Innovative Models Promoting Access and Coverage Transformation (IMPACT)

*Supporting the Implementation of Organisational Innovations in Community-Based Primary Health Care to Improve Population Coverage and Access for Vulnerable Groups*

# Lay abstract (1/2 page)

Canada and Australia are two of many countries trying to improve their systems for delivering primary healthcare (PHC). Experts in both countries have devoted much time and effort into schemes to improve the quality of care delivered by PHC providers. However many consumers are still unable to access quality care. Access to quality PHC is less than ideal for citizens of both countries - especially for the sick, the poor, or those who are otherwise disadvantaged. Poor PHC access leads to overloaded emergency departments, avoidable hospitalisations and, in the long run, to increased costs and poor health outcomes.

Canada and Australia have introduced a number of programs to improve access to PHC. However many of these programs have been either limited in their scope or restricted to ‘pilot studies’. Some initiatives may have actually (unintentionally) increased the gap between vulnerable populations and the rest of the community.

Our team comprises experienced researchers, clinicians and decision makers who have come together to help solve some of these critical problems. We plan to work with consumers and providers in six communities (three in Australia and three in Canada) to identify, refine and then trial ‘world’s best practice’ innovations to assist access, particularly for vulnerable populations.

The innovations we will be developing and evaluating won’t be simply thrust upon communities. Much time will be spent building upon our team’s existing links with community leaders, decision makers and health professionals in each region to develop innovations that enhance the local system, are tailored to local needs and are likely to make a real difference to vulnerable groups in each setting. Our evaluation will determine whether these interventions work to improve access to quality care and health of the local population. If they didn’t work as planned we will find out why, and use this experience to inform other approaches.

Our 5 year program will give governments, health services and consumers in both countries a rich understanding of what really matters in access to needed PHC health care. Decision makers and communities will have a toolkit and a well-tested plan through which to address local access needs. Most importantly, all will have an opportunity to reduce the access gap for vulnerable populations so that better health outcomes can be achieved and healthcare funds can be used to best purpose.

# Summary (1 page)

Canada and Australia are amongst the Organisation for Economic Cooperation and Development countries with the poorest accessibility to quality primary health care. In both countries families and individuals endure long waiting times and rely on models of care that inconsistently address individual needs. Emergency rooms are over-crowded, primary care providers overwhelmed, and governments frustrated as all struggle to match community demand and system capacity for high quality care. Although both Canada and Australia champion principles of health equity, citizens who are most vulnerable, particularly those who suffer from socioeconomic disadvantage, have poor health literacy or are from different cultures are further challenged with disproportionately poor access to responsive quality Community-Based Primary Health Care (CBPHC).

Several jurisdictions have implemented changes that aim to enhance the accessibility to, and performance of, their CBPHC. However, the benefits of these changes are limited by the fact they often do not achieve their objectives in all population groups. Specifically, vulnerable populations, those with the greatest needs, often do not benefit, and may even be further marginalized by some reform initiatives. As a result, these models of care have often led to improvements in the care for a segment of the population only and have failed to benefit those with the greater needs, so that little impact has been observed on population coverage and appropriateness of care, and as a result did not achieve their intended reduction of avoidable emergency department consultations and hospitalisations.

We will begin by establishing a learning network ofdecision makers, researchers, clinicians and members of the community in areas of need within three participating Canadian Provinces and three Australian states. Our resulting six Local Innovation Partnerships (LIPs) will provide the foundation for the development, trialling and evaluation of innovative approaches to improve primary health care access for vulnerable populations.

Our research program will begin with a scoping of international “best practice” in innovative system-level approaches to optimise population access to CBPHC. Then in partnership with the LIPs we work to conduct realist reviews on the most promising system-oriented organisational innovations in different contexts to produce a set of innovations that can be tailored, implemented and robustly evaluated for effectiveness and feasibility.

Our team is composed of experienced and emerging researchers, providers and policy-makers, many of whom have been working together for a number of years. This Canada-Australia initiative provides an opportunity to build upon these partnerships, programs and research to co-create with communities, providers and policy-makers models of care that enhance access to the vulnerable population. Lessons from this evaluation will inform governments and communities who wish to improve access to CBPHC about the conditions necessary to ensure that innovations such as these can be adapted and up-scaled, and, in so doing, relieve pressure on hospitals and improve population health. The strong partnerships between communities, providers, policy-makers and researchers will ensure that these innovations are most relevant and have the best chance of being implemented broadly in the respective systems.

Further we will empower vulnerable health consumers and develop capacity amongst academics, clinicians and decision-makers with regards to research on and implementation of organisational innovations in CBPHC. We will generate a sustainable, international community of practice able to generate innovative new solutions to hitherto intractable access barriers to appropriate primary health care for vulnerable populations.

Innovative Models Promoting Access and Coverage Team (IMPACT)

*Supporting the Implementation of Organisational Innovations in Community-Based Primary Health Care to Improve Population Coverage and Access for Vulnerable Groups*

**1.0 Introduction and Research Objectives**

**1.1 Introduction**

Recent and widespread reforms in primary health care (PHC) in western countries reflect a growing concern that health systems should become more affordable, inclusive and fair (1;2). In Australia and Canada PHC reforms have prioritised access to effective and high-quality health services, with equity being at the heart of that system (3;4). Despite these reforms, meaningful gaps in equitable access to Community-based Primary Health Care (CBPHC) remain (5-7). These gaps particularly affect vulnerable groups, such as the poor, refugees and indigenous communities (7) (8-13). These problems translate into unmet needs for care, delayed or inappropriate treatments and avoidable emergency department consultations and hospitalisations (5;14). Many of the myriad PHC innovations and pilot projects have been limited in their ability to generate transformative change throughout health care systems (15;16).

This proposal builds on existing international collaboration between PHC researchers, clinicians and decision makers from Australia, Canada and the United States. Our collaboration, the Sorrento Group, came together in 2010 to conduct a comparative analysis of PHC reforms (17). For this CBPHC project, we have complemented the team with additional researchers and end-users (community members, clinicians and decision makers), and representatives of local and regional government in Australia, Canada, and academic leaders from the USA and the UK.

Our IMPACT (Innovative Models Promoting Access and Coverage Team) program of work (summarised in appendix A) aims to generate organisational innovations to promote access to PHC for vulnerable populations, more specifically the poor, refugees and people from indigenous communities. We will conduct our activities through a learning network of administrative regions within three Canadian provinces and three Australian States. Like many, these regions are grappling with the challenges of optimising access for vulnerable populations to quality CBPHC. In partnership, our multi-disciplinary team, including care providers and community representatives, will work with the regions to identify and perform an in-depth and rigorous assessment of existing system-level organisational innovations that address access to vulnerable populations. Then, informed by state of the art evidence on these potential interventions, we will select, adapt, and implement/evaluate approaches that best address their needs and context.

**1.2 Research aim and objectives**

We aim to transform the PHC organisational structure to improve access to appropriate care for vulnerable populations resulting in reduced unmet need, avoidable emergency department visits and avoidable hospitalisations for vulnerable populations. Our program has three main objectives:

1. To develop a network of partnerships between decision makers, researchers and community members to support the improvement of access to PHC for vulnerable populations;
2. To identify organisational, system level CBPHC innovations designed to improve access to appropriate care for vulnerable populations, and establish the effectiveness and scalability of the most promising innovations;
3. To support the selection, adaptation and implementation of innovations that align with our regional partners local populations’ needs and priorities and evaluate the effectiveness and efficiency and further scalability of these innovations.

Our five-year program will empower vulnerable health consumers and develop capacity amongst academics, clinicians and decision-makers about research on and implementation of organisational innovations in CBPHC. We will generate sustainable, national and international communities of practice able to generate innovative solutions to hitherto intractable access barriers to appropriate PHC for vulnerable populations.

**2.0 Literature summary on access to CBPHC for vulnerable populations**

**2.1 What is our IMPACT team focused on?**

Access to quality PHC is associated with cost-effectiveness and equity of health systems, and improved health outcomes, particularly among disadvantaged populations (1;18-21). Various commissions and policy statements in Canada and Australia have highlighted the importance of accessible, high quality PHC for improving the performance of the overall health and social service systems and its capacity to cover the entire population’s needs (3;22). Informed by this policy framework, our research team focuses on **organisational innovations** that promote **access** to PHC for **vulnerable** populations.

While access, vulnerability and organisational innovation are commonly used concepts within health services research, confusion remains in their use. **Access** is defined as the capacity of people to obtain appropriate services in response to need for care (23). Access represents the interaction between supply (location, availability, cost and appropriateness of services), and demand (the burden of disease and knowledge, attitudes and skills and self-care practices of the population) (24). While “access” refers to the individual’s ability to obtain appropriate care, “coverage” reflects the population-level capacity of health systems to provide access to everyone (25). These two concepts are complementary and we will use the word access to encompass both in this proposal. **Vulnerability** is a term describing a propensity for a person to experience harm or bad consequences. With regards to healthcare, vulnerable populations have been defined as “groups whose demographic, geographic, or economic characteristics impede or prevent their access to health care services” (26). Finally, **organisations** are social structures where activities are planned and coordinated to accomplish a mission and goals (27;28). Our work is informed by the literature on organisational change which identifies the factors influencing the diffusion and institutionalisation of organisational **innovations** (29-33) and where organisations are considered as a whole rather than as a set of independent attributes (34;35).

