

Learning from promising primary care practice models
for the USA



Country Case Study: Canada



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Executive summary

Despite spending more on health than many other high- and middle-income countries, the United States (U.S.) continues to achieve poorer health outcomes than these comparators. The project ‘Learning from Promising Primary Care Practice Models for the USA’, being implemented by the Training and Research Support Centre (TARSC) in association with Robert Wood Johnson Foundation (RWJF), seeks to identify and describe promising primary care practice models and approaches with better health outcomes at lower costs than in the USA, that have relevance to US application. This is to inform policy and practitioner dialogue on models and measures that could be adapted or adopted in the USA. This paper reports on the case study implemented in Canada, with a specific focus on the provinces of Ontario and Quebec.

The study had three **objectives**: i) to develop insights about the general and health-system context in Canada as it pertains to primary care (PC) reform efforts in the country; ii) to identify and describe the major characteristics of innovative and promising primary care system(s) and service-delivery models that exist in the country (as well as the social roles and interactions that exist within these systems and models); and iii) to present the findings in a way that facilitates an understanding of the relevance of these models for application in the U.S to improve health outcomes and promote the effective use of resources to achieve these outcomes.

We adopted as **methods** an exploratory case-study design with multiple embedded units, selecting the Canadian PC system as our case, and the provinces of Ontario and Quebec as the ‘embedded units’, given the unique innovations in PC being pursued in these provinces. We included data from both an extensive document review and from 13 key informant interviews with a mix of policymakers and stakeholders from Ontario and Quebec with extensive experience and expertise in the area of PC. A conceptual framework that focused on five specific domains (context, features, social roles, health outcomes and managing and sustaining change in primary care) underpinned our data collection and analysis.

Primary care reforms received attention in Canada in the late 1990s and early 2000s, as trends in health human resources, patient access to primary care physicians and first point of contact suggested there were significant problems in provincial primary care systems. Political and financial commitments at the federal and provincial levels facilitated growing efforts to introduce new approaches to primary care in most provinces.

Ontario introduced a suite of new **PC models** in the years that followed, including Family Health Groups (FHGs), Family Health Networks (FHNs), Family Health Organizations (FHOs), Family Health Teams (FHTs) and Nurse Practitioner-led Clinics (NPLCs), while continuing to support Community Health Centres (CHCs). Quebec also introduced a novel model of PC in the form of Family Medical Groups (FMGs). Introduction of these new models proceeded within a context of public and professional support for a continued governmental role in ensuring first-dollar universal coverage for medically necessary physician and hospital services. The federalist system in Canada, wherein provinces have constitutional authority for health care, also meant that the reforms differed between Ontario and Quebec, given that there is minimal harmonization across provinces with respect to financing, quality, licensing, practice arrangements and scaling up promising practice.

All of the newly introduced primary care models in Ontario and Quebec receive subsidies for the purchase and implementation of electronic medical records, provide some form of after-hours care, rely on voluntary physician participation and receive support from an arms-length government agency for quality improvement planning (in the case of Ontario only). They do not require patients to be enrolled with the practice to receive PC services, but **enrolment** is encouraged for many of them and some models require that physicians enrol their patients.

Service inputs vary across models with respect to practice size, number of practices in operation, and the total number of health professionals practicing in them. The extent to which interdisciplinary care is emphasized also varies across models, with the greatest emphasis seen in CHCs, FHTs,

and NPLCs. The **funding mechanisms** range from fee-for-service to blended remuneration and salary. The governance structures that oversee their operations vary. New models introduced in Ontario have expanded their reach more rapidly than in Quebec. While communities and citizens are engaged in decision making about PC to a limited extent in models that feature community-board governance, there is a distinct lack of **social roles** in primary care in Ontario and Quebec (and in Canada more generally).

The research evidence is limited with respect to the influence of PC models in Ontario and Quebec on **health and health care outcomes**, in relation to access, equity and financial protection, quality, efficiency, cost-effectiveness and value for money, and health outcomes. However, the increase in the number of PC physicians in both provinces, and the increase in the number of patients enrolled in one of the new models of PC, suggests that progress has been made towards a more inclusive and comprehensive system. Additionally, while the results must be viewed with caution, most of the models in this study were found to improve patient access to some extent, some were found to be well suited to serving hard-to-reach vulnerable populations (CHCs), and most were associated with improvements in the quality of care (although quality was defined in a number of ways).

Factors that helped facilitate and sustain changes in PC in both Ontario and Quebec included existing institutions (government structures and past policies), interest groups and ideas (values and beliefs). In both provinces, the policy legacy of physician autonomy in fee-for-service practice created institutional barriers to change, powerful medical associations created interest-related barriers to change, and entrenched values created ideational barriers to change. However, the entrenched system of public payment and private delivery provided governments in both provinces with a key policy lever that has acted as an institutional facilitating factor in both cases. In addition, investments

in the PC workforce provided incentives for new medical graduates to practice family medicine (an interest-related facilitating factor). The consensus across the country that PC reform was necessary provided a facilitating ideas-related factor. A positive fiscal climate in the early 2000s also helped to initiate change in both provinces. Within provinces, a unique constellation of institutions, interests and ideas created variation in the nature of reforms pursued, now reflected in the different models introduced and sustained in Ontario and Quebec.

The evidence from the experience of PC practice in Ontario and Quebec documented in this study has several **implications for PC policy and practice in the U.S:**

- With policy levers largely limited to control over health professional remuneration, reform efforts require additional investments in primary care (and particularly in payments to health professionals) to incentivize a change in practice.
- Models that emphasize patient enrolment appear to improve access to services, and models that emphasize multidisciplinary care show promise in expanding care to include a more comprehensive basket of services, including health promotion, disease prevention and chronic disease management. They may also improve care coordination.
- It is possible to support a movement away from pure fee-for-service remuneration for physician services to alternative mixed remuneration models such as blended fee-for-service and capitation payment. These alternative remuneration mechanisms can support increases in patient enrolment, expansion of multidisciplinary teams, extended hours, and a greater emphasis on health promotion and disease prevention through additional targeted payments.

1. Background

Despite spending more on health than many other high- and middle-income countries, the United States (U.S.) continues to achieve poorer health outcomes than these comparators (Loewenson et al. 2014). In light of the mismatch between spending and outcomes, there is a growing interest in determining the optimal approaches to health-sector reform. Some have called for the increased use of technology assessments combined with volume and price controls (Stabile et al. 2012), as just one example among many. Improving the primary care system in the country is one particular area in which much attention is being paid and is supported by recent work undertaken

to synthesize background evidence on primary care in the USA. This work suggests that investments in primary care may improve value for money, increase access to services, improve health outcomes, and contain costs over the long term (Loewenson, et al. 2014). While primary care can more generally be defined by some key characteristics (see *Box 1*), the range and diversity of primary care models available, and the unique variety of contexts in which US health-sector reforms must be pursued, creates a challenging situation for those attempting to determine which approaches are most appropriate for improving health outcomes.

Box 1: Key attributes of primary care

Primary care includes:

1. First contact, accessible health care services, where demands are clarified and information, reassurance or advice are given and diagnoses made;
2. Practice sizes and levels of integration with social and community services that are responsive to and reflective of population need;
3. Services that address the population's main physical, mental and social health concerns, integrating their biomedical, psychological and social dimensions;
4. Services that are responsive to social, cultural, and economic norms and contexts;
5. Approaches to care that are based on sound knowledge of patients and communities, and that are informed by population health data, the best available research evidence and clinical practice guidelines;
6. Integrated, coordinated, comprehensive approaches to health promotion, disease prevention, personal care and rehabilitation;
7. Supports that ensure continuity of care, guidance and referral to other levels of the system (including additional supportive services);
8. People-centred service delivery;
9. A family and community care orientation;
10. Partnerships between people, patients and multidisciplinary collaborative teams of frontline health providers (including community health workers); and
11. Effective information use and sharing.

Source: Loewenson et al. 2014.

The project 'Learning from Promising Primary Care Practice Models for the USA', being implemented by the Training and Research Support Centre (TARSC) in association with Robert Wood Johnson Foundation (RWJF), seeks to identify and describe promising primary care practice models and approaches with better health outcomes at lower costs than in the USA that have relevance to US application. This is to inform policy and practitioner dialogue on models and measures that the USA could adapt or adopt.

While there are obvious differences in the health systems in the USA and Canada, there are also important similarities that enable lessons to be learned from recent experience with the implementation of innovative primary care models being pursued in Canadian provinces (Strumpf et al. 2012).

The similarities include aspects of how care is organized (such as physician-to-population ratio and the preponderance of private practice and fee-for-service payments), the underlying rationale for considering primary care reforms (such as access, coordination and integration of care, expansion of team-based approaches, quality improvement, chronic-disease prevention and management, and the integration of electronic health records) (Primary Healthcare Planning Group 2011a) and the federal political systems that

provide provinces and states with a significant degree of autonomy (Strumpf et al. 2012). Given the potential to learn from primary care initiatives in Canada, it was chosen as one of the focal countries within which a targeted case study would be conducted to derive insights about promising primary care models for the US context.

Given the mandate provided within the larger project, this study had three objectives:

- i. to develop insights about the general and health-system context in Canada as it pertains to primary care reform efforts in the country;
- ii. to identify and describe the major characteristics of innovative and promising primary care system(s) and service-delivery models that exist in the country (as well as the social roles and interactions that exist within these systems and models); and
- iii. to present the findings in a way that facilitates an understanding of the relevance of these models for application in the USA to improve health outcomes and promote the effective use of resources to achieve these outcomes.

2. Methods

2.1 Case selection, data sources and sampling

To achieve the objectives of this study, we adopted an exploratory case-study design with multiple embedded units (Yin 1999; 2009) and selected the Canadian primary care system as our case. A number of innovations in primary care are being pursued in the provinces of Ontario and Quebec, including ongoing support for Community Health Centres (CHCs) and the more recent introduction of Family Health Networks (FHNs), Family Health Organizations (FHOs), Family Health Teams (FHTs) and Nurse Practitioner-led Clinics (NPLCs) in Ontario, and Family Medicine Groups (FMGs) in Quebec (Baker et al. 2013; Blais et al. 2013; Hutchison et al. 2011; Lazar et al. 2014; Strumpf et al. 2012). Given this, we selected these two provinces as our ‘embedded units’. Additionally, nearly two-thirds of Canadians live in these two provinces, with 39% of the total population living in Ontario and 23% in Quebec. Nearly two-thirds of Canadian physicians work there, with 36% and 25% working in Ontario and Quebec, respectively (CMA 2014a; Statistics Canada 2014). Taken together, these models have been introduced with the potential for improving primary care for a large proportion of Canadians.

We included data from two major sources. First, a document review was conducted using several electronic databases, in addition to manual searches of reference lists and government websites and referrals from key informants (see below). The document review retrieved a collection of both published and grey literature (including government policy documents, reports and evaluations and operational documents) relevant to primary care in each province. Second, we conducted key informant interviews lasting 25-40 minutes with a mix of policymakers and stakeholders from Ontario and Quebec who are (or have been) involved in decision-making processes related to primary care reform, or who have been influenced by these processes. A stakeholder-mapping tool identified a mix of potential key informants at the policymaking level, the management level, and the frontline-provider level, as well as representatives of civil society organizations (for community views on services). From this sampling frame,

22 potential key informants were purposively sampled based on their ability to provide relevant information, or suggest sources of data or key informants that ought to be consulted (see *Appendix 1*).

2.2 Data analysis

Our approach to data analysis was informed by the conceptual framework developed as background to this study (Loewenson et al. 2014). In particular, the framework’s five domains were used to guide the development and organization of identified thematic categories that emerged during the stages of analysis, and included: i) the **context** for primary care systems; ii) **features** of the primary care system; iii) **social roles** in the primary care system; iv) health **outcomes** from primary care services and practice; and v) approaches to **managing and sustaining change** in primary care.

Data analysis unfolded in three stages. In the first stage, the data collected during the initial phase of the document review were read through, summarized, and coded based on their relation to the broad domains in the conceptual framework. Second, data coded within each domain were organized according to their relation to the specific factors of interest within each domain (using empty versions of *Appendix 2 Tables A1-A4*, as well as *Table 5*, as data extraction tools). These factors were established in the background work conducted by TARSC (Loewenson et al. 2014). Third, insights from key informant interviews confirmed and/or clarified results at various stages of our documentary data analysis to ensure our conclusions were valid. This integration of the results from document analysis with inputs from key informants continued until the team felt that trustworthy and robust conclusions related to each domain had been drawn, and there was agreement that no additional insights were emerging during additional stages of analysis. The Hamilton Integrated Research Ethics Board granted ethical approval. *Appendix 1* provides a detailed description of these methods, and *Section 4.2* discusses the strengths and limitations of the methods and evidence.

3. Results

After identifying more than 150 documents (a mix of published literature, grey literature, reports and policy documents) our final analysis included 81 that were particularly relevant to the objectives of this study. We excluded many that were dated, where a newer document was identified with similar but more recent data or information. We also excluded those that did not provide content that could be used to develop a better understanding of the various domains considered and represented in the conceptual framework. Thirteen key informants agreed to participate in the study and were interviewed to provide additional insights, to fill gaps in our understanding of the various domains of interest in this study and to ensure our emerging results and interpretations were accurate, robust and trustworthy.

In this section, we present the main findings related to each of the domains of interest in five sections. These findings represent the integration and synthesis of lessons learned from our documentary analysis as well as those gained through key informant interviews. The findings provide the broad set of ‘take-away’ messages that were gleaned through our multiple data sources. *Tables 1-5* provide highlights of the findings. Where a particular insight has been drawn primarily (or solely) from key informants, this is made explicit.

Given the many domains covered in this study (context, features, social roles, outcomes, and managing and sustaining change) and the fact that our analysis focused on not one but several primary care models, we have provided a detailed set of results in *Appendix 2 Tables A1-4*. These tables provide the detailed information that underpin the key messages provided in *Sections 3.1, 3.2, 3.3* and *3.4*, and in *Table 5*, which provides a summary of *Section 3.5*. The results are presented in a way that offers multiple points of entry for readers in an organized fashion. Those seeking to obtain an overview of the most pertinent findings will find this in the main text of the report, while readers interested in the detailed information and sources that were used to inform our summary findings and conclusions within each domain will find this from reading through the detailed evidence presented in *Appendix 2 Tables A1-A4*.

Citations are provided within these tables when a particular finding was drawn from a document included in our review. This approach makes explicit the domains in which evidence about primary care (PC) models in Ontario and Quebec is sparse and in some cases entirely lacking, in so doing highlighting those domains within which drawing definitive conclusions is still difficult.

3.1 General and health system contexts

In the mid-to-late 1990s it became apparent to many observers in Canada that primary care was in need of repair after nearly two decades of perceived neglect (Hogg 2011). Medical students tended to choose other specialties, first contact became increasingly the domain of emergency departments and walk-in clinics and growing numbers of patients did not have a regular primary care physician (Hogg 2011; Hutchison et al. 2011). As these trends became widely known, calls for reform began to become more frequent. In 2000, the Primary Health Care Transition Fund was introduced to encourage provincial-level efforts to implement and evaluate new approaches to primary care (Health Canada 2007). In 2002 publication of the ‘Commission on the Future of Health Care in Canada: Building on Values’, further highlighted the dissatisfaction with the status quo in Canada, providing additional impetus for provincial action to reform primary care (Romanow 2002). With the First Ministers’ Health Accord of 2003, commitments were made (which included dedicated funding allocated to improve primary care services and support evaluation of innovative practices across the provinces) to improve access for all Canadians to primary care services that are multidisciplinary, comprehensive, patient centred and focused on health promotion and disease prevention, with the intention of putting in motion change that would unfold in the ensuing decade (Health Canada 2003).

In addition to these financial commitments, at the national level, the Canadian Working Group for Primary Healthcare Improvement was commissioned by the Canadian Health Services Research Foundation (now the Canadian Foundation for Healthcare Improvement) to bring together leaders in primary care (researchers, practitioners, funders and policy

makers) to investigate best international practices and provide concrete recommendations on how Canada could redefine its priorities in order to strengthen the system. This working group produced three reports that provided insights about how research about primary care can be standardized to ensure the availability of good evidence with which to inform decision making (Russell et al. 2010), about what is known internationally about best practices in primary care (Katz et al. 2010), and about what makes a high-quality primary care system (McMurphy 2010). More recently, at the provincial level in Ontario, the Primary Healthcare Planning Group was set up for a similar purpose, but with a focus on strengthening the provincial primary care system through improvements in quality, access, efficiency, accountability and governance (Primary Healthcare Planning Group 2011a; 2011b). Table 1a summarizes features of the general context for PC systems, particularly those in Ontario and Quebec, with further detail in *Appendix 2 Table A1*.

In the wake of the commitments made in the First Ministers' Health Accord, Ontario continued to support CHCs and introduced FHGs, FHNs, FHOs, FHTs and NPLCs, while Quebec introduced FMGs. The characteristics of these models differ significantly from the traditional fee-for-service model in terms of organization, process and approach to physician remuneration (as further discussed in *Section 3.2*), in the extent to which they engage patients,

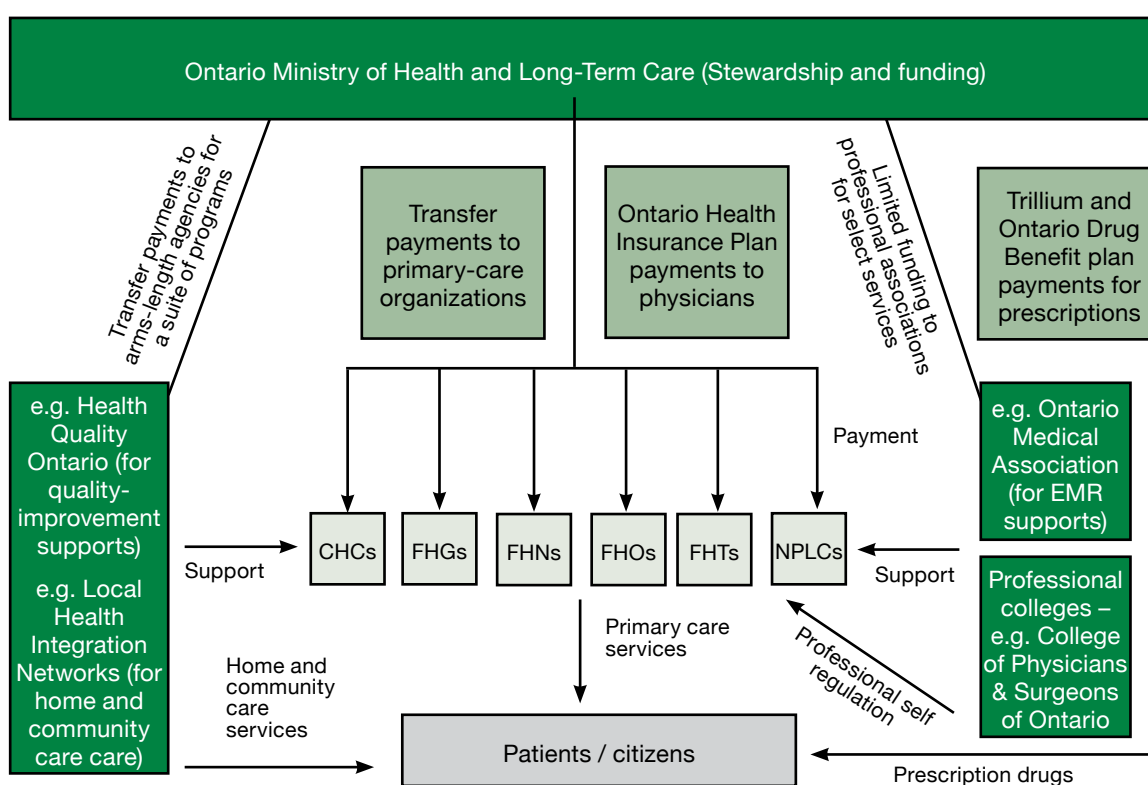
the communities they serve in decision making and care planning (as discussed in *Section 3.3*) and in their influence on important outcomes (as further discussed in *Section 3.4*). The major facilitating factors that have led to their implementation are detailed in *Section 3.5*.

