strengthened, as has its nursing counterpart, by the funding and support of at least five PHC research chairs nationally. Among the criteria for the selection of PHC research chairs would be their ability to nurture the next generation of researchers, to work across disciplinary boundaries and to foster KTE.

5.3) EMBED PRINCIPLES OF KNOWLEDGE TRANSLATION AND EXCHANGE

Recommendation 3: Tailor CHSRF and other national and provincial KTE activities to the specific needs of PHC clinicians and policy makers

Canada has been a leader in the articulation of the concepts of knowledge translation and exchange. CHSRF has for a number of years been actively promoting dialogue between researchers and policy makers. We strongly recommend that principles of effective KTE be embedded at all levels of the initiatives mentioned above. This generic recommendation reflects the general endorsement of current activities, while highlighting the importance of making research-based information relevant to a sector that is far more dispersed and varied than secondary and tertiary care.

6) CONCLUSION

Three comments need to be made in the consideration of these recommendations. First, we feel that many of the deficiencies of Canada's capacity for conducting quality PHC research stem from the piecemeal approach with which governments, funding agencies and professional bodies have dealt with the area. While some of the recommendations require co-ordinated strategies from a number of levels, almost all could be facilitated by the implementation of our first recommendation: *the formation of a Canadian co-ordinating body for primary healthcare research.*

Second, a policy maker could be excused for believing that the recommendations are overwhelmingly oriented to the needs of the PHC research enterprise. This is a reflection of our conclusion that knowledge translation policies are far in advance of those directed towards knowledge generation. Advances in knowledge translation can capitalize on the KT lessons of the last decade, remaining mindful of the particular features of PHC policy and practice.

Finally, we believe that it would be premature to recommend wide implementation of PHC research centres of excellence. Notwithstanding this, the policy and academic communities should continue to watch the activities of several PHC and health services research centres that have been able to attract quality researchers and to produce research of international standard.

Few of the recommendations in this report are new. Many have been presented by professional bodies and reviewers of Canada's health research enterprise in the last decade. The continuing lack of progress is deeply disturbing, especially when considering the outcomes from international initiatives built around similar frameworks. It seems counterintuitive that, while Canada moves steadily towards a wholesale reform of primary care delivery, research in the field lacks stable, co-ordinated support.

Our review causes us to speculate on a fundamental question. Do funders and policy makers consider that Canada needs more understanding of and high-quality research data in the area of primary healthcare? If the aims of health research are to generate biomedical knowledge to increase Canada's international competitiveness, then PHC research has little place. If, however, research in healthcare has a broader remit, one that includes addressing the healthcare needs of communities beyond the teaching hospital, and of understanding and responding to emergent issues within a complex healthcare system, then it is difficult to dismiss the fundamental importance of a vibrant, co-ordinated PHC research community.

The recommendations contained within this report illuminate a path along which Canada can begin to reach the potential of a critical sector of its healthcare system.

7) REFERENCES

- (1) Trostle J. Research capacity building in international health: definitions, evaluations and strategies for success. *Soc Sci Med* 1992 Dec;35(11):1321-4.
- (2) Institute of Medicine. *Health Services Research: Opportunities for an Expanding Field of Inquiry*. 1994.
- (3) Starfield B. *Primary care: balancing health needs, services and technology*. 2nd ed. New York: Oxford University Press; 1998.
- (4) Health Canada. *Primary Health Care and Health System Renewal*. Health Canada 2004 October 1 [cited 2006 Nov 21]; Available from: URL: http://www.hc-sc.gc.ca/hcs-sss/prim/renew-renouv/index_e.html
- (5) Lamarche P, Beaulieu M, Pineault R, Contandriopoulos A, Dennis D, Haggerty J. *Choices for Change: The Path for Restructuring Primary Healthcare Services in Canada*. CHSRF; 2003.
- (6) Muldoon LK, Hogg WE, Levitt M. Primary care (PC) and primary health care (PHC) – What is the difference? *Canadian Journal of Public Health-Revue Canadienne de Sante Publique* 2006;97(5):409-11.
- (7) AcademyHealth. *Directory of training programs in health services research & health policy*. AcademyHealth 2006 [cited 2006 Nov 21]; Available from: URL: <http://www.academyhealth.org/directory/background.htm>
- (8) Lomas J. *Connecting Research and Policy*. Isuma: *Canadian Journal of Policy Research* 2000;1(1):140-4.
- (9) Dash P, Gowman N, Traynor M. Increasing the impact of health services research. *British Medical Journal* 2003;327(7427):1339-41.
- (10) Mold JW, Green LA. Primary care research: revisiting its definition and rationale. *J Fam Pract* 2000 Mar;49(3):206-8.
- (11) Fulop N, Allen P, Clarke A, Black N. Issues in studying the organisation and delivery of health services. In: Fulop N, Allen P, Clarke A, Black N, editors. *Studying the organisation and delivery of health services: Research methods*. London: Routledge; 2001. p. 1-23.
- (12) Ryan JG. Health Services Researcher Lu Ann Aday: Primary Care and Health Services Researchers as Partners. *Annals Of Family Medicine* 2003 May 1;1(1):60-1.
- (13) Del MC, Askew D. Building family/general practice research capacity. *Ann Fam Med* 2004 May 26;2 Suppl 2:S35-S40.
- (14) From the North American Primary Care Research Group. *Future of Family Medicine Recommendations Confirm Need for Increased Research from Family Physicians*. *Ann Fam Med* 2004 Jan;2:282-3.
- (15) Askew DA, Clavarino AM, Glasziou PP, Del Mar CB. General practice research: attitudes and involvement of Queensland general practitioners. *Med J Aust* 2002 Jul 15;177(2):74-7.
- (16) Askew DA, Glasziou PP, Del Mar CB. Research output of Australian general practice: a comparison with medicine, surgery and public health. *Medical Journal of Australia* 2001;175(2):77-80.