**2.2 What is known about access to CBPHC for vulnerable populations?**

Various gaps in access to appropriate CBPHC have been documented for a number of vulnerable groups in Canada and Australia. In both countries, socioeconomically disadvantaged groups are more likely to report unmet needs and financial barriers to care (5;20;36-38), are less likely to receive access to appropriate preventive services (39-46), and chronic disease care (36;47;48) and are less likely to receive quality care (49). New immigrants and asylum seekers also report more difficulty accessing care for emergent conditions, and are less likely to receive preventive care than the general population (12;50-52). Similar findings are reported in studies of Aboriginal populations (53-55), for complex patients (36;56;57), and the homeless (13). These problems of access translate into higher rates of morbidity (56;58), avoidable emergency department utilisation or hospitalisation (12;54;58;59), and unnecessary costs (36;55;60).

**2.3 Why is organisational innovation promoting access to CBPHC for vulnerable populations a relevant topic of research?**

Several interventions, parts of Canada and Australia’s reform agenda, have tried to address these gaps in access to CBPHC. These have consisted of either: the implementation of various organisational models of PHC practice, such as community health centres, Family Medicine Groups and multi-disciplinary teams (4;61); in the implementation of organisational innovations affecting certain parts of CBPHC organisations (16;62); or the implementation of meso-level coordinating organisations, such as Medicare Locals in Australia and Primary Care Networks in Canada. Organisational innovations, part of current reform of primary health care, have mostly consisted of: clinical information systems; integration of allied health professionals such as mid-wives; expanded-role nurses with telephone access to on-call physicians; and advanced access appointment systems. Recent innovations have aimed to change the traditional modalities for patients to interface with healthcare professionals by: providing health services in the workplace or in community-based organisations; the integration of hospitals with community health services; shared mental health care; and using new types of professionals to deliver primary health care (16;61). Finally, some elements of reform act at the regional level and consist in programs to: connect unattached patients to physicians and nurse practitioners; provide programs for chronic disease self-management; and coordinate various providers or organisations (4;61;62).

Many of these interventions have met with limited success at bridging the access gaps for vulnerable populations (4;16). Many have been narrowly focused and limited in scope, rarely addressing the different components of the system that interplay to influence access for members of vulnerable populations (63). Instead, interventions have often centred on a specific sector (e.g. emergency department care) or a specific population (e.g. those living with a nominated disease) rather than address capacities of populations to overcome access barriers. In addition, various evaluations have suggested that new models of primary care practice have a limited impact at the population level (64-75). Finally, scaling up these innovations to address the needs of vulnerable population at the system level remains a challenge (15;76-78).

**3.0 Programmatic research approach and schedule of work.**

The IMPACT program will establish a **learning network** ofdecision makers, researchers, clinicians and members of the community in three participating Canadian provinces and three Australian states. These six Local Innovation Partnerships (LIPs) will provide the foundation for the development and trialling of innovative approaches to CBPHC access for vulnerable populations.The LIPs will provide the foundation for a set of collaborative activities to identify populations’ needs and understand local contexts. This will support the conduction of a **program of empirical research** (summarised in appendix B)**,** designed to generate innovative models directed at improving access to CBPHC for vulnerable populations. Section 3.1 describes the activities planned to develop the partnership with each LIP. Section 3.2 describes the first stream of research. In this stream, we will scope the existing innovations in CBPHC and synthesize the scientific knowledge about: 1) their effectiveness in improving access for vulnerable populations; and 2) the contextual factors influencing their implementation and scaling up. Section 3.3 describes the second stream of research. During this stream, and in close consultation with the learning network of LIPs, we will select, adapt and implement the most promising and regionally relevant innovations. Finally, we will evaluate the impact of the innovations on unmet needs, avoidable emergency department consultations and avoidable hospitalisations for vulnerable populations. Over the five years of our program, we will follow an iterative sequence with work within each stream informing the other (See timeline details in Appendix F).

**3.1 Establishing a learning network of Local Innovation Partnerships**

This foundational activity addresses our first objective: ***To develop a network of partnerships between decision makers, researchers and community members to support the improvement of access to PHC for vulnerable populations.*** Our approach is reliant on the fundamental principle that community based research partnerships built upon on-going knowledge exchange are an essential component of sustainable innovations and, ultimately, community impact (79). S**ix Local Innovation Partnerships** will be established within three Canadian provinces (Québec, Ontario, Alberta) and three Australian states (New South Wales, Victoria, and South Australia). The LIPs represent communities grappling with complex challenges to the delivery of appropriate and equitable CBPHC. Each partnership has arisen from robust existing collaborations between academics, and decision makers and clinicians responsible for PHC coordination and delivery. Community representation is essential to the success of the LIPs. In each region, community representatives will be drawn from the network of local community groups interacting with members of each partnership. For example, Australian LIPs will interact with pre-established consumer representative groups; in particular, those embedded within Medicare Locals and regional health authorities. Similar representation will be sought in Canada, with additional community representatives from relevant new models and/or networks of PHC delivery. The LIPs are described in more detail in Appendix C, and the strength of these collaborations is reflected in the appended letters of support (Appendices J and K).

## 3.1.1 Program of work in the Local Innovation Partnerships

The IMPACT program of work begins with a series of coordinated LIP activities. Investigators in each LIP will form a small governance team comprising researchers, decision makers, clinicians and community members (see section 4.3 for details). Then, assisted by a LIP Coordinator, and working with staff employed by decision maker members of our team, we will help each LIP **document access-related need** for vulnerable populations within the region. Our approach will be similar to that used by team members to ascertain need for after-hours services in Australian Medicare Locals (80). A profile of the demographic, economic and geographic characteristics of each LIP will be generated from existing needs assessments. These will be complemented by collecting detailed data, such as for hospital and emergency department admissions, ambulance attendances, and utilisation information from primary care practices and community health centres in the region. A similar process will be used to document currently implemented access-related innovations within the regions.

This data will help inform a series of **deliberative forums** held early in the first year of activity (81). These facilitated forums will involve each LIP team, members of the community, providers, decision makers, as well as representatives from local government, housing, transport, education and other human services. The forums will act to gain common ground relating to access goals, unmet needs and principal perceived barriers to access for vulnerable populations in each region. These meetings will help each LIP decide on *regional access priorities* – a critical stage in the subsequent program of work. Hence, by the end of the first year of work, each LIP’s access related need will be comprehensively described, for subsequent use in informing the first stream of research. Further LIP activities will intersect with discrete stages of the research program, and are described in sections 3.2 and 3.3.

**3.1.2 Building a learning network of Local Innovation Partnerships**

Our team is dependent upon meaningful partnerships being formed between decision makers, researchers, clinicians and members of vulnerable communities. While strong partnerships already exist between our team members and each LIP region, we will act to foster links between all six LIPs by establishing structures for ongoing dialogue between the international research team and citizens, decision makers and health care professionals in each partnership. We will bring the three LIPs in Canada and the three in Australia together for yearly national meetings where each will compare program experiences, linkages and strategies for addressing need. We will convene a major meeting of the whole research team on three occasions during the program of work. The first meeting will occur at the end of the first year. The second meeting will be held at a key stage of our work mid program. A third international meeting will be timed to finalise the next steps for the program of work.

**3.1.3 Setting the scene for future interventions**

An ongoing theme of activity in the partnerships will involve the building of collaborative relationships between the partners and with other national decision makers. This is particularly important in that, while our budget allows some direct funding to support implementation of best practice interventions, we anticipate that additional program funding will also be required. Letters of support suggest that goodwill already exists for such future investments (Appendices J and K). With the close involvement of Medicare Locals (Australia) and Regional Health Authorities and Provincial Ministries (Canada) in our LIPs, we anticipate that their role in commissioning future funded health care initiatives will reinforce their active engagement in the intervention phase of the program.

The figure in appendix A highlights the constant interaction of the partnerships through the evolution of the steps of research. This interaction will provide an understanding of the contextual factors that often thwart the capacity to scale up innovations. The constant involvement and commitment of top-level and local level partners, will enable us to identify and redesign innovations to be evaluated in real settings to ensure they are effective, acceptable, sustainable, and scalable.

**3.2 Research stream 1. Identifying and understanding access-related organisational CBPHC innovations**

In conjunction with the development of the learning network within and between the LIPs, we will begin a program of work to identify innovative, effective models of CBPHC delivery for vulnerable populations and to characterise key contextual influences influencing their uptake. Research stream 1 will address the second objective: ***To identify organisational, system level CBPHC innovations designed to improve access to appropriate care for vulnerable populations and establish the effectiveness and scalability of the most promising innovations.***

We will use a mixed methods approach to scope and synthesize organisational innovations to capture the knowledge coming from the academic literature, from the grey literature as well as the knowledge that various actors have about organisational innovations in our LIPs. A rigorous and comprehensive scoping and synthesis of evidence on the world’s leading innovations will support and inform the strategies selected by LIPs to address their local access gaps. This stream will involve three projects:

## 3.2.1 Project #1 : Scoping the innovations: A review of academic and grey literature relating to organisational innovations to improve CBPHC access (Leads: Levesque, Gunn, Crabtree)

**Purpose**: 1) identify currently implemented organisational innovations in CBPHC to improve access for vulnerable populations; 2) develop of typology of innovations to better understand the organisational characteristics that these innovations aim at modifying.