Of importance for this study is the context in which these new models have evolved and emerged as innovative primary care strategies, as indicated in *Table 1a* overleaf for the general context and *Table 1b* of the health system context, with further detail in *Appendix 2 Table A1*.

In *Figure 1* the organogram outlines the relationships among some of the key payers and providers in the Ontario health system as an example of the system discussed.

Nationally, there is broad support among the public and among important health-system stakeholders for a governmental role in ensuring first-dollar universal access to medically necessary physician and hospital services (Abelson et al. 2004). As shown in *Table 1a*, the public supports the maintenance of the status quo with respect to the system's underlying 'core bargain', which ensures no user fees and no two-tier access to physician and hospital services, although they are more likely to be open to two-tier access to and for-profit delivery of new and rapidly expanding services.

Figure 1: Relationships among key payers and providers in the Ontario health system



Source: Authors.

Table 1a: General contexts for innovative PC models in Ontario and Quebec

Feature	Main findings
Social and stakeholder support for state intervention and regulation	<ul style="list-style-type: none"> • There is broad public and stakeholder support in Canada for maintaining the government's role in health care financing, which includes publicly funded physician and hospital services (with universal access, no user fees and no two-tier access to care), although there is openness to access to two-tier care and for-profit delivery for newer and rapidly expanding services such as home care and high-tech care (Abelson et al. 2004) • The Assembly of First Nations (AFN) support financial and some administrative support from the federal government's First Nations and Inuit Health Branch (FNIHB) for health care services delivered to First Nations populations (Assembly of First Nations 2013)
Measures taken to inform and involve the public in decision making	<ul style="list-style-type: none"> • Overall, there is limited experience across Canada in involving the public in decision making, although there are some experiences to note <ul style="list-style-type: none"> ◦ Some experimentation in Ontario to determine optimal methods of public engagement, particularly through initiatives led by Health Quality Ontario (Gauvin et al. 2014) ◦ Many initiatives exist at various levels of the system in Quebec to engage the public in decision-making although the true extent of implementation is variable across the province ◦ Health Canada's First Nations and Inuit Health Branch has explicit commitments to engage First Nations communities in planning, management and implementation of health programmes, although the extent of implementation is difficult to determine (Health Canada 2012)
Measures for harmonizing financing, quality standards, licensing and practice arrangements and for scaling up promising practice, within and across provinces and territories	<ul style="list-style-type: none"> • Nationally, the Canada Health Act (1984), defines the standards to which provincial health insurance programmes must conform for federal funding <ul style="list-style-type: none"> ◦ Universality ◦ Portability among provinces ◦ Public administration ◦ Accessibility (first-dollar coverage for physician and hospital service) ◦ Comprehensiveness (medically necessary health services provided by hospitals and physicians) • Provincially, harmonizing financing is achieved through provincial health insurance plans (Ontario Health Insurance Plan and Régie de l'assurance-maladie du Québec in Ontario and Quebec, respectively) • There are limited examples of initiatives for harmonizing quality standards in Canada, although the Excellent Care for All Act (2010) promotes quality monitoring and improvement in Ontario • Harmonizing licensing is only achieved nationally for primary care physicians through the College of Family Physicians of Canada and at the provincial level through the Regulated Health Professionals Act (1991) in Ontario and the Professional Code (1974) in Quebec that provide self-regulatory responsibilities for professional colleges (e.g. Ontario College of Family Physicians (OCFP)) • Harmonizing practice arrangements and scaling up promising practice is mostly achieved through opportunities and incentives associated with voluntarily engaging in new models of care within provinces

Sources: As noted in Table text and Appendix 2 Table A1

Health professional associations across the country generally support the maintenance of first-dollar coverage and universal access to medically necessary physician and hospital services. There is also support for the federal government's financing and delivery roles for care provided to First Nations populations among Assembly of First Nations members (Assembly of First Nations 2013).

Several initiatives within provinces aim to engage the public in decision making related to healthcare, outlined in *Table 1a*, but the methods used are still being developed, and the extent to which they are being implemented varies.

- In Ontario, Health Quality Ontario (HQO) is experimenting with new ways to engage patients in decisions about health technology funding and use, although the methods for doing this are still under development.
- In Quebec, there are initiatives at the local level (e.g. user committees), at the regional level (e.g. Forum of the Population) and at the provincial level (e.g. the Health and Welfare Commissioner's Consultation Forum), although implementation varies across healthcare settings and regions.
- Health Canada commits to engaging First Nations communities in the strategic planning, management and implementation of services, although the lack of accountability mechanisms means that there are no clear indicators that these commitments have been fulfilled.

Harmonization of healthcare financing for physician and hospital services across provinces is achieved at the federal level through the Canada Health Act. Harmonization of licensing for family physicians (but not for non-physician providers) is facilitated through the College of Family Physicians of Canada (CFPC), but the majority of approaches for harmonizing financing, quality, licensing, practice arrangements and scaling up promising practice are pursued within provinces (See *Table 1a*). Amendments to the Agreement on Internal Trade in 2009 allowed for interprovincial mobility for members of regulated professions' (physicians, nurses). In relation to the harmonizing of standards within provinces:

- Licensing standards are set for all PC providers in Ontario through the Regulated Health Professionals Act and in Quebec through the Professional Code.
- Health insurance plans in Ontario and Quebec that act as a single payer for all physician services ensure harmonized, within-province mechanisms for financial arrangements related to primary care delivered by physicians.

- There are no explicit initiatives for harmonizing quality, although Ontario's 'Excellent Care for All Act' 2010 provides a potential mechanism for ensuring quality standards across PC organizations in the province.
- Opportunities and incentives for voluntary enrolment of PC physicians into one of the new PC models in both Ontario and Quebec attempt to harmonize practice arrangements within a given model.
- Repeated calls for applications for FHTs (Ontario) and FMGs (Quebec) are the major mechanisms for scaling up promising practice in PC, although in Ontario no new applications to establish FHTs are currently being accepted (See *Table 1a*).

Table 1b outlines the health system context. Both Ontario and Quebec have unicameral Westminster-style parliamentary democracy systems of governance, with constitutional authority for governing health care as a result of the British North America Act. There is, however, no formal governance or explicit legal framework for primary care per se in either jurisdiction. Traditionally, physicians have worked in private practices, billing the provincial (publicly administered) insurance plan for services provided. Both Ontario and Quebec have negotiated agreements with physicians that provide an informal policy framework for PC.

In both provinces, the organization of the health system is similar, with longstanding public payment and private delivery for all medically necessary physician and hospital services, allowing physicians to practice as largely independent entrepreneurs. Some publicly owned and operated health centres serve marginalized and/or rural communities such as First Nations populations, however (Health Canada 2012).

The health financing characteristics are also similar in both provinces. Both are 'single payer' for medically necessary physician and hospital services, but multipayer for prescription drugs, and both finance the system through general taxation (although a mix of private and public financing is used for prescription drugs, home care, rehabilitation, long-term care and other social services). While Ontario spends more overall, the proportion of public and private expenditures in both provinces is similar, as are per capita expenditures (CIHI 2013). Resource allocation to PC in Ontario and Quebec are primarily based on either fee-for-service payments or blended-capitation mechanisms to physicians. In Ontario the majority of PC physicians are now receiving some form of blended-capitation payment (Glazier et al. 2012a).

Table 1b: Summary findings: Health system contexts in Ontario and Quebec

Feature	Main findings
Governance legal and policy features	<ul style="list-style-type: none"> • At national level, the British North American Act (1867) gives responsibility for health care to the provinces, but the federal government funds all health care for First Nations populations (as stipulated in the Indian Health Policy, 1979) and armed service members • Federal legislation also establishes publicly funded, privately delivered care (Hospital Insurance and Diagnostic Services Act, 1957, and the Medical Care Act, 1966) • Both Ontario and Quebec have unicameral Westminster-style parliamentary democracies, with authority under the British North American Act (1867) for governing healthcare (except for armed services and First Nations populations) • There are no explicit governance or legal frameworks in either Ontario or Quebec for PC in general or specific PC sites. In contrast governance frameworks exist for not-for-profit hospitals (e.g. Public Hospitals Act in Ontario) and for clinical sites providing diagnostic and surgical services (eg. Independent Health Facilities Act in Ontario) • The Regulated Health Professions Act (1991) and Professional Code (1974) provide the legal framework for individual healthcare providers in Ontario and Quebec, respectively (e.g. physicians, nurse practitioners) • Negotiated agreements with physicians provide the policy framework for PC models and payment
Organisation	<ul style="list-style-type: none"> • Long-standing public payment/private delivery 'bargain' with physicians (and hospitals), with physicians paid for medically necessary services through a publicly administered provincial health insurance plan but practicing as largely independent entrepreneurs (typically within a personally owned professional corporation) • Public payment and (typically) public provision of services for First Nations and armed forces populations federally
Health financing	<ul style="list-style-type: none"> • Both Ontario and Quebec have single-payer systems for medically necessary physician (and hospital) services but multipayer for prescription drugs, home care, rehabilitation, long-term care and many other social services (although Quebec also has single-payer public insurance for all of those without employer-based coverage for prescription drugs, and there is a single federal payer for all care provided to First Nations and armed forces populations) • Tax vs. social security vs. private <ul style="list-style-type: none"> ◦ In both Ontario and Quebec (and federally for First Nations and armed forces), general taxation is used to fund a publicly administered health insurance plan, which covers all medically necessary physician and hospital services ◦ Both provinces have a mix of private financing (mostly through employer-based insurance plans) and public financing (for those aged 65 and over or living in poverty) for prescription drugs, home care, rehabilitation, long-term care and many other associated social services. Quebec also has a mix of employer-based and publicly administered insurance for those without employer-based coverage for prescription drugs • Per capita levels of health spending are similar in Ontario and Quebec, although there are no recent indicators on the share of spending allocated to PC services <ul style="list-style-type: none"> ◦ Total health expenditure in 2013 was C\$79.7 billion (C\$5,835 per capita) in Ontario, and C\$44.9 billion, (C\$5,531 per capita) in Quebec (CIHI 2013) ◦ Total public expenditure on health in 2013 (including funds received through federal transfer) was C\$54 billion (C\$3,952 per capita) in Ontario, and C\$32 billion (C\$3,944 per capita) in Quebec (CIHI 2013) ◦ Total private expenditure on health in 2013 was C\$25.7 billion (C\$1 883/ capita) in Ontario and C\$12.9 billion, (C\$1 588 per capita) in Quebec (CIHI 2013) ◦ In Ontario, total provincial spending on physicians in PC in 2010 was \$3.2 billion (Kralj and Kantarevic 2012). No updated evidence is available on how much is spent on PC per capita in Ontario or Quebec (CIHI 2012) ◦ Total spending on health care for First Nations populations was C\$ 2.4 billion in 2011/2012, or C\$2,626 per capita (Milke 2013), although there are no available estimates to suggest what proportion was for PC services

Table 1b: Summary findings: Health system contexts in Ontario and Quebec (continued)

Feature	Main findings
Resource allocation strategies for PC	<ul style="list-style-type: none"> • The federal government has provided some block funding for PC reform initiatives (e.g. the \$800 million Primary Health Care Transition Fund, and the \$16 billion Health Reform Fund introduced by First Ministers) • Traditionally PC across Canada, including in Ontario and Quebec, is paid for through fee-for-service (FFS) payments to physicians. This is changing, and the share of family physicians nationally receiving 90% or more of their professional income from FFS fell to 41% by 2010 (The College of Family Physicians of Canada et al. 2010) • In Ontario and Quebec, most resource allocation decisions in PC are the result of negotiations between the provincial government and the provincial medical association (which often includes a fee schedule for physicians billing fee-for-service) • In Ontario, allocation is moving towards blended payment strategies and particularly towards capitation payments, which have risen rapidly since 2004-2005 (Glazier et al. 2012a), although this type of change has been slower in Quebec • Additional payments to incentivize patient enrolments are rising in Ontario and Quebec, such as the access bonus payments for enrolling unattached patients
Measures for containing costs of medicines	<ul style="list-style-type: none"> • For those eligible for provincial drug plans and those First Nations and armed services populations covered by federal plans (e.g. Ontario Drug Benefit and Trillium Drug programme, Quebec's public drug insurance plan) cost-containment strategies are primarily based on cost sharing, and the use of drug formularies • A Patented Medicine Prices Review Board regulates the prices of patented drugs entering the Canadian market. It has no authority to control prices charged by wholesalers, pharmacies, or the fees charged by pharmacists (see: http://www.pmprb-cepmb.gc.ca/english/View.asp?x=1433)
Primary care workforce profile	<ul style="list-style-type: none"> • Family physicians comprise more than 50% of the physician workforce in Canada (CMA 2014b). Although the physician density is low by international standards, the general practitioner (GP) density exceeds the OECD average (Hutchison et al. 2011) • Increased medical school spaces and family medicine residency positions has increased the number of family physicians per 100,000 people from 94 in 2000 to 103 in 2009 (CIHI 2010b) • The non-physician PC workforce has expanded (Hutchison et al. 2011). The number of licensed nurse practitioners in Canada doubled from 800 to 1990 from 2004 to 2008 (CIHI 2010a; Hutchison et al. 2011). Physician assistants also rose in number, with at least 400 currently practicing in Canada and a further 160 being trained in 2014, many of whom are eligible to support PC services (such as conducting patient interviews and routine physical assessments, as well as providing select diagnostic and therapeutic services). These professionals are less utilized compared to the USA (Canadian Association of Physicians Assistants 2014) • Canadian physicians rank second-lowest on use of electronic medical records (EMRs) compared to ten wealthy industrialized countries (Commonwealth Fund 2012). Estimates suggest that in 2010, 23% of practices across Canada were using EMRs (Katz et al. 2010) <p>Provincially, the following health personnel trends were identified:</p> <ul style="list-style-type: none"> ◦ In 2014 there were 12,871 family physicians in Ontario and 8,737 in Quebec, constituting 47.8 % and 49.6 % of all physicians in these provinces, respectively (CMA 2014b). By 2011 about 4,700 family physicians in Ontario were estimated to have adopted an EMR in their practice (Aggarwal 2011) ◦ Ontario has the second-lowest density of PC physicians in Canada's provinces, at 92 / 100,000. The number of family physicians rose by 16% from 10,000 in 2002 to 11,600 in 2010, with 67% affiliated with a PC model based on patient enrolment (Aggarwal 2011; Hutchison and Glazier 2013; Kralj and Kantarevic 2012) ◦ In 2011, 72% of Ontarians and more than half of Quebecers were enrolled with a PC physician, (Hutchison et al. 2011), with nearly 77% of people living in Ontario rostered to a family physician by 2012 (Kralj and Kantarevic 2012) ◦ Ontario's PC physicians have high levels of pay and satisfaction, possibly linked to significant investments in PC in the last decade and to family medicine being more attractive to medical graduates (Glazier et al. 2012a; Strumpf et al. 2012) ◦ Ontario has expanded the roles of midwives and nurses (with 4,285 nurses and 1,362 nurse practitioners in Ontario's PC system in 2010, about 50% of all nurse practitioners in Canada. Quebec has much lower numbers, with fewer than 100 nurse practitioners in 2011 (CIHI 2010a; Hutchison et al. 2011; RNAO 2012)

Sources: As noted in Table text and Appendix 2 Table A1; US\$1 = Canadian \$1.1.

Both provinces use cost sharing as a way of containing costs of medicines, and the use of drug formularies is also common in publicly administered drug programmes. At the federal level, the Patented Medicine Prices Review Board (PMPRB) regulates the prices of patented drugs entering the Canadian market, although this body has no authority to regulate prices charged by wholesalers or pharmacies, or fees charged by pharmacists.

As *Table 1b* details, the primary care workforce is growing in Canada. PC physicians as a share of all physicians is similar in both Ontario and Quebec, but Ontario has many more nurse practitioners currently working in PC models than Quebec (CIHI 2010a; Hutchison et al. 2011; RNAO 2012).

3.2 Features of innovative primary care models in Ontario and Quebec

As raised earlier, many new PC models have been introduced in the last fifteen years, particularly in Ontario. These include FHGs (established in 2002-03), FHNs (established in 2001-02), FHOs (established in 2007), FHTs (established in 2005) and NPLCs (established in 2006-07), which now operate alongside CHCs (established in 1979) and traditional fee-for-service solo practices, both of which have a longer history in the province. New primary care models have expanded their reach in both Ontario and Quebec, albeit more rapidly in Ontario.

Table 2 provides an overview of the core features of these innovative PC models in Ontario across several domains (service inputs, service content, service organization and process, and service reach) and details about the same domains for the new FMG model being introduced in Quebec (established in 2002). *Appendix 2* presents these findings in much greater detail.

Despite the many unique characteristics of each innovative primary care model in Ontario and Quebec, as *Table 2* indicates, all of the models:

- receive subsidies for the purchase and implementation of approved clinical-management systems and electronic medical records;
- provide some form of after-hours care;
- rely on voluntary physician participation;
- (in the case of Ontario only) receive support from an arms-length government agency for planning quality improvement;
- do not require patients to be enrolled with the practice to receive primary care services, although enrolment is encouraged for many of them; and
- do not have specific patient incentives to encourage enrolment; in most cases enrolment is simply a formal recognition of an existing physician-patient relationship.

On the latter point, patients rarely decline to enrol. In Ontario, for example, patients agree to contact the physician with whom they are enrolled when they need primary care medical advice or treatment, except when there is an emergency or they are travelling away from home. They can end their enrolment with another physician six weeks after signing the enrolment form, but they agree not to change enrolment more often than twice per year. Additionally, while not an incentive, per se, most patients who need a referral generally go to a primary care physician because specialists prefer patients that have been referred over those who find their way to a specialist on their own. This is because specialists are paid at a lower rate if patients have not been referred by a family physician (OHIP 2014). In effect, the preferences of specialists provide an indirect incentive for patients to visit a primary care physician as the first point of contact.

Table 2: Core features of innovative primary care models in Ontario and Quebec

Primary care model (year established)	Number and reach (where available)	Staff composition	Remuneration and funding	Patient enrolment	Governance features
Community Health Centres (CHCs), Ontario (1979)	75 in 2013, serving more than 500,000 people	<ul style="list-style-type: none"> • About 400 physicians in interprofessional teams • 300 nurse practitioners and 1,700 other clinical, health promotion and community development professionals, • >800 management and administrative personnel • No minimum physician group size 	<ul style="list-style-type: none"> • Staff (including all health professionals) paid through salary, with no targeted financial incentives • Organizational funding directly from the Ministry of Health and Long-Term Care 	No formal patient enrolment	Governed by community boards and accountability agreements with Local Health Integration Networks
Family Health Groups (FHGs), Ontario (2002-03)	238 as of 2011	<ul style="list-style-type: none"> • 3,003 physicians working in this model as of 2011 • Limited interprofessional care • Minimum physician group size of 3 	<ul style="list-style-type: none"> • Physicians paid by FFS, blended with targeted financial incentives for providing after-hours care and targeted services, e.g. palliative and mental health care 	Not required but formal patient enrolment is encouraged	Physician-led governance and agreements signed with the Ministry of Health and Long-Term Care
Family Health Networks (FHNs), Ontario (2001-02)	36 as of 2011	<ul style="list-style-type: none"> • 246 physicians working in this model as of 2011 • Limited interprofessional care • Minimum physician group size of 3 	<ul style="list-style-type: none"> • Physicians paid through blended-capitation • Access bonus for all services provided in the network • Additional funds to pay administrative staff, and monthly payments for each enrolled patient 	Formal patient enrolment required	Physician-led governance and agreements signed with the Ministry of Health and Long-Term Care
Family Health Organizations (FHOs), Ontario (2007)*	362 as of 2011	<ul style="list-style-type: none"> • 3,631 physicians working in this model • Limited interprofessional care • Minimum physician group size of 3 	<ul style="list-style-type: none"> • Physicians paid through blended-capitation (higher than for FHNs enrolled patients) • Access bonus for all services provided within the group of physicians • Additional funds to pay administrative staff 	Formal patient enrolment required	Physician-led governance and agreements signed with the Ministry of Health and Long-Term Care

Table 2: Core features of innovative primary care models in Ontario and Quebec (continued)

Primary care model (year established)	Number and reach (where available)	Staff composition	Remuneration and funding	Patient enrolment	Governance features
Family Health Teams (FHTs), Ontario (2005)	200 as of 2012, serving nearly 2.5 million	<ul style="list-style-type: none"> More than 2,400 physicians working in this model along with 1,700 other multidisciplinary health professionals Minimum physician group size of 3 	<ul style="list-style-type: none"> Physicians paid through a combination of capitation, salary fee-for-service and pay-for-performance bonuses Additional funds provided to pay for interprofessional staff and administration 	Formal patient enrolment required	Several different approaches to governance including physician-led, community boards or a mix of the two
Nurse Practitioner-led Clinics (NPLCs), Ontario (2006-07)	26 as of 2012, serving a population of over 27,000	<ul style="list-style-type: none"> Numbers not available but Nurse-to-physician ratio greater than FHTs Per clinic: Up to four full-time nurse practitioners, four interprofessional staff, an administrative lead and clerical staff 	<ul style="list-style-type: none"> Transfer payments direct from the Ministry to cover salaries and operational costs of each clinic 	Patients enrolled with the clinic (not with specific providers)	Nurse-practitioners lead governance and organization of care, proposals required to justify establishment, and agreements signed with the Ministry
Family Medicine Groups (FMGs), Quebec (2002)	223 as of 2011 each serving a population of about 15,000 patients meaning over 3 million people are covered by this model in Quebec	<ul style="list-style-type: none"> 3,177 physicians working in this model in Quebec Limited interprofessional team, although nurses provide support Minimum physician group size of 8 	<ul style="list-style-type: none"> Physicians paid through fee-for-service Subsidies provided to cover administrative costs and nurse salaries, with targeted payments to incentivize 24/7 comprehensive care 	Formal patient enrolment required	Agreements signed with the Ministry defining services provided and arrangements made with other organizations that have shared responsibility for PC

Sources: Pineault et al. 2009; DiCenso et al. 2010; Hutchison and Glazier 2013; Hutchison et al. 2011; Aggarwal 2011; Dinh 2012; Glazier et al. 2012a; Beaulieu et al. 2013; Breton et al. 2011; Rosser et al. 2010.

