Kootenay Boundary
Division of Family Practice
A GPSC initiative

Interior Health
Every person matters

GPSC
General Practice Services Committee

Boundary Proof of Concept Patient Medical Home/Primary Care Network

Case Study: Early Learnings Report

February 7, 2019

List of Acronyms

ALC	Alternate Level of Care
ALOS	Average Length of Stay
BDH	Boundary District Hospital
CATC	Community Ambulatory Clinic
CPA	Common Program Agreement
CSC	Collaborative Services Committee
CTAS	Canadian Triage Acuity Scale
ED	Emergency Department
EMR	Electronic Medical Record
GF/KV GSA	Grand Forks/Kettle Valley Geographic Services Area
GPSC	General Practice Services Committee
IH	Interior Health
KB	Kootenay Boundary
KBDoFP	Kootenay Boundary Division of Family Practice
LHA	Local Health Area
MHSU	Mental Health and Substance Use
MOA	Medical Office Assistant
NP	Nurse Practitioner
PMH/PCN	Patient Medical Home/Primary Care Network
PoC	Proof of Concept
QI	Quality improvement
SCSP	Specialized Community Services Program
TNA	Third next available

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Introduction

This is a case study of the Boundary Proof of Concept Patient Medical Home/Primary Care Network (PMH/PCN), a three-year project in the Boundary area of British Columbia started in late 2016 to support the implementation of PMHs in five medical clinics and create a PCN to connect those clinics with each other and the local health authority.[1] The Boundary area is comprised of six communities in the western part of the Kootenay Boundary region: Christina Lake, Grand Forks, Midway, Greenwood, Rock Creek and Beaverdell.[2] The Boundary Proof of Concept PMH/PCN (Boundary PoC) was a collaborative initiative of the Kootenay Boundary Division of Family Practice (KBDoFP), Interior Health Authority (IH) and the physicians and nurse practitioner in the Boundary area. As part of the initiative, five clinical staff members (four nurses and one social worker comprising four full-time equivalent positions) were hired to work for a health care cooperative in the five Boundary area medical clinics. The design phase of the initiative commenced in December 2016 and ran until April 2017, with the implementation phase starting in May 2017 with the development of the health care cooperative. The first clinical staff started work in July 2017 and the final clinical staff member began work in December 2017. This case study, based on in-depth interviews with multiple stakeholders, direct observation of project meetings, surveys of patients and providers, and clinic- and health authority-level administrative data, provides an overview of the project implementation and identifies key successes and challenges.

This case study is broken into the following main sections: 1) overview of case study approach, 2) Overview of Boundary PoC design and implementation, 3) Key outcomes achieved to date, 4) Key Boundary PoC successes, 5) Key enablers of success in the Boundary PoC process, 6) Key Boundary PoC challenges; and 7) Conclusions and recommendations.

Overview of Case Study Approach

Work on this case study commenced in January 2018, a little over year after the design phase of the Boundary PoC started. The evaluator completing this case study also developed the quality improvement framework for the Boundary PoC, which included collection of baseline data for the PoC in January through November of 2017. As such, this case study also draws upon that baseline data collected.

The case study is based on the following key sources of data:

- 33 in-depth key informant interviews undertaken from April to October 2018 with:
    - 8 physicians and 1 nurse practitioner (NP)

[1] For a description of the General Practice Services Committee's (GPSC) 12 attributes of a PMH, see Appendix 1.

[2] The community of Big White near Kelowna is also technically part of the Boundary area. However, most people in Big White seek medical care in Big White or Kelowna and thus, for the purposes of the Boundary PoC is not considered part of the Boundary area.

    - 4 KBDoFP project managers
    - 5 Boundary Health Care Cooperative staff members
    - 10 IH administrators, managers and front-line staff
    - 5 patients
- Review of all project documentation, including notes taken by evaluator at design and implementation meetings from December 2016 to October 2018;
- A Patient Experience Survey undertaken at baseline in September/October 2017 and again one year after implementation in November/December 2018;
- A Provider Satisfaction Survey undertaken at baseline in August 2017 and again in September 2018;
- Time to third next available appointment data collected for the 10 physicians/1 NP in September/October 2017, February 2018 and September/October 2018;
- Administrative data from IH on CTAS 4 and 5 visits by Boundary residents to Boundary District Hospital, scheduled visits to Boundary District Hospital, and total hospital days by Boundary residents; and
- A review of this report by KBDoFP project managers, key IH staff, the Kootenay Boundary Collaborative Services Committee, the health care coop staff, and physicians/NP in November 2018 (review ongoing).

This case study was based on a detailed evaluation framework and is grounded in a review of the literature on PMH implementation. Both the evaluation framework and literature review are available for further reading. This case study was funded by the General Practice Services Committee (GPSC) with many hours provided in-kind by the KBDoFP for the evaluator to attend design and implementation meetings, collect time to third next available appointment data and undertake the surveys as part of the Boundary PoC quality improvement framework.

Overview of Boundary PoC Design and Implementation

Boundary area context

The Boundary area is situated in the western portion of the Kootenay Boundary (KB) region and is comprised of five small communities (Grand Forks, Christina Lake, Greenwood, Midway and Rock Creek). The total population of the Grand Forks/Kettle Valley Geographic Services Area (GF/KV GSA) was 11,315 in 2015/16.[3] However the GF/KV GSA also includes unincorporated areas closer to the Okanagan, including Big White, which has about 250 year round residents, Mt. Baldy, and Bridesville. These other small areas are not generally included when the "Boundary area" is referred to, although Beaverdell, a small community en route to Kelowna is.

The Boundary area is served by five medical clinics, one in each of the five communities, with ten general practitioners (GPs) and one nurse practitioner (NP) (jointly referred to in this case study as the Boundary providers).[4] The Grand Forks Medical Clinic with four GPs is the largest of the clinics, followed by Christina Lake Medical Clinic with three GPs. Greenwood has two physicians who share a single panel, while Midway is served by one physician and Rock Creek is served by an NP. Christina Lake, the easternmost community in the Boundary area is about 95 kilometres from Rock Creek, the westernmost community.

Boundary District Hospital (BDH), with a 24/7 emergency department (ED) and a 12-bed inpatient ward, is situated in Grand Forks. All of the GPs in the Boundary area do ED shifts. Challenges in the Boundary area prior to the implementation of the Boundary PoC included a high ED utilization rate by Boundary residents, with 906 visits per 1000 population in 2015/16, compared to 639 for Kootenay Boundary residents and 560 for

[3] Information Management, Interior Health. (2016). Health Services used by the Residents of the Grand Forks/Kettle Valley Geographic Service Area.
[4] In recognition of the fact that the NP in Rock Creek plays an important role in the Boundary health care system, the physicians and NP will often be jointly referred to as providers in this report when the issues under discussion apply to both physicians and the NP. However, in cases where the issues under discussion apply more to the physicians, they will be referred to more specifically as physicians.

residents of the IH region as a whole.[5] [6] In addition, Canadian Triage and Acuity Scale (CTAS) 4 and 5 visits comprised a higher percentage of these visits in the Boundary area at 60.1% in 2015/16, compared to 53.4% for the Kootenay Boundary region and 45.4% for the IH region as a whole.[7] The Boundary area also had the highest number of scheduled visits at the BDH ED (e.g. excisions, ED visit follow ups) compared to all other hospitals in the IH region, more than three times that of any hospital in KB and more than twice that of all other hospitals of a similar size in IH.[8] Long waits for primary care appointments (anecdotally 4 to 6 weeks), and a high demand for mental health and substance use (MHSU) services, with more than twice the number of clients and service days per 1000 population in the Grand Forks Local Health Area (LHA) than the IH region[9] also challenged care in the Boundary area.

The GF/KV GSA also has a higher proportion of residents aged 75+ at 12.8% compared to 9.3% in the rest of Kootenay Boundary and 9.8% in the rest of the IH region.[10] Both the Grand Forks and Kettle Valley LHAs had a lower education rate and a higher rate of low income population than BC as a whole, with the Kettle Valley having twice the number of people considered "low income" in 2010 than the provincial average and had the highest number of low income people in any KB LHA.[11]

Timeline

The Boundary PoC PMH/PCN is based on two key phases. *Phase one* (December 2016 to December 2017) focused on the establishment of five patient medical homes (PMHs) in the five Boundary area clinics by hiring five clinical staff members (four nurses and one social worker) to support the work of the ten physicians and nurse practitioner who work in the Boundary area and establish team-based care. The phase one work is based on a Contract between the Boundary Health Care cooperative and IH for IH to provide $500,000 in funding per year for a minimum of three years to support the hiring of the clinical staff to work in the five Boundary area clinics in exchange for the achievement of five key outcomes (see below).

Phase two (January 2018-present) is focusing more on primary care network (PCN) implementation in the Boundary area by integrating the work of IH and clinic staff more effectively to provide better patient care. In reality, the two phases are not completely distinct. Some PCN work occurred in phase one and PMH consolidation continues to occur in phase two. This case study will focus primarily on the phase one PMH implementation work as PCN work was still largely just beginning during the period of data collection. However, where relevant, some PCN work may be discussed.

Phase one can further be broken down into the pre-design, design and implementation phases which are comprised of the steps outlined in the table below. As noted above, IH and clinic integration work (PCN implementation) is integrated into both the design and implementation phases.

PoC phases and key milestones

Pre-Design Phase	
Engagement with communities and physicians across KB regarding PMH implementation and attributes	May/June 2016

[5] Ibid.

[6] The IH region includes 4 sub-regions – the Okanagan, Kootenay Boundary, East Kootenay and Thompson Caribou Shuswap. The Okanagan region is by far the most populous of the sub-regions.

[7] Ibid.

[8] Information Management. Interior Health. (2016). Interior Health ED Visits by Facility – Scheduled and Unscheduled. Fiscal Year 2011/12 to 2015/16.

[9] Information Management, Interior Health. (2016). Health Services used by the Residents of the Grand Forks/Kettle Valley Geographic Service Area.

[10] Ibid.

[11] Health Sector Information, Analysis and Reporting Division. (2016). Local Health Area Profile. IHA – Kettle Valley (013). Ministry of Health. Health Sector Information, Analysis and Reporting Division. (2016). Local Health Area Profile. IHA – Kettle Valley (012). Ministry of Health.

Formation of KB PMH working group of the Collaborative Services Committee (CSC) with representation from KBDoFP, IH, physicians and patients	August 2016
Preliminary analysis of key administrative data provided by IH and review of literature to understand potential outcomes of PMH implementation	September 2016
Discussion of most appropriate locations for PMH implementation in Kootenay Boundary and approaches to implementing team-based care	September 2016
PMH working group and CSC develop a proposal to IH for PMH implementation in the Boundary outlining detailed potential outcomes and design process (building on decision briefs already sent to IH in March and Sept 2016)	October 21, 2016
Invitation from IH to initiate collaborative PMH design process in the Boundary area with a $500,000/year budget with a completion date for design phase of February 28, 2017	October 31, 2016
Development of preliminary design materials for Boundary PoC work including draft quality improvement (QI) framework and a timeline for the design phase	November 2016
Design Phase	
Short meeting to introduce concept of Boundary PoC PMH/PCN to Boundary physicians/NP and review the draft outcomes, QI framework and timeline	November 22, 2016
Establishment of new Boundary-focused change design working group with KBDoFP project managers, regional and Boundary-specific IH managers, Boundary physicians and NP and Boundary patient	December 2016
First two-day change design working group meeting to build relationships, review administrative data and come to consensus on desired outcomes and indicators the Boundary PoC work (Physicians joining for first 3 hours on first day and first 2 hours on second day)	December 13/14 2016
Second two-day change design working group meeting to determine the type and number of human resources required to meet the outcomes that could be hired within the budget, and how they should be distributed among the clinics, determine whether they should be IH or non-IH employees, and identify other budget line items for implementation	January 17/18, 2017
One-day change design working group meeting to review agreements reached regarding the outcomes and human resources, discuss starting PCN clinic and IH integration, get final agreement on the QI framework including the clinic-level indicators and make plans for development of final PoC proposal to IH	January 31, 2017
Submission of final CSC-approved Boundary PoC model outlining the outcomes, proposed human resources to add to the clinics, QI framework, and implementation timelines to IH	February 24, 2017
Development of IH Decision Brief to support the model description for submission to IH Senior Executive Team (SET)	February 2017
One-day change design working group meeting to review IH decision brief and model description and have preliminary discussions regarding IH contract with physician group to allow for hiring of new PMH staff and new staff contracts	March 14, 2017
Work to develop and finalize the IH-GP contract, create a cooperative (the Boundary Health Care Coop) to hold the contract, develop a patient engagement plan and establish a planning and implementation working group, smaller than the change design working group	April 2017
Contract signed between IH and Boundary Health Care Coop	May 2017
Implementation Phase	
IH begins to move Home Health to main floor in Boundary District Hospital (BDH) to set up ambulatory care unit to take in some scheduled visits currently occurring in BDH ED	May 2017
Job descriptions and postings developed for new Boundary Health Care Coop staff	June 2017
Interviews for new Boundary Health Care Coop staff start	July 2017
Baseline provider satisfaction data collected	August 2017
First nurses (sharing one FTE) hired and start work for Christina Lake Medical Clinic	July/August 2017
Second nurse hired and starts work for West Boundary clinics and registered social worker hired to serve as social programs officer and starts work for all five medical clinics	September 2017
Baseline time to third next available appointment and patient satisfaction data collected and nurses and social worker start tracking appointment types and numbers	September/October 2017

Planning and implementation working group does not get off the ground so physician implementation group and IH implementation group start meeting independently	September 2017
Implementation progress meeting to discuss integrating two implementation working groups, introduce aboriginal representatives, and plan for greater IH and clinic integration	October 5, 2017
Orientation/learning day for new coop staff with introductions to all IH services and departments and clinical instruction on primary care work provided by Boundary physician	October 13, 2017
Work to start clinic QI meetings (renamed clinic check-in meetings) to have clinics begin QI work and team-building and first clinic check-in meetings held	December 2017
New integrated implementation working group created with representation from IH, physicians, coop staff and aboriginal partners. Internal IH working group continues to meet and separate monthly physician/coop staff implementation meetings continue	November 2017
Third nurse hired and starts work in Grand Forks Medical Clinic	December 2017
Planning for how to taper KBDoFP sessional and project management support for Boundary PoC over the course of 2018	January 2018
First Regional QI meeting held to discuss progress on meeting outcomes and plan for meeting year two outcome targets	April 2018
Meetings between IH Home Health, and MHSU departments and physicians and coop staff to discuss opportunities for integration, and increasing continuity of care	June 2018
CTAS 4 and 5 Working Group established to work on meeting year two targets for CTAS 4 and 5 reductions	August 2018
Implementation working group continues to meet to discuss opportunities to improve outcome achievement and integration of services between IH and clinics	Ongoing

The GPSC describes the phases of PMH implementation slightly differently than was done in the Boundary, as development, transition, maturing and sustainability. At present, the Boundary PoC would likely be considered in the Maturing phase.

Outcomes and QI framework

The original proposal to IH for the Boundary PoC prepared in October 2016 was based around the idea of achieving specific outcomes with numeric targets relating to ED visits, MHSU utilization rates and hospitalization rates. It was decided at the outset that a robust quality improvement framework that included the collaborative identification of key regional outcomes with numeric targets for the process would be an essential part of the Boundary PoC process. As such, the initial design meetings in the Boundary PoC process in December 2016 began with refining the outcomes in the October 2016 proposal. The regional-level outcomes identified for the Boundary PoC process and agreed upon by the change design working group in January 2017 were as follows:

- Reduction of Age Standardized Total Cost of Care for Target Populations of Frail Seniors, Mental Health and Substance Use (MHSU) and Chronic Disease of 5% over three years;
- Reduction in Boundary resident CTAS 4/5 by 50% over three years (yr 1 10%, yr 2 25%, yr 3 15%);
- 90% of Scheduled Visits diverted from BDH ED to BDH Community Ambulatory Treatment Clinic in year one, and total number of Scheduled Visits in BDH reduced by 50% in three years;
- Provision of mild/moderate mental health supports to 160 patients in PMHs, enabling a decreased Boundary resident caseload at MHSU of 10%, as measured by active MHSU clients; and
- Reduced total hospital days for all cause hospitalizations for Boundary residents (excluding scheduled surgeries or procedures) by 8%.

These outcomes were incorporated into a broader Quality Improvement (QI) framework that included additional regional level indicators, clinic-level indicators, a plan for regional QI meetings, and a process for engaging clinics in ongoing QI cycles via clinic QI meetings.

The clinic-level indicators that the Boundary providers agreed to at the end of January 2017 included:

- Access – time to third next available appointment;
- Team functioning;
- Provider satisfaction;
- Patient experience;
- Number of mild to moderate mental health appointments offered and clients supported in PMHs;
- Number of patients seen by new team members in clinics;
- # of patients referred to new team members in clinics; and
- Use of team-based care billing codes.

The QI framework was intended to inform implementation, measure progress, stimulate discussion and spur improvement. Regional QI meetings for Boundary providers, coop staff and IH staff to reflect on data associated with the regional outcomes and reflect on successes and challenges are a key element of the framework. In addition, all clinic staff and providers were expected to participate in clinic QI meetings once a month (now called clinic check-in meetings) to discuss QI and team-based care, including exploring ways to improve team functioning, examining data from clinic-level preventative service delivery/patient outcome indicators and picking potential clinic-level improvements to implement.

Change design working group, meetings and decisions

Although some work was done in the pre-design phase of the Boundary PoC process, much of the intense design work was undertaken in December 2016 and January 2017 in two two-day and one one-day design meetings undertaken by the change design working group, which was established by the KB Collaborative Services Committee (CSC) in December 2016. The change design working group was comprised of:

- 12 physicians (10 practicing Boundary-area physicians, a semi-retired Boundary-area physician, and a Big White physician);
- 1 Boundary-area nurse practitioner;
- 10 IH representatives (3 senior executive team members; 2 regional administrators; 3 regional managers and 2 Boundary-area managers);
- 6 KBDoFP representatives (Executive Director, 3 project managers and 1 QI coordinator); and
- 1 patient representative.

The change design working group made decisions by consensus. All meetings were held in Boundary District Hospital and started at 7:30 am to make it easier for Boundary area physicians to attend. The physicians could not attend for full day planning sessions, due to their clinical responsibilities, and thus the meetings were set up to allow them to attend for two to three hours the morning of each planning session to provide their input with regard to whatever the focus of the meeting was. The rest of the change design working group would then work for the remainder of the afternoon on the topic of the meeting to prepare a straw dog proposal for review by the physicians the following day. The semi-retired physician lead for the project and the NP from Rock Creek also attended the afternoon portion of the meetings. All physicians were supported by sessional payments. Despite the meetings being set up as much as possible to facilitate physician attendance, in practice there were generally only four to six physicians in full attendance at each of the morning portions of

the meetings, with the other physicians often having to step in and out to see inpatients or work in the ED during the meetings or not in attendance at all.

The change design group met in December 2016 to develop the regional-level outcomes listed above. These outcomes were adjusted slightly by the KBDoFP team and were presented to the change design group in early January 2017 and consensus was achieved. The remainder of the first January 2017 change design meeting focused on discussing the types of team members necessary to have in the Boundary area clinics to achieve the outcomes, and the number of team members that could be supported by the $500,000 budget, while still reserving some funds to support administration and other costs, such as staff education and supplies.

Despite giving consideration to a wide variety of types of allied health team members to work in the Boundary clinics, it was ultimately decided that three nurses and one social programs officer (SPO)[12] would be most appropriate (staffing option 1) because it was felt that nurses were best positioned as generalists able to offer a wide variety of supports to patients, and because it was felt that a social programs officer could help with the high prevalence of mental health issues and poverty in the Boundary area. In addition, consideration was given to keeping the positions as full-time positions consolidated as much as possible in one clinic (instead of for example, a 0.5 nurse and a 0.5 physiotherapist in each clinic or having all the nurses driving among the five clinics) to increase efficiencies and the likelihood of effective recruitment. An alternate scenario (staffing option 2) of 2 nurses and 2 social programs officers was also included in the proposal to IH in February (see below). However, this alternate scenario never gained much support as it did not lend itself to an easy or equitable division of the nurse time among the five clinics and would have required one of the nurses to drive between Christina Lake clinic and the West Boundary clinics.
The nurses and social programs officer in staffing option 1 were divided based on the panel sizes of each of the clinics, with both Christina Lake Medical Clinic and Grand Forks Medical clinic receiving 1 FTE nurse each and the three smaller West Boundary clinics splitting one nurse. The social programs officer would be shared among all of the clinics.

Staffing options considered for Boundary PoC

Staffing Option 1

FTE	West Boundary	Grand Forks	Christina Lake	TTL
Primary Care Nurse	1.0	1.0	1.0	3.0
Social Program Officer	0.3	0.4	0.3	1.0

Staffing Option 2

FTE	West Boundary	Grand Forks	Christina Lake	TTL
Primary Care Nurse	0.4	1.0	0.6	2.0
Social Program Officer	0.6	1.0	0.4	2.0

[12] A social program officer (SPO) is a job title with in Interior Health that is often filled by someone with mental health counselling or social work experience. In the Boundary PoC job description, the social programs officer was described as "the Social Program Officer provides direct psychosocial care, counselling and group work, system navigation and advocacy, education and linkage to relevant specialized complex care resources while facilitating patient self- management."

It was agreed that the nurses and social programs officer should be compensated at rates competitive with those offered by IH to increase the likelihood of successful recruitment. Although a variety of governance models were discussed, including having IH employ the nurses and social programs officer, a few physicians felt that the nurses and social programs officer should be employed by the physicians themselves. This was the option ultimately chosen in large part because it was so strongly favoured by some of the physicians.

A third change design working group meeting was held at the end of January 2017 to review all of the decisions made up until that point and the clinic-level indicators and QI framework and start to talk about the phase two PCN work. Based on the work of the change design working group, a Boundary PoC model description was developed, outlining the outcomes, proposed human resources to add to the clinics, QI framework, and implementation timelines. The model description and an accompanying decision brief were approved by the CSC for submission to IH in February 2017.

A final change design working group meeting was held in March 2017 to to review IH decision brief and model description and have preliminary discussions regarding IH contract with physician group to allow for hiring of new PMH staff and new staff contracts.

Contract negotiation and establishing Boundary Health Care Coop

Since the clinics wanted the staff to work for the clinics rather than for IH, the Boundary Health Care Cooperative (the coop) was incorporated to hold the contract with IH and employ the nurses and social programs officer. The formation of the Boundary Health Care Cooperative was highly complex, requiring consideration of a wide range of issues including incorporation, insurance, opening bank accounts, registration with Canada Revenue Agency (CRA). It was also felt that formal contracts between the coop with the new nurses and social programs officer would be a good idea, adding an additional layer of complexity. Much of the work to establish the coop was undertaken by the KBDoFP working in conjunction with the Boundary area physicians. Key steps associated with establishing the Boundary Health Care Cooperative and hiring staff are outlined below:

1. Incorporate Cooperative with BC registries
    - Writing Rules of Association & Memorandum of Association
    - Establishing Board of Directors
2. Register Cooperative with Canada Revenue Agency
    - Business number
    - Payroll deductions account
3. Register with WorkSafe BC
4. Register Cooperative as business with City
5. Open bank account
    - Establish signing authority
    - Set up direct deposit from IH to Coop bank account
6. Purchase insurance & work with underwriters
    - Directors & Officers Insurance
    - General Liability Insurance
    - Professional Liability Insurance
7. Open Canada Post Office box
8. Develop contract with IH outlining key deliverables, budget, staffing complement and reporting requirements
9. Develop job descriptions and interview processes for new staff
10. Complete interviews and undertake reference and Criminal Record Checks

11. Develop contracts/letters of employment for new staff outlining remuneration, mileage, averaging agreements for staff that work 40+ hours, and any benefits to be offered
12. Hire coop administrator for payroll
13. Purchase payroll/bookkeeping software
14. Set up new staff with direct deposit, business cards, email accounts, cell phones, computers and office supplies
15. Orient new staff

It is estimated that it took about 110 hours of KBDoFP time between May 2017 and October 2017 to establish the coop and enable it to employ staff. The coop is run by a board consisting of Boundary-area physician representatives with physician representatives taking on various roles in administering the coop, such as overseeing payroll. Approximately $25,000 per year of the $500,000 being provided by IH was reserved for administration of the coop. The coop is required to conduct an audit annually which costs about $12,500 per year, leaving $12,500 per year to fund a coop administrator to take care of payroll, bookkeeping and other administration.

In addition to payroll every two weeks and payroll deductions that must be paid to the Canada Revenue Agency, the coop has a number of additional ongoing obligations including financial reporting to IH (2 times per year), an annual audit, report and AGM, ongoing board meetings. It is also expected to create learning opportunities for staff and provide overall oversight of the contract. It was intended that the KBDoFP withdraw its support for the coop in late 2017. Since then, the physicians have been running the coop with the assistance of an administrator.

Contract negotiations with IH were ongoing as the Boundary Health Care Coop was being established. There were some contentious issues in the standard IH contract that had to be worked out, but ultimately a contact satisfactory to all parties was signed in May 2017.

Implementation working groups, meetings and decisions

A smaller planning and monitoring working group comprised of IH, KBDoFP and physician representatives was proposed to take over from the change design working group in May 2017. This group was to be comprised of:

- 4 physicians (3 practicing Boundary-area physicians with 1 representing each of the two larger clinics and 1 representing all three of the West Boundary clinics, and the semi-retired Boundary-area physician lead)
- 3 IH staff (2 local managers and 1 regional manager);
- 1 KBDoFP project manager;
- 1-2 representatives of the new staff hired to work in the clinics; and
- 1 or more patient representatives.

This working group never got established as after the intense effort associated with the change design working group and the establishment of the coop, the physicians were reluctant to commit to any more meetings that took time away from their practices. In addition, two physicians were preparing to switch clinics and one clinic was moving locations to create more space for the new staff. As a result, it was a busy period of time for the physicians.

As a result, IH set up a separate BDH-based implementation working group to move forward on moving its Home Health department to the main floor of the hospital and establishing a Community Ambulatory Treatment Centre (CATC) staffed by Home Health nurses to remove some of the scheduled visits from the BDH ED. IH also started work on updating some of its registration processes at this time to reduce congestion in the

ED. The physicians, who had traditionally met amongst themselves once a week on Tuesday mornings at BDH for education and other physician-related discussions agreed to devote one Tuesday morning meeting per month to discussing matters related to PoC implementation in their clinics. Those monthly physician meetings started in September 2017 and were also attended by the newly hired coop staff and a KBDoFP facilitator.

Over the summer of 2017, three nurses and one social programs officer (SPO) were hired.[13] Two of the nurses were job sharing one FTE in Christina Lake clinic and one was shared among the three West Boundary clinics. Recruitment at the fifth clinic was slightly delayed as the initial candidate declined the position and the job had to be reposted, whereby a new successful applicant was interviewed and hired. The new staff was integrated into the clinics and clinic-level baseline data were collected during August and September 2017. A coop staff learning day to introduce the staff to IH services and personnel and provide them with clinical instruction was held in October 2017. The final nurse was hired to work in Grand Forks Medical Clinic in December 2017.[14]

In October 2017, it was agreed that although the individual internal IH implementation working group and the health care coop implementation meetings would continue to occur separately, there was a need for a collaborative IH and physician working group. This working group, named the Boundary PoC Working Group was established in late 2017 to start work on PCN implementation. It was decided that two to three physicians (including the physician lead) and coop staff representatives as well as several local IH staff members would be part of the Boundary PoC Working Group. The newly formed Boundary PoC Working Group, facilitated by a KBDoFP project manager, started meeting once a month in late 2017 to discuss issues of concern in PoC implementation, including outcome achievement, changes in the hospital, and integration of IH and clinic services.

One of the first issues tackled by the Boundary PoC working group in the spring of 2018 was the PoC outcome of removing 90% of scheduled visits from the BDH ED, which physicians were increasingly feeling was an unrealistic goal as they maintained that some of the visits have to occur at the ED, such as those requiring an x-ray or ultrasound. The group dug further into the data and did a chart audit to determine that about a quarter of the visits that had been counted as scheduled visits had been miscoded (such as appointments with visiting specialists) and a quarter of the visits in fact needed to be undertaken at the hospital (such as a patient who had been seen in the night at the ED who was requested by the physician to come back in the morning for an x-ray). Others types of scheduled visits included follow up visits the following day for patients who were seen in the ED. Given that the charts of these patients would not be available in the clinics for up to two weeks, the ED physicians felt it would be best if the patient were followed up with at the hospital where a record of their treatment the day before would be available. Although there was discussion of potentially changing the outcome to be more realistic, this was decided against, and it was agreed that the variance from the outcome would just have to be explained. The working group is continuing to identify ways that the data can be improved, and remove appropriate scheduled visits from the ED and the hospital.

The Boundary PoC working group also organized initial engagements between physician representatives, coop staff and IH Home Health, IH MHSU and IH Emergency Department nursing in the spring and summer of

[13] A registered social worker was hired to fill the social programs officer (SPO) position. Since many of the interviewees refer to the SPO as a social worker and some of the work that is being undertaken by the social worker in the SPO position can only be completed by a registered social worker working to full scope of practice, she is referred to as a social worker throughout this case study. Nevertheless, some interview participants refer to her as a SPO. It is also important to note that while the current SPO is able to work to the full scope of practice of a registered social worker, this might not be the case if someone without social work credentials were hired in the SPO position. The SPO position does not require a social work background, but rather "a Bachelor's degree (from an accredited educational institution) in an Allied Health, Behavioural or Social Science field relevant to the position."

[14] During this time period, there were also lots of shifts in providers and clinics in the Boundary, with one provider leaving the region entirely, one new provider coming into the region to a different clinic, and two providers moving clinics. These changes may have had an effect on outcome achievement, but it is difficult to determine the magnitude of that effect as the new provider in the region set up more of a full-time practice than the one who left, but at the same time, one of the providers who switched clinics left behind a panel to share a panel with another provider.

2018 to further discuss integration of services and improvement of patient care. The meeting with Home Health resulted in a suggestion that a few physicians join the morning Home Health huddles to improve communication and that other avenues of improved communication be explored. The meeting with ED nursing resulted in the establishment of a CTAS 4 and 5 working group was also formed to further discuss meeting the PoC CTAS 4 and 5 reduction goals leading to decisions to have the Grand Forks Medical Clinic nurse hold four walk-in appointments open per day and having BDH ED staff call to arrange to send over appropriate CTAS 4 and 5 patients if the nurse had appointments available.

The Boundary PoC working group also worked through the issue of information sharing within the circle of care and is endeavouring to establish more communication between IH departments and the coop staff to help improve patient care, including having coop staff engage in complex discharge planning meetings. The potential for shared care plans was explored but challenges, including the absence of a shared EMR that would facilitate sharing and updating of the care plan to ensure that it was a living document were identified. The group is expected to continue to discuss the matter at future meetings.

Nevertheless, significant integration of IH services and primary care clinic services in the Boundary is somewhat on hold until the IH Specialized Community Services Programs (SCSPs) are developed so that whatever is done in the Boundary is in alignment with what is done in the rest of the health authority. As a result, while some PCN related work is underway, such as having two of the Boundary physicians join in Home Health huddles, significant integration has not yet occurred.