**Methods and source of data**: This project is founded on the approach used by our team members for similar exercises (16;82;83). Using a systematic and standardised approach, we will review the published and grey literature to identify organisational innovations aiming at improving access to care for our target vulnerable populations, which are currently implemented in Canada, Australia or international settings comparable to these two countries. The work will involve searches of scientific literature databases and web-based search using a systematic search strategy (e.g. keywords, inclusion criteria, quick assessment, selection, data extraction, references search) to identify relevant information, and will be complemented with “snowballing” technique of identifying new documentation. We anticipate finding evidence from randomised controlled trials, pilot projects, pragmatic trials and evaluations of policies. Following the extraction of information, we will analyse the data by classifying the innovations according to various dimensions such as: the *context* within which they are implemented (e.g. rural/urban, small-area/country-wide, medical system/broad sectoral scope); the *organisational levers* touched upon (e.g. governance and policies, funding, training and resources development, accreditation, care pathways, coordinating bodies); or the *service sectors* affected (e.g. primary medical care, allied health care, community-based organisations). A particular emphasis will be to capture the funding, payment mechanisms and costs for patient involved in each innovation (84). In addition, international experts will be interviewed (n = 12) to identify innovations not currently being reported in academic journals and will support the analysis of the scoped innovations. We will also engage our LIPs’ stakeholders to help ensure that the review captures the aspects deemed relevant by these partners.

**Deliverables:** This project will provide an understanding of the breadth of current innovative practices in CBPHC access (scoping report), propose a typology of PHC innovations (across various dimensions) that is useful to researchers and knowledge users, and provide case studies of innovations providing an understanding of the contextual elements related to their implementation. It will also provide a preliminary assessment of the potential for impact for each innovation based on their apparent breadth of population reach and effectiveness.

**Intersection with LIP activities:** The scoping review will be timed to deliver results to our first whole of project meeting of the LIPs. Just prior to meeting, and informed by their documentation of access related need, the team within each LIP will collate and map their currently implemented access-related innovations against a draft template created from early work within Project 1.

## 3.2.2 Project #2: Effectiveness and scalability: Syntheses of factors related to the implementation and effectiveness of innovations to improve access for vulnerable populations (Leads: Dahrouge, Harris, Peckham )

**Purpose:** 1) select six to eight organisational innovations emerging from the knowledge generated by project 1, based on their anticipated benefit and relevance to our LIPs; 2) synthesize the scientific knowledge about the effectiveness and their potential for scalability within the LIPs.

**Methods and source of data:** We will rely on the results of the scoping done in project 1, data gathered from LIPs’ needs assessments, our understanding of their local context, and further consultation to select the innovations. The decision on the innovations to be synthesized will be based on: a) a preliminary assessment of their potential of impact; b) their alignment with local priorities; c) the acceptability and feasibility of the innovation to the LIPs’ decision makers, community providers and population; and d) the fit between the innovation and the local contextual factors and levers that can influence its scalability in that environment. Our preliminary needs assessment and discussions with our six LIPs demonstrate significant overlap in priorities across some regions. We anticipate doing an in-depth evaluation of up to eight organisational innovations.

Each innovation will be submitted to a ***realist review*** to garner all evidence surrounding each innovation and gain in depth understanding of its potential (85). Because CBPHC is a complex system, and barriers to optimal CBPHC are multi-factorial, we anticipate successful interventions to be complex and multifaceted. Realist reviews allow exploration of the pathways for effectiveness of the various components of complex interventions(86-88). They have generated synthesized evidence on numerous primary care interventions, and have been used to evaluate interventions to improve equitable access to health care (89;90).

Following the review and in collaboration with each LIP having identified a strategy as an intervention of interest, we will use the RE-AIM framework to **assess each intervention’s anticipated impact** based on its reach (R) effectiveness (E), and suitability (AIM) for application within individual LIPs (91;92). In this context, R (Reach) refers to the extent to which vulnerable individuals targeted have been reached (participated/benefited); E (Efficacy) is the improvement in the access measure of interest; A (Adoption) reflects the participation of the organisation(s) delivering the care, a measure of the acceptability of the intervention in that setting; I (Implementation) describe the variation in program implementation. Implementation concerns such factors as differences across regions/studies in the use incentives to establish the program region, or approach to publicizing the program to reach the intended population. M (Maintenance) is the sustainability of the program over time, both at the participant level (e.g. do vulnerable individuals continue to use a telehealth, innovation over time) and organisation level (e.g. is a newly established walk in clinic for emergent care sustainable over the long term). The RE-AIM factors can be combined into an overall score of suitability, but more importantly, they can be used to derive several additional policy relevant measures such as population impact (which considers the prevalence of the vulnerable population), and efficiency index (which reflects the cost savings in relation to implementation costs) (91;92). Various members of our team have used Realist approaches and the RE-AIM framework. A crucial component of these syntheses will consist in: assessing the economic investment involved in implementing these innovations; assessing their on direct costs (e.g. user costs, medication and treatments), indirect costs (e.g. transportation, lodging) and opportunity costs (e.g. loss of income) for patients; as well as assessing the potential savings related to reduction in care and to the utilisation of more appropriate levels of care by patients (84).

**Deliverables**: We will produce a rigorous synthesis of information on each of the selected innovations in a format that is useful to decision makers. The content will include a description of each innovation and its estimated population impact, as well as its suitability, scalability and anticipated sustainability and efficiency index for specific LIPs.

**Intersection with LIP activities:** A process of collaborative decision making with our six LIPs will be performed during the two months following the end of the project to select the two most promising innovations agreed as being most appropriate for each LIP to form the basis for research steam 2.

## 3.2.3 Project #3: Mixed-method analysis of currently existing population based surveys (Leads: Lewis/Levesque/Strumpf.)

**Purpose**: This project aims to: 1) reanalyse quantitative data from international, national and selected provincial/state level surveys; 2) study the association of access to CBPHC and vulnerability to identify jurisdictions that have had success in dealing with this issue and organisational innovations that might be associated with access. Our scoping and syntheses of the literature (Projects 1 and 2) will allow us to generate hypotheses about the organisational innovations that might be associated with access to CBPHC for vulnerable populations. This project will generate key contextual factors likely to influence access-related innovations.

**Methods and source of data**: Various available surveys provide interesting information about access to PHC and unmet needs for care. Our team has secured access to data within the Commonwealth Fund international health policy surveys (CMWF-IHP), and the Quality and Costs in Primary Care survey (QUALICOPC) (36;93-95). These surveys are recent international surveys of developed countries, comparable to and including Australia and Canada, that gather information related to regional governance, health care resources (human, technological and financial) and structure (quality improvement, clinical governance and procedures), quality of PHC provisions, as well as demographic (including several vulnerability factors), and health measures. Some cycles of the surveys have targeted sicker patients (36) while others elicited responses from the general population (94) and primary care providers (93). Several Canadian provinces and Australian states have increased the sample size to generate reliable estimates at the provincial level and most Canadian provinces are now participating in the QUALICOPC survey. These surveys represent a great opportunity to gather information related to the costs of care for patients and the various consequences related to economic barriers to care such as forgone care, unmet needs, delayed treatment and proportion of household income spent on health care.

In addition, national level surveys assessing various aspects of access to care are available in Canada and Australia. Amongst these, the Canadian Community Health Survey and the surveys analysed by the Population Health Information Development Unit and the Population Research and Outcomes Studies unit of the University of Adelaide provide a strong basis to compare provinces and states. These surveys are available for analyses and have been the subject of many publications. However, few studies have documented the organisational factors impacting on access for vulnerable populations from these sources of data.

We will reanalyse data from these surveys to assess the equity of access to CBPHC. Multiple regression models will be used to identify jurisdictions with better access to care for their vulnerable populations, taking into account socio-demographic factors. Some of these associations will be further explored through a case-study method involving interviews and focus groups of key experts and stakeholders, in the countries or regions having implemented the strategies of interest. Diversity of perspective will guide selection of participants and saturation in information will be sought. This will generate hypotheses about the organisational innovations present in these contexts that might be related to better access for vulnerable populations and provide an understanding of contextual factors influencing their implementation.

Various members of our team have worked together extensively over a six year period to identify, using survey data, the organisational factors associated with better quality of PHC level (9;64-74). JFL has extensive experience with the CWF analyses and leads with WH the coordination of the QUALICOPC survey in Canada. Furthermore, we have a collaborative agreement with Walter Wodchis’s team, involving such analyses for Canada and New Zealand, to share data and analyses (see Appendices J & K).

**Deliverables**: Project 3 will provide context information to refine the typology developed in Project 1. The team will have gained a comprehensive understanding of context influences of access innovations, and will be ready to pilot and implement innovations, part of Project 4, in each LIP.

**Intersection with LIP activities:** By the end of the second year of work, we will have reinforced our partnerships within the LIPs. Each will have documented need, and will have mapped existing interventions for vulnerable populations. LIPs will have had the opportunity to learn from each other and will have received emerging evidence-based information from the empirical research program.