Service inputs vary across all models, with key differences in the number of physicians involved and the minimum practice size, the extent to which interprofessional teams are utilized, and how funds are allocated. As shown in *Table 2*:

Community Health Centres (CHCs) in Ontario (n=75) Involve at least 400 physicians working in the province's CHCs, with no minimum practice size, a multitude of other

non-physician providers, administration and management personnel, providers paid by salary, and a budget provided for organizational management and administration.

Family Health Groups (FHGs) in Ontario (n=238) Involve at least 3,003 physicians with a minimum practice size of three, little interdisciplinary care, and blended remuneration, mostly through traditional fee-for-service with additional targeted incentives.

Family Health Networks (FHNs) in Ontario (n=36) Involve at least 346 physicians with a minimum practice size of three, little interdisciplinary care, and payments made

mostly through age- and sex-adjusted blended capitation with additional targeted incentives and performance bonuses.

Family Health Organizations (FHOs) in Ontario (n=362) Involve at least 3,361 physicians, with similar features to FHNs.

Family Health Teams (FHTs) in Ontario (n=200) Involve at least 2,400 physicians and an extensive range of non-physician providers who make up comprehensive, interdisciplinary teams, a minimum physician practice size of three, physician payments made using a blended-remuneration formula composed of a core payment model of mixed capitation and fee-for-service, with additional bundled payments to cover salaried staff (i.e. non-physician health professionals), management and administration. Other targeted incentives are provided for additional services (such as preventive care and after-hours care).

Nurse Practitioner-led Clinics (NPLCs) in Ontario (n=26) No reliable source identified to provide data related to aggregate NPLC service inputs identified.

Family Medicine Groups (FMGs) in Quebec (n=223, although the number may now be as high as 264) Involve at least 3,177 physicians with a minimum practice size of eight, little interdisciplinary care outside of engaging nurses, and payments made mostly through fee-for-service, although additional incentives provided for enrolled patients, administration, etc.

The government has also committed to providing additional funding for FMGs that are considered 'good' performers to add another health professional for every 6,000 patients that are rostered, in an attempt to improve the extent of interdisciplinary care within this model.

The financial data are not publicly available in either province to enable a detailed breakdown of how funding is allocated within each model, including shares paid to physicians as salary, as incentives, and as block funding to cover administration. Nevertheless, the Ontario Medical Association has provided an overview of payment structures across patient enrolment models (OMA 2013a), as shown in *Table 2* and in *Appendix 2 Table A2*.

There are many similarities in the **content of services** across the models of care included in this study (with all models positioned as providing comprehensive primary care services). However, some have unique characteristics.

- CHCs aim to provide comprehensive PC services delivered by multidisciplinary teams, focused on health promotion and disease prevention, with the ability to reach marginalized and vulnerable

populations, including socially disadvantaged and hard-to-serve populations, through community outreach programmes.

- In addition to CHCs, FHTs and NPLCs also focus explicitly on health promotion and disease prevention within their core basket of services, although many of their main activities remain curative, all of which provide linkages between PC and public health goals. Any direct relationships between PC organizations and public health units would be locally negotiated, so generalizations about the nature of these relationships are difficult to make. Health promotion and disease prevention services are mandated as elements of service agreements between the organizations and the Ministry of Health and Long-Term Care (in Ontario), and as outlined in Appendix 2 additional funds are allocated for this purpose. These funds either come in the form of additional fees for enrolled patients to ensure providers (e.g. physicians) can spend additional time with each patient, as targeted incentives to focus on health promotion and disease prevention, or through administrative funds to ensure the right mix of staff are available to provide these kinds of services (e.g. by hiring a nutritionist).

Despite progress within models introduced in Ontario, and generally positive results with respect to new **remuneration mechanisms** that aim to incentivize the inclusion of preventive and after-hours care within the basket of services, key informants still gave a sense that incentives need to be reviewed, that accountability requirements are not being met, and that additional investments in monitoring progress towards these objectives need to be pursued. Two informants from Ontario pointed out that a key deficiency relates to the fact that none of the models in that province are being appropriately monitored, and that there is no mechanism for accountability. Hence, while the frameworks for expanding the range of services provided within Ontario's newest models are in place, with the provision of additional targeted payments and incentives, these key informants argued that additional accountability mechanisms are still required to ensure these new arrangements are followed and that an expanded basket of services is provided.

With respect to the **service organization and processes** across these PC models in Ontario and Quebec, they are governed in a variety of ways, including:

- community boards in CHCs;
- physician-led governance in FHGs, FHNs, FHOs; and

- a mix of approaches, with some governed by community boards, some by physicians and some by a mix of providers on an executive board in FHTs, NPLCs, and FMGs (See *Table 2*).

Patient advisory councils are being developed in some PC organizations, but are not yet common. Information about their specific characteristics, as well as the extent to which they have been introduced in Ontario or Quebec, is sparse. HQO in Ontario has deployed practice facilitators in the form of quality-improvement coaches to support development of PC quality-improvement plans (QIPs). There are, however, no structures in Ontario that facilitate the development of local or regional associations of PC practice groups to help with practice management or with quality improvements, or to help organize and facilitate team care. In Quebec this is happening to a limited extent through regional agreements and shared responsibilities established across organizations involved in the provision of PC services (Hutchison et al. 2011; Pineault et al. 2009).

The reason for the recent development of so many different models has not been explicitly addressed in the literature or in the policy documents reviewed in this study. Interviews with key informants provided some potential reasons for it, most of which deal with balancing the demands and preferences of physicians, given their influence in PC, as discussed further in *Section 3.5*.

Key informants often viewed **CHCs** as the most promising PC model because they were built on a core ‘community development’ approach that ensured comprehensive PC services provided by multidisciplinary teams, focused on health promotion and disease prevention. CHCs were noted to have the ability to reach marginalized and vulnerable populations, particularly when established in dense urban environments. They were, however, also noted to have always had trouble attracting physicians. It was suggested that this is because this model relies on salary-based remuneration, largely viewed by physicians as the least desirable payment form, with perceptions that professional autonomy is lost when a physician is employed by an organization and paid via salary. Moreover, CHC salaries are typically lower than the incomes received by family physicians working in other models.

FHTs were introduced and seen as a model with the potential to achieve similar PC aims, albeit without the salaried-remuneration system and with higher rates of pay, which have proved to be more attractive to physicians. While **FHOs** and **FHNs** do not go as far in promoting multidisciplinary care, they do emphasize patient enrolment and extended

coverage, and are often viewed as a step towards physicians becoming part of a FHT, given the focus on moving away from fee-for-service payments. Further, all physicians practicing in the FHT model must be remunerated through blended-capitation or blended-salary arrangements.

FHGs, on the other hand, still exist as a potential accommodation for those physicians who are not comfortable committing to new remuneration schemes and models of practice that emphasize interprofessional teams. It should be noted that this type of resistance to change is not Ontario-specific. Key informants from Quebec also stated that there are still some physicians in the province not willing to move towards the FMG model, which requires additional arrangements with the government and changes to their established way of doing things.

Finally, **NPLCs** are often positioned as a necessary development in Ontario in communities where physician shortages reduce access to care that nurse practitioners are willing and able to provide. This is particularly the case in rural and remote communities, many of which are home to aboriginal communities. It is often difficult to recruit a full-time physician and many of these communities are too small to support or justify a full-time physician. This makes nursing stations the logical choice. Furthermore, the current fiscal climate in the province has put pressure on the Ministry of Health and Long-Term Care to find models that provide greater value for money. NPLCs are argued to do this, given the lower remuneration paid to nurse practitioners for the same services traditionally provided by general practitioners. Others, however, counter that nurse practitioners see fewer patients for longer times, which likely positions them as equivalent to physicians in value-for-money terms (KI interview).

As one key informant suggested, the reality is that in both the Ontario and the Quebec context the influence of powerful professional groups in the decision-making process related to primary care means that experimenting with many different potential models is a political necessity. As such, the many models—many of which share similar features—reflect ongoing negotiations and the incremental nature of concessions made over time as the reform agenda is pursued. This can differ from the experiences of other jurisdictions, such as the Northwest Territories, where smaller populations and fewer practicing physicians might establish a salaried model as the only technically feasible approach, thereby constraining the potential for experimentation and even political contestation.

3.3 Social roles in innovative primary care models

The overview of the evidence is presented in *Table 3* (with further detail in *Appendix 2 Table A3*). The study found that overall there is a limited interface between most of the primary care models studied in Ontario and Quebec and the community.

Table 3: Social roles of innovative primary care models in Ontario and Quebec

Type of engagement	Mechanisms identified across all models
Community involvement in decision making	<ul style="list-style-type: none"> • CHCs use community boards as their main governance mechanism • Some FHTs are community governed and others have mixed provider-community boards. Most are physician governed • FMGs have some linkages with CLSCs*, which engage members of the community in organizational governance
Approaches to strengthening health literacy	<ul style="list-style-type: none"> • FMGs found to improve patients' knowledge related to services provided by integrating nurses with a linked clinical protocol
Role of community health workers (including patient experts)	<ul style="list-style-type: none"> • FHTs involved with the TAPESTRY pilot project engage community volunteers to deliver outreach services to older adults, helping to promote communication of their healthcare needs with their FHT, and facilitating navigation of the system
Social organization and civil society involvement in disease prevention and health promotion	<ul style="list-style-type: none"> • FMGs have some linkages with CLSCs*, which often partner with social organizations

Source: Glazier et al. 2012b; Hutchison and Glazier 2013; Beaulieu et al. 2006; key informants.

*CLSC= Local Community Service Centres

Many key informants stated that thinking through approaches to engage the community and patients in decisions about primary care services are still in the early stages. Some key informants also suggested that part of this slow development can be attributed to the need for a cultural change in healthcare services towards one that views patients as partners in care rather than recipients in a paternalistic relationship with healthcare professionals. It was noted that the move towards more self-management, shared decision making, and online patient portals that facilitate increased awareness of care options and processes have the potential to contribute to this longer-term culture change (although one key informant stated that despite their potential, patient portals are still in early stages of development and have a long way to go before they provide patients with the kinds of information that actually empower them).

Another reason for the lack of engagement may be structural, and in particular the lack of structures to engage communities in decision making related to their primary care. In Canada, the rostering of patients in primary care (and the flow of funding to primary care providers) is based on individual patient-enrolment numbers and not geographical catchment areas, as it is in other countries, such as Brazil and Chile. As such, the accompanying administrative bodies that represent a defined catchment area within municipalities and the communities that make up these catchment areas do not exist in Canada. This may lower the prospects and capacity for meaningful community engagement in primary-care planning.

The lack of existing efforts to engage the community, patients and the general public in their primary care was also recently highlighted in a report prepared by the Registered Nurses' Association of Ontario (RNAO), which suggested that this could be improved upon if more nurses were involved as core providers in newly introduced models (RNAO 2012). While the trend towards nurses playing a more central role in the provision of PC has started in Ontario (and particularly in the FHT and NPLC model), additional changes are needed to ensure that nurses can practice to their full scope of practice, as for example in the legislative amendments to the Regulated Health Professionals Act, 1991. Premier Kathleen Wynne of the newly elected majority Liberal government in Ontario has committed on several occasions to expanding registered nurses' scope of practice to enable them to prescribe certain drugs, which is a significant change for the province (Ontario Liberal Party 2014). In Quebec, the physician-led FMG model still engages nurses in PC largely on the periphery as support staff. As such, in both provincial contexts, there may be important opportunities to leverage the role of nurses to improve community- and patient-engagement initiatives.

Despite the widespread lack of social roles in PC models in Ontario and Quebec, some instances were identified where approaches are being pursued to engage the community, to strengthen health literacy, to use community health workers and to involve social organizations (and civil society) in disease prevention and health promotion. As outlined in *Table 3*:

- i. CHCs (and sometimes FHTs) involve the community in decision making through community-board governance, and FMGs have some linkages with Centres Local de Services Communautaires (CLSCs, or Local Community Service Centres in English) that have a mandate to engage members of the community in organizational governance. One key informant suggested that the community-governed FHT is the most promising model with respect to patient engagement in organizational and policy decision making, given that their smaller size and openness to patient involvement within their governance structures provide a channel for real input and solutions that integrate the will of the people in the communities serviced by the FHT (as opposed to the larger and more complicated boards found in the CHC model). However, most FHTs are still primarily physician-led, which suggests progress within this model is quite limited.
- ii. FMGs that integrate nurses who are linked to the practice have used clinical protocols successfully to improve health literacy.
- iii. FHTs that are involved with the TAPESTRY (Teams Advancing Patient Experience: Strengthening Quality) pilot project (currently in Hamilton, but with plans to expand to other communities in Ontario, see <http://healthtapestry.ca/>) involve community volunteers to deliver outreach services to older adults, which is a potentially innovative illustration of how community members can be more effectively integrated in primary care delivery.
- iv. FMGs, through their linkages with CLSCs, may work with and/or partner with social organizations.

3.4 Influence of innovative models on healthcare outcomes

Table 4 provides an overview of results related to the influences of primary care models on healthcare outcomes in terms of access, equity and financial protection, quality, efficiency, cost containment and health outcomes.

Overall, we found that there is a dearth of high-quality evidence available with which to develop strong conclusions related to the influence of newly introduced and innovative PC models on these types of system improvements. Others trying to assess the performance of new PC models in Canada have also highlighted this (Aggarwal and Hutchison 2012; Dinh 2012). The current lack of evidence, including from evaluations, related to the performance of PC care models in Ontario and Quebec is likely to be the result of two factors, as indicated by our document review and key informant interviews. First, in most cases, the most innovative PC

models have only recently been introduced and, as such, evaluations are still ongoing. Second, important limitations in available data on PC performance and the methods for measuring performance are neither agreed upon nor well developed (Hogg and Dyke 2011).

The Canadian Institute for Health Information also highlighted these challenges. It has since committed to develop appropriate primary care indicators and to routinely collect data for at least 30 of these indicators (CIHI 2009; Hogg and Dyke 2011). In Ontario, Health Quality Ontario is in the process of developing indicators and a sustainable approach to performance measurement in primary care, with a report and strategic plan set to be released soon (see: <http://www.hqontario.ca/public-reporting/primary-care>). Frameworks in Canada that highlight the desired outcomes of PC systems (better health, better care, better value) and that list the characteristics of high performing PC systems have also been published (Kates et al. 2012), although to our knowledge these domains have yet to be used to inform focused evaluations on any of the models introduced in Ontario or Quebec. In some cases internal evaluations have yet to be publicly released, such as a 2009 evaluation led by the Ontario Ministry of Health and Long-Term Care of the newly established Nurse Practitioner-led Clinic model (DiCenso et al. 2010).

One key informant stated that while many are “hungry for evidence about positive outcomes”, the fact that EMRs have only recently been introduced into primary care in Ontario and Quebec means that we are only now moving towards having the capacity to evaluate PC in domains such as access, quality, efficiency and patient outcomes. The lack of available data thus stems from the fact that access to data is a new phenomenon in Ontario and Quebec, and in Canada as a whole. One key informant stated that the first step was to “turn the ship around” to ensure changes in physician remuneration and an increase in interprofessional care, which several key informants argued has been a resounding success in Ontario, and that the task of evaluating these changes is a ‘next step’.

Key informants from both Ontario and Quebec suggested that the majority of family physicians now utilize EMR systems in one way or another. This will help improve capacity to evaluate innovative PC models in both provinces in future, given that existing record systems that make available claims-based data only provide information on billings and provide minimal or no usable information about diagnoses, limiting insights into outcomes of interest. In the 2013 National Physician Survey, 64.3% of Canadian family physician respondents, 77.6% of Ontario family physician respondents and 35.3% of Quebec family physician respondents reported that they use EMRs to enter and retrieve clinical patient notes (The College of Family Physicians of

Canada et al. 2013). While these data must be viewed with caution given low response rates on the National Physician Survey (only 17% of physicians responded nationally), this type of physician use is a promising step towards getting

better patient and treatment data with which PC models can be evaluated, including in relation to diagnoses and treatment-specific information.

Table 4: Influence of PC models on health care outcomes, Ontario and Quebec

Outcomes	Main findings
Access	<p>For all models of care included in this study, mixed findings were reported with respect to their influence on access, although the following findings were noteworthy:</p> <ul style="list-style-type: none"> • CHCs have higher levels of community orientation, which includes greater outreach, needs assessment and monitoring and evaluation of services (Muldoon et al. 2010) • While patient-enrolment models may improve access to care, it may not improve timely access to care (Glazier et al. 2012a), and may result in unequal access to services among those enrolled and those that are not enrolled, as has been found in Quebec (Breton et al. 2011) • Some models with larger practice sizes (as measured by the number of physicians) were found to improve access to care, although the opposite was the case in Quebec's FMGs (Devlin et al. 2013; Haggerty et al. 2004) • Models that promote interprofessional care (e.g. FHTs) may improve access by enabling physicians to enrol more patients, given the added capacity provided by an extended PC team (Breton et al. 2011; Rosser et al. 2010) • Models that engage healthcare providers other than physicians to deliver the bulk of primary care services that fall within their scope of practice (e.g. NPLCs), can improve access to care in areas with endemic physicians shortages (DiCenso et al. 2010) • All models mandate extended hours of care, and in some cases 24-hour access to telehealth was found to improve perceived access to care in some cases (Haggerty et al. 2004)
Equity and financial protection	<p>All PC models in Canada ensure financial protection given private payments for medically necessary services are not legally allowed</p> <p>For all care models included in this study, reported findings on equity were mixed:</p> <ul style="list-style-type: none"> • CHCs tend to treat more disadvantaged populations including those with lower incomes, severe mental illness, multi-morbidities and chronic health conditions, newcomers, and those on social assistance (Glazier et al 2012a; Glazier et al 2012b) • Models relying primarily on FFS physician payments have been found to provide less care to recent immigrants compared to Canadian-born patients (Muggah et al. 2012) • Models that rely on physician payment by capitation were found to be less likely to have unhealthy patients, low-income populations and recent immigrants on their roster (Dahrouge et al. 2013; Hutchison and Glazier 2013)
Quality	<p>Evaluations of the PC models included have found quality improvements, including in:</p> <ul style="list-style-type: none"> • Chronic disease management • Comprehensiveness and continuity of care • Patient satisfaction • Provision of preventative care and patient-centred care (Glazier et al. 2012b) <p>Some exceptions were noted:</p> <ul style="list-style-type: none"> • There is mixed evidence from Ontario that financial incentives improve quality of care (Glazier et al. 2012a; Liddy et al. 2011), although some studies found that they could improve provision of targeted services (Tu et al. 2009; Aggarwal 2011) • Some evaluations have shown that continuity of care suffers in practices that include more physicians (Devlin et al. 2013)

Table 4 continued: Influence of PC models on health care outcomes, Ontario and Quebec

Outcomes	Main findings
Efficiency	For all PC models included, there were mixed findings reported with respect to efficiency: <ul style="list-style-type: none"> • Larger group practices (as measured by the number of physicians) may promote improved group productivity as a result of ‘mutual help’, specifically in FHOs and FHNs (Devlin et al. 2013) • Models with capitation or salary-based pay for physicians in Ontario may be less efficient with more wastage (Hutchison and Glazier 2013; Milliken et al. 2011), and a FFS component may be associated with higher efficiency and productivity (Beaulieu et al. 2013; Milliken et al. 2011)
Cost-containment	This study was unable to determine whether the primary care models included resulted in improved cost containment
Health outcomes	This study had no conclusive findings with respect to the influence of innovative PC models on health outcomes. Available evidence is mixed given that evaluations are in their early stages and not always publicly available. However, the following findings were noteworthy: <ul style="list-style-type: none"> • CHCs appear to have superior patient outcomes among disadvantaged populations when compared to other models (Glazier et al. 2012a; Russell et al. 2009) • Early evaluations of FHTs in Ontario have found reductions in adverse events associated with chronic obstructive pulmonary disorder and improvements in controlled HbA1c among diabetic patients (Dinh 2012) • In Ontario, there are discrepancies across all models with respect to observed emergency department visits, with CHCs having the highest and FHGs having the lowest—although the former is expected given that CHCs serve higher numbers of vulnerable patients (Glazier et al. 2012b)

Sources: As noted in Table text.