- (17) Grzybowski S, MacArthur A, Berger S, Lee A, Boxer J, Cheema N. Scholarly Productivity of Family Medicine in Canada. University of Ottawa 2004.
- (18) Rafferty AM, Traynor M, Thompson DR, Ilott I, White E. Research in nursing, midwifery, and the allied health professions. *BMJ* 2003 Apr 19;326(7394):833-4.
- (19) Hartley D. Rural health research: building capacity and influencing policy in the United States and Canada. *Can J Nurs Res* 2005 Mar;37(1):7-13.
- (20) Taylor J, Hughes C, Petkov J, Williams M. Unique issues in research and evaluation in rural and remote locations: is there a place for specific research training? *Rural Remote Health* 2005 Apr;5(2):351.
- (21) Kulig JC, Minore B, Stewart NJ. Capacity building in rural health research: a Canadian perspective. *Rural Remote Health* 2004 Jul;4(3):274.
- (22) Curtis P, Dickinson P, Steiner J, Lanphear B, Vu K. Building capacity for research in family medicine: is the blueprint faulty? *Fam Med* 2003 Feb;35(2):124-30.
- (23) Dowding D, Fyffe T. Evaluating the funding and capacity of research in Scotland. *Nurs Times* 2004 Apr 20;100(16):36-8.
- (24) Manca D. Funding support for primary care research. *Can Fam Physician* 2002 Sep;48:1435-6.
- (25) Weyant RJ. Resources needed to enhance and develop health services research to improve the oral health status of the aging veteran in the Department of Veterans Affairs System. *Med Care* 1995 Nov;33(11 Suppl):NS164-NS185.
- (26) Kingwell BA, Anderson GP, Duckett SJ, Hoole EA, Jackson-Pulver LR, Khachigian LM, et al. Evaluation of NHMRC funded research completed in 1992, 1997 and 2003: gains in knowledge, health and wealth. *Med J Aust* 2006 Mar 20;184(6):282-6.
- (27) Wilson D, Glassford RG, Krupa E, Masuda J, Wild C, Plotnikoff R, et al. Health promotion practice, research and policy: building capacity through the development of an interdisciplinary study centre and graduate programme in Alberta, Canada. *Promot Educ* 2000;7(1):44-7, 66.
- (28) Fung CC, Hitchcock M, Fisher D. Effects of funding family physicians for advanced research training. *Family Medicine* 2005;37(6):434-9.
- (29) Fuller J, Edwards J, Martinez L, Edwards B, Reid K. Collaboration and local networks for rural and remote primary mental healthcare in South Australia. *Health & Social Care in the Community* 2004 Jan;12(1):75-84.
- (30) Thomas P, Griffiths F, Kai J, O'Dwyer A. Networks for research in primary health care. *BMJ* 2001 Mar 10;322(7286):588-90.
- (31) Lindbloom EJ, Ewigman BG, Hickner JM. Practice-based research networks: the laboratories of primary care research. *Med Care* 2004 Apr;42(4 Suppl):III45-III49.
- (32) Mold JW, Peterson KA. Primary care practice-based research networks: working at the interface between research and quality improvement. *Ann Fam Med* 2005 May; 3 Suppl 1:S12-S20.
- (33) Gunn JM. Should Australia develop primary care research networks? *The Medical Journal Of Australia* 2002 Jul 15;177(2 (Print)):63-6.