**3.3 Research stream 2. Adapting, implementing and evaluating promising organisational CBPHC innovations**

This stream addresses our third objective: ***To support the selection, adaptation and implementation of the innovations that align with our regional partners local populations’ needs and priorities and evaluate the effectiveness and efficiency and further scalability of these innovations.***

## 3.3.1 Project #4: A mixed-method evaluation of the impact of organisational innovations to improve access for vulnerable populations (Leads: Harris, Russell, Dahrouge, Haggerty)

**Purpose:** This project aims to: 1) pilot an intervention model in the LIPs; 2) evaluate the intervention model developed in with our partners. This project will involve both quantitative and qualitative methods to address these specific research questions.

1. How effective and efficient are locally adapted system level innovations in CBPHC in:

* improving vulnerable populations perceived accessibility to CBPHC services;
* reducing avoidable use of hospital Emergency Departments and hospitalisation by vulnerable populations?

1. What are the costs in implementing this model, where do these occur and how does this compare with the potential savings in terms of reduced demand on hospitals?

**Methods and source of data – Quantitative component**: This project will commence with a **pilot** (over six months) in two of the LIPs to determine the feasibility of the intervention model, refine its implementation and identify the evaluation measures for use in the main study. Following the completion of the pilot, an evaluation study will be conducted in at least four of the LIPs (depending on local capacity) to determine the impact of the intervention model on access to PHC for vulnerable population and on the broader care system’s performance.

After the intervention model and framework are defined, we will determine the most suitable evaluation design. Our preference is for a **step wedge design** (96;97) (See figure in appendix D) as this will allow the intervention model to be rolled out sequentially across the local areas while maximising the power of the study to make comparisons between sites that have and have not yet implemented it. We will randomise when this implementation occurs (i.e. which six month period) for each of four to six local regions inside our LIPs with populations of about 50-100,000 people and each involving at least 20 CBPHC practices, with links to a local hospital representing a catchment area to provide a “meso” systems level analysis.

The quantitative evaluation of impact will use CBPHC instruments and selected administrative databases to assess community perceived accessibility and critical, regionally relevant impacts (e.g. costs, avoidable emergency department utilisation and hospitalisations). De-nominalised data will also be pooled comparing outcomes in each of the six months in which they had received the innovation. The following data will be collected on adults aged 18-74 years with low health literacy and/or frequent hospital use (identified from CBPHC and hospitals).

1. De-identified linked routinely collected data: Emergency Department presentations; Avoidable admissions based on hospital discharge data; Attendances at CBPHC for routine/urgent or planned/unplanned visits, based on physician billing data or audit data.
2. Questionnaires mailed to a sample of patients which will elicit measures of access (first contact, organisational, economic, geographic); by vulnerable populations, unmet need, quality of care (e.g. PACIC continuity, preventive coverage, medical errors ) and quality of life (EQ5D or AQOL); and health literacy.
3. Data on the costs of the implementation of the intervention model.

Detailed power estimates will be based on the pilot and local outcome data collected in the preparation period prior to the trials. For example we estimate that a community sample of 864 will have sufficient power to detect a change of 2% in the rate of avoidable (primary care preventable) hospitalisation (based on a rate of preventable hospitalisation of high risk patients of 10%) (98). To adjust for clustering (conservatively an ICC of 0.1) we estimate we will need a sample of 2,600. We estimate that we will have data for 8,000 people across the four local areas within the LIPs. Data will be analysed to make comparisons between data collected before and after implementation of the intervention model. This will be adjusted for baseline differences between LIPs and for clustering. Economic analysis will compare costs and benefits before and after implementation.

**Methods and source of data – Case-study component:** In addition, we will conduct a qualitative investigation of the intervention model, aiming to compare and understand drivers of key outcomes in the various regions. Methods will use ethnographic approaches based upon investigations of primary care reform programs in Ontario (99), Australia (100), and the USA (101). Qualitative evaluation data will be collected in the LIPs before and after the introduction of the innovation. Quantitative evaluation data from questionnaires of health professionals, social network analysis, and service use data such as that from the Canadian Institute for Health Information, the Institute for Clinical Evaluative Sciences, the INSPQ (Appendices J and K for letters of support) will be collected to characterise how the innovations are implemented and how they impact on providers and practice settings (35;102).

**Deliverables:** Project 4 will provide a comprehensive qualitative and quantitative evaluation of the feasibility of the implementation of intervention model in a range of local areas, its impact on quality of care and hospital use and economic evaluation of the costs and benefits.

**Intersection with LIP activities:** Representatives from the LIPs will come together with the research team for a critical second mid project whole of team meeting where we will synthesize the findings of Projects 2 and 3, identify the model of organisational innovation to be evaluated as part of this project and develop an implementation framework which will describe how the model will be adapted to the local contexts. This will include input from the international collaborators. A third and final whole of team meeting will occur at the end of the programme of research to look at the dissemination of successes and failures to provide knowledge about the exportability and scalability of the innovation.

**4.0 Nature of the team and team environment**

**4.1 Team composition and strengths**

As mentioned in the introduction, the IMPACT program builds on a CIHR supported international collaboration between PHC researchers, clinicians and decision makers from Australia, Canada and the United States (17). Our expanded team links researchers with end-users (community members, clinicians and decision makers), with representatives of local and regional governments in Australia and Canada, and with academic leaders from several nations.

The resulting multi-disciplinary team has complementary skills and an impressive track record in conducting scoping reviews and organisational analyses, systematic reviews of the literature, qualitative and quantitative studies of organisational innovations, the analysis of linked administrative databases and multi-site community-based health services trials. We have a strong track record of research into the organisation of public health and CBPHC, and into equity in access for vulnerable populations, such as immigrants and refugees, those with mental health issues, socioeconomically disadvantaged populations and the frail elderly. This provides the foundation to work with our LIPs to redesign innovations, to support their implementation and evaluation in order to address the objective of reducing inequities in access to CBPHC and outcomes in vulnerable populations. Our track record of funded projects and publications attest to our demonstrated leadership in conducting ambitious evaluations of PHC innovations and reforms and analyses of the impact of policies and programs in Australia and Canada.

Our principal investigators are at various levels in their academic career. This will ensure that this team develops capacity in participatory research to conduct relevant and change-promoting research in the future. **Jean-Frédéric Levesque** is a clinical scientist funded by the *Fonds Recherche Québec – Santé*, the scientific director of health systems analyses at the *Institut national de santé publique du Québec* and adjunct professor at *Université de Montréal*. He developed good knowledge of the Australian context when acting as a *Thinker in residence* at the University of Melbourne during the year 2011-2012. **Grant Russell** is Head of Monash University’s multi-disciplinary School of Primary Health Care and director of a health service linked research unit in Melbourne’s south east. **Simone Dahrouge** is Director of Research and Scientist, at the C.T. Lamont Primary Health Care Research Centre, Bruyère Research Institute, and Assistant Professor, Department of Family Medicine, University of Ottawa. She is also a scientist at the Institute for Clinical and Evaluative Sciences in Ontario. **Mark Harris** is Executive Director & Professor, Centre for Primary Health Care and Equity, University of New South Wales, and holds a National Health and Medical Research Council Senior Principal Research Fellowship. Dr Harris has led many national expert groups and commissions. Together, these principal investigators have proven their capacity in leading important research programs and extensive teams of investigators to conduct national evaluations of innovations and reforms.

The team includes scientists with professional training in general practice (BH, GR, JG, MH, WM, MR, NZ, TSL, NS), nursing (JM), public health (JFL, VL, NS), paramedic practice (PJ) physiotherapy (TH, CS), occupational therapy (DM), psychology (AB), sociology (SP), anthropology (BC, WM), economics (AS, ES, TH), epidemiology (SD, JH, DF), and health management and administration (JLD, GPD, JFL). In addition, our team includes researchers with important policy advisory responsibilities (WM, CScott, JFL). This team has very strong involvement of decision-makers, clinicians and patient representatives, through the involvement of local innovation partnerships, at various levels in Canada and Australia. Our team includes a deputy minister of health (JR) and a chief public health officer (SC), directors with knowledge management responsibilities (CS, DR, LH, DB), provincial and regional leaders of PHC reforms (AH, JL, JR, RW) and Chief Executive Officers of Medicare Locals (AP, CSeiboth) and Regional Health Authorities (SP) in Australia. Many Canadian members of our team are fluent in French and English. The table in appendix G provides details of each member’s role in the team.

**4.2 Team environment and external links**

The team has considerable support from leading academic institutions in Canada and Australia. It combines academics from four Canadian Universities (Montréal, McGill, Ottawa, Alberta) and five Australian Universities (Monash, New South Wales, La Trobe, Melbourne, Adelaide). Through these universities, this team is linked with important research centres such as the *Centre de recherche du Centre Hospitalier de l’Université de Montréal,* Monash University’s School of Primary Health Care,the University of New South Wales’ Centre for Primary Health Care and Equity, La Trobe University’s Centre for Health Systems Development and the Elisabeth-Bruyère Research Centre at the University of Ottawa. Substantial economic expertise comes from the Centre for Health Economics at Monash University. These centres provide very strong support to this research team, through their impressive number of researchers and trainees and their support services in statistics, economics, communication and research business development. Being embedded in solid research centres, we will be able to manage an ambitious program of research, capacity development and partnerships. The design of our collaboration is interwoven with policy, practice and the community. Our LIPs are built upon enduring collaborations between decision makers, community members, clinicians and researchers. At the provincial/state level, our team builds on a formal collaboration between South Australia Health and the *Ministère de la santé et des services sociaux du Québec.* This forms a template for collaborations between other Australian states and Canadian provinces (Appendices G and H list our collaborators and partners).

