

Grassroots Development of the Patient's Medical Home Practices in Canada

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Background and Context

Many people in Canada experience challenges accessing comprehensive continuous primary care,¹ with millions of residents reporting they either do not have a family physician^{2,3} or cannot access one on a timely manner.^{4,5} In response, numerous stakeholders, system leaders, and scholars have called for greater investment in the interdisciplinary, team-based practice at the centre of the CFPC's Patient's Medical Home (PMH) vision.⁶ To date, the widespread adoption and uptake of team-based care in Canada is incomplete.^{7,8,9} However, we have noted a small proportion of family medicine practices that have, in a self-initiated manner, developed a family physician-led interdisciplinary team-based approach to primary care service delivery.¹⁰ These practices highlight that team-based care can be achieved via grassroots efforts. Understanding the impacts that these changes had on service delivery as well as how these practices navigated the change process will be beneficial to inspiring and supporting other practices in similar development efforts. Accordingly, this two-study project aims to measure the impact of these transformations on access and delivery of comprehensive family medicine (Study 1), and to describe the processes, mechanisms, structures, and practice features that these practices leveraged to build functioning interdisciplinary team (Study 2).

Study One: A Quantitative Study of Service Delivery

Methods

Study Design

This was a retrospective matched-cohort design using linked population-level health administrative data from Ontario, Canada, spanning 2016 to 2021. Health administrative data across all care settings are linked using unique encoded identifiers and analyzed securely at ICES (formerly known as the Institute for Clinical Evaluative Sciences). The impact of grassroots team-based practice developments on metrics associated with access and delivery of primary care services were assessed relative to formally designated Family Health Teams (FHTs) and a constructed cohort of family physician providers who are not associated with a team-based practices (Non-Team). FHTs operate under a development model that is government-mediated, representing a different mechanism by which interprofessional teams are assembled.

Data Sources

The following databases and datasets were used: Corporate Provider Database (CPDB), GAPP Decision Support Systems (Physician Payments), Postal Code Conversion File (PCCF), Primary Care Population (PCPOP), Ontario Health Insurance Plan Claims Database (OHIP), Ontario Diabetes Dataset (ODD), Ontario Chronic Obstructive Pulmonary Disease (COPD) Dataset, and Ontario Congestive Heart Failure (CHF) Dataset.

Cohort Construction and Descriptions

A cohort of exemplary 'grassroots' practices in Ontario that had self-initiated a transformation to an interprofessional team were identified through previous research¹⁰ and augmented with input from the CFPC. These were brought together into a single cohort and family physicians associated with each practice were identified via the health administrative data. Patients associated with these physicians were then identified as either formally rostered or virtually rostered to the physician. A virtually-rostered patient was defined as a patient for whom that physician had billed the highest dollar amounts for primary care services over a two year period. Each identified site in the

grassroots cohort was labeled according to the Health Region Peer Group (HRPG) classification associated with its geographic disposition.¹¹ The HRPG system creates categories that describe regions as a function of socioeconomic features and health profiles. The grassroots cohort was composed of six practices, an average total of 56.33 (SD: 4.08) physicians per year, and 464,040 patient records.

The construction of the Family Health Team (FHT) cohort involved bringing together all the Ontario FHTs located in the same HRPGs as the grassroots practices, determining the family physicians working in these clinics, and identifying their associated patients. The FHT cohort was composed of 14 practices, an average total of 164 (SD: 2.97) physicians per year, and 1,207,807 patient records.

The Non-Team cohort was constructed by identifying physicians operating outside of a team-based or physician enrollment model. These physicians were sourced from all Ontario Public Health Units (PHUs) associated with the HRPGs of the grassroots clinics of interest, and brought together into a single cohort that enabled comparison with the other two cohorts with respect to access and delivery of primary care. There were an average total of 865 (SD: 36.89) physicians per year and 3,040,430 patient records included in the virtual cohort.

Analyses

Descriptive statistics pertaining to the following practice-level variables across 2016-2021 were generated: the number of rostered patients per family physician, annual family physician visits per physician across the practice and within subgroups of elderly patients (65+ years) and those with chronic conditions, continuity of care, and delivery of a slate of preventative care services. Cohorts were compared on each metric via a one-way analysis of variance with cohort as the only factor. Statistical significance was set at an alpha of $p < .05$ and significant effects were decomposed via Tukey's HSD post hoc method.