Clinic check-in meetings started in November 2017 to foster team building and improve workflows in the clinics. Although the intention was to have these meetings be monthly in each clinic, in practice, due to the challenge of having everyone, or even most people, in the clinic available at the same time, only 13 clinic check-in meetings have been conducted with most of the clinics having had three meetings with the exception of Grand Forks Medical Clinic which has only had one meeting. Although most of the physicians and coop staff attended the clinic check-in meetings held and engaged in discussions with regard to how to improve workflows, they had limited interest in formal QI cycles and panel management, with the exception of one clinic that completed a QI cycle related to PAP delivery. The first Regional QI meeting to discuss outcome achievement was held in February 2018 to review progress to date and focused on the CTAS 4 and 5 and scheduled visit outcomes. A second Regional QI meeting is scheduled for November 2018 and will focus on hospitalization rates and waits for appointments in the PMHs.

Hours and cost

Throughout all of the Boundary PoC work the KBDoFP has been required to be highly involved due to the limited time that the physicians have to support the work. The most intensive period of PoC design and implementation (November 2016 to March 2018 – approximately 80 weeks) required three KBDoFP project managers and over 5000 hours of project manager time. This does not include the QI framework which has required an additional 603 hours of work over the 80-week period of implementation. The total cost was approximately $400,000, including $30,000 in sessional time and $30,000 in expenses. This level of involvement was required to support the extensive logistical details, development of the Boundary Health Care Coop, governance and leadership in the Boundary and at the CSC level, and ongoing communication and relationship building among multiple parties needed to make the PMH a reality.

The work was supported by KBDoFP infrastructure funding and GPSC PMH funding. The approximate breakdowns of the percentage of funds spent on various project management activities is provided in the table below, which gives some sense of the degree of complexity of the work.

Types of activities and % of change management funds spent on activity type

Category of activity	% of time spent	Approximate hours required
Governance and Leadership Communication: communication with CSC leadership, KBDoFP board and membership, IH leadership, Boundary medical staff and Provincial stakeholders	12%	724
Working group engagement: Organization and facilitation of change design working groups, Boundary Health Coop meetings, implementation working group meetings	17%	1026
Collaboration/relationship-building: Internal weekly facilitation group meetings, internal KBDoFP coordination, patient and Aboriginal partner engagement and engagement plans, relationship building with all partners	23%	1388
Boundary Health Care Cooperative: Establishment of new legal entity including creation of board, bank accounts, hiring of new staff, creation of service contract with IH, insurance, business licence, hiring of administrator	15%	905
On the ground change support: Engagement of MOAs, coop staff, and IH frontline staff, EMR integration support, work on Information Sharing Agreement	8%	483
General communication: Keeping everyone informed; collaborative press release and patient education plan	5%	302
Documentation: Creation of model description, IH Decision brief, Terms of Reference for Working Groups, work plans and Gantt charts.	10%	603
Quality improvement: Creation of QI framework, research and development of potential outcomes, baseline data collection and analysis, clinic check-in meeting facilitation and logistics, Regional QI meeting data analysis and facilitation	10%	603

Half of the physician sessional time was utilized for physician leadership, while the other half was utilized for physician members, which suggests that the physician leader in the Boundary spent over 100 hours engaged in PoC work, and each of the member physicians spent on average 12 hours engaged in PoC work from November 2016 to March 2018. In addition, some physicians utilized some Facilities Engagement sessionals to support the Boundary PoC work (approximately 70 hours or 7 hours each) in the last two years since there is overlap between facilities work and primary care transformation

The budget was considerably reduced for March 2018 forward, with approximately $35,000 budgeted for supporting Boundary Health Coop meetings, coop staff learning days, clinic check-in meetings, PoC working group meetings and general change management through to December 2018. Approximately $15,000 of this budget was for sessionals to support continued physician engagement in the work. Since March 2018, the physicians have been supported via sessionals to attend the PoC working group meetings, clinic check-in meetings, and the Regional QI meetings.

Coop staff appointment numbers and types

Coop staff have been tracking all of their appointments for the past year (only eight months of data are available in the case of the nurse at Grand Forks Medical Clinic). The table on the next page outlines their total encounters, unique patients served and average encounters over the past year.

Physician and NP providers joined between 60 to 90% of the nurses' appointments with patients depending on the physician and the clinic. The stats on this were too sporadically kept to provide a more definitive range. The nurses at Christina Lake Medical Clinic undertook far more phone encounters than the nurses in the other clinics.

Numbers of encounters by coop staff members

	Total Encounters	Total Unique Patients	Total Encounters in Person	Total Encounters by Phone	Avg # of encounters per day*	Avg # of in person encounters /day	Avg # of phone encounters /day
Nurses							
Christina Lake Medical Clinic	3079	798	1755	1324	17	10	7
West Boundary Clinics	2065	435	1573	443	12**	9	3
Grand Forks Medical Clinic	1814 (38 weeks)	679	1335	226	13	11	2
Social Worker							
Region	735	345	697	34	5	4	1

*when in clinic

**very wide range from 3 to 33 appts per day due to assistance in telehealth with physician 1 to 2 days per week. Median was closer to 9 encounters per day.

Physician and NP providers did not join any of the social worker appointments after the first week or so but participated in 332 care conferences with the social worker. It is estimated that 54% (186) of the patients that the social worker served in the first year with either counselling, provision of resources or form completion had mild to moderate mental health and/or substance use issues. It is estimated that approximately that this has prevented approximately 1.7 referrals per week to IH MHSU, based on the social worker's knowledge of when a physician was contemplating a referral. In addition to the activities outlined in the table above, it is estimated that on average the social worker spends just over 3 hours per week completing forms and makes 3 phone calls per week to service agencies on behalf of patients. It is estimated that 88% of the patients seen by the social worker have a disease on the MoH chronic disease list.

The coop staff also tracked the types of appointments that they undertook. The table below shows the breakdown of types of appointments in each clinic for a four-month sample period. The table illustrates that although the majority of the nurses' time in all three clinics is spent in general assessments and procedures, there is significant variability in what the nurses in each clinic do based on their skill set, interests, and the preferences of the physicians and NP.

Types of appointments undertaken by coop staff members

	Complex Care Planning	General Assessments (e.g. blood press., temp)	Procedures (e.g. liq nit, suture removal)	Foot Care	Pre Natal	Mini mental state assess	Drivers Medical	Mental Health Coun-selling	Referral to resources	Forms	Holter Monitor
CLMC	7%	19%	44%	17%	3%	1%	1%	6%	1%	0%	0%
WBMCs	10%	44%	30%	0%	0%	1%	2%	3%	1%	4%	4%
GFMC	11%	41%	42%	0%	0%	0%	3%	0%	0%	2%	0%

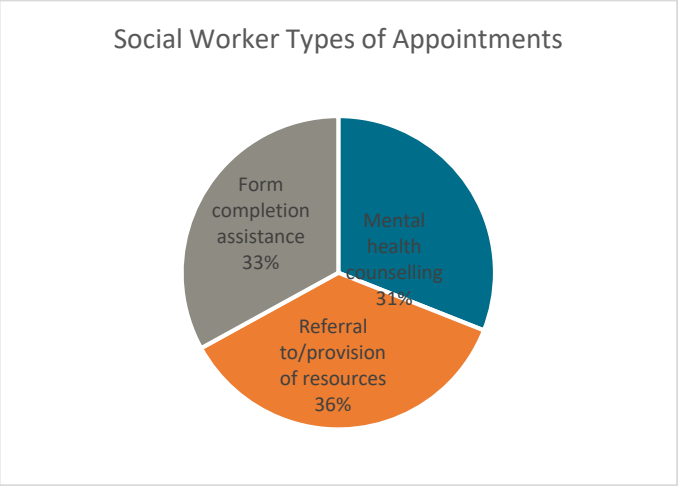
CLMH: Christina Lake Medical Clinic; WBMCs: West Boundary Medical Clinics; GFMC: Grand Forks Medical Clinic

Assessments undertaken by the nurses are very wide ranging and include assessments for blood pressure, blood glucose, asthma or COPD control, chest pain, shortness of breath, edema for chronic disease patients. For non-chronic disease patients, they can include assessments for wound or skin problems (e.g. rashes or lesions), ENT (ear, nose, throat) issues, abdominal assessments, pain, cough/cold/flu symptoms, bladder infections, and temperature.

Procedures include suture removal, dressing changes, assisting with excisions, PAPs, liquid nitrogen, ear flushes, and injections. The types of procedures that the nurses undertook varied to some degree from clinic to clinic. For example, the nurses at Christina Lake assisted with more excisions and did more PAPs, compared to the nurse at Grand Forks Medical Clinic who did more injections. In contrast, the nurse in the West Boundary tended to do more PAPs.

The nurses have indicated that there are also often secondary reasons for visits (only primary reasons were tracked for most of the year). Secondary reasons were tracked for the last few months of the first year that the nurses were in the clinics. These were often for mental health counselling at Christina Lake Medical Clinic and for prescription refills and further assessment at Grand Forks Medical Clinic.

Based on a year of data (last half of fiscal 2017/18 and first half of fiscal 2018/19), the social worker appointments are pretty evenly split between mental health counselling (31%), referral to or provision of resources (36%) and form completion assistance (33%).[15] For most of 2017/18, form completion assistance was a bit higher (36%) and mental health counselling was slightly lower (28%), suggesting that there may be an immediate need or backlog of forms to be completed as a social worker starts, but as time goes on they can start to shift their attention more to mental health counselling. This was confirmed by the social worker, who observed that her appointment types are starting to shift more to mental health counselling now that the form backlog has been addressed. In addition, there has also been a shift in the types of referrals from physicians as they became more aware that the social worker's scope of practice included mental health counselling. The social worker is also receiving referrals for mental health counselling from community organizations and more recently IH MHSU, once they have been assessed and found not to be appropriate for MHSU service.



Key Outcomes Achieved to Date

Administrative data has been provided by IH to track progress towards the CTAS 4 and 5, scheduled visit and hospitalization PoC outcomes. In addition, data regarding mental health supports offered in the PMHs is available to track progress towards the mental health supports outcome. Data from IH regarding achievement of this outcome is pending. Data on the total costs of care (outcome 1) is unlikely to be received as there is currently no methodology by which to gather this data.

CTAS 4/5 visits to the ED

The agreed-upon CTAS 4/5 outcome for the Boundary PoC was as follows:

"Reduction in Boundary resident CTAS 4/5 by 50% over three years (yr 1 10%, yr 2 25%, yr 3 15%)"

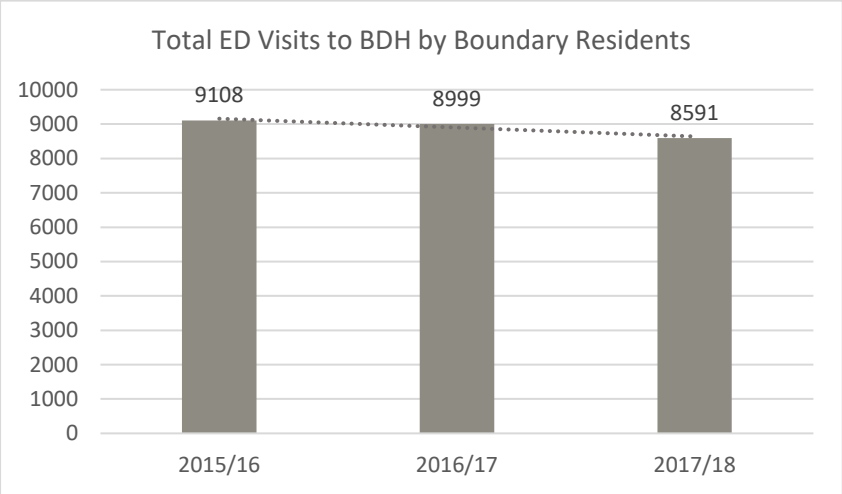
[15] Forms completed by the social worker include: income assistance, Employment Insurance, PWD (provincial disability), CPP-D (federal disability), private insurance short-term and long-term disability, applying for BC Housing, applying for Adaptive Equipment or health care needs (catheters, incontinence supplies, etc.), disability tax credit certificates, disability fuel tax certificates, SPARC/Handy Dart, transportation funding, nutritional supplements, and fair pharmacare.

Key Achievements

⇒ CTAS 4/5 visits down by 13.7% in year one
⇒ Total ED visits down by 5% in year one
⇒ CTAS 4/5 visits down by 22.4% in first 7 periods of year two

According to IH data, there were 5511 CTAS 4/5 visits by Boundary residents to Boundary District Hospital in 2016/17, the baseline year for the Boundary PoC. In 2017/18, this had been reduced by 13.7% to 4757 visits thereby fully meeting the target of a 10% reduction in year 1.[16] In periods 1 through 5 of 2018/19, this number continued to decline and was 3.1% lower than the number of visits in the same period in 2017/18 (and 22.4% lower than the baseline periods 1 to 7), thus contributing to a continued decrease over baseline.[17] The target for year two (2018/19) is to reduce CTAS 4/5 visits by 25% over baseline to 4133 visits, which will require continued effort as we move into the latter half of 2018/19.

As mentioned previously, the CTAS 4/5 outcome was chosen because total Boundary resident emergency department visits per 1000 population were almost twice that of the IH average and because CTAS 4/5 visits constituted a greater percentage of these visits. Although it is not a specified outcome, ED visits are down overall over baseline by 5% as highlighted in the chart below. While CTAS 4 and 5 have decreased by 688 and 66 visits respectively, CTAS 2 and 3 visits have increased by 159 and 141 respectively.



The decrease in total ED visits represents a reversal of a trend of year on year increases in ED visits. From 2012/13 to 2015/16 there was a 30% increase in total ED visits.

The CTAS 4/5 working group is examining time of visit data by attached patients and is trialing different means of diverting CTAS 4/5 patients from the ED during clinic office hours including a public information campaign on "right time right place", using the nursing hotline ("811") and getting emergency prescription refills at the pharmacy, as well as keeping walk-in spaces open with the nurses at the two closest clinics (Christina Lake and Grand Forks) to allow ED staff to divert patients back to their clinics after they have been triaged as CTAS 4/5. The ED registration process at BDH was also just changed in October 2018 in the hope that it will reduce congestion in the ED and perhaps allow for more diversion of people from the ED to the primary care clinics. No data are yet available for the impacts of these changes.

The baseline patient experience survey (n=200) collected data on patient wait times for primary care appointments and their habits in terms of ED use. It found that 31% of Boundary patients who needed care right away (n=108) in the last eight months go straight to the ED without calling their clinic, in part because only 45% could get same or next day appointments, while an additional 22% could get an appointment within 2 to 3 days when they needed care right away.

[16] Interior Health Strategic Information, (2018). Boundary Resident at Boundary District Hospital ED Volumes with CTAS 4 and 5 and Boundary District Hospital Scheduled ED Volumes. Fiscal Year 2016/17 and 2017/18.
[17] Interior Health Strategic Information, (2018). Boundary Resident at Boundary District Hospital ED Volumes with CTAS 4 and 5 and Boundary District Hospital Scheduled ED Volumes. Fiscal Year 2016/17 and *2018/19 (Periods 1 through 7).

The follow-up patient experience survey (n=329) conducted one year after most of the coop staff were working in the Boundary clinics found that 37% of Boundary patients who needed care right away (n=207) in the last 12 months go straight to the ED without calling their clinic. In the follow-up survey, 43% of patients indicated that they could get same or next day appointments, while an additional 11% could get an appointment within 2 to 3 days when they needed care right away.

While this suggests that there has not been an improvement in access to the Boundary clinics since PoC implementation, this data must be interpreted very carefully as the approach to getting survey responses varied from baseline to follow up. The baseline survey was distributed only in the Boundary area clinics, while the follow up survey was also promoted on Facebook and within social service community organizations serving difficult to reach populations to garner additional responses. The table below breaks out the responses of the different survey response groups. It is notable that for respondents who were given the survey in-clinic, access appears to have improved over baseline, but for the other populations, it has not.

When one considers the results of the follow up surveys received from the Boundary area clinics only (n=80), which will be more consistent with the population surveyed in the baseline survey, the percentage of people who go to the ED without calling their clinic when they need care right away is 31% (the same as in the baseline survey), the percentage of people who could get same or next day appointments was 55% and the number of people who could get an appointment within 2 to 3 days is 13%, which suggests a slight improvement in the number of people who could get an appointment within 3 days (68% at follow up versus 67% at baseline), but a fairly significant increase in people who could get a same or next day appointment.

Comparison of ED use and availability of same day appointments at baseline and one year after implementation

Survey	% of patients who needed care right away who went straight to ED	% of patients who could get same or next day appointments	% of patients who could get an appointment within 2 to 3 days
Baseline Survey 2017 (n=200)	31%	45%	22%
Follow-up Survey 2018 (n=329)	37%	43%	11%
Follow-up Survey 2018 Clinic Respondents only (n=80)	31%	55%	13%
Follow-up Survey 2018 Online Respondents only (n=236)	39%	40%	11%
Follow-up Survey 2018 Community Organization Respondents only (n=13)	45%	20%	0%

Analysis regarding the makeup of the three respondent groups (clinic respondents, online respondents and community organization respondents) indicated that the three populations vary with regard to the number of times they visit their primary care provider, their self-reported health, and their income level, with the respondents who received the survey in-clinic having more primary care visits annually and worse self-described health, as will be discussed further in the access section of this report.

Scheduled visits

The scheduled visit outcome is as follows:

"90% of Scheduled Visits diverted from BDH Emergency Department (ED) to BDH Community Ambulatory Treatment Clinic in year one, and total number of Scheduled Visits at BDH reduced by 50% in three years."

Key Achievements

⇒ Scheduled visits in BDH ED down by 30% in year one

⇒ Total scheduled visits in BDH down by 17% in year one

⇒ Scheduled visits in BDH ED down by 63% in periods 1-7 of year two

Based on IH data, there were 3286 scheduled visits to the BDH ED in the baseline year, and 2303 in year one (2017/18) for a total reduction of 30%. Total scheduled visits to BDH (all locations) was 4759 in the baseline year and 3943 in year one for a total reduction of 17%.[18] Thus although progress has been made in reducing total scheduled visits by 50% in year three, the year one target of a 90% reduction of scheduled visits in the ED was not fully achieved. Nevertheless, the number of scheduled visits at BDH and in the BDH ED continued to decline in periods 1 to 7 of 2018/19. Scheduled ED visits in periods 1 to 7 of 2018/19, were down by 63% over the same time period in the baseline year.[19] Total scheduled visits in periods 1 to 7 of 2018/19, were down by 39.4% over the same time period in 2016/17.[20]

Despite making considerable progress in reducing scheduled visits in BDH, this outcome underscores how complex the situation often is and how data can be incorrect or fail to tell the full story. Scheduled visits or "clinicals" as they are often referred to by physicians were initially thought to include a lot of excisions or biopsies, which should technically be done in clinics not in the BDH ED, and were considered to be contributing to "congestion" in the ED. A more in-depth review of the data, once the scheduled visit outcome had been agreed upon, indicated that excisions/biopsies only constituted about 9.1% of the reason for visit in 2017/18 (year 1) and that some of the scheduled visits were things that had to occur in the hospital such as IV antibiotics (4.5% in 2017/18).[21] In addition, a large percentage of the scheduled visits fell into the vague categories of "follow up" and "consult" (51.2% of visits in 2017/18).[22] Physicians who work in the ED have indicated that many of the follow up and consult visits were visits that resulted from them seeing a patient in the ED in the middle of the night and asking them to come back to the ED for a check up or further services, such as lab or x-ray, the following morning or sometime later that week. This had become their practice because lab and x-ray are not available in the middle of the night at BDH unless it is an emergency and because the chart for an ED visit is not available to the clinics for two weeks following the ED visit, making follow up in the clinics harder. A further chart review of these follow up and consult visits indicated that a large number had been miscoded, and were in fact visits with visiting specialists that also had to be done in the hospital, and that only a certain percentage of the consults and follow ups could have been done in the clinics.

The more in-depth review of the data also identified that in the baseline year there were 673 different "reasons" for scheduled visits, many of which were unnecessary categories (e.g. excision/biopsy, biopsy and excision were all separate categories, as were "follow up", "followup", "follow up lab", and "follow up

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[18] Interior Health Strategic Information, (2018). Boundary Resident at Boundary District Hospital ED Volumes with CTAS 4 and 5 and Boundary District Hospital Scheduled ED Volumes. Fiscal Year 2016/17 and 2017/18.

[19] Interior Health Strategic Information, (2018). Boundary Resident at Boundary District Hospital ED Volumes with CTAS 4 and 5 and Boundary District Hospital Scheduled ED Volumes. Fiscal Year 2016/17 and *2018/19 (Periods 1 through 7).

[20] Ibid.

[21] Interior Health Strategic Information, (2018). Boundary Resident at Boundary District Hospital ED Volumes with CTAS 4 and 5 and Boundary District Hospital Scheduled ED Volumes. Fiscal Year 2016/17 and 2017/18.

[22] Ibid.

labwork").[23] By periods 1 to 5 of 2018/19 this had been reduced to 79 categories (which still included overlaps as described above).[24]

The Boundary PoC working group continues to work on sorting out the data for this outcome and understanding what has to happen in the hospital (e.g. x-rays and visits with specialists), what should likely happen in the hospital (follow ups when no chart will be available in the clinics) and what can be appropriately moved to the clinics. More work will be done to remove scheduled visits from the BDH ED and BDH in general, but there is strong evidence that many of the ones that could be removed have been.

While significant progress has been made on achieving this outcome and the Boundary is on track to achieve the long-term outcome of reducing total scheduled visits at BDH by 50%, which is positive, one of the key learnings associated with the scheduled visit outcome is the complexity of administrative data collected in hospitals. The degree of collaboration among the physicians and IH to understand the data in the past year has also been a very positive aspect of this outcome.

Mild/moderate mental health supports

The mild to moderate mental health supports outcome was twofold – to both increase the mild to moderate mental health supports provided in primary care clinics via the work of the SPO (social worker), and to decrease the caseload at IH MHSU:

"Provision of mild/moderate mental health supports to 160 patients in PMHs, enabling a decreased Boundary resident caseload at MHSU of 10%, as measured by active MHSU clients"

Key Achievements

⇒ 121 mild to moderate mental health and substance use patients received supports in PMHs in year one

⇒ 228 mental health counselling visits provided in PMHs in year one

This outcome also illustrates the complexity of the data. The data for CTAS 4/5 and scheduled visits are based on the IH fiscal year. As a result, year one from an IH perspective extends from April 1, 2017 to March 31, 2018. However the contract for the PoC was not signed until June 2017, and the social worker did not start work in the clinics until September 5, 2017. As such, the year one outcome for mild/moderate mental health supports had to be achieved in seven months. Moreover, there was some ambiguity in the outcome and what constituted "supports". For example, does it only include mental health counselling appointments with patients with mild/moderate mental health issues, or does it also include referral to resources and supports and form completion with patients with mild/moderate mental health issues? Likewise, does the outcome include supports for patients with substance use issues, who could be part of the normal caseload for IH MHSU, or just patients with mild/moderate mental health issues? Sorting out what to track and a methodology for tracking it took a few months of understanding how the social worker worked and how appointments could best be tracked.

In the end, it was decided to take the widest view of mild/moderate mental health supports in PMHs, so referral to resources and supports as well as form completion appointments were included, as well as supports for substance use patients. Supports, such as form completion, for moderate to severe mental health patients were not included. Because it took some time to develop this methodology, this wide range of supports was only tracked for 37 weeks, during which 54% of the unique patients supported by the social worker for all types of appointments had mild to moderate mental health or substance use issues. Extrapolating this

[23] Ibid.

[24] Interior Health Strategic Information, (2018). Boundary Resident at Boundary District Hospital ED Volumes with CTAS 4 and 5 and Boundary District Hospital Scheduled ED Volumes. Fiscal Year 2017/18 and 2018/19 (Periods 1 through 5).

percentage over the first twelve months of the social worker's work suggests that a total of 186 unique mild to moderate mental health and substance use patients received supports from the social worker in the first year of her work, which is well within the outcome target as outlined above. Confining the data to just the 2017/18 fiscal year, the social worker provided supports to approximately 121 mild to moderate mental health and substance use patients, just under the year one target of 160.

An alternate way of calculating mild to moderate mental health supports provided in clinics would be to look only at the mental health counselling appointments provided by the social worker—219 in her first year of work, and 126 in fiscal year one in her first seven months of work. The mental health supports provided by the nurses should also be considered. Although these were minimal in one of the clinics, at Christina Lake Medical Clinic, they constitute 6% of the nurses' appointments and in the West Boundary clinics, 3%, which is approximately 102 additional mental health counselling appointments undertaken by the nurses in fiscal year one, bringing the total mental health counselling appointments provided in fiscal year one to 228.

Data for MHSU caseloads in year one of the Boundary PoC implementation has been requested from IH but has not yet been received. It will be added into this case study when it is received. Anecdotally from MHSU representatives, there has been no decrease in the number of MHSU intakes, but there is a feeling that they are being able to concentrate more appropriately on individuals with moderate to severe mental health issues and are able to refer mild to moderate cases to the social worker in the PMHs, which was a key part of the intent of the outcome. When assessing progress on this outcome, it is also important to keep in mind that the Boundary area was impacted by major flooding in the spring of 2018, requiring a lengthy evacuation of more than 1600 properties including both homes and businesses and one of the Boundary area primary care clinics. Some of those structures have subsequently been deemed too damaged to return to, which means that some families remain without a permanent residence in the area and some businesses were lost completely. All of this likely contributed to an increased demand for mental health supports as the community recovers from the disaster and therefore progress on reducing MHSU caseloads may be limited. There is also an ongoing opioid crisis in the Boundary, with death rates higher than other similar sized communities.

Anecdotally, according to case study interviewees, MHSU remains very busy and client numbers have not decreased since the social worker started working in the clinic. The social worker in the clinics is also providing a different kind of support than MHSU, focusing on mild to moderate mental health patients and people requiring assistance with form completion, neither of which MHSU does, so instead of taking demand away from MHSU, it is likely that the social worker is just providing an additional service in the Boundary, and one for which there was significant latent demand.

Key lessons from this outcome are the importance of clarity with regard to the goal of the outcome and what should be measured in evaluating progress.

Total hospital days

Total hospital days, which are calculated by looking at the total number of hospitalizations by the length of stay, are considered to be a reflection of overall population health. As health improves due to the added supports in the PMH, it was expected that total hospital days would decrease. The outcome for total hospital days was:

Key Achievements

⇒ Total hospital days were reduced by 3% in year one.

"Reduced total hospital days for all cause hospitalizations for Boundary residents (excluding scheduled surgeries or procedures) by 8%."

Total hospital days data for Boundary residents for urgent/emergent hospitalizations in 2016/17 and 2017/18 were provided by IH and are provided in the table below:

Urgent/Emergent Hospitalizations of Boundary Residents 2016/17 and 2017/18[25]

Fiscal Year	# of Hospitalizations	Inpatient Days	Average Length of Stay (ALOS) (days)
2016/17	848	6,296	7.4
2017/18	958	6,120	6.4

As highlighted by the table, although the total number of hospitalizations increased for Boundary residents, the ALOS decreased and therefore, the total number of urgent/emergent inpatient days decreased by 3%. Although this is an improvement, this outcome does not yet appear to have been achieved. It should be noted that the literature review suggested that hospitalization outcomes often lag emergency department and other outcomes. Thus the PoC hospitalization outcome did not have a year one or two component, but rather was to be achieved by the end of the three-year implementation phase. Given the relatively older population in the Boundary area and the high proportion of hospitalizations among older patients, this may take some time to achieve. Patients 60+ accounted for 69% of hospitalizations in the time period under consideration.[26]

Preliminary data for quarters 1 and 2 of 2018/19 suggests that total hospital days for urgent/emergent hospitalizations for Boundary residents have increased by 31% over the same period in 2017/18 due to an increase in the number of hospitalizations, although the ALOS continues to decrease.[27] It is too early in 2018/19 whether total hospital days will be increased over 2017/18. However, it is important to note that the 2018 Boundary flooding crisis is influencing hospitalization rates in 2018/19 as there were many houses condemned and some people are being forced to stay in hospital because they have no housing. The Alternative Level of Care (ALC) days have more than doubled in Boundary District Hospital and account for 72% of the increase in total hospital days.[28] Anecdotally, new provision of opioid agonist treatment in the Boundary has also had an impact on hospitalization rates (and potentially ED visit rates) as transients who used to move on are now receiving treatment in the Boundary and are choosing to stay. These people are often homeless and are potentially having an impact on hospitalization rates.

Key Successes of Boundary PoC Process

This section outlines the key successes of the Boundary PoC process as identified in surveys, interviews, process documentation, attendance at working groups and key informant interviews. The key successes are presented roughly in order of the degree of evidence available to support them and range from improved patient access and quality of care and increased provider satisfaction to learning more about patient medical home implementation and achieving the Boundary PoC outcomes.

Improving access for patients

One of the biggest successes of the Boundary PoC process may be the improvements in access for patients enabled by adding the nurses and social worker to the Boundary area clinics. For seven of the provider interviewees, and all of the coop staff, seeing an improvement in patient access was one of the biggest successes of the Boundary PoC. One provider observed, "[Patients] are getting seen sooner."

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[25] Interior Health Strategic Information. (2018). Boundary Resident Urgent/Emergent Hospitalizations within Interior Health. Fiscal years 2016/17 and 2017/18.

[26] Ibid.

[27] Interior Health Strategic Information. (2018). Boundary Resident Urgent/Emergent Hospitalizations within KBHSA Facilities. Fiscal years 2017/18 and 2018/19 (Q1-2).

[28] Ibid.

Highlights

- Qualitatively providers, coop staff and patients think same day access has improved.
- Qualitative evidence of improved workflow and provider time allocation.
- Time to third next available appointment has not changed and is around 12 to 14 days.
- 55% of patients who responded to the patient survey in clinics reported in the patient experience survey that they can get a same or next day appointment at the end of year one, up from 45% at baseline, but only 43% of patients overall in the follow-up survey indicated they could get a same or next day appointment.

On a qualitative front, all nine of the physicians interviewed stressed that they felt that the nurses were improving access for their patients both by providing appointments on their own in some clinics and by freeing up physician time by taking vitals and prepping the patient in advance of having the physician join them. There is significant qualitative evidence of improved workflow and physician time allocation. One noted, "I think for me my wait time is less and it think my patients have more access to care. I think often if they can't see me they will see me with the nurse on the same day or in the same week." Several physicians stressed that the nurses were reducing the amount of time they were spending with patients and thereby increasing the physician's time to see other patients. One physician observed,

"I think a lot of things that take a lot of time becomes less onerous than before specifically complex care used to take me an hour a patient and now it takes me half an hour and I am able to see more patients and they are able to see walk ins and I can just walk in and sort of see the patient and they will do all the paper work so it really makes a difference for workflow and patient access."

Another noted that nurses not only reduce the amount of time physicians spend in routine care appointments, but also urgent care appointments by setting patient expectations regarding the length and type of appointment,

"Things like repetitive counselling that we do. If you come in with high cholesterol levels I give the same talk and that kind of canned talk can be done by someone else and that frees up my time to see other acute patients, and there are all sorts of canned talks like that – hypertension, exercise. They are really important but they take a lot of time. Nurses are also seeing and triaging urgent care appointments – people who walk in or phone in for same day appointments. The nurse can see them, take a history of problem, get an understanding of patient needs. So it cuts down on physician time in the appointment quite significantly, and nurse sets up patient expectations. Patients sometimes come in for same day and say by the way this happened and a 5- minute fit in appointment becomes 20 minutes. The nurse can say we squeezed you in for 5 minutes and we will make another apt for the 20-minute issue. So physician can come in and deal with the one issue and not the counselling visit unless it is a crisis."