In addition to these traditional academic institutions, many of our investigators work in health service-linked academic collaborations and are decision-makers as well as academics. Spanning boundaries between research, system management and policy is a key strength of our team. We have significant linkages with key public data repositories in Canadian provinces at the Institute for Clinical Evaluative Sciences and the Quebec public health institute, which host an expansive number of linked billing datasets (e.g. emergency, hospitalisation, and physician visits). Our principal investigators are leaders in developing measures of organisational performance of CBPHC, through the Canadian Institute for Health Information PHC Indicator performance project, and in design and analysis of international surveys such as the Commonwealth Fund International Health Policy surveys and Quality and Costs in Primary Care international study (QUALICOPC).

Our team’s links with important networks and research teams ensure a powerful network approach to CBPHC research development. We have links with existing networks and Centres for Research Excellence through collaborative relationships with Professor John Humphrey, a lead of APHCRI’s Centre of Research Excellence in Rural and Remote Primary Health Care (See Appendices J and K for letter of collaboration), and through La Trobe/AIPCA’s convening of the Australian National Primary and Community Health Network. Canadian members of our team are engaged with the pan-Canadian Canada Primary Health Care Research and Innovation Network and will engage with the successful PHC SPOR network and APHCRI Centre for research excellences in identifying and implementing common indicators.

**4.3 Governance structure**

Ensuring the efficient implementation of an ambitious program of research, capacity development, and policy-makers and citizen engagement requires an appropriate governance structure. This team builds appropriate governance structures to provide leadership and management of the funds and activities (See Appendix E).

An **Executive Group** comprising the principal investigators and principal knowledge-users will be responsible for overall administration of the study, assisted by program managers in Canada and Australia. The executive group will meet bi-monthly through web-based videoconferencing. It will hold separate monthly meetings in Canada and Australia on issues related specifically to implementation of projects in each country. This executive group will maintain networking and partnership with other CBPHC funded teams to ensure coherence of methods, measurement tools and indicators of outcomes across this CBPHC teams funding program. Our group of PIs have extensive experience in leading teams and research programs in interaction with decision-makers.

The LIP management will be conducted through the involvement of a senior investigator from our research team and LIP coordinator and a small management team comprising consumer, decision maker and clinician representatives. These **local innovation partnership management committees** will meet regularly throughout the teams’ activities to ensure appropriateness to the local context and realisation of the projects. In addition, these LIP management committees will meet together yearly (through videoconferencing and face-to-face) to facilitate cross-fertilisation and development of shared knowledge and experiences.

An **International Policy Advisory Board** (Board) led by Cathie Scott, comprising representatives of vulnerable populations, senior members of professional organisations and key decision makers from Canada and Australia, will provide policy and end user leadership. The Board will meet yearly through videoconferencing to consider the appropriateness and relevance of proposed innovations, policy implications and opportunities for knowledge translation and exchange (KTE). An additional yearly meeting will facilitate the interaction of each project with the Board, according to the projects’ specific requirements.

An **International Experts Forum** (Forum) led by Martin Roland, composed of internationally recognised experts, will support the scientific work through regular correspondence and videoconferencing meetings. This Forum will act as a review committee, critically appraising the projects’ design and tools and participating in interpretation of key findings. This will ensure a broad perspective integrating knowledge from diverse fields of science and international contexts. The Forum will meet on average twice a year, through videoconferencing or during international conferences, at crucial times in the development of projects and finalisation of analyses.

**5.0 Capacity development, training/mentorship and knowledge translation**

**5.1 Academic development**

Our academic investigators and collaborators work in environments that directly support academic development, scholarship training, and/or education. Opportunities for academic development will include enrolment of Higher Degree Research (HDR) students and engagement through varied pathways of emerging and established academic researchers within collaborating organisations. Substantial benefits and value will be added by linking researchers through IMPACT.

Some HDR students will be directly funded by the grant, and existing funding sources available to support students in Canada and Australia will be accessed. All participating organisations will consider funding or co-funding HDR students (Monash University and La Trobe University will provide scholarships for one PhD student each). The Bruyère Research Institute will re-invest all CIHR overhead costs towards trainees. The quality of our multiple research environments and potential to undertake significant projects through association with the IMPACT program will strongly support further HDR applications. The multidisciplinary qualifications and expertise of the investigators provide excellent opportunities to engage HDR students from across the health disciplines, and to facilitate multi-disciplinary collaboration across the PHC research community. Students will work as part of cross institutional and multi-disciplinary teams linked to specific projects and supervisors will be selected across institutions from Canada and Australia.

Opportunities will be offered for cross-provincial and international exchange programs for HDR students. Partnering organisations will provide in-kind support for students who work with them. Support for other costs will be sought through existing funding sources.

IMPACT will foster partnerships between researchers and end-users, including building mentoring relationships between emerging researchers and decision makers. The involvement of HDR students and IMPACT research team members in the LIPs will develop their capacity to design and implement policy and practice relevant research, and to enhance the use of research evidence in policy and practice settings. Academic researchers at all levels involved in the IMPACT program will develop capacity to engage meaningfully with community members, clinicians and decision makers. Finally, we will provide internship opportunities for academics to work in services organisation.

**5.2 Clinical and management capacity development**

The IMPACT proposal is based on meaningful partnerships between researchers, decision-makers, care providers and community representatives. There will be opportunities for clinical and management capacity development at all levels of the partnerships. Relationships and partnerships between care providers, decision-makers, managers and community representatives who are part of the LIPs will be supported through the governance structures and the national and international Network meetings. Mentoring between managers and clinicians may emerge as an appropriate strategy for capacity development. Engagement of care providers and service managers in interventions implemented through the IMPACT program will directly develop their capacity to improve access to CBPHC. In some instances, interventions may target the clinical practice of care providers, while other interventions may target service or practice design.

The IMPACT program will support the development of capacity for embedding research in practice and policy settings, and for enhancing the use of research evidence in practice settings, through ongoing collaborative activities and the KTE program. Research training and skill building of decision-makers and health professionals will be targeted through discussion groups, webinars, and mentoring relationships. A core capacity building element is supporting the development of a common understanding about access to CBPHC for vulnerable consumers across the team and LIPs members, and then more broadly across health care and service organisations in Australia and Canada.

**5.3 Knowledge translation and exchange plan**

The IMPACT program of research is founded on the ongoing engagement and meaningful partnerships between researchers, decision-makers, care providers and community representatives (“knowledge users”). Engagement structures include LIP management committees, discussion groups, webinars, and other network meetings. The program of research involves real-world development of interventions, and recognises contributions that different stakeholders bring to understanding issues surrounding access to CBPHC for vulnerable consumers. The KTE plan includes a variety of strategies that target the range of stakeholders within the LIPs and across the broader health system. We will invite the participation and advice of knowledge brokers and KTE experts, particularly those working within APHCRI in Australia and CPHCRIN in Canada.

The outcomes of stream 1 will include literature reviews and evidence summaries that will be disseminated through refereed academic journals, policy briefings, newsletters, and our existing networks (e.g., PHCRIS and APHCRI in Australia, and IPCDC and CPHCRIN in Canada), in addition to ongoing discussions through the different governance groups. The outcomes of stream 2 will relate to the design and implementation of interventions within each local network This information will be shared with all networks through formal and informal mechanisms, including local LIP meetings, discussion groups (in person and virtual), online updates and forums. Evaluation and research findings will be disseminated through the above strategies and conference presentations, targeted presentations for stakeholders, WebEx and provincial rounds (e.g. MOHLTC Ontario).

In order to support the ongoing co-production of knowledge, we will build an online presence for the LIPs including a website with open sections and restricted areas for stakeholders involved in specific projects. The website will link to key PHC related websites to ensure widespread dissemination. Of particular relevance in Australia are APHCRI and PHCRIS. In Canada, the work will be disseminated through the planned “clearing house” role of the newly established CPHCRIN. The website will include opportunities for facilitated online “communities of practice” involving the LIP members.

Our collaborating group includes internationally renowned experts in health services research into innovation in primary health care. We will create opportunities for them to share their experience through presentations (in person and virtual). We will promote recognition of the IMPACT group as a reliable source of knowledge about access and CBPHC. We will continue to engage with the KTE and implementation science literature to support our KTE program throughout the life of the grant.

**6.0 Ethics**

Members of vulnerable populations face challenges that limit access to CBPHC and can impede effective participation in research. Our team members have extensive experience in community participatory research with refugees and Aboriginal communities. We will follow the NHMRC guidelines for working with Indigenous communities(103), whose core values are: Reciprocity, Respect, Equality, Responsibility, Survival and protection, Spirit and integrity. Partnership with representative organisations is key to success, and existing relationships have been built by our Research groups and health service partners with refugee, Aboriginal and other community organisations (e.g. SAPCRU with refugees, and CPHCE with Aboriginal and low literacy groups e.g. Community Health Centres (CHCs) or Aboriginal CHCs).