Nevertheless, despite these areas of progress, as highlighted in *Table 1*, Canada still ranks low in terms of EMR adoption. Improved use of EMRs must occur before physicians are encouraged to use them in ways that strengthen evaluation.

That being said, one key informant did suggest that the increase in the number of new medical-school graduates who are choosing family practice, in combination with the increase in the number of patients enrolled with a PC physician in Ontario and Quebec, suggests that some positive outcomes have been achieved. Both changes provide evidence of a move towards a more inclusive and comprehensive PC system. While there is no indication that increasing the number of medical school graduates choosing to practice family medicine was an explicit policy goal in either jurisdiction, it is often cited by ministry staff as an example of a ‘success’ outcome that has resulted from PC reforms in Ontario.

Furthermore, that patient satisfaction is high and the patient experience positive with some of the newer models in Ontario, such as with NPLCs (DiCenso et al. 2010), was flagged by several key informants as an important indication that improvements are being made, particularly when compared to the state of PC in the early 2000s.

One key informant suggested that improvements are beginning to emerge in care coordination between PC and specialists and in chronic disease management in newer models in Ontario, particularly with work being done

to evaluate FHGs and physicians in FHOs that are often also attached to a FHT. A recently established initiative in Ontario called Health Links is attempting to improve care coordination for the 5% of patients with the most complex conditions, who account for two-thirds of health care costs. Through an individualized care coordination plan that engages a range of service providers across the continuum of care (including PC, hospital care, long-term care, community organizations and social services), Health Links serve as a first small step towards enhancing coordination among a broad range of service providers who are often serving the same patients (as HMOs in the USA have long done), albeit functioning in a fragmented system (Ontario MoHLTC 2014; for further information see www.health.gov.on.ca/en/pro/programs/transformation/community.aspx). With primary care as the foundation for the Health Links programme, better coordination may help to increase information flows across the continuum of care while enhancing accountability.

Despite the relative paucity of evidence about the influence of the new PC models in Ontario and Quebec on outcomes of interest, various trends outlined below were identified in this study (with further detail provided in *Appendix 2 Table A5*):

- i. Given no models in Ontario or Quebec have private payments, there is *universal* access to free PC services for the entire population, although some key informants noted that patients rostered to different

models in Ontario, and patients who are not rostered in Quebec, may not receive the same breadth of services from their PC providers.

- ii. There is little evidence available to suggest that financial incentives employed within each PC model in Ontario, in and of themselves, are resulting in higher quality care (Glazier et al. 2012a), although *patient and provider satisfaction* are reported to have improved significantly in multidisciplinary capitation-based models, according to several key informants.
- iii. Most models in Ontario were found to improve access to some extent. Those that focus on patient enrolment were often positioned by key informants as the models that have had led to the most positive improvements in access to a family physician, although the evidence is mixed.
 - Some models that were adopted by practices with large numbers of physicians appeared to improve access, although some studies suggested that enrolment models may not improve *timely* access to care.
 - NPLCs may be especially suited to improving access in settings with physician shortages and in hard-to-reach communities (DiCenso et al. 2010).
 - FMGs in Quebec were funded to improve access for enrolled patients and initial experiences suggest they are achieving this, but access may be negatively affected when practice sizes surpass ten physicians, given the potential for fragmentation of the FMG across many sites and challenges with care coordination (Devlin et al. 2013; Haggerty et al. 2004).
 - One key informant suggested that early lessons from FMGs in Quebec provide evidence that this model may also have negative consequences with respect to equity of access when considering patients not enrolled with one of the groups. Coordination within existing FMGs (particularly if they're multi-site) and between FMGs and other services (e.g. inpatient and hospital care, other services provided by other allied health professionals such as ultrasounds and blood tests needs to be strengthened). The government has since initiated smaller clinics in which patients who are not rostered can receive care and be placed with a family physician or FMG that is still accepting patients.

In relation to **access**, among all of the models, CHCs were found to be best positioned to serve hard-to-reach and disadvantaged populations (Glazier et al. 2012a; Glazier et al. 2012b), and the results related to other models were

mixed. Some key informants suggested that, in Ontario, the capitation formulae used in the new enrolment models (FHGs, FHNs, FHOs, FHTs and NPLCs) are not appropriately adjusted to meet the demands of the most vulnerable populations, given that they are presently only adjusted to account for age and sex. As such, there may be disincentives for practices to enrol complex patients from vulnerable populations given they are more resource intensive and could have financial implications for the practice. While incorporating factors such as those related to health status may help to overcome these disincentives, some key informants were hesitant to state that this was a final solution, and that all remuneration mechanisms—including salary—need to be seriously considered.

Below are additional issues raised during key informant interviews.

- Both provinces are experiencing challenges in reaching rural and northern communities. In Quebec, the requirement for a minimum of 9,000 rostered patients to become a FMG has resulted in some barriers to expanding this model to underserved areas of the province with smaller populations. The government has since relaxed this requirement so that smaller patient rosters (e.g. 6,000 patients) are allowed in some cases.
- In both provinces, key informants noted that jurisdictional issues related to accountabilities for serving First Nations communities complicated the provision of services to these communities. In particular, although these populations could be considered citizens of one of Canada's First Nations and therefore should fall within federal jurisdiction with respect to primary care services (see *Table 1*), they are also considered Ontarians and Quebecers—and are often using provincially funded centres for care. Given these jurisdictional issues, challenges addressing coverage gaps for these communities remain.
- Ontario introduced the Shelter Health programme that focuses on outreach to the most marginalized and vulnerable patients (often those who are homeless and with a range of health problems), addressing coverage gaps among this population (see <http://shelterhealthnetwork.ca/>). In addition, 10 Aboriginal Health Access Centres have been introduced to provide tailored primary care services—a mix of traditional healing and western medicine—to First Nations populations (see <http://aohc.org/aboriginal-health-access-centres>).

No definitive conclusions can be drawn with respect to the influence of PC models on **quality improvement**, although the available evidence suggests that most models are associated with some improvements in the quality of care, when compared to traditional fee-for-service primary care models, some specific examples of which include:

- CHCs are associated with improvements in the delivery of health promotion and chronic-disease management, although this may not be the case in busier practices that are larger (Russell et al. 2009);
- FHGs, FHNs and FHOs may be more likely to adopt preventive bonuses to deliver particular priority services (e.g. influenza vaccines, Pap smears, mammograms and childhood immunizations) (Aggarwal 2011);
- Models with some blended-capitation components may improve the quality of support for smoking cessation and weight-management care (Liddy et al. 2011);
- FHTs were found to be open to the process of performance measurement and feedback, which may strengthen the culture of performance management and improve capacity for change (Johnston et al. 2011);
- NPLCs in Ontario and FMGs in Quebec may result in greater patient satisfaction, and according to some key informants working in Ontario, there is increasing evidence that this is the case for FHTs as well (DiCenso et al. 2010; MSSS 2008); and
- FMGs may improve preventive care (Provost et al. 2010).

There were no consistent findings related to the influence of PC models on **efficiency**, although the literature reviewed suggests that models that include a salary or capitation component may be less efficient when compared to models that are based primarily on fee-for-service physician payments (which tend to provide more services) (Beaulieu et al. 2013; Hutchison and Glazier 2013). Some studies suggested that revenue-sharing arrangements, which were more likely to occur in larger practices, may improve group productivity (Devlin et al. 2013).

It may be surmised that effective PC will result in **lower costs** by reducing the number of specialist referrals, reducing the number of emergency department visits (discussed below and presented in detail in *Appendix 2 Table A4*), reducing the number of avoidable hospitalizations, and reducing the need for healthcare services more generally through health promotion and disease prevention. Indeed, many models incentivize the provision of health promotion and preventive care (as shown in *Table 2* and *Appendix 2*

Table A2). According to some key informants, provinces are increasingly moving towards evaluation frameworks that include referrals and emergency department visits (Glazier et al. 2012a). However, no literature was identified that provided insights that focused specifically on how PC models in Ontario and Quebec contributed to cost containment and value for money through any of these pathways.

One recent evaluation of interprofessional care teams suggests that models adopting this approach have the ability to shift costs away from acute care (Dinh et al. 2014). Several key informants suggested that the current lack of data pointing to the cost-saving potential of specific PC models reflects a lack of explicit efforts within any of the models to contain costs, including costs associated with prescription drugs. In fact, by many accounts, more money is being spent now on PC than was the case in the past (given increased physician payments, incentives for expanded services, etc.). One key informant asserted that the new PC models were not designed to contain costs but were rather focusing primarily on improving access and quality. However, one informant noted that, by design, capitation-based payments are meant to contain costs by fixing per-patient spending. In some of the group-based models, such as FHTs where pharmacists can be embedded in the team, medication review teams are being utilized to ensure appropriate prescribing practices.

Some key informants suggested that viewing cost containment as an immediate outcome as a result of introducing these models is shortsighted. The emphasis on comprehensive, holistic care and improvements in health promotion and disease prevention themselves have the potential to save money in the longer term. They do so by reducing unnecessary hospitalizations through better disease management and by improving patients' health at the community level before they develop multiple morbidities that lead to higher costs. Additionally, one key informant highlighted that while it is clear that moving from a solo practice based on fee-for-service payment to a model such as FHO is a large leap, given the additional payments made for the additional services provided, the incremental cost of moving from a FHO to a FHT is relatively low, and this should be kept in mind if criticisms are made with respect to cost.

Little evidence was identified to provide insights about how PC models in Ontario and Quebec affect health outcomes. Some studies found that CHCs may improve health among disadvantaged populations (Glazier et al. 2012a; Russell et al. 2009). There was evidence to suggest that emergency department visits are highest in FHNs and lowest in FHGs (Glazier, et al. 2012b). One key informant also noted that internal evaluations in Ontario (not yet released) have started to show that interprofessional teams such as those in FHTs are reducing referrals and readmissions to hospital.

3.5 Managing and sustaining change in primary care

Table 5 provides details of the many factors identified to promote and sustain (or act as barriers to) change in primary care in Ontario and Quebec.

Ontario and Quebec share many barriers and facilitators as shown with the sources of evidence in Table 5:

- i. **Institutional barriers** include a long history of physician autonomy in fee-for-service practice, which has contributed to creating powerful medical associations that tend to resist change;
- ii. **Institutional facilitators** include past policies that created a system of public payment and private delivery, thereby providing provincial governments with a key policy lever with which to achieve innovations in care (physician remuneration), and that created provincial authority over the number and types of health professionals available to provide primary care;
- iii. **Interest group-related barriers** include powerful medical associations that are generally unsupportive

of primary care reforms that infringe upon traditional physician scope-of-practice arrangements and hesitant to embrace alternative-remuneration mechanisms perceived to be threats to physician autonomy;

- iv. **Interest group-related facilitators** include significant investments in the primary care workforce that have recently made it more attractive for medical-school graduates to become primary care practitioners and support reforms that improve their practice;
- v. **Ideas-related barriers** include entrenched values among the public that view primary care as something provided by physicians rather than other health professionals; and
- vi. **Ideas-related facilitators** include a general national consensus that primary care reform is a priority across Canada.

The unique constellations of institutions, interests and ideas within Ontario and Quebec have provided different opportunities for change in each province and have shaped the current state of primary care reforms in each jurisdiction.

Table 5: Findings on managing and sustaining change in PC in Ontario and Quebec

Province	Institutions	Interests	Ideas	External events
Common barriers and facilitators across provinces	<p>Barriers Policy legacies – Long history of physician autonomy in fee-for-service practice created powerful provincial medical associations, making it difficult to impose promising and innovative models, leaving government to rely on voluntary participation (Strumpf, et al. 2012)</p> <p>Facilitators Policy legacies – Public payment and private delivery provides provincial governments with a key lever to achieve desired innovations in PC (Hutchison et al. 2011), enabling elected leaders to incentivize the medical profession to adopt new models of PC (Baker et al. 2013). System of provincial government funding of health professional training has created provincial authority over the number and types of health personnel available to for PC (Hutchison et al. 2011)</p>	<p>Barriers Powerful medical associations have often been unsupportive of reforms that threaten to infringe on the traditional physician scope of practice (Hutchison et al. 2001). Physicians have been hesitant to embrace pay mechanisms that they see as a threat to their professional autonomy or as motivated by cost containment objectives</p> <p>Facilitators Investments to expand the pool of PC providers have provided more opportunities for medical school graduates in family medicine residency programmes (which resulted in a 9% increase in family physicians from 2000 to 2009) (Hutchison et al. 2011)</p>	<p>Barriers Views about what ought to be – entrenched values of public that view primary care as something to be provided by a physician rather than nurse practitioners or other PC professionals (Baker et al. 2013; Hutchison et al. 2001; 2011)</p> <p>Facilitators Views about what ought to be – National consensus that primary care reform is required across Canada, which has created an optimal climate for reform initiatives (Hutchison and Glazier 2013)</p>	<p>Facilitator Improved fiscal climate in early 2000s created a new policy environment for PC reforms through new investments (Hutchison and Glazier 2013; Hutchison et al. 2011)</p>

Table 5 continued: Findings on managing and sustaining change in PC in Ontario and Quebec

Province	Institutions	Interests	Ideas	External events
Ontario	<p>Barriers Policy legacies – Traditional focus on physician-driven care in the Ministry of Health and Long-Term Care (MHLTC) created administrations aligned with FFS approaches for individual physicians, raising challenges for introducing other funding models to provider groups and non-physicians (Baker et al. 2013)</p> <p>Policy networks – Physician Services Agreement and Committee created a clientele pluralist network involving the MHLTC and the OMA, giving the OMA a privileged and influential position in decisions on PC, relegating other stakeholders as less influential external pressure groups</p> <p>Facilitators Government structures —Strong leadership support for PC reform through introduction of interdisciplinary FHTs and NPLCs from elected majority party and strong party discipline (Baker et al. 2013). Single ministry charged with all aspects of the government’s role in stewarding the PC sector and paying PC physicians</p> <p>Policy legacies – Government elites and administrations learned that FFS models posed access challenges, enticing politicians to focus on PC reform (Baker et al. 2013). A variety of alternative PC models introduced towards blended remuneration of physicians working in groups, contributing to a shift over time in interpretations of how PC care ought to be organized (Baker et al. 2013)</p> <p>Policy networks – Elected officials engaged directly with local providers and physician leaders in reform discussions, building networks of consensus and circumventing sometimes opposing views of the OMA, which has a privileged position in health policy (Baker et al. 2013; Hutchison et al. 2011)</p>	<p>Barriers OMA opposition to PC models led by nurses and lobbying to protect their scope of practice, making it difficult to move forward with multidisciplinary teams, or models by non-physicians / nurse practitioners (DiCenso et al. 2010)</p> <p>Facilitators Large investments by government into PC with increased pay for PC providers taking part (namely physicians), providing financial rewards for participating in new models (Baker et al. 2013; Hutchison et al. 2011)</p> <p>Increased interest in medical school graduates in family medicine post-graduate training and increased satisfaction with family medicine practice (Hutchison and Glazier 2013)</p> <p>Strong support for PC reform among non-physician PC professionals, most notably nurse practitioners advocating for new nurse-led models of care with the backing of the RNAO (Baker et al. 2013; DiCenso et al. 2010)</p>	<p>Facilitators Views about what ought to be – National consensus among policymakers and stakeholders that PC reform is required across Canada, creating a climate for reform initiatives (Hutchison and Glazier 2013)</p> <p>Medical profession more open to discussions of PC reform than in the past (Hutchison et al. 2011)</p> <p>Alignment of reform vision among stakeholders from public service to front-line service providers (Baker et al. 2013), and sustained commitment from the Ontario MHLTC for improvements in PC related to: quality, access, efficiency, accountability, strengthening organization and governance (Primary Healthcare Planning Group 2011b)</p>	None identified

Table 5 continued: Findings on managing and sustaining change in PC in Ontario and Quebec

Province	Institutions	Interests	Ideas	External events
Quebec	<p>Barriers Policy legacies – Creation of regional health authorities now entrenched accreditation procedures, challenging the contracting of FMGs (Blais et al. 2013). Regional health authorities provide no financial or organizational support for information systems, impeding implementation in new FMGs (Blais et al. 2013)</p> <p>Facilitators Policy legacies – Pushback from physicians in the 1970s against community service centres and salary models indicated that physician groups would oppose reforms that tried to move away from FFS, promoting the establishment of a network of private family practices run by clinicians, requiring administrative support for the development and introduction of FHGs (Breton et al. 2011). Administrative capacities sufficiently developed for effective patient registration, team training and integration of information systems, clinical management and nursing care protocols (Blais et al. 2013)</p> <p>Policy networks – Clinician leaders communicated the need for a new PC model to garner support from colleagues and all important stakeholders involved in the development and implementation of FMGs (Blais et al. 2013). Regional health authorities, clinician leaders and other stakeholder involvement in policy development enabled navigation of entrenched accreditation structures imposed on aspiring FMGs (Blais et al. 2013)</p>	<p>Barriers Some challenges integrating nurses within physician practices, given an initial hesitancy among physicians to share clinical responsibilities with nurses (Breton et al. 2011)</p> <p>Facilitators Quebec government and regional health authorities provide financial and organizational support for medical clinics that develop their own FMGs, incentivizing physician leaders that had responsibilities for existing clinics in the province to adopt the model (Blais et al. 2013)</p> <p>Younger physicians view the FMG model as an opportunity to share more equitably the costs and constraints involved with providing services (Breton et al. 2011)</p> <p>Many important policy actors in the province supported the idea of establishing FMGs including: physicians who were clinical leaders, centres de santé et de services sociaux, regional health authorities and Departement regional de medicine generale (Blais et al. 2013)</p>	<p>Facilitators Evidence about what is – Clair Commission Report published in 2000 shows need for PC reform (Blais et al. 2013)</p> <p>Views about what ought to be – Clair Commission recommends adoption of the FMG model (Blais et al. 2013). Many physicians in Quebec believe there is need for reforms that ensure quality and accessibility to PC services (Blais et al. 2013)</p>	None identified

Sources: As noted in Table text.