- (34) Martin-Misener R, McNab J, Sketris IS, Edwards L. Collaborative practice in health systems change: the Nova Scotia experience with the Strengthening Primary Care Initiative. *Can J Nurs Leadersh* 2004 May;17(2):33-45.
- (35) DeHaven MJ, Wilson GR, O'Connor-Kettlestrings P. Creating a research culture: what we can learn from residencies that are successful in research. *Family Medicine* 1998 Jul;30(7 (Print)):501-7.
- (36) Hitchcock MA, Bland CJ, Hekelman FP, Blumenthal MG. Professional networks: the influence of colleagues on the academic success of faculty. *Acad Med* 1995 Dec;70(12):1108-16.
- (37) Mant D, Del MC, Glasziou P, Knottnerus A, Wallace P, van WC. The state of primary-care research. *Lancet* 2004 Sep 11;364(9438):1004-6.
- (38) Cooke J. A framework to evaluate research capacity building in health care. *BMC Fam Pract* 2005 Oct 27;6:44.
- (39) Lomas J. Improving Research Dissemination and Uptake in the Health Sector: Beyond the Sound of One Hand Clapping, McMaster University Centre for Health Economics and Policy Analysis. Policy Commentary C97-1, November 1997.
Ref Type: Generic
- (40) Canadian Institutes of Health Research. Developing a CIHR Framework to Measure The Impact of Health Research. Canadian Institutes of Health Research; Sept. 2005
- (41) Black C, McGrail K, Fooks C, Baranek P, Maslove L. Data, Data Everywhere: Improving access to population health and health services research data in Canada. CHSPR, CPRN; 2005.
- (42) Lavis JN, Ross SE, Hurley JE, Hohenadel JM, Stoddart GL, Woodward CA, et al. Examining the role of health services research in public policymaking. *Milbank Q* 2002;80(1):125-54.
- (43) Green LA, Seifert CM. Translation of research into practice: why we can't "just do it." *J Am Board Fam Pract* 2005 Nov;18(6):541-5.
- (44) Farmer E, Weston K. A conceptual model for capacity building in Australian primary health care research. *Aust Fam Physician* 2002 Dec;31(12):1139-42.
- (45) Canadian Institutes of Health Research. Balance of Funding in Canadian Health Research and Future Funding Requirements. Canadian Institutes of Health Research 2006 September 18 [cited 2006 Nov 21];Available from: URL: <http://www.cihr-irsc.gc.ca/e/32171.html>
- (46) Bernstein A, Hicks V, Borbey P, Campbell T. A framework to measure the impact of investments in health research. 2006 Sep 25; 2006.
- (47) Canadian Institutes of Health Research. Task Force on Career Support: Final Report. Canadian Institutes of Health Research 2005 April 24 [cited 2006 Nov 21];Available from: URL: <http://www.irsc.gc.ca/e/25943.html#5.0%20Career%20Support%20For%20Canadian%20Health%20Researchers>
- (48) Canadian Institutes of Health Research. Clinical Research Initiative (CRI): The Multi-Stakeholder (MUST) Taskforce on Clinical Research. Canadian Institutes of Health Research 2006 September 18 [cited 2006 Nov 21];Available from: URL: <http://www.cihr-irsc.gc.ca/e/25081.html>

- (49) Partnering in Community Health Research. Towards a PCHR Vision. Partnering in Community Health Research 2007 [cited 2007 Dec 1]; Available from: URL: <http://www.pchr.net/1.2.htm>
- (50) The University of Western Ontario, Dalhousie University, McMaster University, Université de Montréal, CIHR. Transdisciplinary Understanding and Training on Research – Primary Health Care (TUTOR-PHC). The University of Western Ontario 2006 [cited 2007 Dec 1]; Available from: URL: <http://www.uwo.ca/fammed/csfm/tutor-phc/>
- (51) Canadian Institutes of Health Research. CIHR: Year 5 International Review Panel Report 2000–2005. Canadian Institutes of Health Research; 2006. Report No.: MR21-78/2005E-PDF.
- (52) Canadian Health Services Research Foundation. About CHSRF. Canadian Health Services Research Foundation 2006 [cited 2006 Nov 21]; Available from: URL: http://www.chsrf.ca/about/index_e.php
- (53) Haggerty J, Crossling F. Inventory of PHC Evaluation Projects & Strategies in Canada. Canadian Health Services Research Foundation; 2006 Apr 1.
- (54) Canadian Health Services Research Foundation. Capacity for Applied and Developmental Research and Evaluation in Health Services and Nursing (CADRE). Canadian Health Services Research Foundation 2006 [cited 2006 Nov 21]; Available from: URL: http://www.chsrf.ca/cadre/index_e.php
- (55) Centre FERASI. Centre FERASI: Formation et expertise en recherche en administration des services infirmiers. Centre FERASI 2007 [cited 2007 Dec 1]; Available from: URL: <http://www.ferasi.umontreal.ca/eng/index.shtml>
- (56) Canadian Health Services Research Foundation. Nursing Research Fund. Canadian Health Services Research Foundation 2006 [cited 2006 Nov 21]; Available from: URL: http://www.chsrf.ca/nursing_research_fund/index_e.php
- (57) Canada Research Chairs. Thinking Ahead: About Us. Canada Research Chairs 2006 November 15 [cited 2006 Nov 21]; Available from: URL: http://www.chairs.gc.ca/web/about/index_e.asp
- (58) Canada Foundation for Innovation 2006 [cited 2006 Nov 21]; Available from: URL: <http://www.innovation.ca/index.cfm>
- (59) The Leaders' Forum Steering Committee. Strengthening the Foundation of Canada's Health Research Enterprise: *A Backgrounder*. The Leaders' Forum Steering Committee; 2004 Sep 8.
- (60) Social Union. New Federal Investments to Accompany the Agreements on Health Renewal and Early Childhood Development. Social Union 2000 September 11 [cited 2006 Nov 21]; Available from: URL: http://www.socialunion.ca/news/110900ii_e.html
- (61) Health Canada. Primary Health Care Transition Fund. Health Canada 2006 March 7 [cited 2006 Nov 21]; Available from: URL: http://www.hc-sc.gc.ca/hcs-sss/prim/phctf-fassp/index_e.html
- (62) Michael Smith Foundation for Health Research. About the BC Directory of Health Researchers and Trainees. Michael Smith Foundation for Health Research 2006 [cited 2006 Nov 21]; Available from: URL: <http://www.msfhr.org/sub-strategic-directory.htm>