We are well prepared to address the methodological, ethical and operational challenges of involving patients in the research process (e.g. confidentiality, respect of cultural diversity, language barriers and poor literacy in obtaining consent). Through our consultation process with community members, their care providers and regional health care decision makers, we will ensure that the program can adequately reduce risks associated with these challenges, and minimize potential unintended negative consequences of the interventions.

In stream 2, design and evaluation of the innovations will include consultation with representatives of disadvantaged communities through deliberative forums. In this stream, there are: general ethical issues of confidentiality, informed consent, and avoidance of harm; and specific issues for vulnerable populations around language, cultural difference and low literacy.

Our regions include areas with significant refugee and indigenous populations and areas of socioeconomic disadvantage. We expect substantial benefits for vulnerable populations, individually and as a group, as this project will identify, adapt, implement and evaluate programs to improve primary care access. We hope to duplicate the experience of some of our researchers in employing workers from vulnerable populations to conduct our work.

For refugees, three central issues to be addressed are: language (use of interpreters and translators); cultural competency (training for researchers and health providers; collaboration with refugee community organisations); and vulnerability to re-traumatisation (avoid questioning about experiences of persecution, torture or other trauma outside of a therapeutic context).

We will engage with Indigenous people through community organisations and deliberative forums in discussion and agreement on the conduct and potential benefits of the research. These discussions will respect cultural diversity, through each LIP developing local partnerships. La Trobe University and UNSW are members of the Cooperative Research Centre for Aboriginal and Torres Strait Islander Health CRCATSIH, hosted by the Lowitja Institute, Australia’s National Institute for Aboriginal and Torres Strait Islander Health Research. The AIPCA has an established collaborative relationship with the CRC and Lowitja Institute including working on projects and undertaking an evaluation of the impact of the CRC. In the event that Australian LIPs have a focus on primary health for Indigenous Australians, the IMPACT team would seek the expert advice and guidance from the Lowitja Institute.

**7.0 Addressing challenges**

**Partners’ engagement**: At this time, all required partners in the LIPs have been consulted or have contributed to this proposal, and are fully committed to the initiative (Appendices J & K). For many partner members, this relationship is rooted in past collaborations with team members, and there is little risk of disengagement. In some cases, the collaboration is new, and more attention will be required to ensure its sustainability. We may face challenges of inter-disciplinary language, role definition, and understanding each other’s perspective. We are committed to open and regular dialogues with all partners, and ensuring that each member’s contribution is valued. Our past successful inter-disciplinary and inter-professional partnerships attest to our ability to achieve this.

**Risks associated with the proposed methodology**: Given our extensive experience in these areas, we do not anticipate any unknown challenges in conducting the systematic scoping, review and synthesis, and mixed-methods analyses (Project 2). Identifying and engaging key experts and stakeholders from regions having implemented the strategies in the case-study interviews and focus groups of in the regions of interest will pose some challenges. We will consult our team members’ international network of researchers to identify the key researchers, decision makers and community representatives in the regions of interest. We may rely on their connections for introductions, and will attend international CBPHC conferences to allow face-to-face consultations with these individuals. Where long-distance consultations are required, we will use videoconferencing tools to facilitate the interaction.

**Scaling up in the real world**: The research program follows a rather linear progression guided by initial needs assessments and iterative consultations with our LIPs, with the goal of scaling up the most suitable intervention(s) for each LIP. As efforts to address the access gap for vulnerable populations are already underway in each region, we anticipate that the activity in the scaling up phase will consist of supplementing the existing strategies in some cases, and supplanting in others. This is the reality of pragmatic trials, and requires that the implementation and evaluation approach be adapted accordingly. For implementation in cases of supplementation, adequate consideration of potential interactions with existing strategies is required. Where the innovation supplants an existing program, the challenges are to shift resources efficiently and effectively, and re-orient the population and care providers to the new strategy. Ensuring adequate evaluation can also be challenging in cases where strategies overlap in time or where the roll out is not entirely in the researcher’s hand (as in traditional randomised controlled trials). Study design strategies (e.g. cluster randomised step wedge design) can help address these barriers. Several team members (SD, GR, MH) have extensive experience in pragmatic trials and have faced the methodological and operational challenges of introducing innovations in the real life setting.

**8.0 Anticipated outcomes and impact**

This study addresses important challenges or barriers in the delivery of CBPHC. The presence of gaps in access to CBPHC for vulnerable populations is well documented. The program is centred on producing evidence to support decision makers in addressing the CBPHC access gaps facing their region and to support policy makers in creating the environment to help this occur. Our preliminary needs assessments (Appendix C) demonstrate meaningful commonalities in the challenges across the regions, and likely reflect those experienced across many other regions. Ultimately, this research will provide new policy and program options for improving access to care by vulnerable population groups through interventions in and with CBPHC. Options for policy and practice will be communicated by a variety of means to managers and policy makers for more widespread implementation.

**Addressing pervasive challenges to the equitable access to CBPHC:** Many factors that contribute to the gap in access to CBPHC are common across vulnerable populations. Because this program addresses issues that more broadly affect the underserved populations, its reach will be broad and its potential for impact on the health system and on the population will be large. Outcomes from the Forums and whole-team meetings and the evaluation study (Project 4) will include an intervention model and implementation framework, the validation of evaluation indicators and measures, evaluation of the feasibility of implementation and the impact on health services and patient assessed outcomes, as well as economic analysis comparing costs and benefits of the implementation of the intervention model. This will provide a rich source of practical experience and examples of innovations which can be communicated and shared between the LIPs and the collaborating researchers and policy makers. The research will also provide a range of knowledge including how innovations work in different contexts and both their direct and indirect impacts (including unanticipated impacts). Resorting to a clear logic conceptualisation of PHC systems will enable us to identify relevant organisational levers and contextual influences that can be harnessed to create sustainable and scalable change in CBPHC to favour access for the vulnerable [101][102].

**Establishing a base of knowledge for future work**: We use a comprehensive and rigorous approach to identifying all system-level organisational innovations that address access to vulnerable populations (Project 1). The knowledge created by this in-depth scoping review will serve any region seeking to be informed about the options available to address their access gaps. This investigative and collaborative approach to seeking solutions to health care issues is transferable to other subjects where primary research evidence exists. Throughout the program, progress in knowledge and the steps involved in creating the knowledge will be disseminated outside the team through the program website, webinars and traditional dissemination venues.

**Providing a thorough assessment of up to eight system-level organisational innovations that address access to vulnerable populations**: The principal access barriers to adequate access to CBPHC faced by a region is related to the population served, the local health care context, and other regional factors. Our systematic review (Project 2) and RE-AIM assessment will provide rigorous information on the effectiveness of several innovations, as well as on their scalability in different contexts (based on their adaptability, sustainability, and acceptability in different settings), and anticipated economic impact. This work will be uniquely relevant to real world implementation in a range of contexts and systems. The synthesis will contain rich source of practical experience and examples of applications of innovations and experience at the local level which can be shared with other services grappling with similar access problems.

**The iterative, collaborative consultation approach is a new model**: We also rely on our partners to help guide this process. This investigative and collaborative approach to seeking solutions to health care issues is transferable to other subjects where primary research evidence exists. Throughout the program, progress in knowledge and the steps involved in creating the knowledge will be disseminated outside the team through the program website, webinars and traditional dissemination venues. Successes will also be shared with the broader community of decision makers with the support of partners. This approach can be applied to other issues of health service delivery.

Reference List

(1) World Health Organization. A Summary of the 2008 World Health Report "Primary Health Care: Now More Than Ever. World Health Organization . 2008.

(2) Canadian Institute for Health Information. Reducing Gaps in Health: A Focus on Socio-Economic Status in Urban Canada. 2008. Ottawa, Ont., CIHI.

(3) Commonwealth of Australia. Healthier Future For All Australians. Final Report of the National Health and Hospitals Reform Commission, editor. 2009. Canberra.

(4) Hutchison B, Levesque JF, Strumpf E, Coyle N. Primary health care in Canada: systems in motion. Milbank Quarterly 89, 256-288. 2011.

(5) Levesque JF, Pineault R, Kapetanakis C, Hamel M, Roberge D, Robert L et al. Primary care affiliation and unmet needs for healthcare services for vulnerable populations: insights from a population-based survey in Quebec province. BMC Family Practice 13, 66. 2012.

(6) Harris MF. Access to preventive care by immigrant populations . BMC Medecine 10, 55. 2012.

(7) Asada Y, Kephart G. Equity in health services use and intensity of use in Canada. BMC Health Services Research , 7-41. 2007.

(8) BowenS. Access to health services for underserved populations in Canada. 11-70. 2012. Ottawa, Health Canada.

(9) Haggerty JL, Pinneault R, Beaulieu MD, Brunelle Y, Gauthier J, Goulet F et al. Practice features associated with patient-reported accessibility, continuity, and coordination of primary health care. Annals of Family Medecine 6[2], 116-123. 2008.

(10) Marshall EG, Wong ST, Haggerty JL, Levesque JF. Perceptions of unmet healthcare needs: What Do Punjabi and Chinese-speaking immigrants think? A qualitative study . BMC Health Services Research 22, 10-46. 2010.

(11) Harris MF, Furler J, Valenti L, et al. Matching care to need in general practice: A secondary analysis of BEACH data. Australian Journal of Primary Health 10, 151-155. 2004.