- Ontario's primary care reforms were initiated and facilitated primarily by the existence of institutional factors that were supportive of primary care innovation, including an elected majority government with a leader dedicated to primary care reform (through the introduction of FHTs and NPLCs), concentrated governmental authority for primary care in the province that enabled the government to act as a steward to guide reforms, learning from past policies that suggested fee-for-service negatively affected access to care (and that blended-remuneration models were possible), and the establishment of non-traditional networks of physicians outside of the medical association that helped to build consensus among physicians.
- Quebec's primary care reforms to introduce FHGs were also initiated and facilitated primarily by the existence of institutional factors including past policies that helped to establish networks of physicians and family practices, administrative capacities that enabled patient registration, team training and clinical management, and ongoing negotiation through newly established networks that helped promote buy-in and overcome challenges associated with entrenched accreditation structures.

Reforms in both Ontario and Quebec have been sustained through support from interest groups in the province, as well as by values that support ongoing improvements in primary care. Key informant interviews suggested that there is a growing interest in primary care reform in Ontario and Quebec, and that most stakeholders support change that will result in better patient care. In both Ontario and Quebec, the positive fiscal climate in the early 2000s provided a facilitating external factor that helped support the initiation of and ongoing investment in primary care reforms (and it is possible that the challenging fiscal climate that currently exists has provided another 'cost-containment' imperative that supports further innovation in primary care).

A number of key informants suggested that, overall, new models have served to change the perception of family practice among physicians for several reasons that will help to sustain them over time.

First, entering family practice is now a more attractive option than was the case in the past because remuneration through blended-capitation based on patient enrolment in Ontario (and on blended fee-for-service with additional payments for each enrolled patient in Quebec) allows for a more balanced approach to patient care. Whereas under a traditional fee-for-service model physicians may have felt the pressure to consistently increase the number of services provided to as many patients as possible, there is

a real sense that physicians can now focus on providing comprehensive care to the patients who are enrolled with them—which resonates with their own perceptions of what a family physician is meant to do. One key informant said that as a result of the new blended-capitation models, PC physicians no longer have to worry about generating income and can instead focus on doing right by their patients based on their patients' needs. One explicit example about what this means in practice came from a physician working in a FHT in Ontario, who said that blended-capitation allows him to allocate an appropriate amount of time to his most complex patients with each visit, given his roster dictates his total income and not the number of different appointments he books in a day. Another key informant highlighted that practicing in a fee-for-service model could be quite overwhelming at times given challenges with treating patient populations that are increasingly presenting with multi-morbidities and requiring more services and support from a wider range of professionals—which is difficult to coordinate in solo practice.

Second, the new remuneration mechanisms and additional incentives provided for activities like after-hours care, patient enrolment, EMR adoption and administration have increased PC physician compensation, closing the gap between their compensation and that paid to specialists. However, as several key informants pointed out, the same increases in compensation have not been seen among nurses. This may create a disincentive among this provider group, given that they can make more money outside of PC settings. This is particularly challenging given the potential advantages of leveraging the role of nurses in primary care practice outlined earlier in this report.

One key informant suggested that the same disincentives exist in the CHC model, where salaried providers make less than those practicing in one of the other models—although many physicians can work as part-time employees in this model and use FHOs to 'top-up' their pay. As such, providers choosing to work in a CHC do so because they believe in the emphasis on community-based care, outreach, chronic disease management, health promotion and disease prevention, and targeting disadvantaged populations, and are not attracted by the prospect for better pay (as they may be in newer models of care).

Third, the additional incentives to adopt EMRs and initiatives like OntarioMD (<https://www.ontariomd.ca/portal/server.pt/community/home/205>) are enabling younger tech-savvy family physicians to practice medicine in environments in which they feel comfortable. This is achieved through their EMR Transition Support Programme, which is funded by eHealth Ontario, and provides eligible physicians (an application process is required) with free support to acquire, implement and adopt health-information technology. Many

key informants highlighted ‘Moving away from paper’ as a major draw for physicians.

Fourth, the emphasis on multidisciplinary teams (particularly in the FHT and CHC models in Ontario and to some extent FHGs in Quebec) aligns with newer graduates’ perceptions of the delivery arrangements that ought to be the norm in primary care settings given the diverse and complex needs of patients—issues that they would have been exposed to on a regular basis in their medical school training through initiatives like Family Medicine Interest Groups (<http://www.cfpc.ca/FMIGs.aspx>).

This shift has also been facilitated within family medicine training programmes in Ontario where, with few exceptions, family medicine residents are trained in Ontario in inter-professional primary care settings and all full-time family medicine teaching units and many community-based teaching practices are themselves FHTs. As such, residents are required to become familiar with new models of care, such as FHTs, and are also trained on the specific skills related to those models from an early point in their careers. This has been based on approaches to PC capacity building developed in other settings that have been found to be highly relevant to Canadian practice (Talbot et al. 2009).

One key informant suggested that the new models have served to “reduce the barriers to team-based care,” creating a more hospitable environment for approaches that integrate several cadres of primary care professionals. Another key informant suggested that in Quebec the additional funds provided to ensure nurses are integrated into FMGs was a powerful incentive for physicians moving into this model, which was particularly the case among younger doctors. According to some key informants interviewed, this incentive is especially strong among new medical graduates, who are often intimidated by the thought of setting up their own solo practices, fearing both the potential isolation it may bring in their professional lives, as well as the additional skills required on the administrative end of things. Group-based models, therefore, have added benefits for those wanting to work in a team-based environment given the potential for learning from and interacting with other healthcare professionals, as well as the administrative support that is offered.

Finally, these new models of care are attracting other health professionals as well—most notably registered nurses, nurse practitioners and the allied health professions—because they have created opportunities to participate formally in PC as autonomous professionals outside the control of physicians, while practicing to their full scope. This support is widespread, although some key informants suggested that more could be done to ensure nurses in particular are given opportunities to practice to their full scope. One key

informant pointed out that there are still challenges with respect to role definition, particularly in Ontario where the explicit roles of nurses in a FHT, for example, may not be listed in written agreements with the ministry.

The result of these factors is that PC is now more current, more exciting and compensates physicians in a way that is more comparable to specialists, and this has underpinned the growing interest in family practice, and will likely serve to help sustain changes made in both settings. It has also helped to engage other health professionals who have traditionally served under physicians, and who are now excited by the opportunity to become an active and integrated contributor to an interprofessional care team.

3.6 Understanding the patient experience of the Family Health Team model

This section provides an illustration of how one of the innovative models from Ontario (FHTs) works for complex-care patients through a patient vignette. The vignette is based on a real case from a PC practice in Hamilton, Ontario, Canada who has been anonymized for the purpose of this study.

Mr. Hamilton is a 68-year-old retired divorcee who lives alone in an apartment in the East Mountain area of Hamilton, Ontario. While his two dogs provide him with some company, Mr. Hamilton does not get to see his two children very often and feels socially isolated much of the time. Unfortunately, he also suffers from severe type 2 diabetes, and several other chronic conditions including heart disease, asthma and osteoarthritis. In the last few years, he has also struggled through several bouts of major depression, which were exacerbated by his poor health and feelings of social isolation.

Given the complexity of Mr. Hamilton’s healthcare challenges, he requires a variety of types of care—from chronic disease management support to mental and social health services—which have traditionally been fragmented and uncoordinated in Ontario’s primary care system, delivered in multiple settings by a number of different professionals and not always free at the point of care. Making the situation even more challenging is the reality that Mr. Hamilton rarely feels like leaving his apartment to visit even his family doctor, reducing the likelihood that he will get any of the care he needs.

The Family Health Team model that was recently introduced into Ontario’s primary care system makes caring for patients like Mr. Hamilton possible for a number of reasons. First, earmarked funding is provided to physicians, enabling them to allocate time each week to provide care in the community through house calls. In Mr. Hamilton’s case, this was a

crucial factor. His family physician, after receiving an alert from a local pharmacy that Mr. Hamilton's prescriptions had not been filled for months, decided to make a house call that brought to light all of his health challenges and care needs and provided an opportunity for his doctor to proactively address them. At the time, this included managing his chronic conditions as well as dealing with his depression and social isolation, non-adherence to medications, growing mobility issues as a result of his progressive osteoarthritis as well as what was later identified by his doctor as early stage Alzheimer's disease.

Funds provided in this model enable teams to hire a range of health professionals to create multidisciplinary care teams, which ensures that patients registered to the FHT have timely, free access to the range of services they require. The FHT that Mr. Hamilton's family doctor was attached to had a nurse practitioner, clinical pharmacist, occupational therapist, mental health specialist and social worker on staff, which allowed his doctor to quickly arrange follow-up visits with each provider to address the full range of his health concerns. The close integration of the many health professionals within the team setting allows for complex care to be delivered in a much more coordinated and patient-centred way, given each provider can easily communicate aspects of their patients' care needs with each other.

In Mr. Hamilton's case, his family doctor was able to provide face-to-face briefings about his unique needs and challenges to the on-staff nurse practitioner that was going to support the management of his diabetes, asthma and heart disease, to the clinical pharmacist that was going to provide education and reminders that would promote adherence to his heart medication, and to the occupational therapist and mental health and social worker who were going to provide follow-up visits to address his mobility issues, depression and social isolation. EMRs were used to record all aspects of Mr. Hamilton's care in a single and easy-to-access file that was made available to the entire network of providers as a way to ensure everyone was on the same page with respect to the services he had already received, those that he was scheduled to receive and to identify care that he may require in the future.

A fourth aspect of the FHT model that facilitates care for complex patients like Mr. Hamilton is the blended-remuneration mechanism that moves away from traditional fee-for-service arrangements. The blended-remuneration mechanism through which FHTs receive funding allows physicians to spend more time with each patient if required.

Mr. Hamilton's family doctor is now able to spend more time per consultation with him to review progress made towards improving his health across a range of domains. The Ministry of Health and Long-Term Care provides earmarked resources to FHTs that allows them to hire a full-time administrator and manager who can focus all of his/her time ensuring the unique and dynamic aspects of this innovative model—such as having a range of health professionals paid through a number of different mechanisms and providing a comprehensive range of services—are managed and organized effectively.

Despite the promise of the FHT model for patients like Mr. Hamilton, there are still challenges to ensuring comprehensive follow-up care is provided to monitor continually a patient's progress and to help patients navigate the health system. The new local TAPESTRY project is a first step in addressing these challenges. The goal of the programme is to increase access to health or community-based programmes and services that can promote staying healthy at home. By engaging volunteers from the community to provide outreach programs, TAPESTRY ensures the FHT will be able to support patients like Mr. Hamilton to use online personal health records (PHRs) to set healthcare goals, to communicate their unique needs with their healthcare providers, and other members of their circle of care (e.g. community care nurses, public health and family/caregivers), and to navigate the system.

Health Links is another initiative currently being introduced in Hamilton and across the province of Ontario that aims to ensure the most complex patients (the 5% that account for nearly two-thirds of all health care spending) receive the entire continuum of care they require in a coordinated manner by family physicians, hospitals, long-term care homes and community services organizations. This is achieved by engaging the range of service providers to work together as a team to design patient-specific individualized care plans. The aim is to ensure that patients—some of whom may be more complex than Mr. Hamilton—have access to the full range of complementary social services they require, which includes comprehensive primary care.

These initiatives have yet to be evaluated, but are increasingly being viewed as important complements to primary care initiatives like FHTs. In Hamilton, however, Health Links that intersects with Mr. Hamilton's FHT is initially focused on individuals facing even more complex challenges than Mr. Hamilton.

4. Discussion

4.1 Principal findings

The results of this study suggest that there has been significant innovation and transformation in primary care in Ontario and Quebec in the last ten years—changes that were inspired by concerns raised in the early 2000s about the state of primary care in the country and initiated (in the early part of the decade) by Canada-wide commitments from provincial governments to increase efforts directed towards primary care reform (Health Canada 2003; 2007). The increase in the number of patients enrolled with a PC physician through one of the new models, among other positive developments, suggest that these changes have improved patient access to care, while the integration of a wider range of providers through models that emphasize multidisciplinary teams and health promotion and disease prevention (particularly in CHCs, FHTs and NPLCs in Ontario) suggests that the move towards more comprehensive care has also been initiated.

As illustrated by the example in *Section 3.6*, patients with complex health needs that are enrolled with a FHT now have free access to a range of PC professionals who can complement the care they receive from their family doctor (nurses, nutritionists, social workers, etc.) in a more coordinated manner than has been the case in the past. New remuneration mechanisms that have moved away from traditional fee-for-service towards blended capitation have helped to facilitate some of these changes. Additionally, investments have helped to strengthen the PC workforce, making primary care a more attractive career choice for new medical graduates—most of whom are receptive to working with multidisciplinary teams in technology-enabled practice settings. While there is still much to learn about whether and how these different models have led to improvements in quality, equity, efficiency, and patient outcomes, preliminary evaluations are promising (Glazier et al. 2012a; Hutchison and Glazier 2013; Pomey et al. 2009).

New investments in EMRs, which can act as tools to collect and manage clinical data more efficiently compared

to traditional paper records, and efforts by the Canadian Institute for Health Information and Health Quality Ontario to develop a comprehensive set of indicators to evaluate progress made in primary care will expand our understanding of the benefits of each of these new models of care, and highlight areas that may require improvements (CIHI 2006; Health Quality Ontario 2014). Despite the significant transformations in primary care observed in Ontario and Quebec over the last decade, calls for continued and targeted emphasis on ensuring the move towards a more comprehensive system remains front-and-centre, given the many areas that remain underdeveloped (Hutchison 2013).

In Ontario, the number of nurses engaged in providing PC services through models such as the NPLCs and FHTs is encouraging. Further expanding their scope of practice to allow them to communicate diagnoses to patients and to prescribe drugs would help to ensure expanded same-day access to PC services across the province (and in particular in areas underserved by physicians) and could help make services more cost-effective (RNAO 2012). Estimates suggest that only 61% of nurses in Ontario are practicing to their full scope, representing a significantly untapped PC resource in the province. This trend is likely to be the case in other jurisdictions as well (RNAO 2012). Furthermore, developing better accountability mechanisms to ensure that physicians practising within one of the newer models of care in Ontario and Quebec are providing services as per written agreements with the government would be an important step forward. As suggested by one of the key informants from Ontario, the recently introduced Excellent Care for All Act (Government of Ontario 2010) is an appropriate framework within which these types of accountability arrangements could be enforced. Without these types of accountability mechanisms and/or oversight it is unclear whether progress in primary care will be sustained in the medium and long term.

4.2 Reflections on strengths and weaknesses of the study

There are strengths and limitations in the evidence and analysis presented. The study has three major strengths. First, the emphasis within the case study methodology on collecting multiple sources of data (published literature, grey literature and key informant interviews) has allowed us to build on the rich body of PC literature focused on Ontario and Quebec, while expanding on what is known from these sources by integrating the insights of key individuals who are involved in various aspects of PC in both provinces. This has ensured that the account provided is comprehensive from a content perspective, as well as reflective of on-the-ground realities. Second, we adopted an ongoing and iterative approach to data analysis, which included sharing emerging results with study-team members and key informants at various stages of development to inform future revisions and to strengthen our conclusions. This approach also helped to ensure the accuracy and trustworthiness of our conclusions as they emerged. Third, using templates to structure data collection and analysis and the reporting of our results ensured the many complexities of the PC systems of Ontario and Quebec could be presented in a logical way, and also ensured that we stayed focused on addressing the many domains of interest set out in the initial study protocol throughout the conduct of the study.

Our study also has three weaknesses. First, given the nascent stage of PC evaluation in Canada generally, and in Ontario and Quebec more specifically, we were not able to present a complete picture based on existing literature and data. The lack of existing data made it difficult to draw conclusions related to some key domains of interest initially set out in the study protocol—namely those focused on the costs associated with, and influences of newly introduced models of PC in areas such as quality, equity, efficiency and health outcomes. Second, the member of the investigative team responsible for conducting key informant interviews (KAM) is an English speaker, which posed some difficulties when trying to engage with and elicit input from key informants working in Quebec—many of whom are native French speakers. Third, most of the literature identified was focused on PC in Ontario (or nationally). This could reflect a true imbalance in what is known about the systems in Ontario and Quebec, but may also mean that our analysis of the Ontario context is more comprehensive than our analysis focused on Quebec.

4.3 Implications for policy and practice in the USA

The results of this study have several implications for primary care policy and practice in the USA.

With respect to policy, the absence of governmental policy levers in Ontario and Quebec outside of professional remuneration has made it challenging for some of the promising elements of new PC models—most notably multidisciplinary team-based practices—to be introduced to the extent that many have hoped for in recent years. Within the USA similar challenges may be encountered if attempts are made to introduce new models within the large government-funded programmes such as Medicare and Medicaid, where physicians practicing as private providers (similar to Ontario and Quebec) still retain significant autonomy and power, and where the only real policy lever available is physician remuneration. As has been the case in Ontario, this dynamic has led to the need for additional investments in PC remuneration to incentivize physicians to practice in one of the new models. This may be at odds with the intentions of policymakers in the U.S., who may be more interested in initiatives that can *reduce* healthcare spending in the short term, despite the potential for long-term cost savings. This may not be the case for all policymakers, and many national reforms in the USA do specifically invest in PC, including in physician pay.

With respect to **practice**, while the impacts of the new models of PC in Ontario and Quebec are still not fully understood, three promising practice features have emerged.

- i. According to several key informants and some preliminary evaluations results showing an increase in the number of enrolled patients in new models of care (discussed in *Section 3.2* and *3.4*), the move towards models that emphasize patient enrolment appears to have improved access to PC services among the population in both Ontario and Quebec. However, our results also suggest that it is important to consider remuneration mechanisms within patient-enrolment models. Blended-capitation measures may need to be adjusted to ensure the appropriate incentives are in place for providers to add vulnerable populations to their rosters. This could include adjustments to the capitation formulae that take into account health status in addition to age and sex, although this alone is not likely to be a complete answer.

- ii. The move towards models that emphasize care provided by multidisciplinary teams shows promise for extending the range of services available to patients as well as for ensuring the effective coordination of care. This is particularly important in settings where the number of complex patients with multiple chronic conditions is on the rise, and where patient needs extend beyond those services traditionally provided by nurses and physicians to a wider range of healthcare professionals (Dinh et al. 2014). Recent evaluations also suggest models that emphasize interprofessional care and multidisciplinary teams have the potential for cost savings (Dinh et al. 2014).
- iii. Underpinning each aspect of practice discussed above is the need to support movements of physicians away from pure fee-for-service remuneration to blended mechanisms. Approaches such as blended capitation have enabled new PC models in Ontario to increase patient enrolment while providing support for multidisciplinary teams, extended hours, and a greater emphasis on health promotion and disease prevention, through additional targeted payments. In Quebec, where fee-for-service still dominates, progress on these same domains has been slower in comparison, which is quite telling (*Appendix 2 Tables A1 and A3* show the detailed comparisons). These lessons may be particularly salient for those considering how remuneration is structured in existing government-run health programmes in the USA (Medicare and Medicaid) and for those considering how to change practice in other arrangements that have been dominated by fee-for-service physician remuneration, such as in preferred provider organizations.

4.4 Implications for future research

While this study has highlighted several promising practices in Ontario and Quebec that have implications for PC in the U.S., it has also served to highlight important areas in which additional research is needed. In the Canadian context, there is a need to develop further an appropriate primary care evaluation framework that can inform future investigations and help develop the body of knowledge about key outcomes of interest, such those related to costs, quality, equity and population health. Work by Kates and colleagues represents an important step in this (Kates et al. 2012), although it is essential that more investigators adopt this framework to structure future evaluations in Ontario and Quebec.

More emphasis should be placed on understanding the best approaches to engaging patients and communities in decision making related to primary care. At present, there appears to be almost no literature that focuses explicitly on how patients and communities can be engaged in PC in Ontario and Quebec, and to what end.

Finally, more supports are required for researchers undertaking studies that rely on secondary sources of data such as this one to facilitate easier access to existing research focused on PC in particular settings and contexts. For example, the provision of a validated primary care ‘hedge’ within PubMed’s ‘topic specific queries’ could help to optimize the search functionality for investigators looking for literature published about PC in their own setting, much as it now does for investigators interested in cancer and AIDS research.