- (63) The College of Family Physicians of Canada. National Research System (NaReS). The College of Family Physicians of Canada 2006 [cited 2006 Nov 21]; Available from: URL: <http://www.cfpc.ca/English/cfpc/research/national%20research%20system/default.asp?s=1>
- (64) Network for Studies in Primary Care. Queen's Network for Studies in Primary Care. Queen's Network for Studies in Primary Care 2006 [cited 2006 Nov 13]; Available from: URL: <http://www.queensu.ca/fmed/nspcweb/>
- (65) Drummond N. North Toronto Primary Care Research and Development Network (Nortren). North Toronto Primary Care Research and Development Network (Nortren) 2002 August 28 [cited 2006 Nov 13]; Available from: URL: <http://dfcm.utoronto.ca/research/nortren/index.htm>
- (66) Jones C. Toward a National Practice-Based Research Network: A Workshop and Research Community Building Exercise. CIHR-IHSPR, editor. 2006. 1-4-2006. Ref Type: Unpublished Work
- (67) Agency for Healthcare Research and Quality. AHRQ Support for Primary Care Practice-Based Research Networks (PBRNs): Fact Sheet. Agency for Healthcare Research and Quality; 2001 May 1.
- (68) Canadian Institutes of Health Research. The Clinician Scientist: Yesterday, Today and Tomorrow: A Story Told and Recommendations from Canadian Researchers. Canadian Institutes of Health Research 2004 April 5 [cited 2006 Nov 13]; Available from: URL: <http://www.cihr-irsc.gc.ca/e/22030.html>
- (69) Graham ID, Logan J, Harrison MB, Straus SE, Tetroe J, Caswell W, et al. Lost in knowledge translation: Time for a map? *Journal of Continuing Education in the Health Professions* 2006;26(1):13-24.
- (70) Canadian Health Services Research Foundation. Knowledge Transfer and Exchange at Work. Canadian Health Services Research Foundation 2006 [cited 2006 Nov 21]; Available from: URL: http://www.chsrf.ca/knowledge_transfer/work_e.php
- (71) Innvaer S, Vist G, Trommald M, Oxman A. Health policy-makers' perceptions of their use of evidence: a systematic review. *Journal Of Health Services Research & Policy* 2002 Oct;7(4 (Print)):239-44.
- (72) Lavis J, Davies H, Oxman A, Denis JL, Golden-Biddle K, Ferlie E. Towards systematic reviews that inform health care management and policy-making. *Journal Of Health Services Research & Policy* 2005 Jul;10 Suppl 1:35-48.
- (73) Lavis JN. Research, public policymaking, and knowledge-translation processes: Canadian efforts to build bridges. *J Contin Educ Health Prof* 2006;26(1 (Print)):37-45.
- (74) Canadian Health Services Research Foundation. Extra/Forces. Canadian Health Services Research Foundation 2006 [cited 2006 Nov 21]; Available from: URL: http://www.chsrf.ca/extra/about_e.php
- (75) Freeman AC, Sweeney K. Why general practitioners do not implement evidence: qualitative study. *BMJ (Clinical Research Ed)* 2001 Nov 10;323(7321 (Print)):1100-2.
- (76) Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. *Lancet* 2003 Oct 11;362(9391 (Electronic)):1225-30.

- (77) Aquino P, Kohli B, Davison C. Working for a primary care trust. *BMJ* 2003 Mar 8;326(7388):S73.
- (78) Pablos-Mendez A, Shademani R. Knowledge translation in global health. *J Contin Educ Health Prof* 2006;26(1 (Print)):81-6.
- (79) Oliver S, Clarke-Jones L, Rees R, Milne R, Buchanan P, Gabbay J, et al. Involving consumers in research and development agenda setting for the NHS: developing an evidence-based approach. *Health Technology Assessment* 2004;8(15):1-+.
- (80) Campbell SM, Roland MO, Bentley E, Dowell J, Hassall K, Pooley JE, et al. Research capacity in UK primary care. *Br J Gen Pract* 1999 Dec;49(449):967-70.
- (81) Meyer J, Johnson B, Procter S, Bryar R, Rozmovits L. Practitioner research: Exploring issues in relation to research capacity-building. *Journal of Research in Nursing* 2003 Nov 1;8(6):407-17.
- (82) Bednash G, Jones CB, Moody L, Wakefield M. Building health services research capacity in nursing: views from members of nursing's leadership [interview by Candice Cook Bowman and Deborah Gardner]. *Nurs Outlook* 2001 Jul;49(4):187-92.
- (83) NHS Executive. R&D in Primary Care: National Working Group Report. London: Department of Health; 1997.
- (84) NHS. NHS R&D Strategic Review: Primary Care. NHS; 1999.
- (85) Wilson S. Non-medical staff in academic departments of Primary Care. *Society for Academic Primary Care*; 2005 Jan 1.
- (86) Jader L. It is time to separate the NHS from direct government involvement. *BMJ* 2006 Jun 24;332(7556):1518.
- (87) Dixon J, Harrison A, New B. Funding the NHS. Is the NHS underfunded? *BMJ* 1997 Jan 4;314(7073):58-61.
- (88) Mooney H, Harding ML. Why the NHS money-go-round is running out of steam. *Health Serv J* 2005 Mar 3;115(5945):12-3.
- (89) Department of Health. Research and development strategy 2006. Department of Health 2006 [cited 2006 Nov 21];Available from: URL: <http://www.dh.gov.uk/policyandguidance/researchanddevelopment/researchanddevelopmentstrategy/fs/en>
- (90) National Institute for Health Research. The NIHR School for Primary Care Research. National Institute for Health Research 2006 [cited 2006 Nov 21];Available from: URL: http://www.nihr.ac.uk/infrastructure_primary_care_research.aspx
- (91) General Practice Branch CDoHaAC. General Practice in Australia: 2004. Canberra ACT: Commonwealth of Australia; 2005.
- (92) Primary Health Care Research & Information Service. Primary Health Care Research, Evaluation and Development (PHCRED). Primary Health Care Research & Information Service 2006 [cited 2006 Nov 21];Available from: URL: <http://www.phcris.org.au/phcred/index.php>
- (93) National Health and Medical Research Council. Project Grants. Australian Government 2006 January 13 [cited 2006 Nov 13];Available from: URL: <http://www.nhmrc.gov.au/funding/types/granttype/projects/index.htm#a4>