(12) Spike EA, Smith MM, Harris MF. Access to primary health care services by community-based asylum seekers. Medical Journal of Australia 195, 188-191. 2011.

(13) Khandor E, Mason K, Chambers C, Rossiter K, Cowan L, Hwang SW. Access to primary health care among homeless adults in Toronto, Canada: results from the Street Health survey. Open Medecine 5, 94-103. 2011.

(14) McCusker J, Tousigant P, Borgès Da Silva R, Ciampi A, Levesque JF, Vadeboncoeur A et al. Factors predicting patient use of the emergency department: a retrospective cohort study. Canadian Medical Association Journal 184[6], 307-316. 2012.

(15) Hutchison B, Abelson J, Lavis J. Primary care in Canada: so much innovation, so little change. Health Affairs 20, 116-131. 2001.

(16) Levesque JF, Pineault R, Grimard D, Burge F, Haggerty J, Hogg W et al. Looking Backward to Move Forward: A synthesis of Primary Health Care Reform in Canadian Provinces. Agence de la santé et des services sociaux de Montréal/Direction de santé publique et Institut national de santé publique du Québec, editor. -52. 2012. Montreal.

(17) Hogg WE, Russel GM, Crabtree BF, Gunn J, Harris MF, Levesque JF et al. Shifting ground, Common ground - understanding the evolving primary care practice. 2010-2011. # 212271. 2009. Canadian Institutes of Health Research. Catalyst Grant: Primary and Community-Based Healthcare .

(18) Starfield B. Primary Care: Balancing Health Needs, Services and Technology. New York: Oxford University Press, 1998.

(19) Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. Milbank Q 83[3], 457-502. 2005.

(20) Fiscella K. Health Care Reform and Equity: Promise, Pitfalls, and Prescriptions. Annals of Family Medecine 9, 78-84. 2011.

(21) Schoen C, Davis K, DesRoches C, Donelan K, Blendon R, Strumpf E. Equity in health care across five nations: summary findings from an international health policy survey. Issue Brief (Commonwealth Fund) 388, 1-7. 2000.

(22) Romanow RJ. Building on values: the future of healthcare in Canada. 2002. National Library of Canada[CP32-85/2002E-IN2002]. 2002.

(23) Penchansky R, Thomas JW. The concept of access: definition and relationship to consumer satisfaction. Medical Care 19, 127-140. 1981.

(24) Gulliford M, Fiqueroa-Munoz J, Morgan M, Gibson B, Beech R, Hudson M. What does 'access to health care' mean? Journal of Health SErvices Research & Policy 7, 186-188. 2002.

(25) Shengelia B, Murray CJL, Adams OB. Beyond access and utilization: defining and measuring health system coverage. In Health Systems Performance Assessment. Debates, methods and empiricism. Geneva: World Health Organization, 2003.

(26) Blumenthal D, Mort D, Edwards J. The efficacy of primary care for vulnerable population groups. Health Services Research 30[1 pt 2], 253-273. 1995.

(27) Aldrich HE, Marsden PV. Environments and organizations. In: Smelser NJ, editor. Handbook of sociology. Newbury Park, CA: Sage Publication, 1988: 361-392.

(28) Jary D, Jary J. Collins Dictionary of sociology. Scarborough,ON: Harper Collins, 2000.

(29) Demers C. Organizational change theories: A Synthesis. Thousand Oaks, CA: Sage, 2007.

(30) Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: Systematic review and recommendations. Milbank Quarterly 82[4], 581-629. 2004.

(31) Van de Ven AH, Huber GP. Longitudinal field research methods for studying processes of organizational change. Organization Science 1[3], 213-219. 1990.

(32) Armenakis AA, Bedeian AG. Organizational Change: A Review of Theory and Research in the 1990s. Journal of Management 25[3], 697-713. 1999.

(33) Pettigrew AM, Woodman RW, Cameron KS. Studying organizational change and development: Challenges for future research. The Academy of Management Journal 44[4], 697-713. 2001.

(34) Fiss PC. A set-theoretic approach to organizational configurations. Academy of Management Review 32[4], 1180-1198. 2007.

(35) Levesque JF, Pineault R, Provost S, Tousignan P, Couture A, Borgès Da Silva R et al. Assessing the evolution of primary healthcare organizations and their performance (2005-2010) in two regions of Quebec province: Montreal and Monteregie. BMC Family Practice 1, 11-95. 2010.

(36) Schoen C, Osborn R, Squires D, Doty M, Pierson R, Applebaum S. Survey of patients with complex care needs in eleven countries finds that care is often poorly coordinated. Health Affairs (Millwood) 30, 2437-2448. 2011.

(37) Shelley JM, Irwing LM, Simpson JM, Macaskill P. Who has Pap smears in New South Wales? Patterns of screening across sociodemographic groups. Australian Journal of Public Health 18, 406-411. 1994.

(38) Harris MF, Fanaian M, Jayasinghe UW, Passey M, Lyle D, McKenzie S et al. What predicts patient-reported GP management of smoking, nutrition, alcohol, physical activity and weight? Australian Journal of Primary Health 18[2], 123-128. 2012.

(39) Bressler B, Lo C, Amar J, Whittaker S, Chaun H, Halparin L et al. Prospective evaluation of screening colonoscopy: who is being screened? Gastrointestinal Endoscopy 60, 921-926. 2004.

(40) Westert GP, Verkleij H. Dutch health care performance report 2006. Westert.G.P., Verkleij H, editors. 2006. Bilthoven, The Netherlands, NIPHE.

(41) Provost S, Pineault R, Levesque JF, Groulx S, Baron G, Roberge D et al. Does receiving clinical preventive services vary across different types of primary healthcare organizations? Healthcare Policy 6[2], 67-83. 2010.

(42) Andrew MK, McNeil S, Merry H, Rockwood K. Rates of influenza vaccination in older adults and factors associated with vaccine use: a secondary analysis of the Canadian Study of Health and Aging. Public Health , 4-36. 2004.

(43) Hogg W, Lemelin J, Graham ID, Grimshaw J, Martin C, Moore L et al. Improving prevention in primary care: evaluating the effectiveness of outreach facilitation. Family Practice 25[1], 40-48. 2008.

(44) Javanparast S, Ward P, Young G, et al. How equitable are colorectal cancer screening programs which include FOBTs? A review of qualitative and quantitative studies. Preventive Medecine 50, 165-172. 2010.

(45) Singh SM, Paszat LF, He J, Vinden C, Rabeneck L. Association of socioeconomic status and receipt of colorectal cancer investigations: a population-based retrospective cohort study. Canadian Medical Association Journal 171, 461-465. 2004.

(46) Bairati I, Jobin E, Fillion L, Larochelle M, Vincent L. Determinants of delay for breast cancer diagnosis. Cancer Detect Prev 31, 323-331. 2007.

(47) Lemieux V, Levesque JF, Ehrmann-Feldman D. Are primary healthcare organisational attributes associated with patient self-efficacy for managing chronic disease? Healthcare Policy 6[4], 89-105. 2011.

(48) Levesque JF, Ehrmann-Feldman D, Lemieux V et al. Variations in Patients' Assessment of Chronic Illness Care across organizational models of Primary Health Care: A multilevel analysis from a 12 month Cohort Study. Healthcare Policy. In press.

(49) Significant differences in quality of care exist based on income: Results from an international survey of sicker adults in 11 OECD countries; 12 Dec 1-12 Dec 1; 2012.

(50) Khadilkar A, Chen Y. Rate of Cervical Cancer Screening Associated with Immigration Status and Number of Years Since Immigration in Ontario, Canada. Journal of Immigrant and Minority Health . 2012.

(51) Langellier BA, Garza JF, Glik D, et al. Immigration Disparities in Cardiovascular Disease Risk Factor Awareness. Immigr Minor Health . 2012.

(52) Lofters AK, Moineddin R, Hwang SW, Glazier RH. Predictors of low cervical cancer screening among immigrant women in Ontario, Canada. BMC Womens Health 11[20]. 2011.

(53) Martens PJ, Sanderson D, Jebamani L. Health services use of Manitoba First Nations people: is it related to underlying need? Canadian Journal of Public Health 96[1], 39-44. 2005.

(54) Gao S, Manns BJ, Culleton BF, Tonelli M, Quan H, Crowshoe L et al. Access to health care among status Aboriginal people with chronic kidney disease. Canadian Medical Association Journal 179, 1007-1012. 2008.

(55) Shah BR, Gunraj N, Hux JE. Markers of access to and quality of primary care for aboriginal people in Ontario, Canada. Am J Public Health 93[798], 802. 2003.

(56) Prus SG. Comparing social determinants of self-rated health across the United States and Canada. Social Science & Medecin3 73, 50-59. 2011.

(57) Ehrmann-Feldman D, Levesque JF, Lemieux V, Ouchene H, Lavoie JP, Tourigny A et al. Primary health care organization and quality of life outcomes for persons with chronic disease. Healthcare Policy 7[3], 59-72. 2012.

(58) Veugelers PJ, Yip AM. Socioeconomic disparities in health care use: Does universal coverage reduce inequalities in health? J Epidemiol Community Health 57, 424-428. 2003.

(59) McCusker J, Roberge D, Levesque JF, Ciampi A, Vadeboncoeur A, Larouche D et al. Emergency department visits and primary care among adults with chronic conditions. Medical Care 48[11], 972-980. 2010.