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Acronyms

AFN –	Assembly of First Nations
AHACs –	Aboriginal Health Access Centres
CHCs –	Community Health Centres
CFPC –	College of Family Physicians of Canada
CLSC –	Local Community Service Centres (Centre Local de Services Communautaires)
CMQ –	Collège des Médecins du Québec
CSSS –	Centres de santé et de services sociaux
EDS –	Division of Evidence Development and Standards
EMRs –	Electronic Medical Records
FHNs –	Family Health Networks
FHOs –	Family Health Organizations
FHTs –	Family Health Teams
FMGs –	Family Medical Groups
FNIHB –	First Nations and Inuit Health Branch
HQO –	Health Quality Ontario
NPLCs –	Nurse Practitioner-led Clinics
OCFP –	Ontario College of Family Physicians
OECD –	Organization for Economic Cooperation and Development
OHIP –	Ontario Health Insurance Plan
OMA –	Ontario Medical Association
PMPRB –	Patented Medicine Prices Review Board
PHRs –	Personal Health Records
QIPs –	Quality Improvement Plans
RAMQ –	Régie de l'assurance-maladie du Québec
RNAO –	Registered Nurses Association of Ontario
RWJF –	Robert Wood Johnson Foundation
TARSC –	Training and Research Support Centre
TAPESTRY –	Teams Advancing Patient Experience: Strengthening Quality

Appendices

Appendix 1: Detailed description of methods used in the study

Case definition and selection of embedded units: In order to achieve the objectives of this study, we adopted an exploratory case-study design with multiple embedded units (Yin 1999; 2009). We defined our case as ‘the Canadian primary care system,’ and given the aims of this study as outlined above, our embedded units of analysis were defined as ‘the Canadian provincial health systems that have introduced innovative, progressive and promising models of primary care through reforms since the year 2000.’ The year 2000 until present was suggested as an appropriate timeframe by those at the Robert Wood Johnson Foundation that commissioned the study, although historical insights that are vital to understanding each case were occasionally included from outside of this timeframe. Given the particularly rapid innovations in primary care being pursued in the provinces of Ontario and Quebec—which include ongoing support for Community Health Centres (CHCs) and the more recent introduction of Family Health Networks (FHNs), Family Health Organizations (FHOs), Family Health Teams (FHTs) and Nurse Practitioner-Led Clinics (NPLCs) in Ontario, and Family Medicine Groups (FMGs) in Quebec—we selected these two provinces as the main focus (Baker, Aggarwal et al. 2013;Blais, Denis et al. 2013;Hutchison et al. 2011;Lazar, Forest et al. 2014;Strumpf, Levesque et al. 2012). Additionally, nearly two-thirds of Canadians live in these two provinces (39% of the total population live in Ontario, and 23% in Quebec) and nearly two-thirds of Canadian physicians work there (with 36% and 25% working in Ontario and Quebec, respectively) (Canadian Medical Association 2014a;Statistics Canada 2014), so taken together, these models have been introduced with the potential of improving primary care for a large proportion of Canadians.

Data sources: We included data from two major sources. First, a document review was conducted to retrieve a collection of both published and grey literature (e.g. government policy documents, reports and evaluations, operational documents) relevant to primary care in each

province. To identify published literature, we searched the following electronic databases:

- 1) Health Systems Evidence for systematic reviews of the research literature related to primary care that had a Canadian focus (either on Ontario or Quebec, or on Canada more broadly) or that included at least one study conducted in Canada;
- 2) CINAHL, EMBASE, and MEDLINE for single studies that focused on primary care in Ontario and Quebec (or that focused on Canada more broadly); and
- 3) the research team’s own continuously updated personal database of over 11,000 citations related to healthcare, health systems and health policy that has been continuously updated and maintained for over a decade.

To identify grey literature related to primary care in Ontario and Quebec (and in Canada more broadly), we conducted:

- 1) searches of the Evidence-Informed Healthcare Renewal (EIHR) Portal and the Ontario Health System Documents (OHSD) Portal, both of which are contained within Health Systems Evidence, for policy-relevant documents focused on primary care in Ontario and Quebec, as well as those focused on primary care in Canada more broadly;
- 2) searches for health-reform descriptions in Health Systems Evidence that are focused on primary care in Ontario and Quebec, as well as those focused on primary care in Canada more broadly;
- 3) hand searches of government websites in Ontario and Quebec;
- 4) targeted Google searches;
- 5) interviews with key informants (see below) who were asked to suggest relevant documents on the topic; and

- 6) hand searches of the reference lists of key documents identified in steps 1-5.

As a second source of data, key informant interviews were conducted with a mix of policymakers and stakeholders from Ontario and Quebec who are (or have been) involved in decision-making processes related to primary care reform, or who have been influenced by these processes. A stakeholder-mapping tool was used to identify a mix of potential key informants at the policymaking level, the management level, and the frontline-provider level, as well as representatives of civil-society organizations (for community views on services), and from this sampling frame, 22 potential key informants were purposively sampled based on whether they could:

- provide input on primary care models in Canada, and in particular the innovative approaches introduced in Ontario and Quebec;
- suggest sources of data and/or research evidence about primary care models in Ontario and Quebec (and in Canada more generally); and
- suggest additional potential key informants who could provide additional information about primary care.

Data collection and management: Searches for the document review were conducted first to identify an initial collection of documents published from 2000 onwards that discussed primary care in Ontario and Quebec, or that discussed primary care across Canada more broadly. We also hoped to identify documents that provided additional insights about the innovative primary care models being pursued in each province. Citations of retrieved documents were entered into reference-management software. We read each retrieved document, and documented in short summaries the main findings and conclusions as they related to examples of innovative primary care models. We undertook additional stages of purposive document sampling in tandem with key informant interviews, as interviewees brought to light important resources that offered additional important information for our cases. Searches for new documents ceased once the investigative team felt that new resources were no longer providing novel insights about the key domains covered by the study.

We approached 22 key informants from the categories below. Of these 13 responded to the request and were interviewed:

- i. At the policy level we approached individuals: From Strategic Policy in Health Canada; from the Primary Health Care and Health System Strategy and Policy Divisions in Ontario Ministry of Health and Long-Term Care; from the Directorate of Policy and Strategic Planning in Quebec Ministry of Health and Social Services and from expertise in Health Information
- ii. At the provincial/district level of health care delivery, we approached individuals from management of the Montreal Health and Social Service Agency and Toronto Central LHIN
- iii. At the primary health care delivery level, we approached individuals from the Association of Family Health Teams of Ontario; co-ordinators of innovative Family Health Teams and from North East Toronto Health Link
- iv. At the level of community care organizations and civil society, we approached individuals from the Association of Ontario Health Centres representing CHCs that target marginalized communities and other individuals from community-governed PHC models and from Patients Canada; and
- v. At the level of healthcare providers, we approached individuals from the Ontario Medical Association, Ontario College of Family Physicians; from the Registered Nurses Association of Ontario; Department of Family Medicine Hamilton Health Sciences ; from the School of Nursing McMaster University; from the Federation des Medecins Omnipraticiens du Quebec and from the College of Family Physicians of Canada

Each key informant was invited by email to participate in a 25-40 minute semi-structured telephone interview using a formal letter. Key informants who agreed to participate were provided with a structured excerpt from preliminary results obtained from the document review (which were largely composed of iterations of *Tables 1-5* and the more complete versions in the *Appendix Tables A1-A4* in various stages of completion), and asked to review the document prior to the interview. During the interview, we solicited feedback from key informants about the structure and content of the pre-circulated excerpts—with a particular focus on trying to identify misinterpretations and fill gaps in content after the initial stages of document review—and took detailed notes using a word-processing programme.

Data analysis was approached in three stages, and was structured and informed by the conceptual framework developed as background to this study (Loewenson, et al. 2014). In particular, the ways in which the data relate to the framework's five domains for the analysis of the role of primary care was used to guide the development and organization of identified thematic categories that emerged during the analysis, and included:

- 1) the **context** for primary care systems (including the general and health-system context, and with particular attention to
 - a. the measures for harmonizing financing to ensure prepayment coverage, for harmonizing quality

standards, licensing and practice arrangements for health professionals, and for widening promising practice across provinces and territories of Canada,

- b. the measures to support teamwork, extend recognition and licensing for nurse practitioners and physician's assistants, improve the relative remuneration of primary care physicians, strengthen development of interprofessional teams in primary care, and encourage primary care as a career choice,
 - c. how Canada has managed cost containment around medicines;
- 2) **features** of the primary care system (including service inputs, content, organization and process and specific features), noting the service questions that have relevance to the U.S.;
 - 3) **social roles** in the primary care system (with a particular focus on the interface between services and the community);
 - 4) health **outcomes** from primary care services and practice (particularly, those achieved through innovative and progressive models of care and those that have systems, models and measures that have lower levels of cost escalation (rather than aggregate costs alone), that are managing to have lower relative administrative costs and wastage, that improve coverage of prepayment systems and financial protection, and that achieve improved health benefit for resources applied, particularly for the most vulnerable groups); and
 - 5) approaches to **managing and sustaining change** in primary care.

In the first stage of data analysis, data collected during the initial phase of the document review were read through, summarized, and coded based on their relation to the broad domains in the conceptual framework. Second, data coded within each domain was organized according to their relation to the specific factors of interest within each domain (using empty versions of *Tables 1-5* as a data extraction tool). These factors were established in the background work conducted by the study funders (Loewenson et al. 2014). Third, insights from the key informant interviews were used to confirm and/or clarify results at various stages of our documentary data analysis. Data from key informant interviews were also be used to challenge and revisit conclusions derived from the documentary analysis to ensure our conclusions were robust. This integration of the results from documentary analysis with inputs from key informants continued until theoretical saturation was reached (when the team felt that robust conclusions related to each domain had been drawn, and there was agreement that no additional insights were emerging during additional stages of analysis).

Ethics: This study did not directly involve interviews with members of the public, focusing instead on interviews with policymakers, managers and those in senior positions within service delivery organizations. Key informants were not paid for their participation in the study, and were asked to provide informed consent (either verbally or using the form provided in the email letter included in supporting documents) prior to participating in an interview. Each key informant was provided with a brief description of the study background prior to the beginning of the interview, and was informed that they could withdraw or discontinue their participation at any time. Notes taken during the interviews were only made available to lead researchers, and were stored on password-protected computers. Key informants were not identified by name in any of the documents that were produced as a result of this study, nor in the reporting of results. Ethical approval was granted by the Hamilton Integrated Research Ethics Board.

Appendix 2: Tables with detailed findings

Table A1 Findings related to the general and health system contexts for innovative PC models in Ontario and Quebec

Contextual feature		Ontario	Quebec	National
General context	Social and stakeholder support for state intervention and regulation	<ul style="list-style-type: none"> • There is broad public support in Canada for maintaining the status quo with respect to the government's role in health care financing within the traditional domains set out in the 'core bargain', which includes publicly funded physician and hospital services (with universal access, no user-fees and no two-tier care), however there is openness among the public for two-tier care and for-profit delivery for newer and rapidly expanding services such as home care and high-tech care (Abelson, Mendelsohn et al. 2004) • Despite some calls by the Canadian Medical Association to expand for-profit care, the work of the Health Action Lobby (HEAL), which represents 41 health professional associations across the country suggests broad stakeholder support for government intervention and regulation to ensure first-dollar coverage and universal access to all medically necessary physician and hospital services, regardless of ability to pay 		<ul style="list-style-type: none"> • Support among stakeholders represented in the Assembly of First Nations (AFN) for financial and some administrative support from the Federal government First Nations and Inuit Health Branch (FNIHB) for health care services delivered to First Nations populations (Assembly of First Nations 2013)
	Measures taken to inform and involve the public in decision making	<ul style="list-style-type: none"> • Through initiatives being pursued by the Division of Evidence Development and Standards (EDS) at Health Quality Ontario (HQO) and the Ontario Health Technology Advisory Committee, Ontario is leading some of the experimentation in Canada with respect to engaging the public in decision-making about the funding and use of health technologies, although the methods for engaging the public are still under development (Gauvin, Abelson et al. 2014) 	<ul style="list-style-type: none"> • Several initiatives at various levels of the system that aim to inform and involve the public in Quebec, although the extent to which these have been implemented across the province varies significantly across regions and settings <ul style="list-style-type: none"> ◦ At the local level , user committees in primary care institutions (such as community health centres) play an intermediary role between the public and the administration of an institution, and they assist users by providing information and by facilitating feedback for improvement in services ◦ Each Regional Health Authority is obligated to establish a Forum of the population to ensure public consultation on issues related to health and wellness, and to formulate recommendations on ways to improve public satisfaction with health and social services ◦ The Consultation Forum of the Health and Welfare Commissioner is a deliberative assembly at the provincial level, composed of 27 citizens and experts from each of Quebec's regions (appointed by the Commissioner) with a mandate to provide the Commissioner with its viewpoint on various issues related to health and social services (http://www.csbe.gouv.qc.ca/en/consultation-forum.html) 	<ul style="list-style-type: none"> • Health Canada's FNIHB has explicit commitments to engage First Nations communities in the strategic planning, management and implementation of core programmes and services delivered to First Nations populations, including primary care (Health Canada 2012)
	Measures for harmonizing financing, quality standards, licensing and practice arrangements and for scaling up promising practice, within and across provinces and territories	<ul style="list-style-type: none"> • Harmonizing financing <ul style="list-style-type: none"> ◦ Ontario Health Insurance Plan (OHIP) acts as a single payer for all physician services, which ensures harmonized within-province mechanisms for financial arrangements related to primary care delivered by physicians, but no similar mechanism exists for non-physician providers • Harmonizing quality standards <ul style="list-style-type: none"> ◦ Excellent Care for All Act (2010) promotes quality monitoring and improvement in hospitals across the province and in FHTs, CHCs and AHACs, but not (yet) in other primary care organizations 	<ul style="list-style-type: none"> • Harmonizing financing <ul style="list-style-type: none"> ◦ Same as Ontario (although the name of the provincial insurance plan is the Régie de l'assurance maladie du Québec or RAMQ) • Harmonizing quality standards <ul style="list-style-type: none"> ◦ No explicit mechanisms in place to harmonize quality standards across the province • Harmonizing licensing <ul style="list-style-type: none"> ◦ Same as Ontario but with 45 professions across Quebec regulated through the Professional Code (1974), within which professional colleges, such as the Collège des Médecins du Québec (CMQ) plays the same role as the OCPF in Ontario (Éditeur officiel du Québec 2014) 	<ul style="list-style-type: none"> • Harmonizing financing <ul style="list-style-type: none"> ◦ Canada Health Act (1984), defines the standards to which provincial health insurance programmes must conform for federal funding: <ul style="list-style-type: none"> • Universality • Portability among provinces • Public administration • Accessibility (first dollar coverage for physician and hospital service)

Table A1 Findings related to the general and health system contexts for innovative PC models in Ontario and Quebec (continued)

Contextual feature		Ontario	Quebec	National
		<ul style="list-style-type: none"> • Harmonizing licensing <ul style="list-style-type: none"> ◦ Regulated Health Professionals Act (1991) establishes self-regulation through colleges, such as the Ontario College of Family Physicians (OCFP), for physician and non-physician providers, which ensures harmonization of licensing within professions provincially ◦ Ontario College of Family Physicians (OCFP) sets licensing standards for primary care physicians in the province • Harmonizing practice arrangements <ul style="list-style-type: none"> ◦ Opportunities and incentives for voluntary enrolment of primary care physicians into one of the new primary care models is an attempt to harmonize within-model practice arrangements • Measures for scaling up promising practice <ul style="list-style-type: none"> ◦ Repeated calls for applications to become FHTs or to engage with another promising primary care model in Ontario, as well as financial incentives to promote voluntary physician enrolment in these models is the major mechanism used to promote the scale up of promising practice 	<ul style="list-style-type: none"> • Harmonizing practice arrangements <ul style="list-style-type: none"> ◦ Opportunities and incentives for voluntary enrolment of physicians into Family Medical Groups are an attempt to harmonize within-model practice arrangements • Measures for scaling up promising <ul style="list-style-type: none"> ◦ Ongoing calls for applications for FMG enrolment (similar to calls for FHTs in Ontario) 	<ul style="list-style-type: none"> • Comprehensiveness (medically necessary health services provided by hospitals and physicians) • Harmonizing licensing <ul style="list-style-type: none"> ◦ Significant harmonization of licensing for primary care physicians through the College of Family Physicians Canada (CFPC), but little harmonization for other health professionals involved in new primary care models within provinces • No specific mechanisms at the federal level for harmonizing quality standards, practice arrangements (although Health Canada's role in providing all health services publicly to First Nations and armed services populations enables harmonizing practice within these domains) or for scaling up promising practice
Health system context	Governance, legal and policy features	<ul style="list-style-type: none"> • Governance and legal features <ul style="list-style-type: none"> ◦ Unicameral Westminster-style parliamentary democracy, with constitutional authority for governing healthcare (with the exception of armed services and First Nations populations) ◦ No governance or legal framework for primary care in general or for primary care clinical sites in particular (in contrast to the governance frameworks for not-for-profit hospitals (Public Hospitals Act) and a variety of clinical sites providing diagnostic and surgical services (e.g. Independent Health Facilities Act)) ◦ Regulated Health Professions Act (1991) provides the legal framework for individual healthcare providers (e.g. physicians, nurse practitioners) • Policy framework <ul style="list-style-type: none"> ◦ Negotiated agreements with physicians provide the policy framework for primary care models and payment 	<ul style="list-style-type: none"> • Governance and legal features <ul style="list-style-type: none"> ◦ Same as Ontario (although with province-specific legislation) • Policy framework <ul style="list-style-type: none"> ◦ Same as Ontario 	<ul style="list-style-type: none"> • British North American Act (1867) sets out the constitutional framework in Canada, within which provinces in a federal system assume responsibility for health care, although the Federal government provides all health care (including primary care) to First Nations populations as stipulated in the Indian Health Policy (1979) and to all members of the armed services • Hospital Insurance and Diagnostic Services Act (1957) and Medical Care Act (1966) established publicly funded, privately delivered care based on fee-for-service remuneration for physicians

Table A1 Findings related to the general and health system contexts for innovative PC models in Ontario and Quebec (continued)

Contextual feature	Ontario	Quebec	National
<p>Organization (E.g. national health service vs. social health insurance/ public-private mix/ownership)</p>	<ul style="list-style-type: none"> • Long-standing public payment / private delivery 'bargain' with physicians (and hospitals), with physicians paid for medically necessary services through a publicly administered health insurance plan (OHIP) but practicing as largely independent entrepreneurs (typically within a personally owned professional corporation) 	<ul style="list-style-type: none"> • Same as Ontario (but insurance administered publicly through RAMQ) 	<ul style="list-style-type: none"> • Public payment and public delivery for all primary care for First Nations and armed services populations
<p>Financing characteristics E.g. single vs. multi-payer, tax vs. social security vs. private/levels of health spending and out of pocket spending)</p>	<ul style="list-style-type: none"> • Single vs. multi-payer <ul style="list-style-type: none"> ◦ Single-payer system for medically necessary physician (and hospital) services but multi-payer for prescription drugs, home care, rehabilitation, long-term care and many other social services • Tax vs. social security vs. private <ul style="list-style-type: none"> ◦ General taxation is used to fund a provincial publicly administered health insurance plan, which covers all medically necessary primary care physician services (as well as hospital services) ◦ Mix of private financing (mostly through employer-based insurance plans) and public financing (for those aged 65 and over or living in poverty) for prescription drugs, home care, rehabilitation, long-term care and many other associated social services • Levels of health spending <ul style="list-style-type: none"> ◦ Total health expenditure in 2013 in Ontario was C\$ 79.7 billion, or C\$ 5,835 per capita ◦ Total public expenditure on health in 2013 (including funds received through the federal transfer) was C\$ 54 billion, or C\$ 3,952 per capita ◦ Total private expenditure on health in 2013 was C\$ 25.7 billion, or C\$ 1,883 per capita (Canadian Institute for Health Information 2013) ◦ Total provincial spending on physician expenditures in primary care in 2010 was \$3.2 billion (Kralj and Kantarevic 2012), although no recent updated indicators are available to suggest how much is spent on primary care per capita through payments for physician services (Canadian Institute for Health Information 2012) ◦ Most spending on primary care in the province is public and for physician services 	<ul style="list-style-type: none"> • Single vs. multi-payer <ul style="list-style-type: none"> ◦ Same as Ontario , although Quebec has employer-based insurance for prescription drugs and public insurance for all of those without such coverage • Tax vs. social security vs. private <ul style="list-style-type: none"> ◦ Same as Ontario, although for prescription drugs a mix of employer-based insurance and publicly administered insurance for those without employer-based coverage • Levels of health spending <ul style="list-style-type: none"> ◦ Total health expenditure in 2013 in Quebec was C\$ 44.9 billion, or C\$ 5,531 per capita ◦ Total public expenditure on health in 2013 (including funds received through the federal transfer) was C\$ 32 billion, or C\$ 3,944 per capita ◦ Total private expenditure on health in 2013 was C\$ 12.9 billion, or C\$ 1,588 per capita ◦ No recent statistics available for total spending on primary care in Quebec (Canadian Institute for Health Information 2012), although like Ontario most spending is public, and through payments for physician services 	<ul style="list-style-type: none"> • Single vs. multi-payer/tax vs. social security vs. private <ul style="list-style-type: none"> ◦ Single-payer for all primary care services provided to First Nations and armed services populations, financed through general taxation • Levels of spending <ul style="list-style-type: none"> ◦ Total spending on health care for First Nations populations was C\$ 2.4 billion in 2011/2012, or C\$ 2,626 per capita (Milke 2013)