One nurse described the process as follows,

"The physician walks in, I will give an overview of our visit and anything that is abnormal to me and outline anything that I need him to do, for example, sign prescription. I already print it out and they will review it and sign it, if they are in agreement. I will review what we have talked about and what the plan is. And if they agree (90% of time they do) then we just move forward."

Overall seven of the physicians felt that they were seeing more patients in a day on the days that they worked one on one with the nurses and generally speaking quantified that number at around three to five patients a day. One physician observed,

"Yesterday I worked with the nurse and saw about 8 to 10 more patients with the nurse, but you have to balance that with me booking a little more lightly when I work with the nurse…. If I spend an average of 10 min with each patient, but with nurse spend 1 to 3 minutes with patients. Maybe if I didn't do it lighter, it would be okay in terms of patient care, but would be more squeezed, but balanced against lighter schedule, I am seeing maybe 5 more patients a day, but it is also a higher quality of care. It has cut my time down for excision – she does everything preps, suturing, and wound care. That has been a time saver."

Another noted, "I am seeing my patients in addition to her patients. I still see 25 and she will see 5 to 10 so now I am seeing 30 to 35, so it is improving access for patients." In the clinics where the physicians join every single appointment of the nurses, the number of extra appointments that the physician does when working with the nurse tended to be greater. One physician observed, "At our clinic we see everyone she sees, so I usually see 22 to 23 on my own and with days with her it is closer to 30 and that is two days a week. So up to 15 to 20 patients a week, so it's like having an extra day."

All of the nurses also felt like access was improving for patients. One noted, "we have lots of walk ins. People are doing more walk ins now that they know we are there." Another nurse observed that patients "are just happy they got in the same day or week." A third noted that 50 to 80 percent of time walk-ins can be fit in even when the doctor's schedule is full because the nurse is able to see the patient first and "shave off the time required by the physician." Another nurse observed that this was reducing the need for patients to go to the emergency department, "We had a patient walk in at 4:00 on Thursday with a laceration that would have otherwise had to go to emerg, but we were able to accommodate him."

This sense of having easier access was validated by all four patient interviewees. One observed,

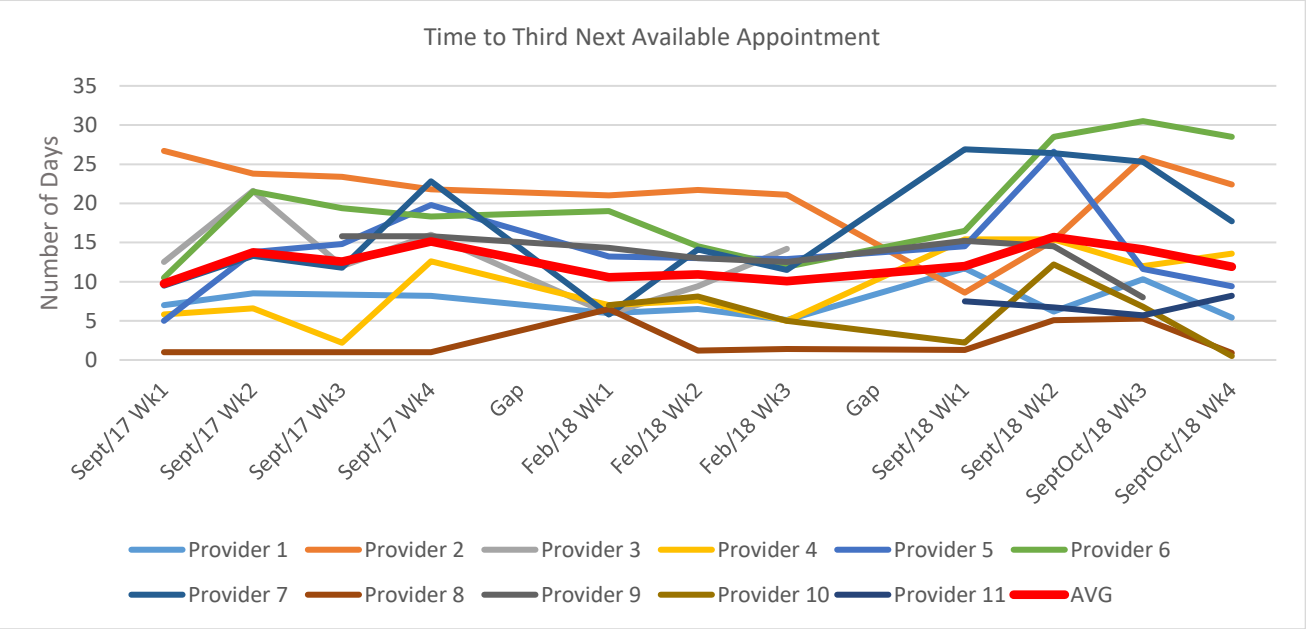
"It is easier [to get an appointment] because sometimes you can just get in and see a nurse and they can take care of the problem… They are good about flagging the doctor in if you need to be seen, or dealing with it if it is something that they can take care of… I think the access has improved. Otherwise you might have been waiting for a week to see a doctor because they are booked up. So having the nurses here is excellent. I would just go by the clinic and the receptionist would say come this afternoon to see a nurse who can maybe solve your problem."

Another patient noted that the most helpful part of having the nurses was that, "I didn't have to wait to get an appointment to see the doctor. That is usually a longer wait. And also I did not have to sit in the waiting room when I got there, which is nice, because that is usually a bit of a wait too."

In the follow-up patient experience survey (n=329), patients who had experiences working with the nurse (n=145) were asked a qualitative question regarding their experiences with the nurse and changes they had observed in their clinic. The most frequent response (33% of those responding to the question; n=121) was that the nurses were increasing access to care both by reducing the amount of time doctors require to see patients and by completing some services on their own. One respondent observed, "I was able to get a same day appointment because the nurse did the legwork, and I was still seen by the doctor but took less of his time." Another noted, "The nurse makes getting an appointment much quicker and care faster." A third commented that he/she "Was able to get an appt. with less than 2 weeks' notice for one of the three days I requested. Stitches were removed, in and out in less than 10 minutes." At the same time, in the open-ended question at the end of the survey, 35% of respondents (n=120) mentioned the long wait times for primary care appointments as the key issue they would like improved with regard to their clinic, suggesting that while there is a perception that the nurses are *improving* access, there are still access challenges in Boundary clinics. One respondent noted, "Wait times are horrible - ER is accessed because there are usually no better or timely options." Another noted, "[The] nurse at clinic is fantastic --- gentle, competent, considerate. Doctors are too

busy. It almost always takes 4 weeks to get an appointment, sometimes as long as 6 weeks. I hope nurse at clinic will alleviate this."

The quantitative data regarding access also reflects continued access challenges. Time to third next available (TNA) appointment data were utilized to measure access both prior to and at the start of the nurses and social worker starting work in September/October 2017, six months later in February 2018 and again in September/October 2018. Time to third next available appointment is considered internationally to be the "gold standard" in measuring access.[29] Third next available is thought to be superior because it avoids counting openings resulting from last minute cancellations and provides a more accurate picture of access to routine appointments. Although for the September/October 2017 data collection period, data were collected by providing MOAs with a TNA worksheet, this was perceived as being too difficult and not part of regular workflow by the MOAs. As a result, for the second and third data collection periods, the evaluator called around to all the clinics once a week for four weeks to get the third next available appointment data. The graph below shows the TNA data for the time periods for which data were collected.



Although the regional TNA average dropped from 12.8 from the September 2017 data collection period to 10.5 during the February 2018 data collection period, it was back up to 13.4 during the September/October 2018 data collection period, and the "post" nurse average TNA was higher for 6 out of 10 providers (note that one provider left and two new providers move to the Boundary over the total time periods so some of the TNA records are not continuous). This suggests that routine access for patients has not improved in the Boundary area as a result of the Boundary PoC process.

Nevertheless, there are a number of problems with the data that should be considered. First of all, measuring time to next available appointment does not effectively capture the availability of same or next day appointments for urgent issues (see below). It is not clear which type of access is most important to patients, but for reducing CTAS 4/5 visits at the ED, the availability of urgent appointments is likely more relevant. Second, the fact that there is not a continuous record of the TNA times for all providers for September 2017 to 2018 prevents one from understanding the natural variability in TNA and whether September/October is just a

[29] Government of Alberta Primary Health Care Branch. (2016). Toolkit for Time to Third Next Available Appointment (TNA) Indicator.

poor time to collect TNA data because there is a backlog of appointments from summer holidays. Third, the data were collected in three of the five clinics after the nurses and social worker started working there, as the finalization of the contracts went much more quickly than expected, and it was impossible to collect data in one clinic earlier because the clinic had just moved locations and had too many things happening to collect the TNA data. While it was hoped that during the nurses first few weeks they would not be increasing appointment capacity within the clinics because they would just be getting oriented, it is possible that they did affect the September 2017 data in three of the clinics. Finally, the data are confounded by the fact that many of the physicians are away frequently and have locums filling in for them. While measuring the TNA for the locum in theory should be the same as the TNA for the provider, it is often not, as patients will delay their appointments until their regular physician returns. Thus there is often a drop in TNA during the week where the locum is there and then a subsequent jump when the physician returns that last several weeks as the physician works through the backlog. It was impossible to find a week during any of the data collection periods where at least one of the physicians was not away. Nevertheless, from a patient perspective, the ebb and flow of TNA associated with physician absences does give some sense of access.

Access and the use of TNA to measure it was discussed at the November 2018 Regional QI meeting. It was agreed in general that TNA is challenged by the time of year that the data are being collected and that it is not an accurate measure of the same day access that clinics are striving to provide, with as many as 15 "fit-in" same day appointments at the two larger clinics per day. Likewise, efforts to reduce scheduled visits at BDH and CTAS 4/5 visits to the ED by doing more same day appointments will have a direct impact on access to routine appointments, which is what TNA measures because the clinics have to accommodate patients that would have previously gone to the hospital. In addition, because the Christina Lake area of the Boundary is a major tourist destination in the summer, the clinics see a lot of non-resident patients in the summer and their wait time can increase as backlog develops. Over the fall, this backlog is generally worked off. Given that TNA was measured in September/October 2018 to give a comparable measure to the baseline TNA, it may have reflected TNA at its highest. Subsequent spot TNA checks in November 2018 at one of the clinics where the tourist population tends to be highest have suggested that the TNA for those providers has dropped substantially since September/October such that the regional TNA may be back near the baseline of 12.8, but that it has not improved as a result of the efforts of the Boundary PoC.

In addition, according to reports by providers at the November 2018 Regional QI meeting, the population of the Boundary also appears to be growing as clinics are being routinely asked to accept new patients, which would affect supply and demand and therefore access. Other potential measures of access were discussed at the Regional QI meeting as well as the potential to shift the clinics to more of an advanced access approach to booking appointments in the Boundary. While nothing was decided, it was agreed that more data needs to be collected to develop a more fulsome understanding of supply and demand, including a retrospective analysis of the number of appointments the providers are undertaking per day now and prior to the Boundary PoC. Although there are eleven providers in the Boundary, most only work a few days a week because they also do ED shifts most weeks. As a result, the total FTE of providers in the Boundary is only six. The fact that TNA is not getting longer, despite all of the events in the community since the implementation of the Boundary PoC, such as the major flood in 2018, suggests that perhaps the PoC work is having an impact.

Access to same or next day appointments was measured via a baseline (n=200) and follow-up (n=329) patient experience survey in which patients were asked to self-report on the availability of same or next day appointments. At baseline, 75% of patients indicated that they very frequently or frequently got an appointment as soon as they needed when they needed care right away. However, this measure is dependent on how patients define "as soon as they needed". The table below outlines the more quantitative results for access as reported by patients.

Wait times for appointments when care is needed right away

	# of days wait when need care right away					
	0	1	2-3	4 to 7	7 to 14	14+
Baseline Survey 2017 (n=200)	27%	18%	22%	10%	17%	7%
Follow-up Survey 2018 (n=329)	26%	17%	11%	12%	16%	18%
Follow-up Survey 2018 Clinic Respondents only (n=80)	37%	18%	13%	8%	16%	8%
Follow-up Survey 2018 Online Respondents only (n=236)	23%	17%	11%	14%	15%	21%
Follow-up Survey 2018 Community Organization Respondents only (n=13)	20%	0%	0%	20%	20%	40%

As noted previously, this data must be interpreted very carefully due to the different methods of soliciting responses to the survey (Facebook, in-clinic and community organizations for the follow-up survey vs. clinics only for the baseline survey). The data for different populations of respondents have been separated out in the table above to be consistent with the data collected in the baseline survey and suggests that overall access is improving a bit for those patients who received the survey in-clinic when compared to baseline. However access is poorer for online respondents and very poor for community organization respondents. Access also varied significantly among the clinics, with the ability to get same or next day access ranging between 26 to 27% in the two larger clinics in the region, to as high as 87.5% to 100% at two of the smaller clinics.

As discussed, the respondents who completed a survey distributed by their clinic tended to have a higher number of primary care appointments during the year, were more likely to rate their health as fair or poor, and had a lower household income on average when compared to online respondents, as highlighted in the table below.

Comparison of survey populations

Survey	% of respondents who visited their primary care clinic 5+ times in the last year	% of respondents who visited their primary care clinic 10+ times in the last year	% of respondents who describe their health as fair or poor	% of respondents with a household income below $29,999
Baseline Survey 2017 (n=200)	53%	19%	13.3%	34%
Follow-up Survey 2018 (n=329)	48%	16%	24%	31%
Follow-up Survey 2018 Clinic Respondents only (n=80)	63%	25%	32%	36%
Follow-up Survey 2018 Online Respondents only (n=236)	44%	12%	19%	27%
Follow-up Survey 2018 Com. Organization	23%	15%	39%	58%

Respondents only (n=13)				

The comparison of survey population and the access data suggests that access appears to improving for people who visit their primary care clinic frequently and have poorer overall health, potentially those with long-term chronic diseases. However, it also suggests that respondents who are served by social service community organizations visit their primary care clinics less frequently, and struggle with access to their primary care clinic, despite having worse self-reported health.

Overall, patient access remains complex and difficult to measure. While the qualitative data suggests that access is improving as a result of improved provider workflow and time allocation through team-based care in the Boundary PoC, the quantitative data remains uncertain. There are many factors that influence primary care access in the Boundary including an aging population, community emergencies, tourist influxes, population growth and efforts to reduce acute care utilization. Truly understanding access and the implications of lack of access on care and acute care utilization requires further and ongoing investigation.

Improving patient care

Highlights

- Patients say that experience of care is good or excellent with nurses (93%) and social worker (84%).
- Qualitatively, providers, coop staff and patients think quality of care has increased with respect to chronic disease management because nurses have more time to do follow up, education and spend more time with patients.
- Qualitatively providers, coop staff and patients think quality of care has improved with respect to navigation of services, form completion and mental health supports because the social worker has more expertise in navigation of services and form completion, and more time to provide mental health supports than physicians.

Improving patient care was also considered to be one of the biggest successes of the Boundary PoC process. Seven of the provider interviewees and all of the coop staff, improving patient care was one of the biggest successes of the Boundary PoC. One provider observed, "[Patients] are getting a better level of care, more complex care, and better follow up." Another observed that the coop staff have "enhanced patient care significantly." In the follow-up patient experience survey (n=329), patients who had experiences working with a nurse (n=146; 44%), and the social worker (n=25; 8%) were asked to rate their experience of care.[30] With respect to the nurses, 72% of respondents rated their experience as excellent while 21% rated it as good and with respect to the social worker, 60% of respondents rated their experience as excellent, while 24% rated it as good.

In particular, chronic disease management, form completion and navigation of services and mental health supports appear to have been improved by having the coop staff available to see patients.

Chronic disease management

In addition, seven providers felt that they were doing a better job at chronic disease management as a result of working with the nurses because the nurses have more time to call patients in for necessary follow-ups, do the complex care flow sheets, and do longer appointments with the patients undertaking the necessary education associated with chronic disease management. Providers indicated that with a nurse they were not only doing more chronic disease management, but also doing a better job of it. One provider noted, "I think that I am starting to work on doing more chronic care with the nurses and my patients. Because they get to spend an hour with the patient and go through everything." Another indicated, "I would say that I am able to

[30] Note that experience of care is not quite the same as quality of care, but is the most closely related patient measure.

be more up to date with chronic disease management, be more comprehensive in terms of getting more done in a visit, so I would say that is a definite benefit."

One provider observed that doctors often just do not have as much time to undertake the education work required for chronic disease management.

"In terms of CD management having the nurse is really helpful in terms of just spending that extra time and doing practical counselling around nutrition and lifestyle management that we often talk about with patients in a more abbreviated sense…. She just does really good work. Patients are getting good care and education."

One of the nurses also highlighted that patients were getting more time spent with them in chronic disease management, noting that "if the patient's diabetes and blood sugars are in high teens then I will use a full 45 minutes with them."

For one of the nurses, longer appointments meant that they were more likely to be able to talk about some of the underlying issues associated with their illness,

"I think because we are able to take time to hear out and talk with the patients a lot of times their actual illness is one thing, but we are able to talk about some of the underlying things that are contributing, for example, diet and education. I think that is the biggest thing. I think the doctors do a great job but their appointment times are short."

One of the providers also stressed that nurses were better at the education work required for chronic disease patients,

"there are certain things that I think nurses are better at than doctors. For example, going over a list and education and they have time for that. A new diagnosis of diabetes requires a lot of time – you have to teach them to do a lot of things, what the signs and symptoms are and nurses do a way better job."

One of the nurses observed that part of doing a better job was just having more experience providing the education piece around chronic disease,

"I think I have been getting better at the patient education piece and how to discuss certain issues with them. Just trying to come at patient education about disease management and lifestyle choices more with the person and less instructing the person and just getting better at doing that has made me more effective."

This experience of quality of care is also reflected in the patient experience survey results. In the follow-up patient experience survey (n=329), patients who had experiences working with the nurse (n=146; 48%) were asked a qualitative question regarding their experiences with the nurse. Of those who responded (n=120), 21% made reference to the quality of care that they had received. One respondent commented, "The quality of care is just as good as seeing a doctor." Another noted, "she has excellent people skills, communicates in language and wording I can understand easily - answers questions well - keeps me informed quickly of blood test results." A third indicated that the nurse offered a "support system working with me to get better control of my diabetes." In addition, one patient interviewee felt the team-based aspect of the care now provided in the clinics is improving care. She observed,

"I think the care has improved quite a bit. You can talk more. You feel like they want to listen more. It feels more like a group effort than an in and out kind of thing to find out more what is going on with you whether it is emotional or physical."

Form completion and navigation of services

All ten of the providers interviewed stressed the high value of the social worker in terms of completing forms and navigating services for their patients. Several suggested that the social worker was just more knowledgeable than they were regarding the variety of services available, and that the social worker did a better job than they would completing forms. One provider observed,

"She has taken a lot of… the applying for disability CPP and all that kind of stuff – she has taken a lot of paper work burden off us and is doing a better job for sure than we would do. She is a good resource for just knowledge and services, knowing what services are available for patients.

Another noted,

"She is bringing a different knowledge base about other services that patients need in order to remain healthy. She helps them with an understanding of their financial needs and where they might be able to access other resources and social determinants of health… In [our area] we have so much poverty and she is experienced with those kinds of people who have different needs and have multiple barriers – she fits in really well in terms of being able to establish relationships with them."

Two providers noted that the social worker is just more knowledgeable regarding the resources available to patients. One observed, "I find that is an area that I am not as knowledgeable in." Another noted,

"There are so many things that patients think as physicians that we understand that we don't e.g. different financial supports and programs – we have so little education and understanding. I don't really understand disability forms – I fill them out but don't know what next step is. She has so many resources for people and especially in our region where poverty is such a prominent issue."

The social worker observed that there are financial supports that patients could have been taking advantage of, but were not prior to her arrival,

"I think patients have more of an all around support system. Their doctor is taking care of physical health and I can take care of mental and financial health. Often they are not aware of all of the programs out there. I recently worked on PWD application for someone and they have been missing out on $300 a month for four years and they have an income of only $800 a month."

She also observed that having a social worker working with a provider as part of a team enables the provider to offer better care,

"doctors get a broader picture of their patients circumstances. For example, they are aware of the patient's diabetes but not aware that they are accessing food bank and that is probably reason their A1c is not well controlled because that is all starchy food."

In the follow-up patient experience survey (n=329), patients who had experiences working with the social worker (n=25; 8%) were asked a qualitative question regarding their experiences. Of those who responded (n=20), 25% made reference to receiving assistance in completing forms.

Mental health supports

Four providers also noted that having the social worker to provide mental health counselling was of significant value as it gave them a free alternative to Mental Health and Substance Use (MHSU), which is often busy, and does not work for some patients, due to lack of patient severity, poor therapeutic alliance, or the

stigma associated with going to MHSU. One provider observed, that it is "nice to have an alternative to MHSU because they can be overwhelmed and sometimes patients do not have good therapeutic alliance and it is good to have free local resource for patients." Another noted, "She is doing some brief counselling as well which is great for patients who might not be able to get into MHSU (due to lack of severity or wait lists) or feel stigma of that and might not engage."

One provider observed that the mental health supports provided by the social worker were particularly important because providers lack time to supply those resources,

"I think she brings huge value. The problem with counselling is we are all trained to counsel patients, most of us have significant training, but we lack the time – it is a minimum 20-minute appointment and often 30 minutes. You can't rush it you need to be relaxed and not pushing patient through."

The social worker corroborated the critical value of mental health supports for many patients, noting,

"Patient access to counselling is improved because they can get in to seeing me very quickly and the flow of info between me and family physician is very strong and there are no barriers financially there are lots of patients who need counselling but can't afford it."

The value of the mental health supports offered in the clinics and of having one's physician more aware of the mental health supports being received by patients was also emphasized by one of the patients who observed,

"She has helped me with all sorts from helping me fill out forms to helping me deal with the grief of my mother. I am going through quite a few things… It is a big help for me counselling-wise and just bouncing things off her… My doctor does seem informed of the things I talk about with her now. He did not know about the stresses I was under but now he does because of the social worker. It feels like there are three people who are seeing what is going on with your one appointment, which is really great."

A second patient likewise commented in the follow up patient experience survey, "I think having a social worker/counsellor is VERY IMPORTANT. This allows for excellent patient care, probably speeds healing and prevents small problems from escalating." A third noted,

"I can get in every 2 weeks to see her, it has helped me so much. I was leaning toward asking my Dr. For more medication but was able to get through with talking to the social worker. This is an excellent service your clinic offers."

Preliminary PCN Work

Although the PCN work is limited to date, the relationships that are developing between the clinic coop staff and providers and IH services including Home Health and MHSU are also likely contributing to improved coordination of care and better services for patients. One IH staff member observed,

"We do some back and forth with the nurses. We do refer to the social worker e.g. we have a patient can you see them, and she refers people that she is concerned about to case management. They had a good meeting a while ago for all of us to meet and greet so there was some team building then. That really helped. All the interactions have started happening after that."

Another noted,

"We are starting to work together more with the primary care nurses. I have a case managed client who needs to go in for Vitamin B injections so I have put all the supports in and the nurse at the clinic has given me his apt times so I can be sure that the person gets there and gets the bus. In another case, the nurse tells me if person is not taking meds, so we can put home supports in to remind her to do so."

More detailed data will be collected with regard to the changes in care resulting from PCN work in later phases of the project.

Overall

In addition, to improving chronic disease management and mental health supports, the providers and coop staff seemed to feel that care was just improving overall in the Boundary clinics. One of the coop staff observed that nurses and doctors complement each other in terms of the type of care they provide,

"I think patient care is better because we are spending more time with them because nursing and medicine are quite different. Nurses can complement the medicine side and people leave thinking they had a holistic appointment as opposed to just a medical visit. We are looking more at a holistic visit. You definitely need both."

Another coop staff member observed that they just have more time than the physicians to provide some extra services, "Often times we have the time to dig or research, sometimes for the things that they need or just have that extra one on one time where they are maybe just needing some reassurance or exploring some ideas."

One coop member noted that a key part of having nurses in primary care was enhancing the continuity of care for patients. She observed that through the Boundary PoC, she has learned that,

"as an RN I can offer a lot more than I have before. For example, continuity of care. We can follow a patient, we can identify a need and say come back and see me and we will work on resources, make a plan and then follow them up, so it is being able to walk patients through and provide that ongoing care and point where they can return to. In ED you see someone you help them get diagnosed and initiate treatment, but then can never check in on them. I feel like that is what we are needed for."

Overall, there seems to be strong evidence that the coop staff and team-based care is improving the care that patients are receiving in Boundary clinics.

Increasing satisfaction and reducing the burden on physicians

Five providers indicated that one of the biggest successes of the Boundary PoC process for them was an increase in satisfaction and a feeling of having a load taken off. With regard to the nurses, they stressed the value of having someone available to help them out to ease their workload and the value of the collegiality associated with team-based care. One provider observed, "It certainly helps us in terms of balancing and taking some of the pressure off our shoulders for walk-ins or procedures. That

Highlights

- Some providers stressed that their satisfaction has increased because they have someone to ease their workload and value the collegiality associated with team-based care.
- The provider survey suggests that satisfaction has not increased for all providers.
- Provider satisfaction has increased most with regard to ability to delegate clinical tasks to members of their staff, the balance between their personal and professional commitments, their ability to provide coordinated care, and the degree to which the system is supporting them in meeting their patients' needs.

has been really nice that we are not the only ones shouldering that." Another noted,

"My satisfaction has gone up. I really enjoy working with nurses. It is nice having extra colleague. It has taken a load off. In some ways I am doing more work. I am seeing more patients. I am seeing every single one of the ones that see the nurse, but the type of work is more enjoyable when nurse is doing some work for me and I have someone to talk to."

One of the providers commented specifically on the types of tasks that the nurse removing from his day,

"she really helps me out with clinical tasks like dressings and suture removes and ear flushes and wound checks. That stuff is really helpful to me to have her do that. She has added a lot to the CD management and does a lot of forms and drivers' medicals and those are things that are labor intensive for me – they just take time. That is really helpful. She has been a really great help. Like right now I don't really do much of the CD flow sheets. I used to spend a fair bit of time doing a couple. She does most of it."

Three of the coop staff indicated that they also got the sense that the providers were happier as a result of having someone to help them, although only two felt that the physician's workload had decreased. One noted,

"I think they seem happier because they have someone to call on if they need help. They have an assistant now and their patients are happier. Their patients like to see the nurse, and mention that to the doctor. The doctor feels appreciative of that because they don't have time to dig into the patients' medical problems. I think the interactions that the doctors are having with their patients are even better because they are not feeling overloaded with all their problems. Someone else is dealing with another piece of the pie so some of the pressure is off. They know that if we are in the office and they can't get there because of a meeting, we are there getting things started."

Another noted that in addition to reducing the providers' workloads, they were also allowing the providers to work to their highest scope of practice,

"I think we are making their workload better. We're making it so that they're working to their highest scope of practice because they are no longer having to do as many ear flushes and suture removal and blood pressures, for instance. I think the physicians are generally happy to have the help that some of the small tasks that they themselves don't have to do and it just feels like a help."

One of the coop staff observed that she specifically works to try to make things easier for the physicians,

"Some of my appointments are literally from just going through the doctor's bookings and seeing where I can alleviate his or her schedule. I usually do that before the appointment and will put them on my schedule, and sometimes they do need to see the doctor and sometimes they don't. If I can shave down the appointment time for a physician, I will see them first and leave them on the doctor's schedule."

Four providers likewise observed that the social worker or social programs officer (SPO) has been very helpful to them in terms of reducing the burden on them, especially with regard to form completion. One provider observed, "The great thing about her is she does all the forms disability forms and so that is a lot of effort." Another provider commented, "Disability paper work would sit on my desk for a month or so and you would dread getting it done and it is really dreadful to do and cumbersome. She is a huge help." Another noted that the biggest value of the social worker was in counselling: "The highest value she is bringing is providing that counselling and that frees up a lot of time for me."

Another aspect of increased satisfaction for some providers was just the sense that they were doing a better, more thorough job in providing care for their patients, which was important to them. One provider noted, "I feel like I am just doing more on the chronic disease management just to make sure everything is touched on, they are getting their feet checked. That is really important to me." Another commented, "there are more disruptions to your day, but ultimately the patient is getting better care." This was also observed by one of the coop nurses,

"They really appreciate me doing procedures like suture removals and injections, as well as longer appointments e.g. someone comes in for something simple but A1C is really out of whack so it becomes longer and they really appreciate me taking that on. So overall they feel like they are being more effective as a practice."

Quantitatively, the provider survey completed in August 2017 (n=8) and September 2018 (n=7) and outlined in the chart on the next page provides an additional perspective on changes in provider satisfaction. The quantitative data suggests that provider satisfaction is improving with regard to their ability to delegate clinical tasks to members of their staff, the balance between their personal and professional commitments, their ability to provide coordinated care, and the degree to which the system is supporting them in meeting their patients' needs. However, physician satisfaction appears to be getting worse with regard to their ability to delegate non-clinical tasks and the freedom they feel in making clinical decisions and there appears to be limited change with respect most other variable including their ability to meet patient needs and their overall experience practicing in their profession. Since the overall number of respondents is low in this survey, the data must be interpreted with extreme caution.

In interviews, several providers stressed their overall satisfaction with the PoC process. One commented, "I don't have any reservations. There are always challenges, but it has all been positive." Even a physician who had expressed a lot of reservations regarding some components of the PoC process felt that it had overall been a good experience, "I would encourage other doctors to do it because team work is great." Nevertheless, not all of the providers felt that they had experienced an increase in satisfaction, as will be outlined in in the challenges section of this case study. The qualitative and quantitative data suggest that physician satisfaction is complex, and that while team-based care can improve provider satisfaction in some ways, it may decrease it in others.