Results

The quantitative study revealed that interprofessional team-based family medicine practices, whether grassroots developments or Family Health Teams, were associated with more attached patients per physician, more annual patient visits per physician for all patients and for sub-groups of older adults and individuals with chronic conditions, and greater continuity of care scores compared to the Non-Team cohort of physicians. Notably, the grassroots clinics were also associated with significantly greater numbers of attached patients per physician, and annual patient visits per physician (i.e., in total; for older adults; for individuals with chronic conditions) compared to the Family Health Team clinics.

Analysis of preventative care services yielded a more equivocal set of findings. There were no differences between any of the three cohorts for the proportion of eligible patients that received lipid testing. The grassroots developments delivered more colonoscopy screening, mammograms, pap smears, fecal occult blood tests, HbA1C tests, and diabetes mellitus eye examinations than the Non-Team cohort of physicians. However, the FHT cohort delivered more colonoscopies, colonoscopy screening, and diabetes mellitus eye exams than the grassroots cohorts. All findings are summarized in Table 1.

Table 1: Comparison of Metrics for Access and Comprehensive of Care Between Grassroots, Family Health Team, and Non-Team Cohorts in Ontario, Presented as Means (SD) Across the Years of Analysis from 2016-2021 (Data source: ICES AHRQ Project P0908.104.000)

Variable	Cohort			p-value ^α	Post-Hoc Analysis
	Grassroots	FHT	Non-Team		
Virtually^β and Formally Rostered Patients per Physician	1,371.06 (45.64)	1,227.64 (15.91)	586.64 (26.00)	< 0.0001	Grassroots > FHT > Non-Team
Annual Visits per Physician	2,791.94 (114.73)	2,321.24 (160.23)	1,378.31 (120.56)	< 0.0001	Grassroots > FHT > Non-Team
Annual Visits by Older Adults per Physician	976.25 (55.06)	867.40 (56.73)	458.29 (35.40)	< 0.0001	Grassroots > FHT > Non-Team
Annual Visits by Individuals with at least one of DM, COPD, and CHF per Physician	934.56 (42.59)	725.49 (49.37)	385.36 (27.98)	< 0.0001	Grassroots > FHT > Non-Team
Percent Annual Visits with the Same Physician (COC)	48.00 (0.01)	48.00 (0.01)	41.00 (0.02)	< 0.0001	Grassroots; FHT > Non-Team
^δPercent Receiving CR (10y)	43.94 (2.15)	53.20 (1.01)	38.57 (0.91)	<0.0001	FHT > Grassroots > Non-Team
^δPercent Receiving CR Screen (10y)	65.11 (1.96)	72.38 (2.17)	52.22 (2.09)	<0.0001	FHT > Grassroots > Non-Team
^δPercent Receiving FOBT/FIT (2y)	37.27 (3.28)	40.71 (3.46)	21.82 (2.36)	<0.0001	Grassroots; FHT > Non-Team
^δPercent Receiving Eye Exam (2y) for DM	69.98 (1.92)	72.76 (1.73)	63.91 (1.81)	<0.0001	FHT > Grassroots > Non-Team
^δPercent Receiving ≥2 HbA1C tests (1y)	49.18 (5.00)	53.78 (6.01)	40.92 (4.00)	0.0018	Grassroots; FHT > Non-Team
^δPercent Receiving ≥1 Lipid Screen (1y)	59.86 (4.74)	64.60 (4.20)	63.20 (3.14)	0.1523	Grassroots; FHT; Non-Team
^δPercent Receiving MAM (2y)	61.77 (5.21)	65.91 (5.78)	47.81 (4.68)	<0.0001	Grassroots; FHT > Non-Team
^δPercent Receiving PAP (2y)	43.46 (4.71)	46.71 (6.25)	33.19 (3.89)	0.0009	Grassroots; FHT > Non-Team

^α Overall significance calculated from one-way ANOVA with group as the only factor.

^β As defined by ICES, patients in the PCPOP database are considered virtually rostered to the physician who billed the highest dollar amount for primary care services for that patient over a two-year period.

^δ Proportion was calculated only out of patients that were eligible for the respective preventative care service.

Abbreviations: CHF: Chronic Heart Failure; COC: Continuity of Care; COPD: Chronic Obstructive Pulmonary Disease; CR: Colonoscopy; DM: Diabetes Mellitus; FHT: Family Health Team; FIT: Fecal Immunochemical Test; FOBT: Fecal Occult Blood Test; HbA1C: Glycated hemoglobin; MAM: mammogram; PAP: Papanicolaou (Pap) Test; SD: Standard Deviation

Summary of Findings

The shift towards an interdisciplinary team was beneficial for patients in terms of attachment, access to timely care, and the comprehensiveness of preventative services delivered. Most prominently, the metrics of attachment, service delivery, and continuity associated with physicians who operated out of team-based practices, whether a grassroots development or a formal FHT, were greater than for those who did not. These findings lend credence to the notion that team-based organizations offer benefits that can offset the current crisis of access. Furthermore, the greater measures of attachment associated with the grassroots practices suggests that there are some advantages to building healthcare teams up from the level of the practice, rather than to have the change mediated in a top-down manner from the level of the regional health authority. The data are insufficient to provide a robust explanation, but it is plausible that those involved in the grassroots development were able to more clearly identify their local community needs and to tailor practice changes to meet those needs.