Table A1 Findings related to the general and health system contexts for innovative PC models in Ontario and Quebec (continued)

Contextual feature	Ontario	Quebec	National
Resource allocation strategies for primary care	<ul style="list-style-type: none"> In 2000, First Ministers established the \$800 million Primary Health Care Transition Fund to accelerate primary care reform through support for pilot projects and research In 2003 the First Ministers Health Accord included \$16 billion Health Reform Fund targeted at primary care, home care and catastrophic drug coverage Proportion of family physicians receiving 90% or more of their professional income from fee-for-service has declined and as of 2010 was approximately 41% (The College of Family Physicians of Canada, CMA et al. 2010) 		
	<ul style="list-style-type: none"> Most resource allocation decisions are made in the context of the agreements negotiated between the provincial government and provincial medical association, which includes a fee schedule for physicians billing fee-for-service and the terms of payment for physicians participating in alternative primary care models Traditionally fee-for-service payments made to physicians, but moving towards blended payment strategies and particularly towards capitation payments which have risen rapidly since 2004-2005 (Glazier et al. 2012a) The access bonus and payments for enrolling unattached patients—two important incentives designed to enhance the retention of patients in care and to improve access to care—reached \$52.1 million and \$22.9 million in 2010-2011 (Glazier et al. 2012a) 	<ul style="list-style-type: none"> As in Ontario, resources for primary care mostly allocated through fee-for-service payments to physicians, but unlike Ontario fewer initiatives to move towards blended-payment strategies (although there are incentives for enrolments of unattached patients with primary care physicians) 	
Measures for management of cost containment around medicines	<ul style="list-style-type: none"> For those eligible for the Ontario Drug Benefit programme (i.e., those over the age of 65, etc.), cost-containment measures include a drug formulary, mandatory generic substitution, and a small cost share For those eligible for the Trillium Drug programme (i.e., those whose prescription drug costs as a proportion of their income exceeds a given threshold), cost-containment measures include a large cost share, etc. 	<ul style="list-style-type: none"> Quebec's public drug insurance plan for those not covered by employer plans includes an annual premium and a small cost-share for each prescription 	<ul style="list-style-type: none"> Drug formularies are used in both FNIHB and armed services drug benefit programmes PMPRB regulates the prices of patented drugs entering the Canadian market, although it has no authority to control the prices charged by wholesalers, pharmacies, or the fees charged by pharmacists (see: http://www.pmprb-cepmb.gc.ca/english/View.asp?x=1433)
Primary care workforce profile	<ul style="list-style-type: none"> Family physicians comprise over 50% per cent of the physician workforce in Canada (CMA 2014b) A low physician-to-population ratio by international standards but higher general practitioner-to-population ratio than average for OECD member countries (Hutchison et al. 2011) 74% of physicians were in a group or interprofessional practice and 23% were in a solo practice in 2007 A greater number of medical school spaces and family medicine residency positions increased the number of family physicians per 100000 Canadians from 94 in 2000 to 103 in 2009 (Canadian Institute for Health Information 2010b) Number of licensed nurse practitioners in Canada doubled from 800 to 1990 from 2004 to 2008(Canadian Institute for Health Information 2010a;Hutchison et al. 2011) Expansion of the non-physician primary care provider pool is variable across the country (Hutchison et al. 2011) Canadian physicians rank second-lowest on use of EMRs when compared to ten wealthy industrialized countries (Commonwealth Fund 2012), and estimates from 2010 suggest that as of 2010 23% of practices across Canada were using EMRs (Katz, Glazier et al. 2010) 		

Table A1 Findings related to the general and health system contexts for innovative PC models in Ontario and Quebec (continued)

Contextual feature	Ontario	Quebec	National
	<ul style="list-style-type: none"> • Workforce profile <ul style="list-style-type: none"> ◦ As of 2014, there were 12, 871 family physicians in Ontario which constitutes 47.8 % of all physicians in the province (CMA 2014b), and by 2011 approximately 4, 700 family physicians in Ontario were estimated to have adopted an EMR in their practice (Aggarwal 2011) ◦ Ontario has the second-lowest ratio of primary care physicians to population among Canada's ten provinces, with 92 per 100 000 (Hutchison and Glazier 2013) ◦ As of April 2010, there were 25,886 physicians in Ontario (Aggarwal 2011) From 2002 to 2010, the number of family physicians in Ontario increased by 16% from 10 000 to 11 600 (Kralj and Kantarevic 2012), and approximately 7700 (67%) are affiliated with a model that is based on patient enrolment (Aggarwal 2011) ◦ As of 2011, 72% of Ontarians enrolled with a primary care physician (Hutchison et al. 2011), with nearly 10 million of the 13 million people living in Ontario rostered to a family physician by 2012 (Kralj and Kantarevic 2012) ◦ Ontario's primary care physicians have high levels of remuneration and satisfaction , which is likely linked to significant investments in primary care in the last decade which have also likely contributed to making family medicine more attractive to medical graduates (Glazier et al. 2012a;Strumpf, Levesque et al. 2012) ◦ Ontario was the first province to recognize midwifery and fund midwifery services, number of midwives increased by 150% from 2002 to 2011, when the number exceeded 500 and midwife-attended births represented 10% of all births in the province (Hutchison et al. 2011) ◦ In 2008, more than 50% of Canadian nurse practitioners were based in Ontario(Canadian Institute for Health Information 2010a) ◦ Between 1999 and 2010, the number of primary care nurse practitioners licensed in Ontario increased from 130 to 1362 (Canadian Institute for Health Information 2010a) ◦ As of 2012 it was estimated that there were 2,873 Registered Nurses and 1,412 Registered Practical Nurses, or a total of 4,285 nurses practicing in Ontario's primary care system (RNAO 2012) 	<ul style="list-style-type: none"> • Workforce profile <ul style="list-style-type: none"> ◦ As of 2014, there were 8,737 family physicians in Quebec which constitutes 49.6% of all physicians in the province ◦ More than half of the Quebec population enrolled with a primary care physician (Hutchison et al. 2011)Far fewer nurse practitioners than Ontario, with less than 100 as of 2011 (Hutchison et al. 2011) and primary care models still dominantly consist of general practitioners 	

Table A2: Detailed findings related to the core features of innovative primary care models in Ontario and Quebec

Primary care model – year of establishment	Features of primary care models			
	Service inputs	Service content	Service organization and process	Service reach
All models	<ul style="list-style-type: none"> All models receive subsidies for the purchase and implementation of approved clinical-management systems and electronic medical records,(Hutchison and Glazier 2013;Pineault, Levesque et al. 2009) 	<ul style="list-style-type: none"> All models provide some after-hours care (Hutchison and Glazier 2013) 	<ul style="list-style-type: none"> In all models, physicians participate on a voluntary basis (Blais, Denis et al. 2013;Hutchison et al. 2011;Strumpf, Levesque et al. 2012) All primary care models in Ontario receive support from HQO to ensure sustained quality improvement through training and capacity building and through Quality Improvement Plans (QIPs) (Aggarwal 2011;Hutchison et al. 2011) 	<ul style="list-style-type: none"> 9.9 million patients (73% of Ontario's total population) were enrolled in one of Ontario's new patient enrolment models (FHGs, FHNs, FHOs, FHTs and NPLCs) as of 2012 (Hutchison and Glazier 2013)
Community Health Centres (CHCs), Ontario – established in 1979	<ul style="list-style-type: none"> 75 CHCs in operation as of 2013, involving interdisciplinary teams that collectively comprising almost 400 physicians, 300 nurse practitioners and 1700 other clinical, health promotion and community development professionals, as well as more than 800 administrative and management personnel (Hutchison and Glazier 2013;Hutchison et al. 2011) CHCs have no minimum physician group size (Hutchison and Glazier 2013) CHCs funds come directly from the Ministry of Health and Long-Term Care to pay for operational costs, provider salaries and administration, with the average capital cost to build one CHC equaling C\$6 million CHCs remunerate physicians mostly through salary (Hutchison et al. 2011), with no additional targeted financial incentives (Hutchison and Glazier 2013) CHCs had more than 300 physicians receive funding from eHealth Ontario to implement an electronic medical record as of June 2011(Aggarwal 2011) 	<ul style="list-style-type: none"> CHCs provide primary care services for socially disadvantaged and hard-to-serve populations, with a particular emphasis on health promotion and disease prevention (Hutchison and Glazier 2013) CHCs engage in community-outreach efforts that emphasize health promotion services (Glazier, et al. 2012b) 	<ul style="list-style-type: none"> CHCs are governed by community boards CHCs have no formal patient-enrolment mechanism (Hutchison and Glazier 2013) CHCs must sign an accountability agreement with a Local Health Integration Network, called the Client Access for Primary Care Clinical Service Programme, which requires that each CHC collects indicators related to health equity, value and affordability, and quality (Aggarwal 2011;Glazier et al. 2012b) 	<ul style="list-style-type: none"> CHCs currently serve around 500,000 people, or 4% of the population in Ontario (Association of Ontario Health Centres 2014)
Family Health Groups (FHGs), Ontario – established in 2002-03 (Glazier, et al. 2012a)	<ul style="list-style-type: none"> 238 FHGs in operation involving 3,003 physicians as of 2011 (Aggarwal 2011), however the extent to which interprofessional teams are integrated into the model is limited (Hutchison and Glazier 2013) FHGs have a minimum physician group size of three (Hutchison and Glazier 2013) 	<ul style="list-style-type: none"> FHGs provide comprehensive primary care services (OMA 2013b) 	<ul style="list-style-type: none"> FHGs are governed by physicians (Hutchison and Glazier 2013) FHGs do not require that physicians commit to formally enrol patients, although patient enrolment is incentivized and strongly encouraged to formally (Hutchison and Glazier 2013) 	<ul style="list-style-type: none"> No model-specific indicators identified

Table A2: Detailed findings related to the core features of innovative primary care models in Ontario and Quebec (continued)

Primary care model – year of establishment	Features of primary care models			
	Service inputs	Service content	Service organization and process	Service reach
	<ul style="list-style-type: none"> FHG physician payments are made primarily through traditional fee-for-service, although there are some blended-payment mechanisms (Hutchison et al. 2011) and targeted financial incentives (Hutchison and Glazier 2013), including FHGs receiving a premium for the core general physician services provided within this model, for after-hours care and for targeted services,(OMA 2013b) 		<ul style="list-style-type: none"> FHGs require participating physicians to sign an agreement to join with the Ministry of Health and Long-Term Care, which requires that they provide 3 to 5 sessions of extended hours and provide nurse-staffed, after-hours Telephone Health Advisory Service to enrolled patients 	
<p>Family Health Networks (FHNs), Ontario – established in 2001-02 (Glazier, et al. 2012a)</p>	<ul style="list-style-type: none"> 36 FHNs in operation involving 346 family physicians as of 2011 (Aggarwal 2011) however the extent to which interprofessional teams are integrated into the model is limited (Hutchison and Glazier 2013) FHNs have a minimum physician group size of three (Glazier et al. 2012a;Hutchison and Glazier 2013) FHN physician payments are made primarily through age- and sex-adjusted blended capitation, with additional targeted financial incentives,(Hutchison and Glazier 2013) an access bonus for all services provided within the group, and payments for office-practice administration 	<ul style="list-style-type: none"> FHNs provide comprehensive primary care services facilitated through provider networks 	<ul style="list-style-type: none"> FHNs are governed by physicians (Hutchison and Glazier 2013) FHNs have formal patient enrolment mechanism in place, whereby physicians participating must commit to enrol patients(Hutchison and Glazier 2013) FHNs require participating physicians to sign governance and FHN agreements to join with the Ministry of Health and Long-Term Care, which requires that they provide 3 to 5 sessions of extended hours and provide nurse-staffed, after-hours Telephone Health Advisory Service to enrolled patients, and may also apply to become FHTs 	<ul style="list-style-type: none"> No model-specific indicators identified
<p>Family Health Organizations (FHOs), Ontario – established in 2007*</p>	<ul style="list-style-type: none"> 362 FHOs in operation involving 3,631 physicians as of 2011(Aggarwal 2011), however the extent to which interprofessional teams are incorporated is limited (Hutchison and Glazier 2013) FHOs have a minimum physician group size of three (Hutchison and Glazier 2013) FHO physician payments are made primarily through age- and sex-adjusted blended-capitation with additional targeted financial incentives and payment for office and practice administration (Hutchison and Glazier 2013) and an access bonus is provided for services provided within the group to enrolled patients(Glazier et al. 2012a) Many physicians practicing in the FHO model are also members of a FHT 	<ul style="list-style-type: none"> FHOs primarily provide physician-delivered primary care services, with additional after-hours care (Hutchison and Glazier 2013) 	<ul style="list-style-type: none"> FHOs are governed by physicians (Hutchison and Glazier 2013) FHOs have a formal patient enrolment mechanism in place, whereby physicians participating must commit to enrol patients (Hutchison and Glazier 2013) FHOs require participating physicians to sign governance and FHO agreements to join with the Ministry of Health and Long-Term Care, which requires that they provide 3 to 5 sessions of extended hours and provide nurse-staffed, after-hours Telephone Health Advisory Service to enrolled patients, and may also apply to become FHTs 	<ul style="list-style-type: none"> No model-specific indicators identified

Table A2: Detailed findings related to the core features of innovative primary care models in Ontario and Quebec (continued)

Primary care model – year of establishment	Features of primary care models			
	Service inputs	Service content	Service organization and process	Service reach
<p>Family Health Teams (FHTs) and Nurse Practitioner-Led Clinics (NPLCs), Ontario – established in 2005 (FHTs) and 2006-2007 (NPLCs)</p>	<ul style="list-style-type: none"> • 200 FHTs in operation, involving more than 2,400 primary care physicians and extensive interdisciplinary teams of more than 1,700 other primary care health professionals (nurses, nurse practitioners, dieticians, mental health workers, social workers, pharmacists, health educators) as of 2012 (Hutchison and Glazier 2013) • 26 NPLCs in operation as of 2012 (Hutchison and Glazier 2013) • FHT minimum physician group size is three (Hutchison and Glazier 2013) • FHT physician payments are made using a blended remuneration formula that combines capitation or salary with fee-for-service, targeted incentives and pay for performance bonuses (Breton, Levesque et al. 2011; Hutchison and Glazier 2013), • Management, administrative personnel and non-physician providers are salaried (Hutchison and Glazier 2013) • The minimum physician group size is three (Hutchison and Glazier 2013) • FHT-directed payments supporting their implementation and ongoing management reached \$200 million in 2009-2010 (Glazier et al. 2012a) • NPLCs are funded through a transfer payment agreement between the ministry and the board of directors for up to four full time nurse practitioners including a nurse lead, up to four full time interprofessional health staff, one full time administrative lead and up to three clerical staff (Dinh 2012) • NPLCs remunerate all participating providers through salary, except for collaborating physicians who are paid a monthly stipend of C\$838.40 per full time nurse practitioner as well as fee-for-service for any direct care they provide (Dinh 2012) 	<ul style="list-style-type: none"> • FHTs and NPLCs provide all primary care services (Hutchison and Glazier 2013) • FHTs and NPLCs emphasize health promotion and disease prevention, provide patient system navigation support, facilitate the development of comprehensive community-based chronic disease management and self-care, link with other healthcare organizations and use information technology to improve care (DiCenso, Bourgeault et al. 2010) 	<ul style="list-style-type: none"> • FHTs are governed by a mix of primary care providers and community boards (Hutchison and Glazier 2013) • FHTs and NPLCs have a system for formal patient enrolment in place (Hutchison and Glazier 2013) and an application process to become a FHT or NPLC through the Ministry of Health and Long-Term Care (Health Force Ontario 2014) • NPLC-rostered patients are enrolled with the clinic, not with specific providers (DiCenso, Bourgeault et al. 2010) • FHTs and NPLCs are organized as patient-centred medical homes where people can access care from multiple health providers (Hutchison and Glazier 2013) • NPLC-attached physicians' main role, is to provide consultations to nurse practitioners regarding patient care within the nurse practitioner scope of practice, and to provide care that falls outside of the nurse practitioners' scope of practice, charging fee-for-service (DiCenso, Bourgeault et al. 2010) 	<ul style="list-style-type: none"> • FHTs served a population of nearly one million Ontarians as of 2010 (Rosser, Colwill et al. 2010), and as of 2011 the Ministry of Health and Long Term Care anticipated that the number of enrolled patients in this model will have risen to nearly 2.5 million (Aggarwal 2011) • NPLCs served over 27 000 Ontarians as of 2012 (Dinh 2012)

Table A2: Detailed findings related to the core features of innovative primary care models in Ontario and Quebec (continued)

Primary care model – year of establishment	Features of primary care models			
	Service inputs	Service content	Service organization and process	Service reach
Family Medicine Groups (FMGs), Quebec – established in 2002	<ul style="list-style-type: none"> • 223 FMGs in operation involving 3,177 family physicians as of 2011, with a stated goal of reaching 300 FMGs in the province (Breton, Levesque et al. 2011;Hutchison et al. 2011) • FMGs consist of eight or more full-time equivalent family physicians, not all necessarily practicing at one location, who receive funding for two registered nurses an administrative assistant and a secretary (Beaulieu, Haggerty et al. 2013;Breton, Levesque et al. 2011) • FMGs pay physicians using traditional fee-for-service, with additional targeted payments made to enhance working conditions, which includes an average payment per group of \$270,000 in subsidies to account for the number of patients enrolled and the salaries of nurses and administrative staff, as well as an average \$275000 remuneration subsidies to top-up physicians fees and to pay for phone services (Beaulieu, Haggerty et al. 2013;Breton, Levesque et al. 2011;Pomey, Martin et al. 2009) • FMGs each receive a small annual fee for each enrolled patient and supplemental fees for registered patients from vulnerable populations (Hutchison, et al. 2011) • Funding to support staffing, premises and information technology is also made available, although the bulk of physician remuneration continues to come from fee-for-service payments (Pineault, Levesque et al. 2008) 	<ul style="list-style-type: none"> • FMGs provide all enrolled patients with comprehensive primary care services that are contractually agreed-upon by physicians participating in the FMG and the Ministry of Health and Social Services (Breton, Levesque et al. 2011;Hutchison et al. 2011) • Services are provided weekdays with and without appointment, with a minimal level of walk-in services available on weekends, although certain vulnerable patients have access to a 24/7 telephone service (Breton, Levesque et al. 2011) 	<ul style="list-style-type: none"> • FMGs are governed through a system of shared responsibility for primary care with Centres de santé et de services sociaux (CSSS) (Blais, Denis et al. 2013) which include contractual agreements between accredited clinics and other health institutions at the local, regional, and provincial levels, which formalize the collaboration and sharing of resources among and within primary care clinics (Hutchison et al. 2011) • FMGs also work within local and regional departments of family medicine which are composed of elected representatives from each local area's pool of general practitioners, mandated to coordinate the supply and planning of primary care services (Hutchison et al. 2011) • FMGs receive supports from Network Clinics that consist of enhanced interdisciplinary teams provide extended hours of service and on-site access to diagnostic services consist of enhanced multidisciplinary teams (Pineault, Levesque et al. 2009) • FMGs are driven by client enrolment, and group responsibility for enrolled clients (Breton, Levesque et al. 2011) • FMGs must contractually commit to extended hours of operation and a 24/7 on-call telephone on-call system (Breton, Levesque et al. 2011) • FMGs establish care protocols, called 'collective prescriptions' to define the range of tasks that nurses are allowed to carry out with respect to diagnosis and treatment (Breton, Levesque et al. 2011) • FMGs establish working groups to make more physicians available and to integrate nurses to establish interprofessional care—particularly in the follow-up of patients (Breton, Levesque et al. 2011) 	<ul style="list-style-type: none"> • FMGs each serve a population of 15,000 patients (Breton, Levesque et al. 2011)