Improving patient satisfaction

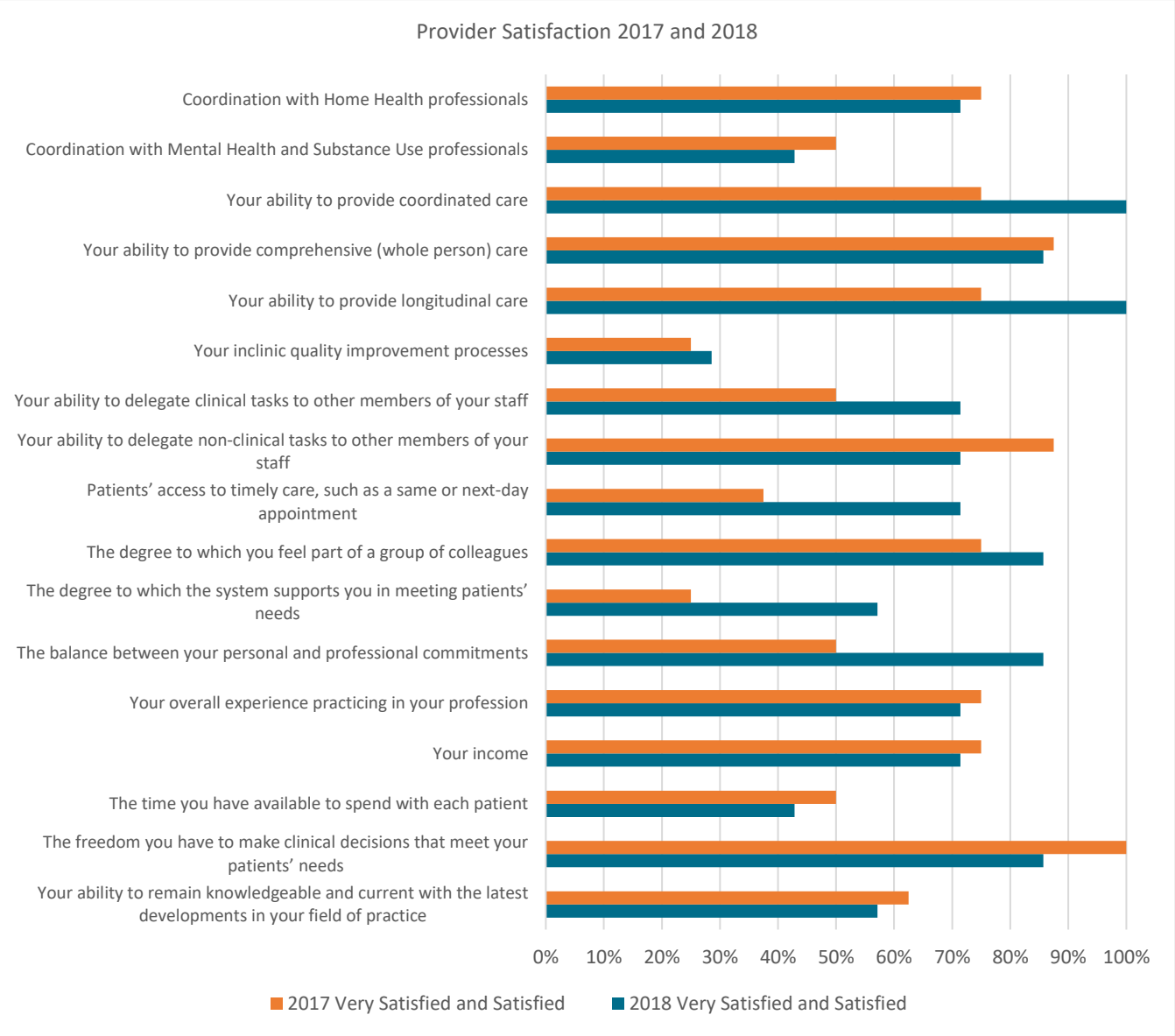
All ten of the providers interviewed felt that the nurses and social worker were improving patient satisfaction and that patients were in general having a positive reaction to working with the nurses and social worker. Three providers observed that a key component of the patient satisfaction was that they felt listened to in the longer appointments that the nurses and social worker can provide,

Highlights

- Qualitatively, providers and coop staff feel that patient satisfaction has increased and that most patients have had a positive reaction to the changes in the clinic.
- In the follow up patient survey, ratings were more mixed in than at baseline. Most patients expressed strong satisfaction with the nurses and social worker and their clinic and felt that it was improving access to primary care, but many felt that it still takes too long to get a primary care appointment.

"Patients are pretty happy. I haven't heard anything otherwise. Some patients will just say – oh just see the nurse, they can deal with that better than the doctor. I think they just like to have someone who spends 30 minutes with you, they feel they have been listened to and that is what people want."

Another provider echoed this sentiment,



"They all like the nurse and a lot of the time they feel heard and they have more time with him. One of the stories I always share is we have a patient, and her memory is not great so she always comes back for same issues e.g. leg pain, and she used to always go to emerge for minor issues. But now we have the nurse scheduled to see her every week and she has not been to ED since."

One provider observed that the faster access was key to patient satisfaction noting, "[patients] love the access." This was also noted by one of the coop staff, who observed,

"in general, people seem to quite like it especially people who got diverted from emergency who did not have to wait for 5 hours. For example, people with a UTI are thrilled…. the wait times are a big deal for the patients, and availability of same day appointments is really nice and patients appreciate it."

This was corroborated by four patient interviewees who all noted increased satisfaction both with their care and with the improved access. One patient observed,

"A couple of times I have dropped in to see a doctor to see me and a nurse was able to see me and take care of the small matter…. It was just so handy… She is lovely. Just very friendly and reassuring and just gets the job done."

Another commented, "They do take good care of me. I feel very comfortable seeing them. They are very compassionate, very concerned and excellent."

Coop staff also felt like patient satisfaction was improving. Three of the nurses noted in particular the time that they have to spend with patients is important,

"People historically have not had a lot of time spent with them, so if I am booked for half an hour for a PAP and there is nobody after me, I just roll it further and people really appreciate the time. I have done a lot of mental health work in a well woman visit and they thank me. It is quality not quantity. I always know how many appointments I have that day so there is time I can spend with them sometimes… I have had all very positive feedback. One because they are getting seen quicker and seen longer so are being fully fully heard. It is quick to see us so it is not a two week wait list. I have heard nothing but positive."

Another coop staff member made a similar observation,

"chronic care people are quite happy too with regular follow up and longer appointment times and less time between appointments… I think I can take a bit longer and get into the weeds more with some of them, for example, diabetes I can go into nutrition and exercise and what exactly does what, and there is a touch of mental health counselling when you talk about chronic disease. I have longer appointments than physicians can."

This was underscored by a patient interviewee who observed that her care has "improved quite a bit. You can talk more. You feel like they want to listen more. It feels more like a group effort than an in and out kind of thing."

A third coop staff member noted that female patients in particular seem to be happy about having a female nurse who can spend time with them or talk about or address specific issues. This was corroborated by one patient interviewee who observed, "It was easier to go in and have a PAP with a female."

Two providers stressed that the quality of care that the nurses provide was key to patient satisfaction. One observed, "Patients have overall been very positive. Interpersonally the nurses are great. They really care for and take ownership of the patient."

One physician observed that patient satisfaction is in part related to the relationship that the provider has with the nurse and that the provider has with their patients. He suggested that patient satisfaction was linked to feeling like their family physician knows what is going on and is overseeing their care,

"as long as they think that I know what is going on, they are happy with it… It is a personal relationship and they trust me if I reassure them – and if didn't I would say I don't think they got it. As long as patient thinks that I am overseeing things and am happy with what is going on they are happy."

The providers generally join the nurse for a portion of about 80 percent of visits to finish the appointment, sign prescriptions or for appointments within the nurses' scope of practice, check in on what the nurse has done. One of the nurses observed that patients are,

"appreciative of the fact that the doctor still comes in. Sometimes they just have to come in and that is fine. Sometimes the physician just has to pop their head in. if it is just a blood pressure check and it is good and it is not needed the patients appreciate it if the doctor still pops his or her head in."

General feelings of satisfaction with the nurses and social worker were corroborated by patients in interviews who seemed to like the idea that a "team" was looking after them.

One provider commented that while patients may initially be skeptical of seeing the nurse, once they experience the care, they are more positive, "Sometimes the MOAs have a hard time selling to some patients. Once the patient actually sees the nurse I have not had any negative feedback."

Considering the results from the baseline patient experience survey (n=200) undertaken in September 2017, patient satisfaction was already high in Boundary area clinics prior to the implementation of the Boundary PoC. Patients were asked to indicate how frequently their clinic and providers met certain criteria, such the clinic is clean, providers listen to their concerns, and providers treat them with dignity and respect. Over 90% of respondents answered very frequently or frequently with regard to 13 of the 15 quality indicators with the exception of:

- being seen within 15 minutes of their appointment time; and
- care provider talking to them about ways to stay healthy and improve their health.

These ratings had dropped in the follow-up patient experience survey (n=329), but again may reflect the different populations for the two surveys. In the follow-up survey, over 80% of respondents answered very frequently or frequently with regard to 6 of 9 of the quality indicators[31] with the exception of being seen within 15 minutes of appointment time, ease of getting in touch with the clinic, and provider talking to them about ways to stay healthy and improve their health, two of which were rated lowest in the baseline survey. Looking at the same results for just the respondents who received the survey in-clinic, these results tend to be higher and more reflective of those in the baseline survey with 88% or more of respondents answering frequently or very frequently with regard to 7 of the 9 quality indicators.

The tables below outlines the quality indicators for which the scores were the highest, and the quality indicators for which the scores were lower in the baseline and follow-up surveys. The quality ratings of the respondents who received the survey in-clinic and tend to visit their primary care clinic more frequently were higher than those of the online respondents and the respondents from community organizations. The quality ratings from respondents who completed the survey at a community organization were quite a bit lower, with fewer than 50% of respondents answering very frequently for any of the quality indicators.

Baseline and follow up survey quality ratings

% of respondents who answered very frequently in baseline survey 2017	Indicators
>80%	• The office reception staff are courteous and respectful* • The clinic is clean* • Providers listening to my concerns* • Providers speak in a language I understand* • Providers treat me with dignity and respect*
70 to 80%	• Providers clearly explain medications, tests or treatments

[31] The number of quality indicators was reduced in the follow-up survey to increase response rates. The indicators utilized are the same as those utilized in the baseline survey. The indicators that were eliminated from the survey in year two were those for which the score in year one were the highest (e.g. the clinic is clean)

	• Providers involve me as much as I want to be in decisions regarding their care • Providers are sensitive to my needs and preferences • Providers give me clear instructions regarding what to do to care for myself after my visit • Providers have access to results from recent tests or exams • Providers give me enough opportunity to ask questions • Providers spend enough time with me*
60 to 70%	• Providers give me clear instructions about what to watch for and when to seek further treatment or care*
50 to 60%	• Providers talk to me about ways to stay healthy and improve my own health
Less than 50%	• I see my health care provider within 15 minutes of my appointment time
% of respondents who answered very frequently in follow-up survey 2018 – All respondents	Indicators
>60%	• Providers have access to results from recent tests or exams
50 to 60%	• Providers clearly explain medications, tests or treatments • Providers involve me as much as I want to be in decisions regarding their care • Providers are sensitive to my needs and preferences • Providers give me clear instructions regarding what to do to care for myself after my visit • Providers give me enough opportunity to ask questions
40 to 50%	• Providers talk to me about ways to stay healthy and improve my own health • It is easy to get in touch with the clinic when I need to make an appointment**
Less than 30%	• I see my health care provider within 15 minutes of my appointment time
% of respondents who answered very frequently in follow-up survey 2018 – Clinic respondents only	Indicators
>70%	• Providers have access to results from recent tests or exams
>60%	• Providers clearly explain medications, tests or treatments • Providers involve me as much as I want to be in decisions regarding their care • Providers are sensitive to my needs and preferences • Providers give me clear instructions regarding what to do to care for myself after my visit • Providers give me enough opportunity to ask questions
50 to 60%	• It is easy to get in touch with the clinic when I need to make an appointment • Providers talk to me about ways to stay healthy and improve my own health
Less than 30%	• I see my health care provider within 15 minutes of my appointment time

*Indicator not included in follow-up survey
**Indicator added in follow-up survey

Overall, 65% of respondents rated their clinic a 9 or 10 out of 10 and 83% of respondents rated their clinic an 8 or higher in 2017. These results were a bit lower in 2018 with 47% of respondents rating their clinic a 9 or 10 out of 10 and 66% rating their clinic an 8 or higher. The ratings of respondents who received surveys in-clinic, and are therefore more comparable with the baseline results, are higher, with 70% of respondents rating their clinic a 9 or 10 out of 10, and 83% rating it an 8 or higher, suggesting that ratings have stayed the same or improved very slightly as a result of the PoC.

In qualitative comments, 25% of respondents (n=120) stressed that their provider is caring and provides excellent care, but 38% stressed that it takes too long to get an appointment and 13% indicated that wait times in the office are too long and/or they feel rushed by their provider. Other challenges included feeling like the care they received was poor (17% of respondents), having difficulty getting in touch with their clinic

because the phone is not answered (6%), needing longer clinic hours (8%) and having their primary care provider always be away (8%).

Getting the nurses and social worker fully utilized and working to full scope of practice

Highlights

- Providers and coop staff feel that the coop staff are working to full scope of practice and are for the most part at capacity, although some of the nurses like to remain only 70% booked to allow for walk in appointments.

An important goal of the Boundary PoC process was to ensure that the nurses and social worker hired were working to full scope of practice and are being fully utilized by the clinics. All of the providers interviewed indicated that the staff were at or approaching full scope of practice. One provider observed,

"It is still evolving. There is still room for them to do more. It is becoming more clear - their roles. We are defining more things that they can be doing versus what we do. I don't think it is easy to define at the beginning. It has a lot to do with the nurse, their experiences, their scope, there is a lot they can do so we shift things in and out of their day. It is hard to just put together a list of things they can do and not do…. Probably it took 6 months to work to full scope of practice."

This was echoed by all of the nurses who also felt that they were approaching or working at full scope. One nurse commented on the difference between working at full scope in an acute care setting and a primary care setting and that working at full scope is a matter of accumulating sufficient knowledge,

"Coming out of acute care where I feel like you have to perform whether you understand what you are doing or not, as opposed to here were we are really given the opportunity to learn things well and then impart that information to patients. So to me working to full scope is having a lot of knowledge in the areas that we are working in and I feel like I am on my way and feel more competent in my position than I have since I started. I definitely need to rely on physicians less because there are things that I know now that I don't have to ask them so I feel like we can be more efficient with their patients and do more for them so they do less."

In general, the nurses felt that they only occasionally were referred something that was out of scope. One nurse commented, "If the MOA refers a patient to me that I know I can't do, I don't waste patient's time, I will refer it back to the doctor because I know it is out of my scope. It happens maybe once a month." Another observed, "Generally, I don't get referrals that are not appropriate, and the MOAs are really good at asking us – this patient has this, can you help, and I can just say yay or nay."

The general feeling among most of the providers was that it took about three to six months before the nurses were working to full scope of practice depending on the experience level of the nurse. One provider observed, "be prepared for 6 months before they are settled right in, but you will see better value for patients in the end." One of the other physicians noted that it might be longer if the nurse is less experienced or has been out of clinical work for a while.

The social worker also felt she was working at full scope, observing, "I am totally at full scope. Right now, I just got back from some training to expand counselling options for trauma. The coop is fantastic for supporting whatever I want to work in."

Most of the providers also stressed that coop staff were busy, indicating that the social worker in particular was booked two to four weeks ahead. This was also echoed by the coop nurses who all indicated that they felt they were about 60 to 80 percent booked ahead on average, and that the remainder of their day was left open for walk-in appointments. One nurse commented,

"I am probably 3/4 booked most of the time, so I have room for walk ins and I have room for doctors who have seen their patients and now need to see the nurse for something like liquid nitrogen… My days are busy and even if I don't have a patient, I have tasks, and can start making phone calls because the doctors are always referring phone calls regarding A1cs, INRs and overdue PAPs."

Another nurse echoed this and observed,

"It really varies day to day. On Tuesday I was completely booked. It was crazy, then Monday was pretty quiet. It also depends on how many docs are there each day. I would say I am 60 to 70 percent full on aggregate. Days with only one doctor in are quieter, and that might be something that changes as we are trying to get some of our complex chronic disease patients to follow up more regularly."

The nurses differed in terms of whether they felt they were "at capacity". Two of the nurses felt that being about 70 percent booked in advance was appropriate because it allowed for space to do walk-ins, have the providers refer things to them like ear flushes and liquid nitrogen treatments "on the fly" and undertake other tasks like phone calls, chronic disease patient recalls and self-study. In contrast, another nurse felt like she would prefer to have more patient encounters.

In contrast, the social worker indicated that she was largely 100 percent booked a couple of weeks in advance and could fit walk-ins or urgent cases in if needed, but did not do so very often.

In addition, to streamline their work, one of the nurses has started to develop "decision support tools" for herself and the other coop nurses. The tools developed to date relate to International Normalized Ratio (INR) work and lidocaine administration, with a standing order for the physicians.

Although it may seem like an easy component of PMH implementation, getting the nurses and social worker to the point where they are mostly booked and working at full scope of practice is not without its complexities. The success in the Boundary PoC is as a result of hard work and initiative on the part of both the providers and the coop staff.

Achieving team-based care

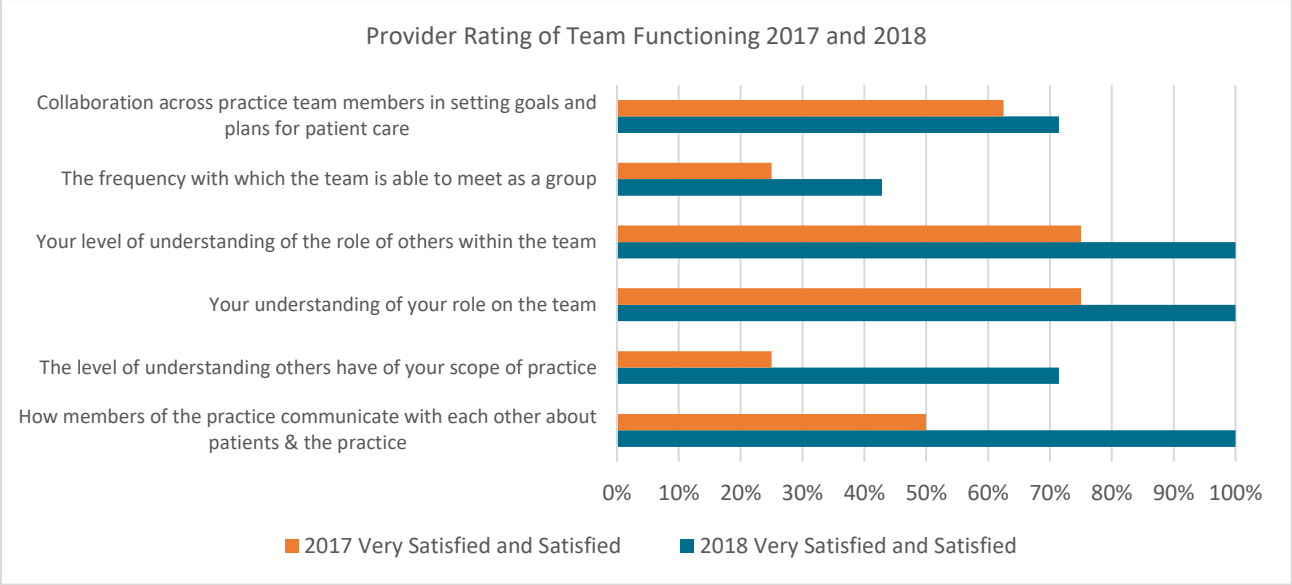
Highlights

- Providers and coop staff feel like they are working as a team with open communication and strong team functioning.
- Ratings of team functioning by both providers and coop staff are high, but coop staff feel providers could have a better understanding of their scope of practice.

Although not all of the providers were asked about team-based care in interviews due to time constraints, the five who were felt that team-based care had been achieved. One provider observed,

"I think we are a team. We have more of a team in the clinic than before the nurses. I think it is open – I hope it is any way. I make a point to try to approach them and ask them what we can do to make their lives better. I feel like our team has gotten stronger."

Another noted, "Yes I feel like part of a team with open dialogue – it is nice to work as a team for sure." The increase in feeling like they were part of a team is reflected in the provider survey on team functioning, which suggests that providers felt much more like a team in 2018 (n=7) than they did in 2017 (n=8).



The feeling of being part of a team was echoed by all of the coop staff. One observed,

"It is like the A-team. It really is and when the doctor comes in and sees me with the patient, the patient can see us communicate really well. There is lots of mutual respect. It is a really good team. I am so happy with it. I feel very comfortable raising mistakes or concerns… I think we have great open communication with the doctors. Everyone is really approachable. They are timely if we need to talk to them they will come at their next available apt. Face to face communication is good, messaging through EMR is very good."

Another noted,

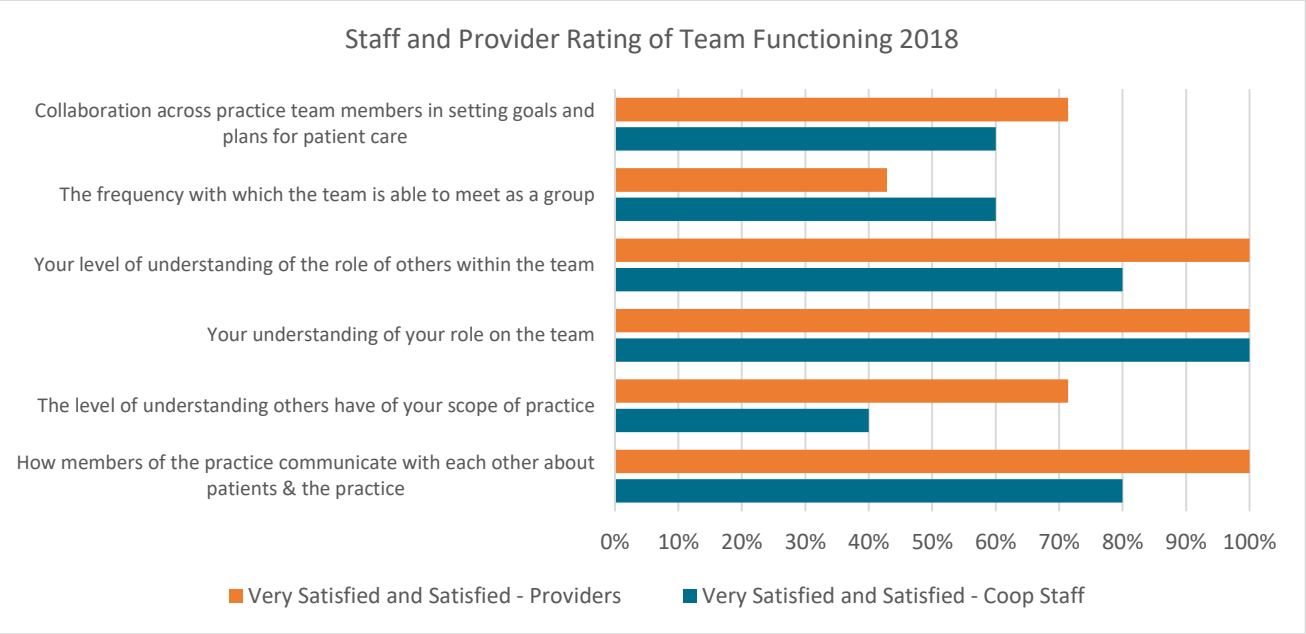
"It is pretty open if there is something I want to say, they are happy to hear it… I think we have become a team at this point. I try to check in now and then to see if what I am doing is helpful and the consensus is that it is but I think we work well together and it is going quite well. I check in to see if anything is needed to be changed. I think my work with the MOAs is going quite well. Usually we communicate by Profile or I walk out front or they come to my office. They have been quite great about answering questions. I think we have a great working relationship."

Although all of the nurses stressed that they had a very positive working relationship with the providers, two observed that they would think very carefully about how to bring something up if they disagreed with one of the physicians, and one noted that she would only do so if she felt that patient care would be negatively affected otherwise.

The social worker also had a slightly different feeling of team because she is split among multiple clinics. She observed, "it is a bit harder because all the nurses have a home clinic, but I am bouncing all over the place. I don't feel like part of the clinic team because so much happens when not here. But definitely feel like part of a team with the doctor and patient in regards to patient care."

Quantitatively, the coop staff (n=5) were fairly satisfied, but perhaps not quite as satisfied with team functioning as the providers, as highlighted in the chart below, especially with regard to the understanding others have of their scope of practice, and the methods by which the members of the practice communicate with each other. This was reflected in the interviews where coop staff indicated that at least at the beginning they had to spend a fair bit of time reminding the providers of the broad range of things that they could do

and noted that more communication from providers with regard to how they want things done would be helpful.



Patients also made comments with regard to the nature of the team and the team-based care in their clinics in the follow-up patient experience survey, with 26% of those patients who commented on their experiences with the nurses noting the value of team-based care. One patient observed, "The nurse is able to take some of the workload off the medical doctors and thereby streamline the process." Another commented,

"I think the nurse is able to facilitate access to the physician more efficiently, by completing a pre-assessment. Also by having an understanding of patient issues she and the physician can potentially collaborate together to serve the needs of patients more comprehensively."

Achieving and measuring the achievement of team-based care is complex. On the surface, based on the perspectives of the providers and coop staff, and based on observations of the two groups interacting in meetings, there appears to have been a level of team-based care achieved in the Boundary. Deepening that sense of team, and measuring it more robustly would be valuable next steps in the Boundary.

Building relationships for ongoing work

Highlights

- The Boundary PoC improved and built important relationships for ongoing primary care transformation.

Another key success identified by several interviewees was that the Boundary PoC design and implementation process built relationships. One provider observed, "I think it is really good to bring all those people together to have everyone in one room to talk about primary care in one room. It was really positive for community." This was echoed by health authority interviewee who observed that the biggest success was the, "willingness for everyone to come together. That the folks wanted to try a different way of working."

A second provider indicated that the biggest success was,

"just everyone getting together and trying to reorganize what goes on is the best part because I have always believed in being involved with everyone – community, home care, acute, lab. It is important to have everyone working together for patients. It has brought us together but BDH was already like that."

This was echoed by a member of the KBDoFP team who noted,

"Another success is how we were able to keep the group of all the stakeholders together over the whole process. We did not lose anyone in a major way and in the end we brought the health authority and physicians closer together."

It is also notable that attendance at the most recent Regional Quality Improvement meeting to talk about how the Boundary PoC was going with respect to outcome achievement was high, with 9 out of 11 providers in attendance and fully engaged in the discussions, which is a significant increase in the attendance of the providers during the planning phases of the process, and suggests that over time buy-in has increased and relationships have continued to improve.

A successful PMH/PCN implementation does not end with the hiring of nurses and social workers to work in clinics. It is a long and ongoing process of establishing and fostering team-based care and linkages between the health authority and physicians' clinics. The relationships developed in the beginning of the PoC design and implementation are proving to be critical in the ongoing implementation of the Boundary PoC process as issues will inevitably arise that need to be addressed.

Implementing some of the twelve attributes of a PMH

Highlights

- The Boundary PoC successfully implemented the team-based care attribute of PMH implementation and had some success on improving access and implementing the quality improvement and evaluation attributes of PMH implementation.

The Boundary PoC PMH/PCN implementation was ultimately supposed to result in the creation of five patient medical homes in the Boundary area reflecting the twelve PMH attributes, and one primary care network that linked those patient medical homes together and with health authority services. Overall one of the biggest successes of the Boundary PoC PMH/PCN, highlighted by thirteen interviewees, was that it succeeded in establishing team-based care by getting three FTE nurses and one FTE social worker working in Boundary primary care clinics. As one KBDoFP interviewee noted,

"The biggest success is that we made a plan and then followed the plan and implemented the plan almost 100 percent as we envisioned with a few delays in hiring and other things that are just variable. We made a plan to hire nurses outside the health authority, and create the coop and embed nurses and the social worker in the clinics and we did all of it."

A provider interviewee echoed this,

"I think biggest success is that it is going – it is working. I think that there is increased team, increased collaboration. I think that the clinics have been able to move towards a team-based care model and that was part of the goal."

This was also observed by a health authority interviewee who stated that the biggest success was "That we actually did it. We succeeded where a lot of people haven't and I think that is a huge accomplishment."

This sense of actually putting something on the ground was a critical as a success for many interviewees. the KBDoFP and the health authority had been working together to plan for patient medical home

implementation for several years, including two "road shows" around the region to engage physicians, and several months of concentrated planning on the part of a CSC working group with regard to how to make patient medical homes a reality in Kootenay Boundary. There had become almost a sense of urgency in delivering what the KBDoFP had been talking about with its physicians for many years. One health authority interviewee observed that,

"I think having been involved in the planning for so long the big success was to actually see it come to fruition – it felt like a success just to move forward because we had planned for so long. For all the efforts and relationship building and development of CSC and trusting one another and building relationships we were finally all able to come together and actually use our skills and strengths and put something on the ground."

The Boundary PoC was more successful in the implementation of some attributes than others. According to interviewees, the Boundary PoC effectively implemented the *team-based care*, *contact (timely access)* and *evaluation and quality improvement* attributes. Likewise, a few interviewees noted that *commitment*, whereby patients have a most responsible provider (MRP) and physicians have a defined patient panel, already existed in the Boundary. With regard to team-based care, one health authority interviewee observed, "we've probably moved the needle most on team-based care. We've definitely moved the needle on that." Other interviewees pointed to the changes in time to third next available appointment, and felt that accessibility had improved somewhat.

With regard to quality improvement and evaluation, one interviewee noted, "We have moved the needle a bit, or at least established a needle. We have made it a part of the change journey." Others observed that while the physician uptake of the QI process had not been huge to date, having the framework of outcomes with baseline data were important and a step forward for QI in the PMH. A health authority interviewee observed, "the work with respect to evaluation and QI, a lot of places don't do. We keep trying to tell people that this is important… you have to prove that what you are doing is working. You can't just say that it is."

With regard to the other attributes, interviewees were more circumspect and divided. Two interviewees felt that the degree of *patient-centeredness* of care had improved to a small degree, while three felt that *comprehensive* care had improved with more services being offered in the clinics with the nurses and social worker and work underway to improve the linkages to health authority services. Two interviewees made reference to the integrated EMR that occurred in relation to the Boundary PoC. One interviewee expressed concern that *coordination* has decreased because physicians are no longer meeting regularly with each other and health authority staff in the hospital because they are reducing their scheduled visits at the hospital as part of the Boundary PoC process, while two others were unable to speculate. Two interviewees also observed that the physicians already had a strong *network*, so it is unlikely that they are improving that as a result of the Boundary PoC.

Overall, putting something on the ground in terms of PMH implementation, no matter how incomplete in terms of meeting all of the PMH attributes is a significant step in the right direction and will provide important learnings for more effective PMH implementation in other parts of KB and the province.

Satisfaction of health care coop staff

An additional success in the Boundary PoC is the satisfaction of the coop staff with their career working in primary care. One coop staff member observed that the biggest success for her in the Boundary PoC process was,

Highlights

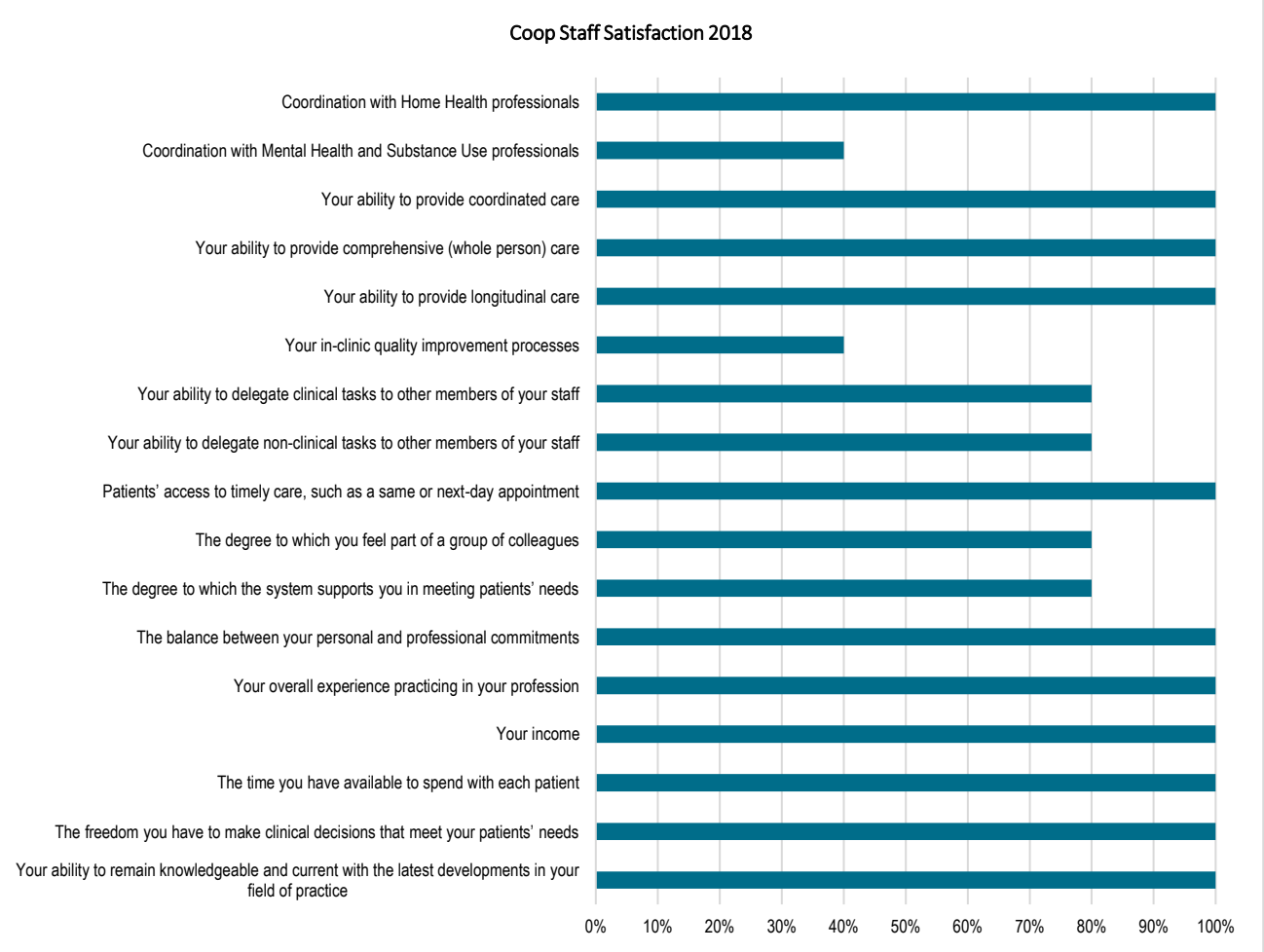
- Coop staff satisfaction with their work in primary care clinics is high as they feel they have more flexibility to make change and engage in greater continuity of care and health promotion.