- (94) Oceania Health Consulting. Summary Report of the Evaluation of the Primary Health Care Research, Evaluation and Development Strategy. 2005.
- (95) Coalition for Health Services Research. Federal Funding for Health Services Research. 2005.
- (96) Agency for Healthcare Research and Quality. Center for Primary Care, Prevention, and Clinical Partnerships (CP3). Agency for Healthcare Research and Quality; 2005 Dec 1.
- (97) The Council of State Governments. Frequently Asked Questions. The Council of State Governments 2007 [cited 2007 Dec 1]; Available from: URL: <http://www.csg.org/about/faqs.aspx>
- (98) National Research Council of the National Academies. Advancing the Nation's Health Needs: Committee for Monitoring the Nation's Changing Needs for Biomedical, Behavioral, and Clinical Personnel. National Academy of Sciences; 2005.
- (99) Generalist Physician Faculty Scholars Program. About Our Program. Generalist Physician Faculty Scholars Program 2004 April 16 [cited 2006 Nov 13]; Available from: URL: <http://www.gpscholar.uthscsa.edu/gpscholar/FacultyScholars/about.html>
- (100) The Robert Wood Johnson Foundation. Media Guide 2003: Experts on Health & Health Care. The Robert Wood Johnson Foundation; 2005.
- (101) The Robert Graham Center. About the Center. The Robert Graham Center 2006; Available from: URL: <http://www.graham-center.org/x763.xml>
- (102) Commonwealth Fund. Fellowships. Commonwealth Fund 2006; Available from: URL: <http://www.cmwf.org/fellowships/fellowships.htm>
- (103) Center for Health Research. A Tradition of Innovation and Collaboration. Center for Health Research 2006 [cited 2006 Nov 13]; Available from: URL: <http://www.kpchr.org/public/about/abtTradition.asp>
- (104) Green LA, Hickner J. A short history of primary care practice-based research networks: from concept to essential research laboratories. J Am Board Fam Med 2006 Jan;19(1):1-10.
- (105) Liaison Committee on Medical Education. Liaison Committee on Medical Education (LCME): hearing for public comment on proposed changes in accreditation standards. Liaison Committee on Medical Education 2006 November 2 [cited 2006 Nov 21]; Available from: URL: <http://www.lcme.org/hearing.htm>
- (106) Aiken JW. The Value of Scientific Conferences: a longitudinal survey. Keystone Symposia on Molecular and Cellular Biology 2006 [cited 2006 Nov 21]; Available from: URL: <http://www.keystonesymposia.org/survey/>
- (107) Michael Smith Foundation for Health Research. Michael Smith Foundation for Health Research: About Us. Michael Smith Foundation for Health Research 2006 [cited 2006 Nov 21]; Available from: URL: <http://www.msfr.org/sub-about.htm>
- (108) Nova Scotia Health Research Foundation. About NSHRF. Nova Scotia Health Research Foundation 2006 [cited 2006 Nov 13]; Available from: URL: <http://www.nshrf.ca/AbsPage.aspx?siteid=1&lang=1&tid=2>

- (109) Primary Health Care Research & Information Service. What is PHC RIS?: About Us. Primary Health Care Research & Information Service 2006 [cited 2006 Nov 21]; Available from: URL: <http://www.phcris.org.au/aboutus/index.php>
- (110) CHSPR. Mapping health and healthcare in British Columbia. CHSPR 2005 January 1 [cited 2006 Nov 13]; Available from: URL: <http://www.chspr.ubc.ca/files/publications/2005/chspr05-05S.pdf>
- (111) Canadian Institutes of Health Research. Team Grant (2006-2007). Canadian Institutes of Health Research 2006 September 18 [cited 2006 Nov 21]; Available from: URL: <http://www.cihr-irsc.gc.ca/e/31228.html>
- (112) Patton MQ. Qualitative research and evaluation methods. 3rd ed. Thousand Oaks, California: Sage Publications; 2002.