*Note that Family Health Organizations were created through the harmonization of Health Service Organizations which were introduced in 1978 and Primary Care Networks which were introduced in 1999 (Hutchison and Glazier 2013)

Table A3: Detailed findings related to the social roles of innovative primary care models in Ontario and Quebec

Primary care model	Interface between primary care models and the community			
	Community involvement in decision making	Approaches to strengthening health literacy	Role of community health workers (including patient experts)	Social organization and civil society involvement in disease prevention and health promotion
Community Health Centres (CHCs), Ontario – established in 1979	<ul style="list-style-type: none"> • CHCs use community boards as their main governance mechanism (Glazier et al. 2012b; Hutchison and Glazier 2013) 	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Not available
Family Health Groups (FHGs), Ontario – established in 2002-03 (Glazier et al. 2012a)	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Not available
Family Health Networks (FHNs)*, Ontario – established in 2001-02 (Glazier et al. 2012a)	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Not available
Family Health Organizations (FHOs), Ontario – established in 2007*	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Not available
Family Health Teams (FHTs) and Nurse Practitioner-Led Clinics (NPLCs), Ontario – established in 2005 (FHTs) and 2006-2007 (NPLCs)	<ul style="list-style-type: none"> • Some FHTs are community governed and others have mixed provider-community boards. However, most FHTs are physician-governed. (Glazier et al. 2012b; Hutchison and Glazier 2013) 	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • FHTs involved with the TAPESTRY pilot project engage community volunteers to deliver outreach services to older adults, helping to promote communication of their healthcare needs with their FHT , and to facilitate system navigation (personal communication) 	<ul style="list-style-type: none"> • Not available
Family Medicine Groups (FMGs), Quebec – established in 2002	<ul style="list-style-type: none"> • FMGs have some linkages with CLSCs, which engage members of the community in organizational governance 	<ul style="list-style-type: none"> • FMGs found to improve patients' knowledge related to services provided through the integration of nurses and a linked clinical protocol (Beaulieu, Denis et al. 2006) 	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • FMGs have some linkages with CLSCs, which often partner with social organizations

*Note that Family Health Organizations were created through the harmonization of Health Service Organizations which were introduced in 1978 and Primary Care Networks which were introduced in 1999 (Hutchison and Glazier 2013)

Table A4: Findings on the influence of innovative PC models on health care outcomes in Ontario and Quebec

Primary care model	Interface between primary care models and the community					
	Access	Equity and financial protection	Quality	Efficiency (especially lower relative administrative costs and wastage)	Cost-containment and value for money (improved health benefit for resources applied)	Health outcomes
All models	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> No primary care models have private payments in Ontario or Quebec 	<ul style="list-style-type: none"> All models in Ontario: There is little support to suggest new incentives in primary care models in Ontario have improved quality of care (Glazier et al. 2012a) 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A
Community Health Centres (CHCs), Ontario – established in 1979	<ul style="list-style-type: none"> CHCs had lower patient-reported access when compared to capitation remuneration models (such as FHNs, FHOs and FHTs) (Muggah, Hogg et al. 2014) CHCs had higher levels of community orientation compared to other models, which includes greater outreach, needs assessment, and monitoring and evaluation of programme and service effectiveness (Muldoon, Dahrouge et al. 2010) CHCs (and FHNs and FHOs) with large practice sizes (measured as the number of physicians involved in the practice) experienced higher patient access to care (Devlin, Hogg et al. 2013) 	<ul style="list-style-type: none"> CHCs treated more disadvantaged populations, those from lower-income neighbourhoods, those with more severe mental illness and chronic health conditions, and with more morbidity and co-morbidity (Glazier et al. 2012a; Glazier, et al. 2012b) CHCs served higher proportions of newcomers and those on social assistance (Glazier et al. 2012b) 	<ul style="list-style-type: none"> CHCs improved delivery of health-promotion services compared to fee-for-service practices (such as FHGs), FHNs and FHOs (Hogg, Dahrouge et al. 2009) CHCs demonstrated superior chronic disease management compared to other models, with physicians finding it easier to promote high quality care through longer consultations and interprofessional collaboration, although quality of care suffered in CHCs that were larger and busier with high physician-to-patient ratios (Russell, Dahrouge et al. 2009), although this contradicts with a separate finding that suggests CHCs (and FHNs and FHOs) with large practice sizes (measured as the number of physicians involved in the practice) had higher quality care (i.e., more comprehensive and more focused on promotion and prevention), but poorer continuity of care (Devlin, Hogg et al. 2013) CHC providers believe that they provide more family-centred care than is provided in FHNs, although their patients report no such difference (Mayo-Bruinsma, Hogg et al. 2013) CHCs found to provide higher quality of diabetes care than traditional fee-for-service models (Liddy, Singh et al. 2011) 	<ul style="list-style-type: none"> CHCs were the least efficient model when compared to traditional fee-for-service practices (including FHGs), FHOs and FHNs (Milliken, Devlin et al. 2011) 	<ul style="list-style-type: none"> No studies identified 	<ul style="list-style-type: none"> CHCs had superior patient health outcomes among disadvantaged populations (Glazier, et al. 2012a; Russell, Dahrouge et al. 2009) CHCs found to have patients with second highest observed emergency department visits, (after FHNs), among primary care models in Ontario, (FHGs, FHNs, FHOs, FHTs) –although given the fact that this model tends to serve populations that are more vulnerable, they were expected to have higher rates of emergency department visits and rates were lower than expected (Glazier et al. 2012b)

Table A4: Findings on the influence of innovative PC models on health care outcomes in Ontario and Quebec (continued)

Primary care model	Interface between primary care models and the community					
	Access	Equity and financial protection	Quality	Efficiency (especially lower relative administrative costs and wastage)	Cost-containment and value for money (improved health benefit for resources applied)	Health outcomes
Family Health Groups (FHGs), Ontario – established in 2002-03 (Glazier et al. 2012a)	<ul style="list-style-type: none"> FHGs and other models that promote increased patient enrolment (FHNs, FHOs, FHTs,) may not improve timely access to care (Glazier et al. 2012a), however some studies have found improvements in patient access to primary care as a result of FHGs (Kralj and Kantarevic 2012) 	<ul style="list-style-type: none"> FHGs found to attract the sickest patients among all new patient-enrolment models in Ontario (Glazier, et al. 2012a; Glazier et al. 2012b), although another study found that, in general FHGs treat populations with socio-demographic and morbidity profiles that are similar to the Ontario population as a whole (Glazier et al. 2012b) FHGs and other primary care models that are based primarily on fee-for-service physician payments found to provide poorer access to primary care for recent immigrants, who had fewer primary care visits compared to Canadian-born patients (Muggah, Dahrouge et al. 2012) 	<ul style="list-style-type: none"> FHGs (and other models of care that are based primarily on fee-for-service payments) may be less likely to provide preventive services when compared to new capitation models, although physician characteristics are likely a more important determinant of prevention service provision (Dahrouge, Hogg et al. 2012) FHGs (in addition to FHNs and FHOs) found to be more likely than other models to adopt and bill for preventive bonus payments to deliver influenza vaccines, Pap smear, mammogram and childhood immunization (Aggarwal 2011) 	<ul style="list-style-type: none"> FHG physicians found to provide more services and visits, see more patients, make fewer referrals and treat more complex patients compared to traditional fee-for-service physicians, suggesting improved physician productivity in this model (Kantarevic, Kralj et al. 2010) FHG family physicians found to provide 9.4% more services than physicians in a traditional fee-for-service model (Kralj and Kantarevic 2012) 	<ul style="list-style-type: none"> No studies identified 	<ul style="list-style-type: none"> FHGs found to have patients with the lowest number of observed emergency department visits compared to other primary care models in Ontario (CHCs, FHNs, FHOs, FHTs) (Glazier et al. 2012b)
Family Health Networks (FHNs), Ontario – established in 2001-02 (Glazier, et al. 2012a)	<ul style="list-style-type: none"> FHNs (and CHCs and FHOs) associated with small increases in patient access to care (Devlin, Hogg et al. 2013) FHNs and other models that promote increased patient enrolment (FHGs, FHOs, FHTs,) may not improve timely access to care (Glazier et al. 2012a) 	<ul style="list-style-type: none"> FHNs and other capitation-based primary care models in Ontario may not support necessary care for more vulnerable groups, as capitation formulae are only age and sex adjusted (Dahrouge, Hogg et al. 2013; Hutchison and Glazier 2013), and have been found to be less likely to have unhealthy, low-income and immigrant Ontarians in their practice populations (Hutchison and Glazier 2013) FHNs found to have a patient population with a large rural profile, and a high proportion of high-income patients with few newcomers (Glazier et al. 2012b) 	<ul style="list-style-type: none"> FHNs were found to have treatment and control rates for hypertension management that were higher than CHCs and traditional fee-for-service practices (Tu, Cauch-Dudek et al. 2009) FHN (and CHC and FHO) practice size (measured as the number of physicians involved in the practice) was found to be associated with higher quality care (comprehensiveness, more focus on promotion and prevention), although also associated with poorer continuity of care (Devlin, Hogg et al. 2013) FHNs (and other models that use blended-capitation payments) found to improve quality of smoking cessation and weight management care in Ontario (Liddy, Singh et al. 2011) 	<ul style="list-style-type: none"> FHNs (and FHOs) with larger group practices are more likely to be involved in revenue sharing which encourages 'mutual help' among physicians that can increase group productivity (Devlin, Hogg et al. 2013) 	<ul style="list-style-type: none"> No studies identified 	<ul style="list-style-type: none"> FHNs found to have patients with lower six-month prevalence of emergency department use compared with patients of physicians in FHGs and traditional fee-for-service practices (Howard, Goertzen et al. 2008)

Table A4: Findings on the influence of innovative PC models on health care outcomes in Ontario and Quebec (continued)

Primary care model	Interface between primary care models and the community					
	Access	Equity and financial protection	Quality	Efficiency (especially lower relative administrative costs and wastage)	Cost-containment and value for money (improved health benefit for resources applied)	Health outcomes
			<ul style="list-style-type: none"> FHNs (in addition to FHGs) were found to be more likely than other models to adopt and bill for preventive bonuses designed to incentivize the delivery of preventative services (influenza vaccines, Pap smear, mammogram and childhood immunization), and also most likely to bill for the maximum threshold for each incentive (Aggarwal 2011) 			<ul style="list-style-type: none"> FHNs found to have patients with the highest number of observed emergency department visits compared to other primary care models in Ontario (CHCs, FHGs, FHOs, FHTs (Glazier et al. 2012b)
Family Health Organizations (FHOs)*, Ontario – established in 2007*	<ul style="list-style-type: none"> FHOs (and CHCs, FHNs) with larger practice size (as measured by the number of physicians) found to slightly improve access to care (Devlin, Hogg et al. 2013) FHOs found to have better continuity of care than other primary care models, although provider characteristics within these models may be more important (Kristjansson, Hogg et al. 2013) FHOs and other models that promote increased patient enrolment (FHGs, FHNs, FHTs,) may not improve timely access to care (Glazier et al. 2012a) 	<ul style="list-style-type: none"> FHOs and other capitation-based primary care models in Ontario may not support necessary care for more vulnerable groups, as capitation formulae are only age and sex adjusted (Dahrouge, Hogg et al. 2013; Hutchison and Glazier 2013) and have been found to be less likely to have unhealthy, low-income and immigrant Ontarians (Glazier et al. 2012a; Hutchison and Glazier 2013) FHOs, have also been found to serve patient populations that are representative of the Ontario population in general, although patients are more likely to be from higher income neighbourhoods, less likely to be newcomers and less likely to use the health system or have high comorbidity 	<ul style="list-style-type: none"> FHOs (and CHCs and FHNs) with larger practice size (measured as the number of physicians involved in the practice) have been found to be associated with higher quality care (comprehensiveness, more focus on promotion and prevention), but poorer continuity of care (Devlin, Hogg et al. 2013) FHOs have been found to provide improved preventive care, particularly in organizations where nurses delivered prevention facilitation interventions to physicians (Lemelin, Hogg et al. 2001) FHO physicians are between 7 and 11% more likely to achieve preventive care quality targets for senior flu shots, toddler immunizations, Pap smears, colorectal screening and mammograms compared to physicians in FHGs (Kralj and Kantarevic 2013) FHOs were found to be one of the least likely of existing primary care models in Ontario to adopt incentives designed to improve the delivery of preventive care (influenza vaccine, Pap smear, mammogram and childhood immunization) (Aggarwal 2011) FHOs (and other models that use blended-capitation payments) found to improve quality of smoking cessation and weight management care in Ontario (Liddy, Singh et al. 2011) 	<ul style="list-style-type: none"> FHOs (and FHNs) with larger group practices (as measured by the number of physicians) are more likely to be involved in revenue sharing which encourages ‘mutual help’ among physicians that can increase group productivity (Devlin, Hogg et al. 2013) FHOs and other capitation-based primary care models in Ontario may be less efficient, and have more wastage, given they are associated with higher rates of emergency department visits (Hutchison and Glazier 2013) FHO physicians may have 3% fewer referrals, when compared to FHGs (Kralj and Kantarevic 2013) 	<ul style="list-style-type: none"> No studies identified 	<ul style="list-style-type: none"> FHOs found to have patients with lower observed emergency department visits than CHCs, FHNs, FHTs, although they had a higher number compared to FHGs (Glazier et al. 2012b)

Table A4: Findings on the influence of innovative PC models on health care outcomes in Ontario and Quebec (continued)

Primary care model	Interface between primary care models and the community					
	Access	Equity and financial protection	Quality	Efficiency (especially lower relative administrative costs and wastage)	Cost-containment and value for money (improved health benefit for resources applied)	Health outcomes
<p>Family Health Teams (FHTs) and Nurse Practitioner-Led Clinics (NPLCs), Ontario – established in 2005 (FHTs) and 2006-2007 (NPLCs)</p>	<ul style="list-style-type: none"> FHTs, through the integration of nurse practitioners have increased the number of patients on active patient rosters by 800 patients per year, improving access to services by increasing the average of enrolled patients-per-physician to 2200 (Breton, Levesque et al. 2011; Rosser, Colwill et al. 2010) FHGs and other models that promote increased attachment to a family physician through enrolment may not improve timely access to care (Glazier et al. 2012a), and a survey of patients enrolled in Nurse Practitioner-Led Clinics identified accessibility after hours and on-site physician availability areas that should be improved upon (DiCenso, Bourgeault et al. 2010) NPLCs improve access in settings with physician shortages and where patients do not have a regular family physician, reducing the number of unattached patients (DiCenso, Bourgeault et al. 2010) 	<ul style="list-style-type: none"> FHTs and other capitation-based primary care models in Ontario may not support necessary care for more vulnerable groups, as capitation formulae are only age and sex adjusted (Dahrouge, Hogg et al. 2013; Hutchison and Glazier 2013) FHTs and other capitation-based primary care models have been found to serve populations that under-represent those that are less healthy, low-income and that are from immigrants communities (Glazier et al. 2012a; Hutchison and Glazier 2013) FHTs also found to have a patient population with a large rural profile, with a higher proportion of high-income patients and lower proportion of patients with severe mental illness and co-morbidities (Glazier et al. 2012b) 	<ul style="list-style-type: none"> FHTs have been found to be open to performance measurement and feedback to support quality improvement, and the process of providing feedback may strengthen team function and imbue a culture of performance management while improving capacity to change (Johnston, Green et al. 2011) FHTs (and other models based on blended-capitation) have improved the quality of smoking cessation and weight management care in Ontario (Liddy, Singh et al. 2011) NPLCs have been found to result in high levels of patient-satisfaction (DiCenso, Bourgeault et al. 2010) 	<ul style="list-style-type: none"> FHTs that integrate electronic medical records may improve efficiency of both clinical activities and communications (Glazier and Redelmeier 2010) FHTs and other capitation-based primary care models in Ontario may be less efficient, have more wastage, given capitation-based remuneration primary care models, including, are associated with higher rates of emergency department visits (Hutchison and Glazier 2013) NPLCs have been found to be associated with high-needs and complex patients that had not been receiving needed care in their first years, and as such were not as efficient as hoped given lengthy visits that included frequent physician involvement, however, these clinics may be more efficient in some settings, given physicians are only called upon for complex patients (DiCenso, Bourgeault et al. 2010) 	<ul style="list-style-type: none"> No studies identified 	<ul style="list-style-type: none"> FHTs found to have patients with higher observed emergency department visits compared to FHGs and FHOs, but lower visits compared to CHCs and FHNs (Glazier et al. 2012b) In 2012, one FHT in London, Ontario reported a 19.7% reduction in the proportion of chronic obstructive pulmonary in disorder patients with one exacerbation (Dinh 2012) In 2011 two other FHTs, one in Petawawa and one in Timmins, reported improvements in the proportion of diabetic patients with controlled HbA1c, with a 30% and 12% improvement respectively (Dinh 2012)

Table A4: Findings on the influence of innovative PC models on health care outcomes in Ontario and Quebec (continued)

Primary care model	Interface between primary care models and the community					
	Access	Equity and financial protection	Quality	Efficiency (especially lower relative administrative costs and wastage)	Cost-containment and value for money (improved health benefit for resources applied)	Health outcomes
Family Medicine Groups (FMGs), Quebec – established in 2002	<ul style="list-style-type: none"> • FMGs found to improve access to care (Beaulieu, Denis et al. 2006) • FMGs found to improve access to medical services in urgent cases or outside regular hours of care (Ministere de la sante et des services sociaux (MSSS) 2008) • FMG-enrolled patients (and primary care models with round-the-clock access to telephone advice) have a better sense of accessibility and coordination than traditional models of care) (Haggerty, Pineault et al. 2004) • FMGs with more than 10 physicians included in the practice have been associated with reduced accessibility and continuity of care in Quebec—which conflicts with common assumptions and findings in Ontario (Devlin, Hogg et al. 2013;Haggerty, Pineault et al. 2004) 	<ul style="list-style-type: none"> • FMGs are often criticized as a closed model with significant disparities between those enrolled and those that aren't enrolled, given the latter tend to use the system less and have poorer access to needed services(Breton, Levesque et al. 2011) 	<ul style="list-style-type: none"> • FMGs found to improve rates of preventive care delivery higher compared to traditional fee-for-service practices (Provost, Pineault et al. 2010) • FMGs found to improve comprehensiveness of care (Beaulieu, Denis et al. 2006) • FMGs that emphasize sharing administrative resources across providers, include more allied health professionals and specialists, have a mechanism to evaluate competence and include organizational access to practice are strongly associated with higher quality care (Beaulieu, Haggerty et al. 2013) • FMGs have been found to result in improved patient satisfaction with the quality of the relationships with their physician, improved perception of physicians' knowledge of their situation and better communication between physicians and patients about consultations with specialists (Ministere de la sante et des services sociaux (MSSS) 2008) 	<ul style="list-style-type: none"> • FMGs have been found to lead to better coordination of services (Beaulieu, Denis et al. 2006) • FMGs (blended fee-for-service payments) may be more efficient than models that are salary-based (Beaulieu, Haggerty et al. 2013) 	<ul style="list-style-type: none"> • No studies identified 	<ul style="list-style-type: none"> • No studies identified

*Note that FHOs were created through the harmonization of Health Service Organizations which were introduced in 1978 and Primary Care Networks which were introduced in 1999 (Hutchison and Glazier 2013),. When a study reported a finding related to Health Service Organizations, they have been captured under the label FHOs.