"Increased scope of practice. Increased job satisfaction. I love my job. I have never been able to put love and nursing in the same sentence. This is why I went to nursing school to really promote health and prevent disease and I think we are doing that. I have passion in my work. I am finally at a place in my career where I am satisfied."

Another noted,

"I feel like I have more job satisfaction, because I feel like the support systems are more readily available, and I feel like I have the opportunity to engage in more of where the position is going whereas in the health authority you feel like more of a number."

The satisfaction of the coop staff is corroborated by the provider survey that was also completed by the coop staff (n=5) in 2018. As the chart below highlights, coop staff were 80 to 100% satisfied or very satisfied in all of the categories with the exception of coordination with IH MHSU and in-clinic quality improvement processes.



The satisfaction of nurses and other allied health providers in a primary care setting is critical to the success of team-based care and PMH implementation.

Improving patient outcomes

Highlights

- There is some limited anecdotal evidence of improved patient outcomes.

Although it is much harder to measure, and there is very limited data, a few of the providers and coop staff felt like patient outcomes were improving. One provider felt that the improved chronic disease management in his clinic was resulting in improved patient outcomes, noting that "My admission rate has gone down – rarely do I have a person as an inpatient anymore and if I do usually they are unattached patients. We just don't have CHF patients and COPD flare admissions anymore."

A coop staff member similarly commented,

"Sometimes I run into diabetes patients in the store, and say I have been thinking bout what you said about diet and exercise and they will say I have switched my diet and my blood sugars are down and they seem thrilled and they end up decreasing their meds a bit. That is the best part. Or similar thing in follow up, their blood sugars are lower that is just great."

Measuring patient outcomes was not a focus of this case study and more data are required to draw any conclusions with regard to the degree to which PMH implementation and the Boundary PoC in particular is improving patient outcomes.

Achieving outcomes

Highlights

- Achieving the CTAS 4/5 and the mental health supports in clinic outcomes and being on track to achieving the scheduled visits outcome are important successes.

Many interviewees pointed to the achievement of outcomes, including a reduction in CTAS 4 and 5 visits to the Boundary District Hospital (BDH) emergency department, reductions in scheduled visits at BDH and the mental health supports provided in clinics as one of the key successes of the Boundary PoC. One KBDoFP interviewee observed,

"We are seeing reductions in CTAS 4 and 5 and reductions in scheduled visits, and [the social worker] is achieving outcomes of mental health supports in clinics. I think we can say we are making progress and have done some really good work."

This sense of actually making a difference in the numbers and meeting the collaborative goals set as part of the process is important to many of the stakeholders, especially the health authority. While there was strong evidence in the literature that achieving some of these outcomes were possible as a result of PMH implementation, nobody knew for sure if they would occur.

Many interviewees also stressed just the importance of having the outcomes and a data-driven quality improvement process that keeps everyone focused on what it was that they were attempting to achieve. Physicians frequently alluded to the outcomes and said "we agreed to these outcomes" in working group meetings, suggesting that the outcomes are affecting their behaviour. Having quantified outcomes also likely played an important role in convincing the health authority to support the Boundary PoC process.

Learning about patient medical home implementation

Although less commonly noted by interviewees, the amount learned from the Boundary PoC implementation, in terms of the challenges of undertaking such work and the types of enablers that facilitate success, was identified as a key success in and of itself. One KBDoFP interviewee noted, "I am glad we've learned so much from it, from an organizational standpoint we will do future work way better from what we learned in the Boundary." Another KBDoFP interviewee observed, "if we do it again, it will be cheaper and easier."

Highlights

- The learning from the Boundary PoC PMH/PCN implementation played an important role in the development of Kootenay Boundary's PCN proposal to the Ministry of Health.

The learnings from the Boundary PoC design and implementation should not be underestimated and played a key role in the development of the Kootenay Boundary Primary Care Network Service Plan proposal to the Ministry of Health prepared by the KBDoFP and IH, in terms of the degree of change management support required, the degree to which nurses and social workers can enable physicians to see more patients in their day and the potential outcomes of PCN implementation.

Key Enablers of Success

Interviewees identified a range of key enablers of these successes including committed and collaborative leadership from the KBDoFP and the health authority, strong leadership from the physician lead, the existing relationship among all the stakeholders, and the commitment of everyone to success.

Highlights

- KBDoFP leadership and funding
- Health authority leadership and funding
- Physician leadership
- Relationship between health authority and KBDoFP
- Quality improvement framework
- Pre-existing relationships in the Boundary
- The health care coop
- Time and patience
- Ensuring that patients understand the changes in the clinic
- Co-location of the nurses
- Hiring nurses with a diversity of primary care experience
- Physician support for coop staff
- EMR use

KBDoFP leadership and funding

The KBDoFP played a critical role in the Boundary PoC design and implementation. The KBDoFP project management team organized all of the change design meetings, wrote the PoC model description, created the QI framework and outcomes, established the health care coop and supported the implementation working groups. This required the coordination of multiple stakeholders with varied agendas operating in a complex environment. The role of the KBDoFP in the successful implementation of the Boundary PoC was emphasized by KBDoFP, health authority and provider interviewees. One provider observed, "The best thing of the implementation was having the resource of the Division staff to help implement that because they had the time and space to do that. The physicians did not have that time."

The KBDoFP also had a nimbleness that the health authority, who was a critical partner in the design and implementation of the PoC, did not, and was able to move a four-person project team into place with a flexible mandate immediately. While the health authority did ultimate hire a project manager to help support the PoC process, many health authority managers and administrators were participating in the PoC process off the side of their desk. The KBDoFP was able to devote the person power to the project when it was needed and ramp up and down the number of hours per week devoted to the PoC as needed. In particular, when an

intensive push was required to establish the Boundary Health Care cooperative, the KBDoFP was able to ensure that there was someone with the hours and skills necessary to make it happen. A member of the KBDoFP team commented, that the team "made sure everything happened that needed to happen." One of the KBDoFP team members also stressed the importance of having a person from the Boundary area on the team, noting that "I don't think the Boundary physicians would have taken direction from CSC. They would not have responded well from someone from outside the community trying to direct them."

To provide this level of support and leadership, it was crucial that the KBDoFP have access to considerable change management funding. One of the key lessons from the literature review on PMH implementation in the U.S. is that underestimating, and therefore underfunding, the degree of change required to implement a PMH is a major risk.

The KBDoFP also brought the benefit of a trusting relationship with the local physicians and NP, as well as a local physician lead who had been a long term member of the KBDoFP Board, and was able to bring them to the table to engage in the design and implementation phases of the project via sessionals.

Health authority leadership and funding

Commitment and leadership by the health authority, and particular health authority administrators and managers, also played a fundamental role in the success of the Boundary PoC. In addition to providing the $500,000 commitment of annual funding to make the PoC possible in the first place, the health authority was flexible with regard to the PoC design, came to the table as a key partner in the design and implementation process, provided utilization data as needed, and made multiple changes at Boundary District Hospital to facilitate outcome achievement. One KBDoFP team member observed,

"The Health Authority's commitment was fundamental to the success of the overall process. The Health Service Administrators were integral in the design phase… they championed it in their own spheres of influence, attended meetings, shared data, and were open to changing how their staff interacted with clinics and with each other. When it came to implementation, they enabled their staff on the ground to drive the changes forward. I think it's important to acknowledge that they worked hard at being flexible. When the physicians said they wanted to hire the staff themselves, I think they were disappointed, but they supported it and stayed committed to the partnership."

Yet another commented,

"The departments were willing to come together. The 90-day period with 2 day workshops, everyone was willingly gone along. If the relationship was not that strong there would have been more trouble… with the intensity of that period… If you look at all the hospital and utilization data that we received. They were helpful in bringing that forward and sharing it openly. There was a willingness to change structures and processes in the hospital….."

In particular, a local administrator was considered to have really driven the process forward and championed it within the health authority. One KBDoFP interviewee observed,

"[a specific health authority administrator] showed up as champion. She made it happen and drove it forward despite stressors. She was a champion at the CSC and within the health authority. Would it all have gone down without the CSC, maybe… but it would not have happened without her role as a champion."

During the summer of 2017, major changes were undertaken by the health authority at Boundary District Hospital (BDH) to move the Home Health department to the main floor of the hospital to establish a Community Ambulatory Treatment Clinic (CATC). This move was intended to allow Home Health nurses to

provide care to some patients arriving at the BDH ED for scheduled visits, thereby helping to achieve the goal of removing 90% of scheduled visits from the BDH ED. One health authority interviewee observed with regard to the change,

"The main difference at BDH is the relocation of all of the community care team – case managers, supervisors and home care nurses are all co-located in one hallway, which makes it easier for patients who have been triaged who may be more appropriate for ambulatory care clinic can go down the hallway – that is the most important change…. Patients seem happy with ambulatory care clinic because it is decreasing their time sitting in ED department waiting."

Scheduled visits deemed appropriate for diversion from the ED to the CATC include suture or staple removal, catheter issues, phlebotomy, IV antibiotics (but not first dose), and wound checks.

To date, the CATC has not ended up diverting as many patients as hoped (49 scheduled visit patients were diverted to the CATC in periods 1 through 7 of 2018/19).[32] This is in part because it took a bit of time for IH staff to understand what types of appointments were most appropriate for diversion and establish processes for that diversion. Now that these processes have been established, it is hoped that there will be more diversion of scheduled appointments. The relocation of the home health department also helps the IH teams at BDH to work more collaboratively and improve patient care. One health authority interviewee commented, "I think internally the biggest success is having the home health team relocated and able to work together more collaboratively with the ED and acute to work towards the goals." In addition, having patients go to home health for some of their scheduled visits helps them to understand how home health works and start to establish relationships for potential future care. One of the home health nurses noted that some patients come to home health for the first time as a scheduled visit diversion from the ED, but end up becoming part of the home health regular program for ongoing wound checks and other care, thereby allowing them to receive care in a more timely manner in the appropriate location.

In addition to the CATC, IH also improved its data coding practices, thereby allowing better understanding of the scheduled visits, educated its staff on triaging in the ED to ensure that CTAS 4 and 5 visits are being correctly classified, and updated its registration processes at BDH to have scheduled and unscheduled ED patients registered in one location to make things simpler for patients and reduce congestion in the ED. One manager observed just prior to the implementation of the new registration system, "We're hoping that for patient simplicity and for overall better functioning of the building, we can have front clerks register whoever comes through door so unit clerks at ED can do unit clerk work instead of registration work."

The health authority is also playing a key role in moving PCN implementation forward. Although moving forward with significant PCN work in the Boundary has been slowed down a bit while health authorities develop their Specialized Care Service Plans (SCSPs) across the province, some integration work has already happened in the Boundary to improve patient care. One health authority interviewee observed,

"The physician groups getting together with individual departments that we are doing now is really important because creating buy in and allowing them to talk about what is working and what is not and good ideas have been generated to provide better care and give physicians more feed back about what we are doing with clients. We are doing feedback forms to the doctors in Home Health and MHSU now. We just started this week to have [two physicians] to meet with Home Health with morning huddles to talk about mutual clients and do case consults."

[32] Interior Health Strategic Information, (2018). Boundary Resident at Boundary District Hospital ED Volumes with CTAS 4 and 5 and Boundary District Hospital Scheduled ED Volumes. Fiscal Year 2016/17 to *2018/19 (Fiscal Periods 1 through 7).

Further work is anticipated once the Common Program Agreement (CPA) for PCNs is finalized and signed. One IH staff member observed that eventually they hope to be able to integrate coop staff into their team meetings or talk more openly about mutual patients, but cannot yet due to confidentiality concerns. As of October 2018, the health authority had been given approval to integrate coop staff into health authority discharge meetings.

The health authority continues to play an extremely critical role in the Boundary PoC implementation process, engaging in the implementation working groups and providing the KBDoFP with data on CTAS 4/5 visits, scheduled visits and hospitalization, so that progress towards the outcomes can be accurately measured and problems resolved.

Physician leadership

Leadership on the physician side was also crucial and was emphasized by interviewees. One of the KBDoFP team members observed, "A key enabler was that we had really strong physician leadership with [our physician lead]– he was really committed to project and engaged, and really believed in process, and understood on fundamental level what we were trying to do." One of the providers observed that this physician leadership was crucial,

"the most important thing for me is how much time it took us to do this, and how much time it takes a physician to do this. Without a physician lead having the time to do this I don't think it would have happened because it required a physician in the community to do it. A physician working full or part time cannot do it."

Another KBDoFP interviewee echoed this and stressed the fact that it was critical to have the support of a physician from the community who could make the time for the work, "There was a gradient of enthusiasm. The highest came from the physician lead who was semi-retired so he was able to make more time."
This leadership was really important because the physician voice is needed at the table and yet (as will be discussed in subsequent sections), many of the physicians did not have the time to be fully embedded in the work.

Relationship between health authority and KBDoFP

A key part of the health authority's support for the process was felt to be as a result of the overall level of trust between the KBDoFP and the health authority, especially at the CSC level. Three interviewees stressed that the relationship was critical in the success of the Boundary PoC. One KBDoFP interviewee observed,

"I don't think Boundary PoC would have happened without the relationship between IH and Division. It was the trust in the original relationship that allowed IH to put the money on the table for the PoC… The CSC was the enabler and the facilitator for the trust building between the Division and the HA. I don't think this would have happened without the CSC and the relationships at that table."

The importance of this relationship was echoed by a health authority interviewee,

"I think it was everything, because I think our relationship is of the nature that we can say what we are thinking even if we think it is going to be different. We can argue and we are good with it, and I think that is good, because If we didn't have that frank relationship I think it would have blown up somewhere else… I think the CSC played a bigger part in getting the ball rolling, totally because it was through them that [our CEO] even decided to do it. It went back to a strategy meeting where we decided the policy papers were going to be a focus."

The KB CSC is considered to be a highly functional group and in 2016 completed the Wilder Collaboration Factors Inventory to measure the strength of their collaboration. The group scored very highly on almost all of the factors, and had 100% agreement with regard to the subscales "My organization will benefit from being involved in this collaboration" and "I have a lot of respect for the other people involved in this collaboration." The CSC was a major champion and leader of the Boundary PoC process from its conception to its approval by the health authority. It is unlikely the project would have been successful in the absence of the trusting relationships between the KBDoFP at the CSC level and at other levels.

Quality improvement framework

The Quality Improvement (QI) framework that served as an underpinning for the outcomes developed, the baseline data collected and the continuous improvement cycles undertaken in the clinics was also considered to be a critical enabler of success by two interviewees. One KBDoFP team member noted, that the QI framework "gave us baseline data, outcomes to track towards and mechanisms to use to track, so we will have data later to measure whether we have achieved the outcomes." Another KBDoFP interviewee stressed that the QI framework was really important to the health authority as a means of showing progress.

"The framework is brilliant and very comprehensive and captured everything from a technical perspective and perspective of communicating it to the stakeholders on these are the outcomes and this is how we track it. The physicians could have lived without it. It is of no significance to them. But the health authority on the other hand, it is of significance to them.… without the framework and the outcomes and indicators really clear and the timing of data collection, we would be in difficult waters to show to the health authority the progress. So for the health authority the structure and data they needed might not have been in place without the framework."

A third KBDoFP interviewee noted that even though there were difficulties associated with getting the physicians to buy-in to the QI framework, it was critical to have it as the underpinning of the plan,

"I think the fact that we got these teams functioning together is brilliant, and the fact that we have been able to do it with a QI framework and a plan, however awkward and difficult it is to stay true to paying attention to QI and outcomes, I still feel like we set the stage in terms of our structural overarching framework for doing such a change. That was probably right. We have lots to learn about the nuances of what is required and possible on the ground but that does not make the strategy incorrect."

Even if it was not fully implemented, the quality improvement framework did cause everyone to become more data driven and committed to tracking progress. It also grounded the process in data and allowed everyone to focus constructively on what was known and what was not known from the beginning as a way to identify challenges and work through them, helping to build relationships and take the tension out of more difficult discussions. The attendance of over twenty Boundary area physicians, coop staff, IH staff and KBDoFP staff at the most recent Regional QI meeting to look at the data and discuss what can be changed to better meet the outcomes highlights the positive impact a QI focus can have on the process.

Pre-existing relationships in the Boundary

Another key enabler of success, and one of the reasons the Boundary was chosen for the PoC was the pre-existing relationships between the doctors and the health authority and among the doctors themselves. This was stressed by at least three interviewees. One KBDoFP interviewee observed, "Of all of our regions, with possible exception of some very small areas, they have the most robust primary care network already established and team-based relationships with their health authority colleagues."

A health authority interviewee also noted,

"The biggest part of it was that the physicians seemed to be the ones that were the most ready. They met on a regular basis already. It was also good from an IH perspective because we had one Interior Health manager who was in charge of a lot of the services there – MHSU, Home Health, and Public Health, so it was easier to collaborate across a lot of fronts."

Whether the region was sufficiently ready or not and whether individual physicians were totally ready is a matter of debate (see the challenges section of this case study), however the pre-existing relationships in the Boundary likely played a significant role in smoothing the path and prevent the initiative from derailing when things got difficult.

The health care coop

Hiring the PoC staff through a health care coop was both a key success and an enabler of success in the Boundary PoC process (it was also a challenge as outlined in subsequent sections). When asked what they considered to be the biggest success of the Boundary PoC process, four interviewees stressed that getting the health care coop up and running and employing staff, was a major success. One KBDoFP interviewee observed that the coop changes the interactions among the stakeholders,

"I think it is really important to have a vehicle that gives everyone a stake at the table and if they were health authority employees the doctors would not have a stake at the table in the same way and the staff wouldn't either… even if we have 10% of employees who are not health authority employees in patient medical homes, they upset the apple cart and everyone behaves differently. There is a benefit from having autonomy from the core power structure."

For many of the providers, having control over the people who would be working in their office was an essential part of the Boundary PoC process. They wanted to be able to hire who they wanted, have them undertake the tasks that they wanted with no restrictions other than legal scope of practice, and fire staff as necessary. One provider noted, "It is a hassle but that is what we took on…I am glad we are in control. It is more work and more responsibility, but we get more say."

For most of the providers, being able to control the scope of the nurses' practice was important. One provider commented, "I think we have pushed their limits in terms of their scope. They are doing our suturing which they would not be doing anywhere else."

Another observed,

"Ideally the doctor would hire the staff because it gives you total flexibility in terms of what they can do and not do. The worst case scenario is the HA hiring the staff before like the IPCC nurses and they totally dictated what they could and could not do, and she could be 0.2 of a diabetes educator and 0.2 of wound care – it was too restrictive."

A third provider also stressed the importance of this flexibility with regard to the nurses,

"Their role that they are doing right now is keeping them busy. There are other things they could do and that is why I think physician running things is the best way because they can determine. Maybe in Salmo they would want nurse to do IV therapy because they are more rural, but we have hospital with IV nurse and centre and don't want to take away a third of their patients. Maybe they would do something else. Right now if the nurses are not busy they do phone follow ups. So they are very flexible."

For all of the coop staff themselves, the flexibility of working for the coop is also important. Two of the coop staff commented about the importance of being able to make changes that benefit patients more quickly than in a health authority. One observed,

"Working in a coop is way more flexible right from my work environment to like if something needs to be changed, for example, like the structural bones of what we are doing, we can do that very quickly because we have close contact with the people who can make that change – the doctors and the Division. There is really no middle management which I really like because the patient care can really change based on the need... I feel like more of an agent of change – I can see a problem and fix it in a few weeks rather than never because my voice would not be heard."

This was echoed by another nurse, who also observed that being coop employees enabled them to work more to full scope of practice,

"I find with [health authorities] there can be a lot of protocols for everything and you didn't always know what the protocol was and that could delay things getting done. For example, there was a long learning module that nurses had to do in order to do a flu shot, even though we've been trained in that in nursing school, but because you were so busy on the floor you could not complete the learning module, so you could not do basic nursing tasks…. Whereas in clinic we can do those things as long as the doctors have assessed we have the ability. I can also go door to door and talk to the people I work with on a regular basis to figure out how to do things more smoothly and make changes. It is just a bit quicker that way than in a health authority."

Overall, although it was a large amount of work to establish and remains a challenge to administer, the flexibility enabled by the health care coop has been a key enabler of success in the Boundary PoC process.

Time and patience

Time was also a key enabler in the Boundary PoC. The literature review undertaken for this project strongly underscored the importance of time in PMH implementation, stressing that it takes about three to five years for PMHs to be fully implemented. This is consistent with the experiences in the Boundary. Being patient and having ongoing change management support from the KBDoFP in year two of implementation, albeit at a much lower level than in year one, has been a critical aspect of success in implementation.

PMH implementation is complex, and sometimes it just takes time to work through each aspect of implementation. For example, it was hoped that all of the nurses would be hired in September 2017. However due to unforeseen events, the nurse in Grand Forks Medical Clinic did not start until December 2017. It is also not possible to implement too many changes at once. The focus from September 2017 to February 2018 was really on getting all of the nurses and social worker into place, oriented and working to top of scope. The focus for the health authority at that time was figuring out how to divert some scheduled visits from the emergency department to the new Home Health ambulatory care clinic. It would have been too difficult for physicians and the health authority to focus on integrating their services more effectively and increase the continuity of care and move into PCN implementation at that time. However, by the beginning of year two, both groups had enough capacity to start having these discussions.

Likewise, as implementation started and data started to come in with regard to outcome achievement, such as with regard to scheduled visits, problems in some areas were identified and had to be discussed to develop collaborative solutions. These things all take time and commitment and it is important not to have unrealistic expectations. The Boundary PoC is 18 months into implementation and there are still multiple processes being adjusted and studied to try to ensure that the outcomes are met.

Ensuring that patients understand the changes in the clinic

Another key enabler of success that emerged to some degree was to ensure that patients understand the changes in the clinic. When asked about patient reactions to having a nurse in the clinics, the majority of providers said patient reaction was on the whole very positive. However, a couple of physicians observed that communicating the changes to patients was important to ensuring patient satisfaction. One provider noted,

"Patients are generally positive. It has taken some adjustment though. Sometimes I am not sure if it is a misunderstanding or miscommunication, but there has been a couple of times that they were surprised they were seeing the nurse and were not totally happy with that, but that is pretty uncommon. Sometimes when patient is booked to see us and she will get started if we are running behind… but we put up a sign that that is going on and so patients in the waiting room have an understanding that nobody is being skipped."

Another provider also commented on the importance of communication with patients and giving patients the choice of still seeing their physician,

"one patient upset at having seen the nurse. He was booked with me and then got slotted over to see the nurse and I have talked to MOA that it has to be clear who they are seeing… If patient says I need to see doctor about this, I prefer if they book with me."

Bringing patients along on the PMH journey is a critical element of success and one that was only partially achieved in the Boundary and often in a more reactive manner. While there were initially plans for a PMH announcement to help patients understand the changes in their clinics and the importance of calling their clinic first rather than going straight to the ED at BDH, this was delayed due to some internal challenges in the health authority relating to staffing. While an initial newspaper article came out early in the implementation process, the larger information campaign to patients did not get rolled out until later in 2018.

Co-location and ratios of the nurses

Although it is not a surprise, the interviews reinforced the importance of having the staff in the clinics co-located and available in a sufficient ratio for working relationships to form. All nine of the physicians who have a nurse co-located, and particularly the clinics that have a nurse five days a week, stressed how easy it is to communicate with the nurses. One observed, "it is easy to communicate with the nurses – they are there every day." Another noted, "I have no challenges communicating with the nurses. It is person to person." Two of the physicians observed that co-location allows for both formal and informal communication. One noted,

"The nurse usually just messages me through EMR and sometimes I am not always looking so they will just come and get me and usually at end of day I follow up with them make sure things are okay and if there is anything they want to talk about and just have those hallway conversations."

Three of the physicians stressed the value of being able to just go down the hallway to find the nurse, or have the nurse find them. One observed, "I would generally go and knock on their door because personally I don't like sending notes." Another noted,

"If it is something the nurse is comfortable with he will give me a short summary on the EMR and I can just say yes or no. Sometimes it is more complicated he will say come and see or come and find me and depending on where I am with the current patient I may go see his patient first if it is quick or if I am almost done with my current patient I will say I will finish first."

The coop staff also stressed the value of being able to speak person to person. One of the nurses observed, "There are lots of informal huddles all day long, as needed." Another noted, that the physicians "are all happy

for me to knock and walk into their office and bring anything up. If they want to talk to me they come to my office."

In contrast, the providers expressed more difficulty communicating with the social worker who is co-located at most two days a week in the largest clinic, and at the least one day every two to three weeks in the smaller clinics. One physician observed, "Communicating with the social worker is more of a challenge because I am only in clinic 2 days a week. So if she is not there on my two days…" Another noted,

"She catches me when she can to do the patient conferences with a list. Our communication is not as structured as it should be. It would be helpful to know she is in the clinic on a set day or set time and get the list in advance."

This was echoed by the social worker who observed,

"One of the challenges that I face is just around that I am not in each clinic each day. Face-to-face verbal communication is the most effective, you get the most nuance. Occasionally I get patients sent to me that I have no idea why they are here and they don't know why, and there are not necessarily good notes in the EMR, but that is generally pretty rare. Generally with a conversation we can figure it out. The biggest struggle is I am not in each clinic each day, if I were more accessible would be much smoother."

One physician commented that the lower ratios of the social worker affect how they view her, "I feel more like nurse is integral part of clinic and SPO is like visiting resource."

This topic is discussed further below in relation to challenges associated with the Boundary PoC process. The evidence in the literature and the experience in the Boundary both reinforce the importance of co-location and having a nurse or allied health provider available in a sufficient enough ratio to enable the development of team-based care.

Hiring nurses with a diversity of primary care experience

A key enabler of the success in the Boundary Proof of Concept was that, in part because they were offering a competitive compensation package, the Boundary health care coop was able to hire staff with a diversity of primary care experience. One nurse, who worked in both community and education as well as an ICU and emergency department, commented that having a diversity of experience really prepared her for the role,

"Doing a multiplicity of roles really prepared me for this primary care role because you are a generalist in everything. You need to have experience in a lot of things. The ED pieces came in handy for triaging CTAS 4 and 5 as I can make a call when it is appropriate to refer to the emergency department. Primary care is really a bit of everything… Coming in as a new grad it would be a huge learning curve versus coming in with 15 years' experience, which really helped me."

Two of the other nurses and the social worker also had significant primary care experience, both having worked in a primary care network in Alberta, one working with chronic disease, mental health and chronic pain patients. One observed, "I think I was lucky to have a varied background with chronic disease; to learn that would have been a lot." Conversely one of the nurses who had less primary care experience observed that the biggest challenge in the work was, "coming from a background of not having much primary care experience at all. There was a steep learning curve. I am starting to crest the hill, but there was information overload at first."

Physician support for coop staff

While physician engagement in the change design phase of the Boundary PoC was more variable, almost all of the physicians in the Boundary appear to have really embraced team-based care and are actively supporting the coop staff. The ratings of feelings of team were high for both the doctors and the coop staff, and in interviews, the coop staff indicated that they really feel supported by the doctors. Most of the physicians have shown a strong commitment to referring patients to the nurses and social worker, providing clinical and practical instruction on patient flow where needed, supporting the nurses when they need help, and keeping the lines of communication between themselves and the coop staff open. In addition, one physician participated in both of the coop staff learning days providing several hours of clinical instruction on a variety of topics including suture removal, screening recommendations, chronic disease management and lidocaine administration.

One of the nurses observed, "The doctors are always approachable and more than happy to answer questions." Another commented, "It has been pretty good and a lot of the physicians have been welcoming and willing to teach and take time after appointments to explain things and say why they did things." A third noted that the providers have always been "very gracious" about answering questions, and observed,

"I am a little bit surprised and delighted at everyone's commitment to this project, and the effort that has been put forth even before we came. Everyone's committed and the general respect for everyone as colleagues."

The social worker likewise noted, "The doctors have all been super interested and excited in my work."

The providers in turn indicated that they hoped that the nurses and social worker felt comfortable approaching them about anything, and that they trust the professionalism and judgement of their staff. One provider observed,

"if they send an EMR note that they handled it and I say okay – for example, a dressing change, I trust them that if they are happy with it then it is fine. If they are concerned about the way the wound looks they would call me in. But otherwise I trust that they look at it."

Another provider commented, "with the social worker I feel like a team with open communication – I trust her professionalism and ethics around confidentiality around patient care etc."

The provider role in supporting team-based care in terms of providing instruction and facilitating open communication as well as trusting the professionalism of their staff is an important one and cannot be underestimated as a key facilitator of success.

EMR use

The importance of the clinic EMRs as a means of communication among the physicians/NP and the coop staff was highlighted in all of the interviews with providers and staff. All of the physicians indicated that the nurse often messages them through the EMR via a pop-up when they are ready to have the physician join an appointment, and that they send the nurses tasks via the EMR to undertake phone calls or other clinical work. One physician observed how much they use the EMR for workflow in his clinic,

"The nurse helps me a great deal…. I go in and see the patient. She makes the notes in the EMR, sends it to me as a task, I would read it and then sign off. She sends me reminders to do the orders. It is a bit of a learning curve still – we are using EMR better to help with office flow. We send each other a lot of messages during the day. If I get orders and requests that she can deal with I send it to her. When the front desk receives messages e.g. renewal of standing order

for A1C – they send directly to her so I don't even know about that and she just does it. I don't even see it. Usually for flow, I will finish with patient and check her door, or she sends an EMR pop up when she needs me to come in."