(60) Lavoie JG, Forget EL, Prakash T, Dahl M, Martens P, O'Neil JD. Have investments in on-reserve health services and initiatives promoting community control improved First Nations' health in Manitoba? Soc Sci Med 71, 717-724. 2010.

(61) Canadian Health Services Research Foundation. Picking up the pace: How to accelerate change in primary healthcare. 2010. Ottawa, Canadian Health Services Research Foundation.

(62) Strumpf E, Levesque JF, Coyle N, Hutchison B, Barnes M, Wedel RJ. Innovative and Diverse Strategies toward Primary Health Care Reform: Lessons Learned from the Canadian Experience. Journal of the American Board of Family Medicine 25, 27-33. 2012.

(63) Chapman JL, Zechel A, Carter YH, Abbott S. Systematic review of recent innovations in service provision to improve access to primary care. British Journal of General Practice 54[502], 374-381. 2004.

(64) Breton M, Levesque JF, Pineault R, Hogg W. Primary care reform : Can Quebec's Family Medicine Group Model Benefit from the Experience of Ontario's Family Health Teams? Healthcare Policy 7[2], 122-135. 2011.

(65) Dahrouge S, Hogg W, Tuna M, Russel G, Devlin RA, Tugwel P et al. An evaluation of gender equity in different models of primary care practices in Ontario. PrFont34Bin0BinSub0Frac0Def1Margin0Margin0Jc1Indent1440Lim0Lim1BMC Public Health 10, 151-162. 2010.

(66) Dahrouge S, Hogg W, Tuna M, Russel G, Devlin RA, Tugwel P et al. Age equity in different models of primary care practice in Ontario. Canadian Family Physician 57[11], 1300-1309. 2011.

(67) Pomey MP, Martin E, Forest PG. Quebec's Family Medicine Groups: Innovation and compromise in the reform of front-line care. Canadian Political Science Review 3[4], 31-46. 2009.

(68) Lamarche PA, Pineault R, Haggerty J, Hamel M, Levesque JF, Gauthier J. The experience of primary healthcare users: A rural-urban paradox. Canadian Journal of Rural Medecine 15[2], 61-66. 2010.

(69) Muldoon L, Rowan MS, Geneau R, Hogg W, Coulson D. Models of primary care service delivery in Ontario: Why such diversity? Healthcare Management Forum , 18-23. 2006.

(70) Hogg W, Johnston S, Russel G, Dahrouge S, Gyorfi-Dyke E, Kristjanssonn E. Conducting waiting room surveys in practice-based primary care research: a user's guide. Can Fam Physician 56, 1375-1376. 2010.

(71) Russel G, Dahrouge S, Tuna M, Hogg W, Geneau R, Gebremichael G. Getting it all done. Organizational factors linked with comprehensive primary care. Fam Pract 27, 535-541. 2010.

(72) Russel GM, Dahrouge S, Hogg W, Geneau R, Muldoon L, Tuna M. Managing chronic disease in ontario primary care: the impact of organizational factors. Annals of Family Medecine 7[4], 309-318. 2009.

(73) Pineault R, Provost S, Hamel M, Couture A, Levesque JF. The influence of primary healthcare organizational models on the patients' experience of care in different chronic disease situations. Chronic Diseases and Injuries in Canada 31[3], 109-120. 2011.

(74) Haggerty JL, Pineault R, Beaulieu MD, Brunelle Y, Gauthier J, Goulet F et al. Room for improvement: patients' experiences of primary care in Quebec before major reforms. Can Fam Physician 53[6], 1056-1057. 2007.

(75) Haggerty JL, Pineault R, Beaulieu MD, et al. Practice features associated with patient-reported accessibility, continuity, and coordination of primary health care. Annals of Family Medecine 6, 116-123. 2008.

(76) Bodenheimer T. Innovations in primary care in the United States. British Medical Journal 326, 796-799. 2003.

(77) Davis K, Schoenbaum SC, Audet AM. A 2020 vision of patient-centered primary care. Journal of General Internal Medicine 20, 953-957. 2005.

(78) Mitton C, Dionne F, Masucci L, Wong S, Law S. Innovations in health service organization and delivery in northern rural and remote regions: a review of the literature. Int J Circumpolar Health 70, 460-472. 2011.

(79) Schmittdiel JA, Grumbach K, Selby JV. System-Based Participatory Research in Health Care: An Approach for Sustainable Translational Research and Quality Improvement. Annals of Family Medecine 8[3], 256-259. 2010.

(80) Russel G, Hester J, Enticott J. Whole of Region After Hours Needs Assessment: South Eastern Melbourne Medicare Local. 2012. Melbourne Australia: Southern Academic Primary Care Research Unit.

(81) MacNeil C. Evaluator as Steward of Citizen Deliberation. American Journal of Evaluation 23[1], 45-54. 2002.

(82) Crabtree BF, Chase SM, Wise CG, Schiff GDd, Schimdt LA, Goyzueta JR et al. Evaluation of patient centered medical home practice transformation initiatives. Medical Care 49[1], 10-16. 2011.

(83) Crabtree B, Miller W, Strange K. Understand practice from the ground up. The Journal of Family Practice 50[10], 881-887. 2001.

(84) Drummond MF, Sculpher MJ, Torrance GW, O'Brien BJ, Stoddart GL. Methods for the Economic Evaluation of Health Care Programmes. Oxford University Press, 2005.

(85) Pawson R, Greenhalgh T, Harvey G, Walshe K. Realist review--a new method of systematic review designed for complex policy interventions. Journal of Health SErvices Research & Policy 10[1], 21-34. 2005.

(86) Pawson R, Greenhalgh T, Harvey G, Walshe K. Realist synthesis: an introduction. ESRC Research Methods Programme, editor. 2004. University of Manchester.

(87) Greenhalgh T, Wong G, Westhorp G, Pawson R. Protocol – realist and meta-narrative evidence synthesis: Evolving Standards (RAMESES). BMC Medical Research Methodology 11, 115. 2011.

(88) Dixon-Woods M, Agarwal S, Jones D, Youn B, Sutton A A. Synthesising qualitative and quantitative evidence: A review of methods. Journal of Health SErvices Research & Policy 10[1], 45-53. 2004.

(89) Hoare KF, Mills J, Francis K. The role of Government policy in supporting nurse-led care in general practice in the United Kingdom. New Zealand and Australia: an adapted realist review 68, 963-980. 2012.

(90) Robert E, Ridde V, Marchal B, Fournier P. Protocol: a realist review of user fee exemption policies for health services in Africa. BMJ Open 2[1]. 2012.

(91) Glasgow RE, Vogt RM, Boles SM. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. American Journal of Public Health 89, 1322-1327. 1999.

(92) Glasgow RE, Klesges LM, Dzewaltowski DA, Estabrooks PA, Vogt TM. Evaluating the impact of health promotion programs: using the RE-AIM framework to form summary measures for decision making involving complex issues. Health Education Research 21[688], 694. 2006.

(93) Schoen C, Osborn R, Doty MM, Squires D, Peugh J, Applebaum S. A survey of primary care physicians in eleven countries, 2009: perspectives on care, costs, and experiences. Health Affairs (Millwood) 28[6], 171-183. 2009.

(94) Schoen C, Osborn R, Squires D, Doty MM, Pierson R, Applebaum S. How health insurance design affects access to care and costs, by income, in eleven countries. Health Affairs (Millwood) 29[12], 2323-2334. 2010.

(95) Schäfer WL, Boerma WG, Kringos DS, De Maeseneer J, Gress S, Heinemann S et al. QUALICOPC, a multi-country study evaluating quality, costs and equity in primary care. BMC Fam Pract 12[115]. 2011.

(96) Brown CA, Lilford RJ. The stepped wedge trial design: a systematic review. BMC Medical Research Methology 6, 54. 2006.

(97) Mdege ND, Man MS, Taylor Nee Brown CA, Torgerson DJ. Systematic review of stepped wedge cluster randomized trials shows that design is particularly used to evaluate interventions during routine implementation. J Clin Epidemiol 64[9], 936-948. 2011.

(98) AIHW. Australian hospital statistics 2010-11 . 2012. Canberra.

(99) Russel G, Advocat J, Geneau R, Farrell B, Thile P, Ward N et al. Examining organizational change in primary care practices: experiences from using ethnographic methods. Family Practice 29[4], 455-461. 2012.

(100) Lane R, Russel G, Harris M, Bardoel A, Advocat J, Zwar N et al. A week in the life of two GP Super Clinics. Conference abstract: 2012, Paper sessions . 2012.

(101) Cohen DJ, Crabtree BF, Etz RS, Balasubramanian BA, Donahue KE, Leviton LC et al. Fidelity versus flexibility: translating evidence-based research into practice. Am J Prev Med 35[5], 381-389. 2008.

(102) McDonald J, Jayasuriya R, Harris MF. Primary health care service delivery networks for the prevention and management of type 2 diabetes: using social network methods to describe interorganisational collaboration in a rural setting. Australian Journal of Primary Health 17, 259-267. 2011.

(103) National Health and Medical Research Council (Australia). National statement on ethical conduct in human research 2007 - Update 2009. Australian Research Council; Australian Vice-Chancellors' Committee . 2009.