Importantly, interpretation of these findings must consider the limits of the method. Specifically, given the criteria for associating non-rostered patients to physicians in any cohort, we expect that the physicians are likely seeing more patients than captured. However, a portion of these patients are seeing someone else more, ultimately excluding them from the count. Given that the Non-Team cohort is entirely constructed of physicians with virtual rosters, this limitation bears more influence on those counts. However, in reviewing other literature, we find complimentary numbers that are in line with the evidence we generated, showing that physicians not practicing in a Patient Medical Home had panel sizes of fewer than 650 patients.¹⁴ Examining broader changes in practice patterns of family physicians across the country also supports and adds confidence to our findings. A growing number of family physicians over the last decade have been providing services outside of primary care, and in 2021, nearly 30% of Canadian family physicians were shown to be practicing predominantly outside of primary care.^{15,16} Further, our findings could also reflect some of the impacts of the current access to care challenge. That is, patients who aren't rostered to a team may experience greater access challenges with their physicians such that they are more prone to use walk-in services or seek out another provider elsewhere. This interpretation tracks with the continuity metrics, which measure 7% lower for the Non-Team physicians than the team-based physicians. Previous literature supports and adds confidence in the patient counts for physicians in our Non-Team group, although we acknowledge that our data may not be reflective of all practicing solo family physicians in Ontario.

Study Two: A Qualitative Study of the Development Process

Methods

Study Design

Multiple descriptive case study methodology was used to investigate the processes, mechanisms, structures, and features of family medicine practices that developed or transitioned to an interdisciplinary team-based practice in a grassroots manner.

Case Selection

Select cases were identified across the country through key contacts from the CFPC's *Patient's Medical Home Steering Committee*. All grassroots cases that included in Study 1 were also included in Study 2. Cases were bounded as a continuity-based community family practices that transformed to deliver primary healthcare services to a defined group of patients via an interdisciplinary team-based approach. Cases could include practices that developed an in-house interdisciplinary healthcare team or that reflected loosely organized groups of family physicians who created an interdisciplinary team-based approach via coordinated relationships with allied health support situated outside of the practice.

Data Collection and Analysis

We included 17 cases situated across eight provinces and one territory in Canada, interviewing medical and clinical practice leaders at each case to understand the mechanisms and processes that enabled their transformation towards an interprofessional, team-based practice. Data were analyzed using an unconstrained deductive approach¹² to qualitative description.¹³

Results

The findings revealed key processes, mechanisms, and features of the grassroots development process.

The need for change

Across all cases, participants described that the impetus for transforming to team-based care stemmed from a realization that the *status quo* was no longer sustainable. Increasing patient complexity, high morbidity, underserved needs, practice closures, and physician retirement were seen to hinder patient access to essential primary care services and highlighted that structural change was necessary to maintain effective family practice.

Types of teams

The team compositions across the 17 family practices were unique, reflecting a mix of smaller physician teams with one to four family physicians, larger teams ranging from 5-10 physicians, and teams surpassing 15 family physicians that often incorporated part-time and associate physicians. All practices had administrative support, and almost all included nurses (Registered Nurses, Nurse Practitioners, Registered Practical Nurses/Licensed Practical Nurses, community health nurses). Most practices also included pharmacists, and over half of the cases incorporated mental health support in the form of mental health counsellors, psychologists, and behavioural health consultants. Other common roles included dietitians, social workers, physiotherapists, and diabetes-focused providers such as diabetes nurses or diabetes educator dietitians.

The investigation revealed two forms of interprofessional teams:

- *Embedded Teams*: Interprofessional team members are integrated directly within the team as co-located practice staff.
- *Adjacent Teams*: Interprofessional team members are positioned as collaborators to the practice; funded externally, often by the regional health authority or provincial government.