All of the nurses indicated that the EMR was a critical component of their communication with the physicians. One observed,

"Sometimes I have no idea what to do and just call in the doctor. They come in and I give my findings and I suggest a plan and then they will correct. Or if I don't want to sound stupid in front of the patient or give false confidence, I will message the doctor via EMR so they know what the situation is. The messaging system on the computer is good that way. For example, I am reading a pathology report and it looks like melanoma, but I don't know, I will say to doctor can you read report before you come in. I really have to be sensitive to my scope."

Another noted,

"Communication is a little different for every doctor. Sometimes I send them a message, for example saying "B12 done want to come and see them". If it is something more complex I will tell them on EMR so they have a heads up…. We use the EMR all the time to communicate. It is IM like – if you are on EMR window pops up with the message. If you close it then it is gone, then I just go over and knock if I need to."

In addition, all of the nurses have utilized the EMRs to some extent to generate lists of patients for recalls (e.g. patients overdue for PAPs, patients with elevated A1cs etc.). They have had varying degrees of success with this and more EMR training would be beneficial to facilitate this type of EMR use to enable more robust QI cycles within clinics. The KB Practice Support Program (PSP) staff did facilitate some very valuable training with a MOA peer mentor, but more would have been helpful. PSP also played an important role in facilitating the panel clean up work undertaken in all of the Boundary clinics during the change design stage of the process to further enable the use of the EMR for QI. While this enabled some clinics to pull accurate data to support QI cycles, more work is necessary in some clinics to promote additional clean up and ensure that ongoing data entry is such that the data can be searched.

While most clinics across the province have EMRs and having the nurses not co-charting in the clinic EMR was never really a consideration in the Boundary, the extent to which the physicians and coop staff are utilizing EMRs as a means of communication in the Boundary should be noted and kept in mind for PMH/PCN implementation elsewhere. More robust EMR training and support for the coop staff in the Boundary, particularly with regard to undertaking EMR searches, would likely have been beneficial.

Biggest challenges

The key challenges in the design and initial implementation stages of the Boundary PoC are often interrelated, whereby one contributes to the other. Overall the work required to develop the PoC was highly complex with multiple

Highlights

- Developing and implementing a complex plan in a short time period
- Engaging physicians
- Multiple stakeholders with different agendas and cultures
- Inclusion of some unrealistic outcomes
- Establishing, administering and structure of the coop
- Not enough nurse and social worker time
- Getting providers to fully embrace the QI framework
- Increased workload for providers and focus on complex cases
- Unintended changes in relationships
- Ongoing change in the community, providers and province
- Optimizing workflow and logistics
- Space and overhead
- Lack of clarity regarding CSC role in implementation
- Limited engagement of community members and indigenous stakeholders

stakeholders and a myriad of details to sort out such as what outcomes is the PoC trying to achieve, how many of what type of care provider would go into each clinic, who would employ them, and how much money would be set aside for administration. In addition, there were significant time constraints placed on the planning process, whereby the Health Authority expected a plan within 90 days. The complexity and amount of work that had to be done in a limited period of time contributed in turn to other challenges discussed below, such as a failure at some points to engage and bring everyone along that needed to be engaged, too excessive a demand on physicians' time in a short time period, and an inability to address some of the "elephants" in the room.

Developing and implementing a complex plan in a short time period

The overall difficulty of developing and implementing a complex plan within a short time period was observed by seven interview respondents. The 90-day planning period given by the health authority was noted to be a particular source of difficulty. One KBDoFP project manager noted, "There was a lack of time for meetings and engagement generally." Another noted, "we were under pretty significant time constraints of producing a plan in 90 days and hiring staff right away." This was echoed by one of the providers in the region:

"I think some of the greatest challenges that I perceived was that there was quite a bit of urgency to get the job done and I think that the way the early facilitation happened was that there was a lot of pre-identified goals and objectives and things like that. It wasn't quite enough time, even though there was a lot of time spent and I heard over and over that there were too many meetings, but I don't know how it could have been better. There was a time pressure to get it done."

The sheer amount of work associated with developing and implementing the plan was also observed by several interviewees. As noted in previously, the KBDoFP spent slightly over $400,000 ($340,000 in KBDoFP staff time, and $30,000 in physician sessionals) in supporting the Boundary PoC design and implementation process over 80 weeks from mid 2016/17 to the end of 2017/18. Four interviewees noted that because of the amount of time required to do the work and the limited time that some stakeholders had to contribute, the KBDoFP ended up shouldering much of the work. One IH interviewee observed that one of the biggest challenges was,

"The amount of work and the fact that nobody really understood how much work it was going to be, especially the doctors, and that is why the Division ended up taking on more and more and that was a big issue."

A KBDoFP interviewee indicated that the Division ended up spending so much time and funds to support the completion of the plan because the other stakeholders could not, but observed that this would not be possible in future planning processes of a similar nature.

"The time and energy available for all stakeholders outside of the division to work on such a complex program. Especially the physicians... The physicians have a time limitation to engage… the Division didn't have that limitation and spent a lot of funds to support this. We had the luxury of having the resources to step in and compensate for everyone else. Going forward that luxury will no longer be in place, so a different approach is needed."

Three interviewees stressed that because of the short time available to develop the plan, and the limited time that physicians had to engage, there was just not enough time spent understanding what physicians wanted, especially on an individual or clinic level. One KBDoFP interviewee noted,

"I did not feel there was enough meeting time on the ground with individual clinics to engage the physicians. We did the large meetings, but we never went to where are the physicians were at on the individual clinic level. There was a loss in that engagement with individual physicians and understanding what they wanted."

As a result of this, there was not a common understanding of and language to discuss some of the outcomes among the physicians, IH staff, and KBDoFP. Confusion with regard to the CTAS 4/5 outcome and the scheduled visit outcome existed as recently as October 2018 with a few parties remaining uncertain of the difference between a scheduled and unscheduled visit to the ED, which seriously complicates efforts to discuss the issues and move forward. In particular, there was a failure to fully understand the administrative data relating to scheduled visits at BDH before the scheduled visit outcome was developed. This is addressed in more depth in a section below (see section on unrealistic outcomes below), but is a direct result of the rush to get a plan completed in the time frame allotted. At many points there were assumptions made that the physicians, IH staff and KBDoFP totally understood the data, and that the data provided told a clear story; both of these assumptions proved incorrect.

There was likewise not a clear vision developed that everyone could buy into, as it was felt that there wasn't enough time to concentrate on developing a vision. One KBDoFP interviewee noted,

"There was no vision because of time limits. Bringing stakeholders together to meaningfully identify a shared vision for Boundary health services. That was a major gap. Because the absence of that vision it had the ramification of less engagement…The GP agenda and HA agenda are so different. We never got clarity about what we were trying to do."

It is interesting to note that in the original planning materials for the Boundary PoC process, there was a full day intended to be devoted to understanding clinic needs and developing a collective vision for the PoC work in December 2016 as part of three full days of planning prior to a holiday break (one day on vision and needs and two days on outcomes). However due to unavailability of a variety of stakeholders, these three days of planning were compressed into two and given the need to complete the plan in 90-days, the focus of those two December 2016 meetings was primarily on outcomes.

There was similarly limited time for community engagement. One KBDoFP interviewee commented, "There was a lack of community engagement in work and vision for future of health care in community. We didn't engage them at all." A full assessment of physician readiness for PMH implementation in the Boundary was also not undertaken, which presented challenges for engaging the physicians. A health authority interviewee noted,

"What we needed to do was more of that upfront work to determine readiness. We need to go slow to go fast. We should have done that survey of each physician to determine readiness, not assume readiness. That was my biggest learning. And I think for everyone, we need to do a survey. We are rolling out the PCN and need to determine readiness, no matter the political pressure, we need to pause. It is okay to say no we are not going to go to this community because it is important to some people if there is not readiness."

The PMH literature from the U.S. stresses that PMH implementation timelines were often unrealistic, and that their long term sustainability can be jeopardized by unrealistic expectations. While the Boundary PoC implementation has for the most part succeeded in the sense that the nurses and social worker are in the clinics working and at least some of the outcomes are being achieved, many of the design and implementation challenges outlined below could potentially have been addressed or reduced if the design timeframe had been a bit longer. It is critical not to make assumptions at any stage of the process regarding

stakeholders' understanding of agreements and the data, but rather take the time necessary to ensure that there is a common understanding, language, and vision.

Engaging physicians

Engaging the physicians in the PoC design and implementation process was a challenge observed by six interviewees. That is not to say that physicians did not engage in the process. Over the course of the 80 weeks of design and implementation, $30,000 was spent on physician sessionals. The physician lead for the project, a semi-retired physician, officially spent about 115 hours working on the PoC during this 80-week period, but in reality spent many more hours that were not funded. The physicians on the ground in the Boundary spent an average of 17 hours each engaged in the design and implementation of the Boundary PoC, and the one NP also spent considerable time. In practice this ranged, with some physicians devoting considerably more time to the process and some participating considerably less. Moreover, the time devoted by the physicians was still considered by many to be not enough. One provider observed, "The time commitment on both sides was significant and if you look at how much… time that the physicians gave to this and still it wasn't enough." A KBDoFP interviewee noted, "They made it clear that it was too much …. I would like to have had way more engagement. That was arguably our biggest challenge that they just did not have time to give, or would not."

Two KBDoFP interviewees commented that the KBDoFP was unclear at the beginning what physicians could realistically contribute in terms of time, and one observed that the KBDoFP's expectations at the outset had clearly been unreasonable,

"There was a lack of physician time to commit with work, GP overload with a range of special competing projects and lack of awareness on Division part of this overload. We were unclear of what GPs can contribute – we need to know how many disposable hours they can invest, and not just wing it and assume, but to get clear about what can be invested… We needed to ask do you really want his to the extent that you will put an hour a week into this? We might not have wanted to know the answer – that difference is a problem."

This was echoed by another KBDoFP interviewee who suggested that the KBDoFP was not transparent with regard to the time requirements,

"I think that as a Division, we were not totally upfront about the time and energy that was required and we kind of protected the doctors a bit because we really wanted them to do it and stay engaged, so we weren't totally transparent with the work that was coming forward, so we tried to minimize it, and said it is only going to be a couple of meetings or a couple of hours."

For their part, at least three of the physicians felt that the time demands associated with the project were unnecessary and that the work was being made unnecessarily complex. At meetings, physicians questioned why so many meetings were necessary to just "hire four people." They saw the hiring of the nurses and social worker as being the central output of the project, and did not always understand the need for meetings to discuss the project outcomes, quality improvement, how the health care cooperative would be structured, and further integration of clinics with IH services. One provider observed,

"Sitting down and listening to all the talk about how it is going to be organized – we spent hours and thousands of dollars that way. I am impressed by how it is done, but was it really all that necessary? Could it have been simplified? We continue to have meetings all the time."

Another noted,

"In the planning phase it took an extremely long time to get this going. If we simplified the whole thing. It is basically a nurse working in a physicians' office – it is not rocket science and not a novelty. I have had nurses before but had to pay them. The only difference is that she is paid, and not by me so I am very happy about that. To get to that point it was unnecessarily complicated."

In addition, the physicians all had different perspectives with regard to the value of or need for team-based care, and with regard to all of the other components of the Boundary PoC initiative. These varied perspectives affected their buy-in and engagement. One KBDoFP interviewee observed,

"We used a systems approach and assumed that the physicians are ready, and some of them were, but they are all individuals and some were more ready than others, and some were not ready at all. Because we took a regional approach, some of the not ready ones went a long with it to support their colleagues because they were ready, but they did not really believe in it… Five practitioners were on end of spectrum in terms of ready to change, three were on complete opposite and did not want it, and one was somewhere in the middle and said I will go along, but I am not really sure about this."

At the same time, physician engagement is necessary to make team-based care and PMH implementation work. One KBDoFP interviewee observed, "When they did engage, things were good." This was echoed by one of the providers, "The planning obviously was essential to involve the physicians on the ground in the planning – it is not something you can plan and then hand to them."

There were also varying degrees of physician interest and readiness that presented a challenge. Some physicians were harder to engage than others. For one KBDoFP interviewee, being more focused on individual physicians was key to increasing this engagement,

"It was also clear that if you are going to go with an initiative that reaches a broad cross section of readiness then you need to be far more attuned to delivering them something that they really want and need."

Another KBDoFP interviewee felt it would be better to be more realistic with regard to physician engagement,

"It is pretty clear that our expectations of fee for service physicians have been unreasonable… I don't have any critique of them…. If we get more physician buy-in it is going to be better. But we are not going to, there is no magic sauce."

The need to engage physicians even to a limited extent required that meetings be scheduled around the physicians' availability so that they were not missing clinic. For some health authority participants, this did not feel very "collaborative"

A key reality of PMH/PCN planning is that most physicians and NPs are extremely busy with their clinical practices and sessional payments are not a sufficient incentive to get them to attend multiple planning meetings for initiatives that they are not completely convinced are going to change their work in a positive way. While most physicians/NPs are excited about the prospect of team-based care, many of the other PMH/PCN attributes seem like "riders" to them (in the case of extended clinic hours) or things that they already do (in the case of whole person-centred care). When they are already maxed out delivering services to their patients, it is unrealistic to expect them to attend change design and implementation meetings that occur every few weeks for more than a year. At the same time, their voice at the table is essential. While the physicians and NP in the Boundary engaged as much as they felt they could, having a semi-retired physician lead who could be there most of the time was critical for ensuring that the physician voice was at least somewhat represented. The number of new team members joining their practices is also a factor in physician

engagement. If the ratios of new team members to physician and nurse practitioner providers is too low, physicians will fail to see the transformation as meaningful and worth their time to engage. Developing other creative ways to ensure physicians are heard and are part of the process, such as providing locums, or paying a part-time physician lead who can leave behind some of their clinical practice, is important as PMH/PCN implementation proceeds. Now that the coop staff are actually on the ground working in the clinics and they are more directly seeing the benefits of team-based care, most of the physicians are much more engaged than they were in the planning stages of the process.

Multiple stakeholders with different agendas and cultures

There were also challenges associated with developing a complex plan collaboratively with the health authority, KBDoFP and physicians all at the table. Although everyone brought a lot of good will to the process, it still required that there be a large number of people involved, and although everyone had broadly similar goals, there were some competing, or at least slightly different, agendas. Likewise, while the physicians in the Boundary have a generally good relationship with the health authority, and the Kootenay Boundary CSC is characterized by strong interpersonal relationships, there were some differences of opinion and very different corporate cultures that had to be navigated.

With respect to competing agendas, one KBDoFP interviewee noted, "There were lots of different agendas with the PoC – CSC, physicians, Divisions, HA, and that made it difficult to navigate at time. And all those competing agendas did not necessarily contribute positively." Another observed, "there were so many unspoken agendas and they held us back from what we were trying to do."

Health authority and physicians

Although relationships between physicians and the health authority in the Boundary are generally considered to be good, there were trust issues, particularly between the physician and non-local health authority people, and some agendas that the health authority had that physicians did not agree with.

One KBDoFP interviewee observed that overall not enough time was spent enhancing the level of trust between the health authority and the physicians,

"We didn't pay enough attention to the relationship between physicians and HA, as was needed. The relationship had a history and was not perfect. There are two parts to that – the relationships with managers and staff in community, and relationship with next level above e.g. managers from Castlegar, Nelson and Kelowna…. There is a distrust because things that have come down in past. There is a difference in culture too – people in HA are given directives to implement things, and physicians are not consulted. They are not trying to ruffle feathers, but it is a different in culture. Also physicians have seen loss of services out of facility in last 20 years and they feel that negatively impacts patient care and that frustrates them."

A KBDoFP and two provider interviewee observed that just the number of people in the room, particularly from the health authority, stifled dialogue.

"the large stakeholder group meetings, I didn't find effective… IH has to send every leader of every portfolio, it is not effective use of time. It limited our ability to get to core issues that we needed to get to…. it was not the people themselves, just the fact that there were so many of them."

This was echoed by one of the providers who said,

"It was a little top heavy for initial meetings. There were a lot of people there that I am not sure what purpose they served… there were IH people from all over the place and they never worked in our hospital and they did not add

anything, and I don't care if they are there…. But because that is a new thing and whenever you are dealing with unions and they had to be engaged, so there were political reasons maybe they had to be involved, but there were a lot of people in the room. The only people that needed to be involved were physicians, nursing staff from hospital, and Divisions."

The differing cultures of the health authority and the physician offices also caused strains at times, with the health authority not understanding how independent physician offices like to be, and the physician offices not understanding the organizational structure of the health authority and the need for consistency across health authority sites, even though the health authority was working very hard to be flexible on multiple fronts. One physician noted the biggest challenge of the design process was,

"The usual – working with the HA. That is a common theme – we both like to have control and that has been a struggle. They are used to having control with what happens with their money and we are used to having control with what happens in our offices."

These cultural differences came to somewhat of a head in the middle of the design phase when the physicians decided that they wished to employ the nurses and social worker themselves, rather than have them be health authority employees. The physicians wanted to have control over who they hired to work in their offices and did not want to have the people working with them being managed by someone else. Health authority representatives felt that physicians did not have a good understanding of how complex hiring people on their own would be. The timing and the manner of the announcement also frustrated some health authority representatives who felt that the group had been moving forward in good faith considering all employment options prior to that point, but had in fact been wasting their time in doing so. One health authority representative observed,

"it certainly was disappointing that that could not have come forward beforehand, because that is a whole other conversation. It has to be set up differently. There had to be the coop formed, or whatever the society is. There were other moving pieces that had to be in place that nobody was prepared to talk about. It came to 'this is the only way we are going to participate' after four days of collaborative work together. It really impaired the trust in the room. It is okay, it is a Proof of Concept, it is great they felt they could go there. It was just last minute …. We could have been ready with other info if we knew that was what they wanted to talk about."

There was also a sense that the health authority wanted the work of putting nurses and a social worker into the clinics to unfold more collaboratively. One KBDoFP interviewee observed, that the health authority,

"took a bit of a back seat in terms of implementation due to the physicians' strong sense of independence and desire to hire outside IH. They were always there to support but they let go of the reins a bit because the physicians said they wanted to hire outside and don't want the health authority part of the day to day operations of their clinics. I don't think they were happy about taking a back seat because they had envisioned this as being something we did together but that was not what the physicians wanted."

There were trust issues and minor conflicts that arose during the process. It often was not direct conflicts, but rather objections over the terms of the contract or whether the health authority could sit in on the interviews for the nurses and social worker in the clinics. While the KBDoFP managed to smooth over most of the conflicts, one of the team members observed, the "project team could have benefited from someone really skilled at resolving those conflicts between the health authority and physicians and work on the relationship."

A second health authority interviewee observed that the model of a health care cooperative comes with challenges for the physicians to administer it, and felt that the model should have been more collaborative, but acknowledged the difficulties associated with that,

"when they said they wanted control, I wanted them to explore that more in terms of what they wanted control of, for example, was it just the day to day management and not the other stuff like payroll and ongoing HR. They also wanted control on hiring, which IH would not have been able to give total control over because of the union. Even managers can't control that. But there is a lot of expertise within the the mangers – they have hired a lot of people and they could have provided good advice. It could have been collaborative process to hire and that should have been the model. Why should it just be the physicians? But it is a tricky thing to deal with because the people hired are going into private business to work."

The fact that the issue has been resolved positively and the group was able to carry-on is evidence of the overall very positive relationships among all of those involved and the commitment of all parties to make the Proof of Concept work. However, it does highlight some of the cultural differences and varying agendas that need to be navigated in this work.

One issue in particular that caused some challenges over the course of the PoC implementation was the inclusion of the scheduled visit outcome. These scheduled visits, or "clinicals" were initially identified as being mostly procedures, such as excisions, which should be done in a patient medical home, rather than in the hospital, both for convenience and continuity of care for the patient, but also to reduce congestion in the hospital. The data presented suggested that there was a far greater number of scheduled visits at BDH than other hospitals within the health authority. There was some sense on the part of a few interviewees that the health authority was offering the $500,000 to support the nurses and social worker as a "carrot" to allow them to bring BDH into line with other facilities in the region. Although the physicians agreed to the suggested outcome relating to reducing scheduled visits in the hospital during the design phase of the process, they did not necessarily agree with it, and did not actively comply when it came to implementation, in part because they claimed that some of the scheduled visits simply could not be removed from the hospital. As discussed previously, when the data were explored further, it was determined that this was correct. Although this issue is now being collaboratively resolved by the physicians and the health authority and the goal of removing all scheduled visits has been reduced to removing most of the scheduled visits, at least three providers expressed feeling misunderstood during the design phase of the process, and that members of the health authority outside of the Boundary were passing down rules and changes without fully understanding of how things worked in the Boundary. One provider observed,

"Just in terms of planning and implementation a big challenge in planning and communication has been difficulty conveying to HA and people who aren't on the ground working in our centre to explain why things are done the way they are in Grand Forks. Some things get miscommunicated e.g. clinical visits, some are necessary based on where we are and how hospital is run. It is risking our community of practice and clinical relationships and patient care when people who aren't in our centre try to apply principles that don't work here – mostly related to clinical visits. It is really hard to communicate that stuff."

Another provider indicated that although he was going along with the goal of removing scheduled visits, he did not really agree with it and he was viewing the whole PoC initiative more negatively as a result.

"I feel we have just shifted patients from hospital to clinic. In other settings this model would be great because you can increase patient efficiency and load, but here we have just shifted overhead from hospital to clinic. From a business perspective it has not been helpful, and in the end it costs us and physicians are well aware of that. I thought that it would add remuneration to us, but I don't think that it has…. I probably would not do it again – I

would have left my stuff in the hospital and I do think that relationships with hospital staff have been eroded – that is why I practice rurally to have those relationships. My work satisfaction has been eroded as a result. It is less appealing to work here. Taking the scheduled visits out has really taken away the incentive to go to the hospital – that is the big negative change. If we didn't have that outcome, it would be different."

Division of Family Practice

The KBDoFP had an agenda too, which was to implement a successful proof of concept patient medical home/primary care network in the Boundary, in part because this is the directive of centralized bodies such as the BC Ministry of Health and the GPSC, but also because of a philosophical belief that team-based care is critical to improving primary care in BC. One KBDoFP interviewee observed, the Division had an "agenda to implement this comprehensive PMH following the 12 attributes of a PMH and being leaders in the province." Two KBDoFP interviewees suggested that there was the sense that "failure was not an option" with the Boundary PoC. This affected the approach taken with the physicians. The physicians were for the most part keen on the potential for team-based care in their clinics because it could improve access for their patients, as well as quality of care. However to make a package that everyone was happy with and implement "patient medical homes", other things were added to the mix, such as removing the scheduled visits from the hospital and participating in a QI framework. The nurses and social workers were the carrot offered, but there were other "rider" clauses in the agreement. A few physicians did not like this approach and felt that the KBDoFP and health authority had come in with too much of an agenda. One observed,

"Instead of the approach that was taken, why not come in and say to the doctors – what are the challenges that need to be fixed? If there was more pre-planning with social meetings with the docs on the floor – that would give them more opportunity to understand. The powers that be needed to see how place worked."

This was echoed by a KBDoFP team member,

"All they wanted was a nurse. They didn't want a cooperative, and QI framework and dealing with salaries and paychecks and us, the Division, and the HA, and they wanted the nurse as their own staff, and instead they got huge process and six full days of working through a process with clinic meetings, and quarterly regional meetings and working group meetings."

In addition, the more limited engagement of physicians in some aspects of the design process meant that they were not fully aware of some of the changes that were part of the PoC agreement with the health authority, and felt that some of these changes had not been sufficiently communicated to them. One physician observed, "

"The IH changes in the hospital were a bit sprung on us – we had no say in that – which is exactly why we did not want to give control of everything to them. There were definitely were a lot of changes made in the hospital that we never saw coming."

The failure to do some pre-planning work to understand more what the physicians wanted to get out of the Boundary PoC work was reflected on by one of the KBDoFP team members,

"There was hesitation from the Division and the health authority to meet with the physicians to create a visionary base for this work to find out where people are at and what they would like to get out of it. One major reason is that physicians don't want to engage in these conversations, under the assumption that… they just want action. In hindsight I feel that was an oversight not to do it. It would have helped come to a common understanding of what this work means and what they can invest and what they want to get out of it from their perspective, not coloured by what the Division and the health authority wants to get out of it."

The agenda of getting it done and the pace at which the plan had to be developed, as well as the variety of stakeholders and agendas in the room also resulted in the failure to identify some of the "elephants" in the room. There was some sense on the part of some interviewees from all groups that some of these challenges prevented the group from having "some of the difficult conversations we need to have". One provider observed,

"I think the biggest challenge is that there is a lot of systemic challenges that are barriers to integrating nurses and social workers into our work this way relating to FFS model that our offices is run on. In discussions things came up as barriers and people don't want to talk about some of them. It is not comfortable, so they became no-go issues…."

Another provider observed with regard to the challenge over scheduled visits between the health authority and the physicians, "At the end of the day it is about money and dollars and that is another elephant in the room."

Another elephant that was not effectively addressed, and is related to the reference to not fully establishing a vision for the work, was the question of whether the physicians and NP in the Boundary really wanted or understood the patient medical home model and all that it entails, or whether they wanted a nurse and social worker so that they could engage in team-based care. One KBDoFP interviewee observed that PMH implementation cannot be,

"us, the consultants, pushing the work on someone, saying this is the greatest thing and you need it, and you have to drag them along, and we will not have the resources to do it. So you need to go with early adopters, and who is ready, but we thought the Boundary was, but were they and how do you judge who is ready? So you have to take time to talk about the vision and common goals and where they want to take this work for their own clinic and practice, rather than pushing down a PCN/PMH model envisioned by others."

Another KBDoFP interviewee reflected that for future work it is critical to have "the client be the driver of the work and get buy in and motivation and energy through what the client wants and not what we have to offer."

Physicians

The physicians themselves were also not uniform in their preferences and agendas, desire for change, and ability to engage in change, which led to additional complexity. One provider observed,

"The older docs think things are fine why do we need to change. It isn't broken why do we need to fix it… Younger docs want change but have different ideas from each other in terms of what they want – there are some who wanted to take on business side of this, and others who wanted the health authority to manage it all."

This was also noted by a health authority interviewee, who observed that some physicians were more interested in the idea of a health care coop than others,

"there is a hierarchy among the physicians – ….and it is important to make it collaborative among the physicians as that affects how much buy in there is among the physicians. I have heard some physicians say that they went along with the coop because [certain physicians] felt so strongly. So somehow there needs to be space within the process for them to discuss this and we need to make sure that it is not one person influencing the group because then they don't have buy in to the amount of work it was going to take."

This was echoed by an health authority interviewee who noted that even though the Boundary was considered "the most ready" of Kootenay Boundary communities for PMH implementation, there was different levels of readiness.

While all of the physicians were interested in team-based care, there was also varied understanding of what a PMH is on the part of the physicians, and varied interest in it. Although the PMH attributes were presented at the beginning of the design process, as the goal towards which the group was working, discussions regarding how to implement team-based care dominated the conversations. A few physicians expressed confusion at the magnitude of the process required to "hire four new staff members". While the KBDoFP may have been working from more of an agenda of implementing a PMH, the physicians appeared to be working more from the goal of achieving team-based care.

While the design and implementation team was for the most part able to navigate the complexity of differing agendas and cultures, it did create challenges along the way. The rushed nature of the design process complicated this because it meant that there was never sufficient time or trust built such that agendas could be clearly laid on the table and a collective vision developed. Multiple stakeholders and competing agendas are a reality in the complex systems in which PMH/PCNs are being implemented, and there needs to be preparation for that and a process in place to build trust and get at some of those core truths in order to move forward in the most productive way.

Inclusion of some unrealistic outcomes

In part because of the short time frame permitted for the design phase, the challenges fully engaging physicians, and the need to show the clear potential impact of patient medical homes, some of the outcome targets for the Boundary PoC relating to reducing CTAS 4 and 5 visits by 50% over three years and eliminating 90% of scheduled visits from Boundary District Hospital were potentially set a bit high. As discussed in previous sections, several interviewees, including health authority and physician interviewees, suggested that they just had not been sufficiently discussed.

In the case of scheduled or "clinical" visits, once the data were explored further it became evident that some of those visits that, for example, required an x-ray or bloodwork, had to occur in the hospital making a 90% reduction impossible. One provider observed,

"Some of the goals we came up with might have been a bit unrealistic e.g. no clinical visits in the hospital at all – looking back, I can't believe we agreed to that… Right now, we are looking at data around clinical visits – and the reasons for them. We should have looked at that ahead of time, instead of making specific and lofty goal and realizing it is not achievable."

Another provider reinforced that moving all scheduled follow-up visits out of the hospital was simply not appropriate,

"I guess there was some feeling that were going to be no follow ups in ED, but that means office follow ups If I see a fracture in emerg, I am not going to have them come to clinic for their follow up x-ray. They are going to come here. Same for wound care, they should see nurse here. So sorting that out has been a challenge."

The inclusion of this outcome resulted in conflict internally at IH and it also alienated some of the physicians who disagreed with the desirability of it for improving patient care or the system of care in the Boundary. Some of these physicians have as a result bought into the overall PoC process less than they might have if the scheduled visit outcome had not been included. As discussed previously, a working group has been established to discuss the scheduled visit outcome further and look deeper into the data around the reasons

for scheduled visits. This group is slowly working out how best to remove as many scheduled visits from the ED and BDH as possible, but it is clear that the 90% outcome is not likely achievable.

Likewise, once the nurses were working in the practices, the providers found they were not necessarily using them in the manner in which they expected they would to reduce CTAS 4 and 5 emergency department visits, but that they were making the best decisions for patient care. One provider noted,

"Even the CTAS 4 and 5 outcome… We have ended up using our nurse much more for chronic disease and less for walk ins – so we are not seeing those goals being met. So the challenges is, you come up with goals thinking this is going to happen, but in reality it is not as practical –we have put her in the place where we felt she would help patient most…"

Another provider observed that, "Reducing CTAS 4 and 5 by 50% is too high" and stressed that the planning process failed to take into account some of the reasons for high CTAS 4 and 5 visits—namely that a lot of people cannot leave work or their kids during the day and there is no after hours walk-in clinic in the area.

Other providers felt that the outcomes were attainable, but perhaps not within the timeframe that had originally been agreed to. One provider observed,

"Change takes time and we are moving towards making the changes that we need to make and doctors are really on board now and we just had a meeting yesterday about meeting the expectations about the HA about meeting the goals and there were positive efforts around the table to do that, looking at CTAS 4 and 5s and scheduled visits. All the doctors were there and coming up with ideas how to do that. They were really positively moving towards what we were trying to do."

The Boundary PoC change design process was very rushed as outlined previously. As such, the process to identify, develop and clarify the outcomes was also rushed. In some cases, there was just not enough of a dive into the data or consideration of all of the complexities associated with achieving the outcomes. While the concerns regarding the outcomes are now being worked out in a constructive and effective way, spending a bit more time at the outset to engage physicians and NPs with regard to the outcomes and truly understand the data and local workflows and processes that influence outcomes is critical.

Establishing, administering and structure of the health care coop

Although most of the providers felt that hiring the nurses and social worker via a health care coop was the best way to go, three provider interviewees acknowledged that it is an administrative burden, and that the money that was allocated to coop administration was likely insufficient. Four KBDoFP and health authority interviewees also stressed that establishing the coop was a substantial undertaking. The providers required significant support from the KBDoFP to set the coop. Four providers also observed the difficulties associated with administering the coop for the physicians. One provider noted, "it is challenging to run the coop with the small amount of money we have to administer it. It is a tiny amount to run things. It would be better to have more."