APPENDIX 1

METHODS

The study was designed to address four aims: (i) identify the existing research capacity in the field of primary healthcare; (ii) examine how well this capacity is being used to create and communicate policy-relevant research in primary healthcare; (iii) assess the likely impact of the end of the Primary Health Care Transition Fund in March 2006 on primary healthcare research capacity and output; and (iv) examine strategies (including potential funding mechanisms and organizational models) for developing, supporting and enhancing policy-relevant research capacity and knowledge transfer activities in primary healthcare. The project team employed three inter-related methods to answer the questions – a literature review, semi-structured interviews and regional meetings.

a) Literature review

A search of the English language literature was performed using Medline (PubMed), EMBASE and CINAHL (Ovid), PAIS International, and Canadian Research Index. Terms used in the searches included “research capacity,” “health services research,” “primary care,” “primary health care” and “building capacity.” Hand searches of bibliographies and reference lists were also conducted. Finally, we reviewed research capacity-building initiatives undertaken through the Primary Health Care Transition Fund (PHCTF) projects, provincial governments, and through universities, professional bodies and governmental departments.

b) Interviews

We conducted qualitative, semi-structured interviews, with a maximum variation sample of individuals involved in performing, supporting or implementing primary healthcare research. Interviews were conducted between April and November 2006.

Participants

Two main groups were targeted: a) researchers involved in clinical and health services research in primary care; and b) federal and provincial/territorial policy makers. These data were augmented by additional interviews held with a series of key informants. These included Canadian-based research funders, senior academic staff of health services research centres and institutes conducting a significant amount of work in primary healthcare, professional bodies representing various primary care disciplines and international experts with skills or expertise in primary healthcare research.

Recruitment

A purposive sample of researchers and policy makers was identified following discussions with the project’s steering committee (comprising senior PHC researchers) and the management staff of the primary healthcare section of the Canadian Health Services Research Foundation. Additional participants were identified through contact with departments or units involved in primary care and/or health services research. Researchers were chosen to achieve maximum variation in terms of academic seniority and geographic location (both urban/rural and whether they worked in western, central or eastern Canada).¹³ Policy makers varied in terms of location and level of government (federal/provincial).

¹³ For the purposes of the report, Western Canada refers to provinces to the west of Ontario, Central Canada to Ontario and Quebec and Eastern Canada to the maritime and Atlantic provinces.

Once identified, participants were contacted by a letter or e-mail signed by the project's primary investigator. Respondents were contacted by telephone or e-mail to arrange an appropriate interview time. This process was augmented by snowball sampling (112) where at the conclusion of an interview, participants were asked to nominate individuals whom they thought able to provide additional, alternative or disconfirming views. Potential participants not responding in one week to the initial request were telephoned and/or sent a follow up letter/e-mail. Those still having not responded within another two weeks were sent a final letter/e-mail. See Appendix 2 for the contact letter/e-mail used for participant recruitment.

Data Collection

Data collection involved semi-structured, individual interviews. While most participants were interviewed by telephone, several participants (including two international key informants) had face-to-face interviews. Anglophone interviews were conducted by KH and GR. Two interviews were conducted in the French language by RG. In each group (researcher, policy maker, key informant), interview content followed a written interview guide initially based on a series of questions determined by the researchers following a review of the literature. (See Appendix 3.) These guides were progressively modified in keeping with the iterative process of data collection and analysis. Question sequencing was flexible to allow the interview to be led by the participant rather than the researcher. Interviews lasted between 30 and 60 minutes.

The team conducted 35 semi-structured interviews with French- and English-speaking participants from most provinces of Canada. Of the participants, 18 were researchers, 10 were policy makers, and the remainder were primarily responsible for administering research funding (three participants) or were international experts (four participants).

Data Analysis

A constant comparative approach was used to analyze the data. Interviews and the interviewers' post-interview field notes were audio-taped, then transcribed verbatim. Transcripts were read independently by members of the research team to identify key words and themes. Following initial transcript review, the analysis team (GR, RG, SJ, KH) summarized interview findings using this as a basis for comparing the researchers' interpretations. Regular meetings of the research team were held at which emergent themes, patterns and connections were reviewed. The final analysis used a process of immersion/crystallization to synthesize the key themes. The data were coded and further analysed using QSR NuDst™.

Data saturation was reached following the 26th interview. The final nine interviews allowed for member-checking. All investigators contributed to the final process of clarification of major themes and interpretations.

c) Regional meetings

In addition to key informant interviews, three one-day meetings were held during September and October 2006. These meetings were held in three regions: Atlantic Canada (Halifax), Quebec/Ontario (Ottawa) and the Western provinces (Calgary). Each meeting comprised 15 to 25 individuals with diverging backgrounds and provided an opportunity for regional experts to discuss capacity-building in primary healthcare and health services research. All meetings had representation from policy makers (national and provincial), PHC clinician researchers with medical or other health professional backgrounds and non-clinician researchers. Overall, 22 researchers, seven decision makers, 19 policy makers and eight clinicians attended. Eight of the researchers also worked as healthcare providers. The format of the meetings was similar for each of the regions and consisted of an overview of the project (literature review results and key messages from interviews), followed by small group discussions in which participants were asked to reflect on the findings and comment on whether findings thus far resonated with their experiences locally.