The essentials for practice transformation

We identified four essential components that enabled successful development of an interdisciplinary, team-based practice:

- *Funding*: Funding played a critical role in supporting all transitions, supporting salaries, physical spaces, electronic medical record systems, and operational requirements. Practices acquired the necessary financial resources through a mixture of funding corridors. These included self-investment, government investment, and community funding. In most cases, self-investment and community donation were combined with funding from regional health authorities to fund the transformation.
- *A Champion*: In all cases, a transformation champion spearheaded the development process. These individuals were always physicians with, and usually the clinical leaders of, the practice. These individuals were described as influential and well-connected with local and regional healthcare leaders.
- *Electronic Medical Records*: This technology played a critical role in all cases, providing a platform for connecting interprofessional health team members.
- *Stakeholder Involvement*: The importance of stakeholder collaboration was strongly emphasized. Participants described that it was essential to engage with community organizations, physician and patient advocacy groups, and health system authorities.

The processes of practice transformation

Transformations were complex, but characterized by a general set of processes for all cases:

- *Needs Assessment and Strategic Planning*: The first step in all grassroots transformations was the identification of the local healthcare needs. In determining this, practices could work towards team compositions that were relevant for the community of patients.
- *Business Case Development*: With needs identified, practice leaders developed business cases that outlined the proposed changes and supported requests for funding, personnel, or space resources. On occasion, these cases were developed in collaboration with health system leaders.
- *Change Management*: With resources in place, each grassroots practice embarked on a progressive process of change management. This involved inspiring ‘buy-in’ from across the

practice team, and training team members in interprofessional practice concepts as well as the procedures and processes that support this style of care delivery. Effective change management also involved nurturing team morale and a positive team culture.

- *Continuous Quality Improvement*: In the journey towards developing team-based care, all cases employed continuous quality improvement (QI) processes. Assessment, evaluation, and iterative adaptation were hallmarks of team-based care developments. Insights were regularly harnessed from the perspectives of patients, providers, the broader community, and municipal leaders. In several cases, external organizations led QI evaluations. Several factors were considered in subsequent iterations of change, all grounded in meeting patient care needs and promoting efficiency. These included the type, number, and responsibilities of providers.

Perceived Impacts

Participants across all practices described many positive benefits with the team-based care development. In our participants' view, the transformation contributed to improved efficiency in the use of healthcare services at the system level, with examples provided including cost savings, or reduced visits to the local emergency department. Participants also described how the transformation improved physician recruitment, practice expansion, and better integration with community services and specialized programs. They described greater efficiency and organization in their workflows as well as reduced burnout and enhanced job satisfaction. Working in an interprofessional environment seemingly fostered important collaborative relationships. In coordinating with healthcare professionals from other disciplines, family physicians developed greater knowledge of what each provider contributes to patient care. Notably, however, our participants also pointed to some unexpected constraint. In particular, those that relied primarily on funding via health authority initiatives, grants, and pilot programs reported feeling that they gave up a sense of autonomy over practice organization in accepting these funds.

Summary of Findings

The grassroots transition towards interprofessional team-based care emanates from an acknowledgement of pervasive need. It requires the contributions of a champion who can pursue funding, develop a business case, lobby for community support, and navigate the change management process. These transitions are perceived as beneficial in improving health service utilization, collaboration, and job satisfaction; however, are associated with some sense of constraint on autonomy.

Recommendations

This project, and its two complimentary studies, gives way to tailored recommendations for government and health authorities, family medicine practices, and medical educator, which support the development of effective, sustainable team-based practices.

Government and Health Authorities should:

1. Prioritize flexible funding opportunities that practices can seek in support of team-based transformation at *any* stage of their development trajectory.
2. Establish clear and easily accessible processes for the submission of practice-reform business cases, which support applications for funding and operational supports.
3. Pair pilot initiatives and programs with comprehensive monitoring and evaluation systems that assess the impact of transformations on practices and patients.
4. Empower family physicians and family medicine practices to self-initiate the development of interprofessional practice in a ‘grassroots’ fashion.

Family Medicine Practices aspiring to team-based transformation should:

1. Identify a dedicated *practice champion* with strong social capital in the practice, community, and broader healthcare system who can lead transformation, mobilize resources, facilitate connections, and garner support from important practice, community, and government partners.
2. Articulate a clear collaboratively crafted vision statement early in the development process.
3. Engage QI specialists who can facilitate robust evaluation and identify areas for improvement in the development process.
4. Confer with patients and communities when designing the team-based model and maintain transparent and continuous communication with all relevant stakeholders throughout the transformation.
5. Pursue arrangements, whether embedded or adjacent, that ensure provider co-location. Co-location enhances communication, collaboration, and service efficiency.

Medical Educators should:

1. Train future physicians in the conceptual foundations of interprofessional practice, the optimal scope of non-physician healthcare professionals, health system navigation, and change management.
2. Ensure learners work in interprofessional care teams.

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