Two other providers stressed the significant burden for the physicians who are taking on a major administrative role in the coop,

"I know that we wanted to have more independence and more scope in terms of what we could ask [the nurses] to do and the doctors wanted to go that way for a reason. I am not sure if we are going to duplicate this elsewhere you have to make sure whoever takes the administrative burden on that is a lot for a doctor to deal with – insurance, bank accounts, staff, payroll, licenses, website, emails. You are really creating a whole business… The finances we

were allocated to pay an admin person were in a grey zone –they are not quite enough… there is a lot of things to be signed, and there is ongoing. Someone has to be approving payments and we have to submit financial audits."

Another observed,

"you have to do all the bookkeeping accounting etc. and one of our doctors is doing a lot of it and he is finding it onerous. If you had IH doing it then it would be less onerous and there are economies of scale because we as doctors don't know how to do it and there is only a little bit to do, but you still have to figure out how to do it."

One KBDoFP interviewee spoke to the amount of work required to set the coop up and the issues associated with ensuring that the physicians can maintain it,

"It added a lot of work to the project implementation compared to hiring Interior Health staff. That decision required that we create a whole new organization from scratch. It was a huge undertaking…. It allowed physicians to have total control over staff and HR, who was hired, how the staff work, hours, credentials required, interview processes. From a physician perspective, and from a Division perspective that we should support our members, that is a positive. It was time consuming and complex to start, and means that GPs have to take responsibility for all parts of contract and staff ongoing. We transitioned to them managing the coop in the fall with an admin person, but it remains to be seen whether everything that needs to be done in a fiscal year that needs to be done will get done—the financial report, annual report, audits, AGM and hold elections. Can they do it? We don't know. I hope they can."

Another KBDoFP interviewee observed that even though the KBDoFP did much of the legwork, there were still multiple things that the physicians had to decide on,

"The time to decide between a cooperative and a not –for profit, to get the physicians together to decide on document of incorporation to decide on the structure and decide on bylaws. We did the work but needed physicians to decide on certain critical elements e.g. number of directors, time of AGM, and who is a member. A cooperative is still a legal entity that is just fulfilling a limited function of being the container where these staff are held…. Is it a model to go forward in every single KB community to create an entity to do this? I would say not. It is not a sustainable way of reorganizing."

One of the health authority interviewees felt that the physicians were just not aware of the degree of work that would be required,

"I think there was a lack of understanding by the physicians of the work required to hire staff. That at one point it was almost like I felt that 'see we told you we could do a better job with hiring'…. when they needed to have all the job descriptions and tools, they came to IH asking…. There was a lot of work from IH to support this."

The degree of work associated with the cooperative was echoed by a second health authority interviewee:

"It would have been way easier without the coop – if they had been IH employees all that stuff was in place and we would not have had to reinvent the wheel. Everything we do in Boundary has to be approved by the physicians and that takes a lot of time. Like the job descriptions… Any time there was a change it had to go back out to the physicians."

A further challenge associated with the coop from the perspective of one of the interviewees was its structure in the sense that the Board consists only of doctors, giving other partners in the initiative little opportunity to

be able to direct the coop staff to undertake activities to support the achievement of the outcomes. One KBDoFP interviewee observed,

"I think we need to recruit people into change journey with clear conditions, put out postings saying we are looking at nurses, but also looking for people to be part of learning lab about this new form of care. The way we have structured it, the only people who can tell them what to do are the doctors, and [the doctors] are unlikely to go to the mat for the QI journey. I want to structure it so those involved have a stake in ensuring that it happens."

The physician-only structure of the coop board also does not allow the other partners in the initiative the opportunity to assist as much in the running of the coop and take some of the administrative burden off the physicians. Although a similar governance structure is being contemplated for Primary Care Network implementation in KB, having a more diverse board with IH and community representatives is also under consideration.

Despite presenting some challenges, the health care cooperative also was considered a key enabler of success in the Boundary PoC process as outlined in a previous section. One KBDoFP interviewee observed that, "The balance of whether it was positive or negative is yet to be determined. It is too early to tell whether positives outweigh negatives because we move out of our support phase we are going to see if it works. Is it sustainable for physicians?" Knowing the specific steps to establishing a health care coop will likely make it easier to do if a similar staff governance structure is chosen for future PMH/PCN, but giving more consideration to the ongoing administration burden of a coop on physicians is also essential.

Not enough nurse and social worker time

In order for team-based care to work effectively, team members need to be in a clinic enough to establish a good therapeutic relationship with patients, establish a relationship and a work process with the other providers so that they know what to expect of each other, and be reliably available for appointments in a timely manner. As noted previously, the two larger clinics in the Boundary area (Christina Lake and Grand Forks clinics) have a full FTE nurse each, while the three smaller clinics in the West Boundary share one FTE nurse. The ratio of nurses to providers is 1:3 at Christina Lake and 1:4 in all of the other clinics. Complicating matters in the West Boundary was the fact that one of the clinics is open different days each week in accordance with the doctors' on call schedule and therefore it was difficult for the nurse to have a set day or days at each clinic every week. The social worker is shared across all five clinics and thus the ratio of social worker to providers is 1:11. Three providers felt that they could provide improved care if the nurse to provider ratio was higher, and nine felt that the social worker ratio was insufficient.

Nurses

Overall the providers were satisfied with the nurse to provider ratio. However, three providers in the West Boundary where the nurse is shared across three clinics commented that they did not feel they were using the nurse to their full capacity because her schedule was more unpredictable and sharing one staff person among three clinics just "becomes logistically more difficult." One provider observed, "In order for me to better utilize her I would need a dedicated time. But if I don't have dedicated time it is not going to be that easy for me to have her get that involved with patient care. I hope to see that in the future." Another noted,

"I did find with the nurse that because we are sharing her and the other doctors schedule is unpredictable so that has created challenges, because nurse is unpredictable. If that schedule changes a lot that interrupts the flow."

Even at the other clinics, where the nurses were available full time, they had to be shared among the doctors. At one clinic, they managed this by assigning the nurse to be full time with a particular doctor for a specific day or days each week. While this was generally a satisfactory arrangement for the doctors, several suggested

that they could use a nurse more if it was available to them to improve continuity of care and access. One observed, "I only get 1 to 2 days a week with the nurse. If I could have a nurse every day I would – they would be full, and it would improve access to care." Several doctors referenced the notion of a "economies of scale" with regard to working with the nurses, whereby they need to work with the nurse sufficiently often to have an awareness of the nurse's skills and comfort level with certain aspects of care, and that over time, the care that they provide in a dyad increases as they become more accustomed to working together. While this does not necessarily mean that physicians or NPs require a nurse in a 1:1 ratio, it does suggest that if the ratio is too diluted, these efficiencies and quality of care improvements may not be achieved.

Social worker

All but one of the providers indicated that they felt the social worker ratio was insufficient. Although they stressed that they felt that the social worker was greatly improving care, almost all of the providers indicated that she was extremely busy and that they did not refer as many people to her as they would like, particularly for mental health counselling as often people require help right away, and also because they felt that the most important service she could provide for patients was form completion as that service was not offered elsewhere. The fact that she has to divide her time between five different clinics also means a lot of "windshield time" and some resulting inefficiencies of not being in some clinics often enough for providers to understand and remember the schedule or find her services to be "predictable". One provider observed,

"A big challenge for the SPO is that we don't have her enough – in our area in Boundary we have a greater proportion of people who need her services. She is finding it difficult getting into routine and she fills up. I don't refer more to her for some things as a result. She is once every three weeks and we could use her once every two weeks…. I refer some mild to moderate to MHSU, but she could handle some of them. MHSU does an okay job with mild to moderate, but they are maybe not ideal. The people who are seeing MHSU and the psychiatrist could also benefit from SPO in terms of life situations and financial programs that help when someone is struggling."

In addition, the social worker is in the larger clinics more often than the smaller clinics, which means that she is only in the smaller clinics once every three weeks, and there can be disruptions due to holidays, training days or sick days, which creates challenges for continuity in counselling. One provider observed,

"Having the SPO a little bit more often would be good. I don't even know how often she is here. Once a month or once every three weeks. Every two weeks might be better. I think in terms of continuity for her involvement especially if she is counselling. If we are going to send her more people with higher counselling needs more frequent availability would be nice. If she is here once in three weeks, and can't come one month then it is a huge interruption. I definitely have patients that would refer if she was here more often."

This was echoed by the social worker who noted, "it is not so much hard for me to bounce around. It is harder for patients because am three weeks apart for seeing them. And it's a bit harder for doctors around continuity of care because I am not accessible to them and they have to call and leave a message."

Even in the larger clinics, where the social worker is available two days each week, there is a larger demand for her services than she can cover, and this affects how providers refer. One provider observed,

"The SPO comes two days a week and is booking a month ahead now. I think would use the SPO more – there is definitely a need for a SPO. Four days a week would be ideal – I think she could absorb two more days a week. Right now if she is booking two weeks out then don't bother referring to her."

Another noted,

"I would want more social work. She is in our office one day a week and we have three docs. A half day per doc would be an ideal ratio – double the time with her. She is always full and has a wait list and a lot of that stuff needs to be done pretty quickly."

The fact that the social worker is dividing her time between clinics so is only in some clinics one day or less a week means that some of the providers, who also have variable schedules, are not in clinic on the days that she is, which makes it harder for care conferencing and for the provider to join the appointment. One provider observed, "she only works in office one day a week and I am often not there that day… it is most useful when I am there so the three of us [physician, social worker, patient] can sit down together."

In terms of ideal ratios, most of the providers indicated that having the social worker for twice the amount of time that they do have her for would be sufficient (four days a week at the largest clinic and two days a week at the second largest, and a full day every week at the smaller clinics), or at least far more workable. One provider, reflecting on the lack of information that he receives from MHSU regarding his patients, felt that each clinic could use a full time social worker, and this would allow them to utilize the social worker more for counselling than forms, which he felt was more important for patient care as it would allow for greater links between providers and the clinicians providing mental health supports than exists in the current system,

"I think one social worker for each clinic would be of use. I think a full time social worker would be useful. She would be able to do more counselling. Right now she is doing mostly forms. Forms are not a good use of docs' time but not a good use of her time either. I would rather have her do counselling rather than MHSU because have her here and can talk to her and she is not siloed."

The social worker similarly reflected that the work in the Boundary could probably better be done by two social workers, and that with more social work support additional programs could be provided,

"I think that right off top could we could split West Boundary off and fill one person's time just in the West Boundary. With what I am currently doing, you could fill one person's time with Grand Forks and Christina Lake…. There are also other things I could be doing that am not doing due to lack of time – e.g. goals workshops, outreach programs to care homes about end-of-life planning, as well as I don't actively recruit counselling patients. Ideally it would be nice to say to doctors before you prescribe antidepressants it would be nice if they could come and see me once or twice. Theoretically every patient on antidepressants should be seen for counselling, but that would be impossible."

Getting the right ratios of nurses and allied health providers to physicians/NPs is an essential part of PMH implementation. If the ratios are too low, the change will fail to be meaningful for the myriad of reasons outlined above. Team members need to work with each other sufficiently to know each other's skill sets and preferences, develop appropriate workflows and optimize patient care. In U.S. PMHs, there are often more nurses and allied health providers than there are physicians/NPs. While that was not possible in the Boundary PoC due to the set budget of $500,000, having at least a 1:4 ratio of nurses to providers has been an essential element of success in the Boundary. While the social worker is still providing significant value in a 1:11 ratio, it is not enough to meet the patient needs.

Getting providers to fully embrace the QI framework

The QI framework with the five key outcomes, clinic-level indicators, and ongoing clinic-level meetings and cycles of quality improvement was approved by the physicians during the design phase of the process. Although the QI framework is seen as one of the key enablers of success as described above, it has not been fully embraced by the providers, particularly in the case of the ongoing QI processes within their clinics. Although ten clinic-level quality improvement meetings were held in Boundary clinics over the past year, and were attended by most clinic staff at most clinics (with some clinics having more full attendance than others),

the original plan was to have them monthly in each clinic. However this proved unachievable as providers and staff were unavailable to meet on a more regular basis. Moreover, only one clinic really engaged in a true QI cycle whereby they collected data on the percentage of eligible women who were up to date on their PAP tests, set a goal to improve the percentage and took action. One KBDoFP interviewee observed,

"Although we articulated it and said this is what we want to have in the QI meetings and make time for these activities, it was laid out and communicated, and everyone nodded, but there was no real buy in to the importance of it or true interest in changing the way things were done or picking an indicator and making patient care or outcomes better. It is hard if it is not mandated. I don't think we did anything wrong and the only way to do it is to mandate it and not sure if we were in any position to mandate it to the physicians and so now it is pulling teeth to pull people together to get people together to have these conversations."

Another noted,

"Ongoing QI processes in clinics might be perceived as an add on by GP members… I don't think it was fully understood the value that QI brings or the need for GPs to be engaged in the process. I don't think our members understood or understand why continuous QI is so important, and why they need to be engaged in it. It is unlikely that they will buy because I say or you say that the literature tells us it is important. I think they will buy in when they live it and see value in it."

The regular QI or "clinic check-in" meetings were also designed to be regular opportunities for the providers, coop staff and MOAs in each clinic to get together to talk about their processes and workflow and allow them to make improvements. At each of the ten clinic check-in meetings that were held, important issues of flow, scope of practice and potential services that the staff could be providing were discussed and clarified. One of the nurses noted,

"The trickiest part is to get everyone together they are all so busy. It is easy to talk one on one. We have not all been able to sit down together, so I often bounce room to room and talk to everyone one on one, email is good too… So I have no challenges communicating with the physicians aside from getting everyone together because everyone works different schedules and the call schedule. They are occasionally all in the office at the same time."

Another nurse commented on the difficulty of catching physicians to have discussions outside of clinic check-in meetings,

"some of the physicians are easier than others to capture and discuss things like I am not exactly sure what you are expecting of me because usually they come late or right on time to see their first patient and usually at the end of the day everyone just wants to get out of here. There have been times when I felt frustrated because I wanted to address something but didn't have opportunity or the time wasn't right. But now that comfort level is increasing I feel better at saying 'I need to talk to you'. Our staff meetings are obviously important and hoping that as we continue to have them, as there are things discussed, and I think they every time there are improvements."

Thus the clinic check-in meetings could have played a critical role in furthering the orientation for staff and providers, and supplying some of the needed training for MOAs (discussed below). Additionally, all of the coop staff indicated having specific areas of interest, such as mental health, sexual health, and chronic pain that they would like to develop more expertise in and focus some of their efforts on. It is not clear whether these interests are being made clear to the providers and the clinic check-in meetings would have been an opportunity to do so. The clinic check-in meetings were also intended to focus on building the team within the clinics. Although one coop staff member felt 100 percent part of a team with the physicians and MOAs, she felt that the team-work could be improved even further by getting together with a focus on team. One

nurse observed that although things were going well, the clinic check-in meetings would help with the feeling of team,

"I feel like the whole overall team could be improved – I don't think that I can think of issues that are ongoing, but sometimes I feel like you are so busy dealing with patients through the day that there are things that could be addressed but nobody has time to, but when people feel like they are on the same page then they feel more like a team."

In addition, the providers have allowed the clinic-level indicator data collection that was part of the QI framework (including the provider survey, the time to third next available appointment data and the patient experience survey) to occur in their clinics. However, they have not gone out of their way to facilitate it by, for example, handing out surveys or actively seeking to discuss the results of the TNA analysis in greater depth. Provider attendance at the first Regional QI meeting was decent (four practicing providers attended), but could have been better.

The providers also appear to have a varying degree of commitment to the outcomes. Although at least six of them referred to the importance of achieving the outcomes in their interviews or in clinic check-in meetings, four of them did not, and even among those who mentioned them there appears to be a varying degree of willingness to take action to achieve them. For example, some of the providers have moved most of their procedures out of BDH and did so immediately to meet the scheduled visit outcome, while other providers have taken longer for a variety of reasons. One KBDoFP interviewee observed that there was not the right level of carrot and stick with regard to the Boundary PoC outcomes,

"We need right balance of carrot and stick. [When we implement PCNs in the rest of the region] we need to offer the right balance of autonomy to be part of a 'learning lab' for implementation. The stick would be that we give people the understanding that they have to move the needle on indicators or the learning lab is in jeopardy. [In the Boundary] there is no real consequence to not achieving the outcomes. We have not hit sweet spot in change management 101 in relation to motivation."

While in the balance the QI framework is still considered positive and was one of the key enablers of success, the degree to which it has been implemented could be improved. Having a more robust conversation with providers at the outset of the project regarding the importance of the ongoing clinic check-in meetings, as well as building requirements for certain aspects of QI framework implementation into the overall contract or the coop staff contracts might foster greater adoption in a way that it can spur more meaningful change and benefit the providers too. Having a more dedicated QI person and panel manager in the community as is the case in PCNs in Alberta could also be key to more successful implementation.

Increased workload for providers and focus on more complex cases

Although the majority of providers felt that their workload had been decreased by having the nurse and social worker available to help them, five providers felt that their workload may have increased because they had to "fit in" all or most of the patients that the nurse, sign off on paperwork that the social worker generated as well as undertake case conferences with the social worker. One provider observed, "It is a bit more work because you are putting in more time. It depends on the doc – I see all the patients that nurses see, so when I am working with nurse I schedule myself lighter but see more patients." Another noted, "On the other end it is busy…. Sometimes I feel overwhelmed."

This was also observed by one of the coop staff who noted that although the physicians seemed happier, "I think their workload is the same. They are still jam packed but their wait time is less, so they can see patients

more quickly… We might be increasing their workload. Some days they are plus fifteen patients." Another observed,

"I think there are days where I feel like we had a really efficient day and the doctor was able to see a lot of patients and you feel like you had a part in it and there are some days where you feel like you slowed them down because every patient is complex and needs more from them than a quick pop in, but maybe it makes the physician's day more stressful because they saw so many patients."

One provider stressed that this was also the case with the social worker,

"It is increasing my workload because there are more patients looking for forms and while she does part of it there is still the other part and in order for them to have the medical part it takes getting the paper work together to support the application or they will just be rejected."

One provider observed that although their clinic does its best to divert appropriate appointments to the nurses it is not always predictable what patients were going to present with when they get into the exam room, or if they are going to identify other problems in addition to their main issue. As a result, sometimes the nurses have to draw the physicians into their same-day appointments for a longer time than expected. This can cause the physician, who has a fully booked day, to get behind. One physician observed,

"some of the patients they see are not appropriate so I am seeing them and my patient and it is not something you expect so some days I am seeing my patients and their patients and you feel like you are making them wait."

Another provider commented that because the nurses were doing the simpler appointments, his days were just more intense and "heavier",

"They took some of the easier things out of my day. It is hit and miss there. Some of that stuff – I miss that. My days are more intense now. Seeing just more complicated patients that are really heavy. Some of that easy stuff was a bit of a mind break for that. The way we get paid is a fee for service, so a lot of family physicians run their practices off the backs of the easy patients to finance their practice and if you remove that it becomes harder."

This provider also just felt that the loss of variety in what he was doing negatively impacted his work satisfaction, noting that "doctors who practice here like to do a lot of different things to be stimulating…taking away some of the variety in your day has taken away job satisfaction for the docs."

Despite being busier, three of the providers still felt that in the balance, having the nurses was still positive. One observed, "It can be a bit disruptive to squeeze his patients in, but overall in the balance having the nurse is still valuable to me." Another noted,

"Whenever we work with the nurse we are busier on those days but at the same time if those would have been fit ins for me I would be even busier – it increases volume and you are running around and seeing everyone but net benefit is still positive."

Overall, with the exception of one or two physicians, the net balance of the change appears to be positive. However the potential for PMH implementation to lead to physician burn-out should be monitored carefully and mechanisms put in place to keep lines of discussion open with physicians and adjust where necessary to ensure that physicians still have variety in their day and are not overwhelmed by squeeze-in appointments.

Unintended changes and challenges in relationships

Changes in how patient care is provided, even when in the balance the change is felt to be positive, can result in changes in relationships, as care providers who once interacted frequently in the previous system no longer interact as much and new relationships are developed around the new pattern of care. Likewise, the change itself can result in disruptions in relationships if everyone is not kept fully informed, or is not fully on board with the changes being undertaken. Many interviewees expressed concern about the unintended changes in relationships that have resulted from the Boundary PoC implementation. These relationship challenges are on multiple levels, physician to physician, physician to health authority, internal health authority and coop nurses to health authority.

Physician to physician and physician to health authority

Many concerns were expressed particularly with regard to the outcome of moving the clinical or scheduled visits out of the hospital, both in terms of the goal itself, but also the communications associated with it. Five providers observed that removing scheduled visits from the hospital would reduce the need for physicians to go to the hospital in the mornings and thereby reduce interactions among physicians, which were a key part of maintaining a robust physician network, but also reduce interactions among physician and health authority staff, which had been historically a key part of patient care. One provider noted,

"The Boundary was chosen because of apparent strong relationship between the health authority and physicians and one of the things that might be an unintended consequence is that as we move scheduled visits out of the hospital, there is going to be less opportunity for those relationships to be maintained. Physicians have already expressed that they feel like the health authority is pushing them out of the facility, and the facility has been identified as an enabler of the relationships between the physicians and the health authority… if they don't have a reason to come any more, they don't. So how will those relationships stay strong if there is no mechanism or reason for them to be interacting. The facility is not just enabler of relationship between health authority and physicians, but also between the physicians themselves and that was another reason the Boundary was chosen because [the physicians] already had collaboration and collegiality because they met every day – not all of them, but each of them were there two or three mornings a week, so they would see each other and the acute manager and Home Health nurses – they were milling about and had informal relationships. If they don't go to the facility anymore, I don't know how they will stay connected."

Another provider observed that while the nurses and social worker have enhanced the feeling of "team" within the clinic, the feeling of team outside the clinic has been reduced due to the fact that physicians are no longer supposed to perform scheduled procedures in the hospital and therefore no longer have a reason to be there as often as they once were. This in turn is reducing the efficiency of care because side bar conversations are no longer possible. He observed,

"The feeling of team has definitely weakened outside the clinic. It has weakened in the acute care setting… the home care home support side definitely has changed because we are not in the hospital to have those side bar conversations with them about patients – decisions would be made there now a piece of paper comes and sits on your desk for four days. I think the only way that you can adjust that is to have us back in the hospital every day and the only way to do it is to make it financially worth while for us to go there by having scheduled visits and procedures there…. Our relationship with hospital staff has changed because we don't interact and consult like we used to so those relationships have eroded for sure. The access to the physicians has gone down for anyone in home care and that end of things, because we are not doing scheduled visits in hospital any more and therefore are not around hospital any more, and physicians don't see each other as much any more and don't do hallway consults any more. We did a lot of informal consults any more, the communication is not the same between us."

Another provider felt that the relationships had not changed yet because he still did some procedures in the hospital,

"I think our relationships are still good with people in the hospital. If we move everything out of the hospital that we do there, we aren't going to spend as much time in the hospital and we aren't going to have those hallway conversations…– discharge planning and long term care conversations. That is a legitimate concern. The more time I am there the more likely I am to be caught to have those conversations – they have not deteriorated yet, but it is something to be aware of. If we are pushed out of the hospital we will have less of a relationship with IH staff."

However, four providers indicated that they had noticed little difference in their relationships as a result of doing fewer scheduled visits at the hospital. Although one provider indicated that a nurse had commented that it is harder to reach her, the provider indicated that the physicians can just be called.

IH staff also commented on changes in relationships with physicians as a result of the changes in BDH, indicating that a few of the physicians who had not been as involved in the design of the Boundary PoC seemed unaware of, and not happy about, the diversion of some of their scheduled visits to the CATC that came about as a result of the PoC, even though the physicians as a group had agreed to it. This resulted in some frustration that had to be dealt with by frontline staff who were just doing their jobs.

Internal health authority

There were also relationship challenges within the health authority as the Home Health department was moved and set up to take some of the scheduled visits away from the emergency department as a short-term measure, while the clinics developed their capacity to take most of the scheduled visits on themselves. There was some feeling that some of these changes had not been adequately communicated within the health authority, particularly with the acute care department, who were expected to play a role in asking the physicians to stop undertaking scheduled visits in the emergency department. One provider observed,

"I think the one kind of thing that we should have done would be to have more involvement from the IH acute care… in the planning, but it directly affected her, there has been some relationship erosion because of that, even having floor nurses involved, their thoughts – because this change affected them a lot."

This was echoed by two health authority interviewees. One observed,

"There have been challenges internally within IH are making sure that everyone is informed and on board with the changes. Change management is challenging at the best of times and made further challenging if all the stakeholders are not fully on board."

In addition, because of the different practices between the emergency department and the ambulatory care clinic where some of the scheduled visits were diverted to by the hospital, one physician felt that the changes were not resulting in improved patient care because he did not get any record of the care provided in the ambulatory clinic,

"I think there is a bit of challenge between ED and home care that that wasn't organized properly to redirect people, and then there is no charting in the ambulatory care clinic that they can share with me as a doctor. So we get nothing into our EMR…. There could have been an improvement in how it is going to be done. More planning needs to be done on that. It is getting improved, but it is still raggedy around the edges."

Coop nurses and health authority staff

There were likewise some initial challenges associated with having the health authority nurses working with the coop nurses. There were a variety of reasons for these challenges including some miscommunication and union concerns. One provider observed,

"I think there has been some territory stuff going on…. Our nurses offered to come in and work with people and unions are involved and it really affects the team dynamic.… I don't think it is all the nurses, just some of them. Even allowing the [coop staff] in the hospital has been an issue for some nurses into any areas where health care workers work….I think it would be great if we could break down those barriers."

This was corroborated by one of the coop staff who felt that the issue was just a lack of communication and would get worked out eventually,

"I think the front line staff are very confused what we are doing so they didn't know so I tried to explain, but they were not too sure…. Through the meetings we have had with IH I think our relationships are getting better and stronger. I think the fact that we are not IH employees restricts us. There was a lot of grey in the start. 'Oh you are not IH, can you even come here?' Over time it will work itself out and we will get those relationships straightened out."

One of the IH staff observed that they had wanted to be supportive of the new coop staff, but had been told by the health authority that they could not provide any training to them as that was the responsibility of the doctors, and the doctors all have different processes so the health authority should not be involved. In the beginning it was sometimes unclear what the coop staff were seeking. One IH staff person observed,

"Initially when they were hired these nurses there was no education initially given and we were told that it was not our job to teach them – they need to learn from doctors. They started reaching out to us and we were told not to instruct them and that was unfortunate…. They were starting wanting to do their jobs and had no direction. Their training needs to be done right away so they are not reaching out to us."

While these issues between coop nurses and health authority nurses have mostly been addressed in a positive manner, they underscore the importance of robust initial communication. The importance of training for the coop staff is discussed further in a later section of this report.

Many of the relationship changes and challenges outlined above were unintentional, and as a result of efforts to change care for the positive, but do highlight how changes in patterns of care can change relationships. Most of the health authority communication issues have been effectively resolved and Acute is now actively supporting the change process in the PoC working groups. However, it is not clear what the long term impacts on the relationships among the physicians or the relationships between the physicians and front line health authority staff since they are no longer in the hospital as often. While other lines of communication have been established, such as a rounds discussion between Home Health and two physicians, as well as the PoC working groups, only certain physicians are engaging in those opportunities, so it is unclear if it will restore all the lines of communication that once existed in the Boundary.

Ongoing changes in the community, providers and province

Over the course of the PoC design and implementation phases, multiple changes in the community and the providers in the community occurred. One physician retired, while another left the area. Two new physicians came to the area. Two physicians changed clinics and one clinic moved locations. A third physician has more recently also announced that he is leaving. On the health authority side, the Acute Manager for BDH retired, and a PoC project manager was hired and subsequently completed her contract and left. In addition, IH MHSU has lost an outreach worker and is having difficulty recruiting for the position. On the other hand, the Home

Health unit got a new RN FTE during the Boundary PoC. Additionally, there was a major flood in the spring of 2018 that affected most of the communities in the Boundary area and destroyed many businesses and left many people homeless. As a result of the flood, one of the local social services agency will be getting funding for four new case managers from the province.

All of these changes challenged the design and implementation processes. New people had to be brought up to speed, data collection and hiring nurses had to be delayed while physicians moved locations, the clinic in Grand Forks had to operate out of the hospital for several weeks because it was flooded, and clinics found themselves faced with a higher than usual demand for their services due to the stresses associated with the flood.

One provider observed that it was sometimes difficult to get momentum on achieving the outcomes because of all the changes, "It was difficult because there was transition with people moving clinics and people retiring and new people coming there wasn't buy in sometimes because people are just leaving anyway."

Another provider echoed this, and noted the difficulty of having new providers who didn't participate in the PoC design process, but now have to operate within its parameters,

"We have two new docs who were not involved in the planning process who are now pretty involved in the community in terms of manpower and both had trained here prior and they had worked one way then, and now they are being told to change and that is a challenge."

One of the KBDoFP interviewees reflected on the difficulties of implementing change in a complex system. "The other thing I think we should keep in mind is the other places like Grand Forks, they took so long to get a nurse and then they had the flood. There has been a lot that has affected them…".

The flooding crisis has resulted in a significant housing problem and there are no rentals available. As a result, at least 30 families are staying in a hotel until suitable housing can be found. Anecdotally other factors in the community are also having an impact on the need for medical care including, the threat of one of the local mills closing, the closure of one of the only food sources for the homeless, and increasing opioid use and deaths. Further the wait list for residential care has increased in the past year.

Locums and residents also affect PoC implementation. Although the providers have been stable over the last several months, they are often away and new locums fill in for them. Likewise, Boundary is a teaching area so there are often new residents. Every time someone new comes into a clinic they must learn how team-based care works in that clinic and how to work with the team members. One of the nurses noted that this was sometimes challenging and suggested that there be an orientation package for locums.

On a more global level, the roll out of the provincial PCN strategy has also affected PoC implementation in the Boundary with the IH staff in the Boundary being instructed to hold off on integration of IH services and clinic services until the IH Specialized Community Services Programs (SCSPs) are developed so that whatever is done in the Boundary is in alignment with what is done in the rest of the health authority. As a result, while some small tests of change that are related to PCN implementation, such as having two of the Boundary physicians join in Home Health huddles, are occurring the Boundary, significant integration has yet to occur.

Ongoing change is inevitable in any ecosystem. As new programs are rolled out, other changes in the system around will serve to facilitate or hinder implementation. Being aware of this likelihood and rolling with the changes, but also potentially preparing for them, for example via an orientation package for locums, seems to

be critical to successful implementation. The Boundary PoC seems to have been able to navigate the changes that occurred, even if they have at times caused temporary challenges.

Optimizing workflow and logistics

Although for the most part, the providers, coop staff and MOAs have sorted out workflows and clinic logistics, mostly through trial and error and some preliminary meetings, this presented a challenge for all of the clinics at the beginning, and to some degree continues to be a challenge. Some of these challenges could potentially have been alleviated earlier to some degree through more recognition of the crucial role of MOAs and through better orientation. Nevertheless, some of the challenges are just inherent in the busy fee for service environment in which the clinics operate.

Critical role of MOAs

MOAs play a critical role in clinics as organizers of the physician and coop staff schedules and the first line of contact and triage with patients. Two providers and one of the coop staff observed that more training for the MOAs and ongoing discussions regarding the most effective way to schedule everyone's day might be helpful. One provider observed,

"I don't think our MOA was prepared or trained up in terms of what [the nurse's] scope was, or how to book her, just the additional work to book her and organize patients.…it is a lot for [MOAs] to take on that additional work…. We did not anticipate administrative needs…. There was not additional training for MOAs – that is a big part of how you use them. I kind of leave up to our MOA to triage and we decide who to best see, but it has taken quite a bit to understand. She's almost there but it has taken eight months."