Local experts led the discussion after lunch and another series of small group sessions was held in which participants reflected on possible recommendations/strategic directions for Canada over the next five years in the area of primary care health services research. Each of the small groups was made up of people from diverse backgrounds.

Themes emerging from the meetings, despite different regional perspectives and needs, were common and consistent with key informant interviews. In particular, participants voiced the lack of a common national vision for primary healthcare, lack of infrastructure support and sustainable funding, poor access to information and a central database of experts, and misalignment of researchers and policy makers with respect to policy directions and primary care research priorities.

Feedback from the meetings was also sought and the meetings were generally highly rated, with most participants remarking upon ability to network at the meeting as an enabling, positive exercise. Thus, the meetings themselves served as a capacity-building tool simply by bringing together policy makers and scientists.

Ethics

The study was approved by The University of Ottawa's Review Board for Health Sciences Research Involving Human Subjects.

APPENDIX 2

CONTACT LETTER AND CONSENT FORM

Contact Letter (English Version)

Date

Name

Address

Dear Sir/Madam,

I am writing on behalf of a research team at the C.T. Lamont Primary Health Care Research Centre at the University of Ottawa. The team has been commissioned by the Canadian Health Services Research Foundation to help evaluate Canada's capacity for conducting health services research in primary healthcare (PHC).

We are using mixed methods to identify the existing research capacity in the field of PHC and health services research and to examine how well this capacity is being used to create and communicate policy-relevant findings. We hope as well to assess the likely impact of the end of the Primary Health Care Transition Fund, and examine strategies for developing, supporting and enhancing research capacity and knowledge transfer in this important area.

You have been identified as a key member of the <<research/policy making/funding community>>. As such I am writing to request your participation in a telephone or face to face interview with a member of our project team. The interviews will be designed to help us answer the main research questions (as detailed on the accompanying study information sheet). Any information that is collected and stored in an electronic database will be password protected. All computer files will be password protected. Any print documents will be stored in a locked filing cabinet and all tapes used for recording interviews will be deleted after transcription.

As a researcher and clinician, I am more than aware of the importance of your time. I believe, however, that this study, illuminates critical issues in Canadian health research. The project has been given ethical approval by the Research Ethics Board of the Ottawa Hospital and participation in this study is voluntary. You may refuse to participate or withdraw from the study at any time without repercussion.

We hope that you will grant us the opportunity to understand your perspectives. A member of our project team will contact you by telephone in the next week to assess your interest and, hopefully to arrange the interview time.

Alternatively you may wish to convey your willingness to participate by email to our project manager Ms. Kelly Hogan (khogan@scohs.on.ca).

Sincerely,

Dr. Grant Russell

Principal Investigator

RECAP: Identifying Research Capacity in Primary Care and Health Services Research

Associate Professor, Department of Family Medicine, University of Ottawa

Clinician Researcher, C.T. Lamont Centre, Élisabeth Bruyère Research Institute

Consent form (English Version)

Introduction

The RECAP project is designed to achieve the following goals:

1. To identify the existing research capacity in the field of primary healthcare
2. To examine how well this capacity is being used to create and communicate policy-relevant research in primary healthcare
3. To assess the likely impact of the end of the Primary Health Care Transition Fund on primary healthcare research capacity and output.
4. To examine strategies for developing, supporting and enhancing policy-relevant research capacity and knowledge transfer activities in primary healthcare

Nature of Involvement

Upon your consent, you will be asked to participate in a semi-structured interview which will take no more than 60 minutes. The interview will be audio taped and transcribed. Both the audio-tape and the transcript will then be reviewed carefully by the researcher.

You may skip any questions that you do not feel comfortable answering. You are not required to commit to any follow-up interview; however, you may be invited to attend a meeting for dissemination of the study results early in the fall of 2006. Attendance at this meeting would be voluntary and in no way a requirement for participating in the interview portion of the study.

Anonymity and Confidentiality

Transcripts and tapes will be given an identification number to identify the interview material. Dr. Russell, Dr. Geneau and Kelly Hogan will be the only persons who will have access to a separate document that links your name to the number on the transcript.

Any information that is collected from you and stored in an electronic database will be password protected. All computer files containing information collected from you will be password protected. Any print documents containing data collected from you will be stored in a locked filing cabinet and all tapes used for recording interviews will be deleted after transcription. Your responses will not be identifiable in any publications or presentations resulting from this study unless explicit written consent is given.

All of the information gathered during this interview will be kept confidential and only seen by members of the study team. A nominated member of the Ottawa Hospital Research Ethics Board may also review these records, under the supervision of Dr. Russell, Dr. Geneau or Kelly Hogan.

Voluntary Participation

You are under no obligation to participate in this interview, and you may choose not to participate in this interview or withdraw from this interview at any time without providing the investigator with a reason.

APPENDIX 3

INTERVIEW TEMPLATES

Interview Guide A – For Researchers

*This is a rough guide that was used to shape the interviews – many of the interviews evolved as we learned more about their backgrounds, experiences, etc.....

Introduction

1. Can you tell me a bit about yourself?
2. What kind of training/education do you have?
3. Where did you do your training / Where have you worked?

Research Agenda

1. How would you describe the existing research capacity in primary care health services research?
2. How relevant is the current research that you see being undertaken in primary care and/or health services research?
 1. What type of infrastructure do you think would improve research capacity in primary care and health services research?
 2. What are your experiences with centres of excellence?
 3. Tell me about your experiences with protected time for research.

Knowledge Transfer in Policy Development

1. How well would you say research capacity is being used to create and communicate policy-relevant research in primary care health services research?
2. What kinds of improvements would make knowledge transfer better within your research unit?
3. Describe the influence that knowledge transfer has had on your research.
4. What do you think needs to be done to make research more accessible?
5. What kind of partnerships, if any, do you see now or foresee between researchers and policy makers?
6. What barriers do you see between research and research dissemination?
7. How might those barriers be overcome?

Research Networks

1. Describe your experiences with research networks.
2. What can be done to improve the building and sustaining of networks?
3. What organizations can you identify that are doing things right?

Rurality

1. What impact does your geographic location have on your research capacity?
2. What differences do you perceive exist for rural and urban researchers?
3. How useful would a rural academic network be?

Primary Health Care Transition Fund

1. Describe your experiences with the PHCTF
2. How would you say the PHCTF impacted the time you had available for research?
3. What about infrastructure and training?
4. Comparing projects pre and post PHCTF, what improvements can you identify in terms of methods you employ for collecting data?
5. What about grant writing, personal recognition, institutional recognition, number of publications?
6. How would you describe (if) any adverse effects of the PHCTF?
7. What do you foresee as the impact of the end of the PHCTF?

INTERVIEW GUIDE B – FOR POLICY MAKERS

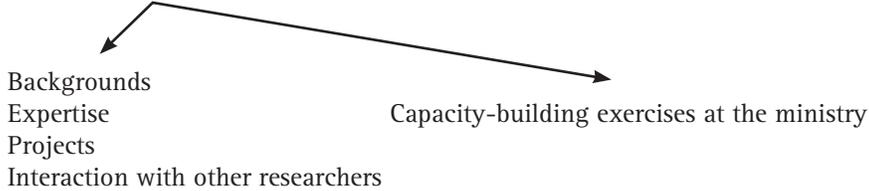
Introduction

Background?
 Other employment experiences?
 Worked as a researcher?
 Currently a liason?

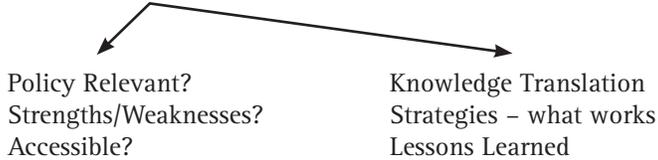
Ministry

Run of a day work
 Interacting with policy makers v. interacting with researches
 Challenges

In- house researchers?



Research 'out there'



Partnerships between Research and government

Past	Barriers
Current	What do you need
Future	

Agenda setting

Priorities?

Cooperation?

Primary Health Care Transition Fund

Experiences

Learned from Researchers ← stories, anecdotes, frustrations, impact

Learned from Ministry

Reporting Mechanisms – Describe, satisfaction, improvements for future

Positive/Negative/ Lessons Learned/

How well would you say research capacity is being used to create and communicate policy-relevant research in primary care health services research?

INTERVIEW GUIDE C – FOR FUNDERS**Introduction**

1. Can you tell me a bit about yourself?
2. Have you ever conducted primary care or health services research?

Identifying existing research capacity

How would you describe the existing research capacity in primary care health services research?

1. What portion of your funding would you say goes into research capacity projects?
2. How long would you say this type of funding has been available for researchers?
3. Do you grant any funding to policy makers?

Research agenda

1. How relevant is the current research that you see being undertaken in primary care and/or health services research?
2. What type of infrastructure do you think would improve research capacity in primary care and health services research?
3. What is your experience with centres of excellence?

Knowledge transfer and collaboration

How well would you say research capacity is being used to create and communicate policy-relevant research in primary care health services research?

1. What do you think about knowledge transfer?
2. How has your organization approached this concept?
3. What barriers do you see between research and research dissemination?
4. How might those barriers be overcome?
5. What kind of capacity do you have to achieve that?
6. What do you think is the role of researchers in knowledge transfer and dissemination?
7. What do you think is the role of policy makers in knowledge transfer and dissemination?
8. What do you think is the role of funders in knowledge transfer and dissemination?

Research Networks

1. Describe your experiences with research networks.
2. What can be done to improve the building and sustaining of networks?

Rurality

1. What impact do you feel a researcher's geographic location has on the work they do?
2. What do you think are useful tools for overcoming any disadvantages experienced by researchers?

Governance and Accountability

1. Tell me about the reporting or evaluation mechanisms that are in place for individuals or organizations that you fund?
2. What improvements would you recommend to those reporting/evaluation mechanisms?

PHCTF

What do you foresee as the impact of the end of the PHCTF?

APPENDIX 4

The project investigators wish to acknowledge the contributions and insight of the interview participants and those who attended the regional meetings. The study could not have been completed without the thoughtful contributions of the members of the steering committee, members of the primary care section of the CHSRF (in particular the senior program officer Ms. Louise Lapierre) and the administrative staff of the Élisabeth Bruyère Research Institute

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