Another provider made a similar comment,

"I think one of the issues we are running into right now is that [the nurses] are not being fully booked and it has a lot to do with the MOAs. They are the gatekeeper of our clinic and they have not been enough involved in terms of patient selection. They have to sell a nurse visit to a patient and there is the MOA involvement in appropriately triaging people. We have not spent the time with them."

This need for ensuring that the MOAs are part of the team and sending appropriate patients to the coop staff was echoed by one of the nurses, who often went through the doctors' schedules to identify appointments that she could better be doing. She observed, "If everything was running like a machine, they would be on my schedule in the first place, but we are all still learning."

All of the nurses indicated that they had at least occasionally been referred patients that were out of scope, and while it was not a big deal as they could just get the doctor, it could be something that training could address. In addition, one of the coop staff pointed out that the MOAs could play a key role in trialing approaches to making the clinic run more smoothly for the providers, staff and patients. She observed,

"I have thought of some solutions for that to maximize the RN role, for example, possibly scheduling the heaviest part of the physicians' day where RN is not likely to need physician to see patient, such as suture removal, more training with MOAs for the scheduling. For example, this patient is going to take a lot of time, so schedule a patient who the physician does not need to see on the RN schedule."

A second coop staff member pointed out that half hour appointments are booked for the nurses, and many types of appointments do not require a half hour, leaving the nurse with down time. While the nurse observed that they put this down time to good use, if there were capacity issues, shortening the nurse appointments, or some of them, and booking more nurse appointments was something that could be looked at.

In addition, in one of the clinics, the physician had taken on the role of calling over to the hospital when the clinic nurse had some openings and could help to alleviate the pressure at the emergency department. This, too, could be a role for MOAs. These were some of the types of discussions that could have been held at clinic check-in meetings, and that were conducted at the few clinic check-in meetings attended by MOAs. However in the absence of those check-in meetings it is not clear that the discussions are occurring.

Orientation could have been better

Most of the providers indicated that they could not comment on the orientation provided to the nurses and social worker with regard to their work in the clinics because they were not aware of what had been undertaken. Nevertheless, two providers felt that the orientation could have been improved, particularly with regard to EMR use and how to handle appointments. One physician observed,

"There's a million little things that it would have been good to know. One thing that we struggled with and are still struggling with is …. that patients come in for one thing and then the nurse will look through and say you have abnormal white blood cell count or you have this knee x-ray – if you dive into medical record, do so at your peril because you will get lost for hours. I have stressed to her that she needs to focus on the reason that the patient is there for, otherwise it gets really difficult for her, and then it gets difficult for me and for the patient if the nurse gets off track…. In terms of orientation that is important – part of that is to reinforce it is okay to say to the patient that you are here for this reason and that it sounds like that additional issue needs follow up and you should see the doctor for that."

Another observed that it would have been good if the nurse,

"were more familiar with certain things we would be doing more at the clinic, so more orientation is better. The EMR, I don't know how much time they got with that. It took a long time for her to get familiar with it. It would have been good to have her taught more about EMR in advance."

There were two local "learning days" for the coop staff in which they were given the opportunity to learn about health authority services and programs, and a wide variety of clinical topics were covered. In addition, the coop staff continues to organize their own learning days, and coop training funds are available to the staff to go and learn about specific clinical topics; all of the staff have taken advantage of these opportunities. Nevertheless, all of the coop staff also felt that the orientation could have been better both on a clinical front and just understanding the workflow and preferences of the providers in each clinic. One of the staff members observed that there are just so many things that they need to know. One nurse suggested a primary care nurse or "go to" nursing educator do the orientation and continue to support the nurses, as it is hard to rely on the physicians to provide the orientation because they are busy seeing patients. The nurse observed,

The doctors were our orientators. They didn't make time to train us because they were busy seeing patients so they are not going to take patient care away to stop making money to train. So we really had to learn on the job. We were very supported if we had a learning need, for example, to learn about diabetes. We were given time off and financial support to do that. The MOAs were great about orientating us to the office process and EMR. I think if this model is going to be tried somewhere else I think maybe hiring a primary care nurse who is very experienced in primary care to train the other primary care nurses to provide that orientation, for example, these are the common things you are going to see, let's dig into complex care and this is how you are going to do it. Instead our training for the complex cares were basically just do the complex care or watch the doctor to do complex care. Doctor training is 10 years. Our training was not adequate so we really struggled to find ways to fill in those gaps ourselves. I think we could have hit complex cares a lot earlier on if we had appropriate training. More formal training would be lovely – a good week of training before seeing patients, but it would depend on the nurse."

Another nurse noted some of the training courses that the coop supported the staff to go to and felt that the doctors had been available to explain things as needed,

"There was a lot to learn but everyone has been quite accommodating in letting me do that. So there was no formal orientation, but it was organic. It has been pretty good as far as training courses I have been able to go to. There was education funding so I went to COPD course and diabetes course in Vancouver. And I will do more training with the STI course…. I learned EMR as I went and the MOAs were quite helpful and continue to be quite helpful in answering EMR questions…."

Nevertheless, the same nurse felt that one of the biggest challenges had been just figuring out workflows and that a sounder orientation by the providers in the clinic would have been helpful in that regard.

"I would say probably one of the trickier things has been figuring out appointment timings for the nurse and how exactly communicating with all the doctors is going to go. I think we have gotten there but I was not sure initially how to do that and communicate with them and call them in. Just having some structure set up about that would have been useful at the start. I just had to do it via trial and error. Having more discussion about flow at the start would have been helpful. Having a plan – here is what we are going to try and then let's tweak… so there would have been just a little less trial and error on the fly for communication. I think we have gotten to a good place now but it was a bit confusing at first."

Another nurse felt it would have been good to know more in advance what was expected of her and what each doctor wanted and that conversations with the doctors would have been necessary for that type of orientation,

"I think there were a lot of grey areas in terms of their expectation of us in the beginning and maybe more of the actual communicating with them in the beginning would have helped. For example, my first day I met the physicians in passing in the hallway while I was working with them. And from different nurse to different nurse we have different areas of expertise so in the beginning I was expected to do things I might not have been able to. I feel like we need to clarify more. For example, in a complete check up what am I expected to do and what do you want to do yourself because we don't want to do things twice. So there was never any discussion 'We want to you to do complete and this is what we want you to do'; instead it was 'Can you do my complete?' There could be more communication in terms of as a nurse in the clinic this is what we want you to do in a full physical."

One of the nurses did get to shadow another nurse who had started earlier and of all the nurses felt most confident about her orientation. Nevertheless, that nurse felt that the shadowing could have been for longer and should have included shadowing the physicians as well,

"In an ideal world I think we would have shadowed our doctors for longer and shadowed our fellow RNs for longer, for example, a week with each and maybe a smattering of seeing your own patients in between starting with easy things."

One of the nurses also observed that as nurses work more in primary care, provincial level "decision support tools" to help nurses work to full scope of practice and maximize the effectiveness of the nurses might be helpful.

The social worker also indicated that the orientation

"hasn't been adequate, but the caveat is that this is new role. It is hard to provide training for job that is not well defined. So considering that it is a new role and doctors have not worked with social workers before and were not clear what I could and could not do, it was okay."

One of the physicians also felt that more orientation would have helped the providers as well,

"I was not oriented as a physician except through our work. So much of it is just that we are going to fly at it – and just go. From the learnings that we have here, sending one of our nurses to Nelson where they had a social worker for awhile to work for a week would be extremely valuable, or have the physicians spend some time explaining how it works. Have a half day orientation with the physician and nurse and then have the nurse stay there for a couple of days.… Like the IPCC nurse we had to experiment and in the end it worked well but we had to feel it out."

This was echoed by the social worker who observed,

"It took the doctors a bit of time to sort out what I can do and now it is an ongoing process to make sure that every doc is very well informed about what my scope is. Sometimes there are still instance where a doctor isn't aware of something that I can do. This is partially due to my changing role and the increased training that I have been doing and partially due to the haphazard nature of conveying a complex job role with 11 different people who are never in the same place at the same time. The doctors mostly learn about what I can do through experience so it is an ongoing process and of course they are great at just asking me if it is something that I can do."

One of the nurses observed that more training for both the nurses and the physician on how to do a hand off when the physician joins an appointment would have been helpful, noting,

"The one thing that feels a little off is I think it is a bit impersonal for the patient for me to be rattling off the info that they just relayed, but it does save the doctor time. It is most difficult for the patient if the doctor asks the same questions as I just asked. Sometimes it works well for the physician to read my notes on the screen. We could use some training in a good hand off and how to give a good verbal report to the physician."

In contrast, one of the physicians stated definitively that the doctors did not need more orientation or meetings and that they knew what they were doing and could manage a nurse. One of the physicians felt that a better orientation would be difficult because the role of the nurses is so varied across the clinics.

"because it was a brand new position you have to figure it out as you go. There is no good orientation. It's not like a nurse in a hospital where there is a definitive role. You have to figure out what they can do. You have to give it a few months to figure it out."

One of the coop staff echoed the difficulty of developing an orientation package that would have suited everyone, and the importance of being proactive about her own orientation,

"Probably at the health authority you have more formal training, so you are hired and you have more structure and more orientation, whereas the coop you had to be very self-aware of what you could and could not do and really go seek out your own orientation, which isn't a bad thing, because we are all at a different stage of learning."

Likewise, another coop staff member pointed out that much of the orientation could not have happened at a coop level because it is very individual to the specific physician, in terms of their preferences with regard to how certain things are done. One of the nurses commented,

"Complex care in the beginning was really challenging without training. Each doctor wants something different so having a day orientation with each doctor where they say this is what I want and this is how I see my patients would have been helpful. They need to tell us but if they don't we are just assuming. But if doctors are not being compensated, they are not going to do it. We have worked it out just through trial and error and time."

Inevitable flow and logistics challenges

In addition, some of the flow and logistics challenges are inevitable in a clinic where there are multiple moving parts, appointment duration is unpredictable, locums are often in the office and the providers are busy.

Most of the coop staff nurses observed that although they have a system for calling the doctor in at the end of their appointments, there are times when the doctor is seeing another patient that they end up waiting with the patient that they have. One nurse observed,

"I will do what I can and then message the doctor and say I need you to come. Generally, they are really good at coming right away. They have all gotten better. Sometimes it feels like a long time. Sometimes they will come right away. I will let them know half way through my visit. I will do what I think I can and leave myself enough time to message them before I am totally finished – I find there is not that much waiting then. I don't like to put patients back out in the waiting room. There have been a few times where I leave my patient in an exam room and go into another. It was happening more in the beginning. It was not flowing as well but we addressed it at one of our meetings and it is much better. Doctors usually finish their own appointment before coming in. If they know they are going to be in that appointment for longer they may actually excuse themselves. Often will specify in my message, for example, I just need this prescription so if they know they are going to be quick they will step out. It seems to be working well."

Two of the coop staff noted that when the providers have locums in, which is fairly frequently, flow issues can arise because the locums do not totally understand the clinic logistics.

In addition, all of the providers have different styles and different approaches to doing complex care planning and other types of appointments. Several coop staff members commented on having to learn the preferences of the different providers that they work for. One commented,

"Each physician is different so sometimes it can be taxing, even though it is getting better each physician has different expectations of you and you have to switch how you do your visits, but I think that is slowly changing as I am more comfortable in what I am doing and can have the conversations with the physicians about what they want me to do for them at the end of the day and then our processes all get better."

One of the physicians acknowledged the challenges of trying to figure out some of these logistics in a busy fee-for-service environment,

"I wish that this program would just fund me for a day or half a day to just spend some time with them to just go over things. Because we kind of have to do it day by day and case by case. And you always want to at the end of day plan for other projects – often on day to day just trying to get better. They are great. I just wish I had one day of funded planning and discussion with them. It would be to say when we are doing complex care – this is the way we should do it together, these are the points I want to touch on, these are the issues that I want to cover. I wish I had more time to go over that with them."

The fee-for-service environment in which all the clinic staff are working also presents some challenges for implementing team-based care, as physicians always have to be considering their billing and the need to

cover clinic overhead. One physician observed that the "physician definitely does not need to join 100 percent of visits" especially as the nurses get to know how the physician wants things done. Another noted,

"So we are trying to piggy back on this fee-for-service model that doesn't accommodate the integration very well. We are trying to find a way to make the model financially sustainable under a fee-for-service model gets in the way of the actual work. It is easier for me to work with nurses and NP if I didn't have to think about the financials if I were salaried or paid on capitated basis – things like joining for each visit or doing patient conference. I am always forced to think about financials of job."

The providers and coop staff in the Boundary have resolved the majority of their orientation and workflow challenges independently and seem to all be making efforts to optimize their teamwork. There is to some extent a learn as you go requirement for all of this work as not all workflow issues can be anticipated in advance. Nevertheless, a more robust initial workflow orientation and discussion for all team members, including MOAs, might have been helpful. Ongoing clinic check-in meetings to discuss workflow challenges that arise and undertake quality improvement cycles to address them would also help to optimize clinic and team functioning.

Space and overhead

Lack of space to incorporate nurses and allied health providers is often presented as a barrier to PMH implementation, especially when physicians own or rent their own space and no overhead is being provided in association with the new clinicians. Although space challenges were not raised by Boundary physicians during the design phase of the Boundary PoC process, there were some minor space issues that arose during implementation. One physician observed that if he had not been planning on moving his clinic, finding space for the nurses would have been a bigger issue,

"Another key factor is that we had to get a new clinic – we would not have been able to fit the nurses into our old clinic, so that is going to be a cost for other doctors – there were other reasons we were going to move anyway and but that was a push. We had to buy new building, build a room, and buy a bed for the nurse, and that is all out of pocket – [the coop] paid for computer and supplies, but if you are going to have to add on an addition it is going to be tens of thousands of dollars. If they have the room, it is going to be an easy transition. If I was not planning on moving, then it would have been a bigger deal – putting an extra room in to a new building was not a big deal. You may get push back from doctors because we are not giving funding for space. Whoever owns the building is an issue. We don't charge rent to the nurses. If renting building and using more rooms the rent might increase, so might have to deal with that."

A second clinic had to add a new exam room in order to accommodate the new workflow of having a nurse, doing excisions and having a foot care nurse who still came to the clinic occasionally. Likewise, a third clinic initially had sufficient space, but after the clinic was flooded in the spring floods of 2018 in the Boundary area and the basement space became too damaged to continue utilizing, there was no longer a space for the social worker to see patients. Moreover, two of the nurses commented that having more than one space available to them helps alleviate the workflow challenges outlined earlier when both the physician/NP and nurse have to see a patient. One nurse commented,

"If the doctor is busy with someone I will leave the patient in the exam room and take my next patient into my office and start with them. If I didn't have the office I would get really backed up. Having the two spaces is really great. And the patients don't seem to mind."

Likewise, while the Boundary providers have generally accepted that the nurse and social worker did not come with overhead, there was some unhappiness on the part of some physicians. One physician often

commented in working group and other meetings that having the nurses in the clinic was costing them in terms of use of supplies, space and MOA time. This was echoed by a second physician who when asked what a reasonable overhead share for a nurse would be observed that he did not know why they would not pay the equivalent of what a doctor would be expected to pay. The Boundary PoC appears to have arrived at a satisfactory situation with respect to space and overhead; however they are vital issues to consider in future PMH/PCN implementation.

Lack of clarity regarding CSC role in implementation

Although the CSC played a critical role in initiating the Boundary PoC and approved the initial terms of reference for the change design working group and the model description and decision brief that went to the IH Senior Executive Team, there were times during the Boundary PoC process where the CSC role was not totally clear, particularly once the process moved into implementation. Several members of the KBDoFP project management team indicated that they were not always sure what types of decisions needed to go to the CSC and how involved the CSC wanted to be. During the design phase this was less of an issue as several key CSC members, including the CSC co-chair, were on the change design working group and were totally informed regarding ongoing activities. As the PoC process moved into implementation it became more localized and only local physicians and IH were on the ongoing working groups. One KBDoFP project manager observed,

"The CSC certainly played a large role in the design, in the model description and overall design and setting up the framework, but in the actual implementation, it was not clear what role the CSC had. Sometimes they would give directives to project team to do this or that or take this approach, and then it was unclear who was governing this work. Should the CSC be dictating what should be happening with GPs in their clinics…? In the future it would be helpful and wise to really articulate what is the role of the CSC in each phase of the project."

A second KBDoFP interviewee noted,

"I did not understand the CSC's role in an ongoing way as the project unfolded. They felt very distant during the implementation….. And yet they could be utilized more in the governance of it. Because they are a collegial group – we could have utilized that strength to better guide some of the work to better guide and inform the work. For example, I couldn't understand why it was such a big deal to get the working group going..? The project needs to be governed – who will do it?…. The CSC could have said this project needs to be governed – and set up working group and have them do it. In the absence of that, who governed the project, the Division?"

A third KBDoFP interviewee stressed the important role that the CSC could and should play in implementation and ensuring that the outcomes are being met,

"The CSC brought great value to initial scoping but not as much has landed there since. The tendency is just to leave the Boundary alone now, but I think that is a mistake. I think we need to be in there with some assertive conversations about what is happening there and how that resource is being used at the CSC. We are going to need, a year into implementation, to bring ambitious evaluation report to CSC and use the clout of CSC to spur some change in practice among physicians and nurses and everyone. It may be a role for CSC to move people into discomfort, or maybe not if they are already doing great."

The degree to which the CSC can and should use its influence to affect PoC implementation in independent physicians' offices in the Boundary is a challenging one as there are no clear lines of governance, and yet having an overarching governing body is potentially vital to successful PMH/PCN implementation, and should be considered more deeply at the CSC table in light of the evaluation findings. Although all of the stakeholders appear to be working in good faith to achieve the outcomes, there are potentially "sacred cows"

of practice on multiple levels (clinics, health authority, province) that may need to be questioned by all parties to push Boundary PoC, and ultimately PMH and PCN implementation across the region, to the next level of success.

Limited engagement of community members and indigenous stakeholders

Ensuring the meaningful participation of community and indigenous peoples takes time and is challenging and the Boundary PoC struggled with engaging them at the right time in the right decisions. Although a community representative sat at the table during the design phase of the project as a patient representative, and indigenous representatives are part of the Boundary PoC implementation working group, it is not clear whether these opportunities are offering meaningful engagement from the perspective of those stakeholders, and it was unfortunately not part of the evaluation design to follow up with those stakeholders.

The patient representative involved in the design phase of the project was not able to continue into the implementation phase due to work commitments. It was often unclear what the specific goals were of having a patient representative present. Although the representative was offered opportunities to speak from a patient perspective at most meetings, there was no strategic effort to collect patient insights could help guide PMH design. Having the support of a diversity of patient representatives and allowing them to present more fully on patient needs in the Boundary and continue to participate through the implementation phases would have allowed the patient perspective to help shape the ultimate model. A more detailed patient engagement plan was developed after the design phase of the project and reviewed by the CSC. It included, (1) patient experience survey, (2) patient focus groups for topics/issues requiring further consultation with patients as identified by patient experience survey or other means, and (3) having patient rep(s) on the implementation working group. There was significant effort to advertise for the patient position on the working group but nobody applied.

Engagement of indigenous stakeholders came later in the process in part due to the speed at which the initial design process had to move and the complexity of determining who the appropriate indigenous stakeholders were and meeting with them to explain the process. As a result, they were not engaged in the design phase of the project but rather participate in the PoC implementation working group and have been invited to the Regional QI meetings. While it is positive to have them at the table, and they are welcome to participate at any time, there is no strategic effort to ask for their specific input to the changes being undertaken. It is also not clear whether the implementation working group, which can be quite operational, is the right place for the voices of these stakeholders to be heard.

At the same time, lessons from engaging community and indigenous stakeholders in the Boundary PoC process have laid the groundwork for engagement of patients and indigenous stakeholders in the Kootenay Boundary PCN process. A patient representative was a key member of the PCN model development working group, and two patient representatives and an indigenous stakeholder participated in the CSC meeting to approve the PCN proposal.

Conclusions and Recommendations

The Boundary Proof of Concept (PoC) is a Patient Medical Home/Primary Care Network initiative. It forms part of work towards the vision of Patient Medical Home in British Columbia, which aims to achieve patient-centred primary care across the province and prioritized outcomes of both the B.C. Ministry of Health and Doctors of B.C. The Boundary PoC introduced team-based care into the Boundary area of the Kootenay Boundary region by bringing three full-time equivalent (FTE) nurses and one FTE social program officer into five primary care clinics. A key feature of Boundary PoC is the strong partnership between the KBDoFP, Interior Health, and the Boundary area physicians, which was critical to the initiation and success of the Boundary PoC.

This partnership enabled a commitment of $500,000 in annual funding from Interior Health directly to a health care cooperative to employ the nurses and social program officer working in the clinics.

This case study of the Boundary PoC, supported by the GPSC, was undertaken from January to November of 2018 and included: a review of existing literature; 34 interviews with representation from the, divisions of family practice, IH, physicians, PoC nurses and social programs officer and patients. Surveys of providers and patients, appointment availability data and IH administrative data were also utilized.

Team-based care and primary care transformation

The Boundary PoC was intended to achieve a number of benefits through the implementation of team-based care as a component of primary care transformation and patient medical home implementation. Existing literature and team-based care experiences across B.C. suggest team-based care can result in the following short- and long-term outcomes:

Short term

- A reduction in low acuity visits to emergency departments;
- Increases in patient satisfaction;
- Better patient access to same- and next-day appointments;
- Improved patient care, particularly with regard to chronic disease management and mild to moderate mental health issues; and
- Improved physician/nurse practitioner satisfaction.

Long term

- A reduction in total hospital days for urgent/emergent hospitalizations;
- Better population health; and
- A reduction in the total costs of care.

The Boundary PoC had the additional goal of reducing scheduled visits at the Boundary District Hospital.

The Boundary PoC case study suggests that all of the short-term outcomes have been achieved to date. In the first year, low acuity ED visits decreased by 13.7% and are on track to decrease by another 22.4% in year two. The target for supporting 160 mild to moderate mental health patients in the clinics has been achieved, and scheduled visits are down by 63% for the ED and 39% for the hospital overall. Qualitative evidence suggests that patient, provider and coop staff satisfaction have increased, although the results are not uniform. Qualitative data also suggests that patient access to primary care appointments has been improved, but this was not confirmed by quantitative data. There is nevertheless strong qualitative evidence of improved workflow, provider allocation of time and team-based care within the five Boundary area clinics. Patient experience with the nurses and social workers is very positive.

At present, the implementation of the Boundary PoC within Kootenay Boundary is in its maturing phase. To realize the long-term outcomes identified above, the initiative will need to continue on to sustainability.

Overall, the qualitative and quantitative data highlight the complexity of the system into which primary care transformation is being introduced. Setting a goal of reducing CTAS 4/5 visits to the ED and scheduled visits to the hospital will increase demand at clinics. While the introduction of nurses and a social worker can help the providers deal with that demand, no supply and demand models were run to understand the expected impact of the CTAS 4/5 and scheduled visit outcomes on the clinics. As a result of the Boundary PoC QI framework and the focus on outcomes in the design of the Boundary PoC, that required the collection of baseline data, we have a much greater understanding of the complexity of the system, and that meeting some goals can bring pressure to bear on other parts of the system. The relationships strengthened and tremendous learning associated with the Boundary PoC will serve Kootenay Boundary and Interior Health in the longer term primary care transformation journey.

Key Findings

Key findings of the Boundary PoC case study for various audiences are outlined below as well as some recommendations for consideration in future primary care transformation:

The 90-day planning period was too short. The Boundary PoC development phase had to be completed in 90 days. While time limits are important for keeping things moving along, the short time frame for PoC development meant that the group did not sufficiently develop a joint vision, assess practice readiness, or develop a sufficient and collaborative understanding of some of the outcome data. This had long-term effects with respect to the selection of at least one outcome without full understanding of the data, that in turn alienated some of the physicians who might have otherwise been bigger champions of the project. While the issue is being addressed collaboratively, a slightly longer planning period may have avoided these challenges. Likewise, because the design phase was rushed, the team-based care attribute of patient medical home became the focus because there was limited time to flesh out how the other attributes were to be achieved, and whether some of them had already been achieved in the Boundary. This meant that although team-based care has been effectively established in the Boundary, it is not clear that patient medical home implementation has been fully realized. Although the major components of the Boundary PoC were designed during the 90-day planning period, many additional components of the PoC including PCN implementation continue to be designed and implemented. System change takes time and money, and there are no short cuts.

Physicians are limited with regard to the amount of time they have to engage in primary care transformation. Even when sessional payments to physicians are provided, physicians must continue to meet their clinical responsibilities during the development phase of primary care initiatives. The KBDoFP was not totally realistic about the physician time commitments associated with the process at the outset and failed to communicate this to the physicians and get their consent. At the end of the intensive Boundary PoC design phase, the Boundary physicians seemed burned out, and indicated that they had no more time to give in the short-term, and yet their commitment and contributions were necessary for implementation. As a result, there was a short period of time where they did not participate significantly in the process. The support of a semi-retired local physician leader in the Boundary was critical to PoC success in all phases. As year two draws to a close, the physicians are increasingly realizing the value of the nurses and social worker in their practices, and as a result, their engagement has significantly increased, and they are much more easily meeting the engagement demands of the maturing phase of the process. It is important to be realistic about the time commitments for all involved, but have realistic expectations with regard to the degree practicing physicians can be engaged in primary care transformation, especially during intense development phases. The number of new team members joining their practices is also a factor in physician engagement. If the ratios of new team members to physician and nurse practitioner providers is too low, physicians will fail to see the transformation as meaningful and worth their time to engage.

Alternative employment structures can be an important facilitator of team-based care within private primary care practices. The nurses and social program officer in the Boundary PoC are employed by a health care cooperative. This was important to the Boundary physicians who wanted to be able to manage the staff working in their clinic and have the flexibility to determine what the coop staff did within their scope of practice, rather than have the team members be health authority employees. The nature of the employment structure affects the relationships within the primary care team, and there is a sense that the health care cooperative employment structure was essential for allowing highly functioning teams to form so quickly within the Boundary primary care clinics. It is possible that some of the physicians might not have moved ahead with the Boundary PoC if they had not been able to employ the team members themselves. At the same time, the health care cooperative took a significant effort to establish by the KBDoFP and requires ongoing administration by the physicians to maintain with a very limited administrative budget. It also creates a duplicative administrative structure requiring insurance, payroll remittance and so on, which the health authority can more easily undertake with economies of scale. There is a sense that at least some of the physicians would have preferred to have the team members be health authority employees to reduce this administrative burden. Likewise, having the team members be employees of a physician only cooperative prevents the other partners from being able to significantly influence the role and activities of those team members to undertake quality improvement activities or other work that could enhance patient medical home implementation. A cooperative with a more diverse board membership and a larger administrative budget might help to address some of these issues.

Divisions of family practice can play a significant role in primary care transformation. Divisions of family practice are in a unique position to link provincial initiatives with local physicians and health authority representatives, and appropriately resourced, can bring the change management leadership required for primary care transformation. Working in collaboration with the health authority, the Kootenay Boundary Division played a critical role in the design and implementation of the Boundary PoC, establishing and convening the design process, writing the PoC model design document to be submitted to the health authority, brokering relationships among all stakeholders and working in the background of the process to ensure that everything that needed to be done was done. Without the ongoing push and commitment of the KBDoFP, it is unlikely that the Boundary PoC would have been successful. At the same time, primary care transformation is highly complex, and the change management funds to enable KBDoFPs continued push were substantial. While some of the tools and general learnings resulting from the Boundary PoC process may enable easier implementation of future PMH/PCNs, there is still a need for change management funding to support lasting change in the primary care system.

The strong relationship between the Division and Interior Health through the Kootenay Boundary Collaborative Service Committee (CSC) and health authority leadership were critical to the PoC initiative. Without the highly collaborative relationships on the Kootenay Boundary CSC, the Boundary PoC would not likely have been considered by IH. While the KBDoFP may have played a key role, the ongoing leadership and support of IH was also essential to PoC implementation. It was a true partnership. IH supported the project by providing the commitment to the annual funding, supplying data when needed and implementing change in the hospital. IH administrators championed the process within the health authority, attended meetings consistently, and remained flexible and open to trying new things, such as the health care cooperative, and determining the best way to implement team-based care in the Boundary. They have remained committed to the process in implementation working closely with the physicians and KBDoFP staff to understand the outcomes and identify changes necessary to meet them. Without the commitment, perseverance and flexibility of all parties, the PoC would not have succeeded.

Identifying outcome targets and having a Quality Improvement Framework can create a concrete focal point for collaborative project design and implementation. The outcome targets for the Boundary PoC serve as a clear reference point for understanding whether the initiative is bringing about the desired change, and reinforced the health authority's support for the project. They also drive action and continued discussion

regarding how implementation can be improved. Developing the quality improvement framework up front with both regional-level and clinic-level indicators allowed for baseline data collection on a variety of fronts including patient access to appointments, patient experience and provider experience, which enabled a more accurate evaluation of the Boundary PoC than is usually possible with similar initiatives. In addition, utilizing the regional data during the design phase to develop the outcomes forced a candid discussion of the health care utilization challenges in the area and how they could be resolved via team-based care. While there were mistakes made in the setting of the quantitative targets, these have for the most part been addressed collaboratively. The health authority role in providing data in an ongoing manner so that progress can be assessed has been critical to continually be able to reframe where the initiative is at, and what additional actions can or need to be taken to achieve the agreed upon goals.

Ensuring the meaningful participation of community and indigenous representatives takes time and is challenging. Although a community representative sat at the table during the development phase of the project, and representatives of aboriginal nations are part of the implementation working group, more participation of more community members throughout the PoC process, and earlier engagement of aboriginal nations would have been desirable. While a detailed engagement plan was developed, it was not until the implementation phase of the project.

It is critical to establish both physician and practice readiness for primary care transformation and understand that primary care transformation is not a panacea for providers. While practice readiness for primary care transformation is often discussed, physicians within a practice can also vary in terms of their readiness for team-based care and PMH implementation. If all of the physicians within a practice are not fully on board, delays and challenges in PMH implementation can often result. Physical space is often an issue for team-based care implementation. More space is better for workflow in team-based care. Lack of space was not a major issue in the Boundary, but one clinic did have to move buildings, while another had to build an extra exam room. For fee for service physicians, these are not insubstantial costs. Fee for service team-based care billing opportunities do not appear to cover the overhead costs associated with new team members. Likewise, while in the balance most of the physicians in the Boundary seem satisfied with the team-based care experience, a few have noted that their days have become more focused on complex patients and problems with out the break associated with resolving simpler issues that are now being addressed by their team. In addition, their days are often busier due to the squeeze in appointments resulting from the nurses. Adding regular team meetings and quality improvement activities to their day has not yet been possible. In addition, team-based care does not fit seamlessly within a fee for service environment. Always being conscious of the billing implications of sharing one's patient panel with non-physician/NP team members does not necessarily optimize team-based care for patients or for the system.

There is no "one size fits all" approach to primary care transformation. Boundary health care teams had developed specific ways of doing things in the area that fit with the fact that it is a small area, where all of the physicians work in the emergency department and many of the health care providers know each other well. While the local data identified potential opportunities for improvement relating to the long waits for primary care appointments and the high number of CTAS 4 and 5 visits to the ED, there was not enough initial effort to understand what worked in the ecosystem and what did not. This resulted in some missteps in implementation of the Boundary PoC and some unhappiness on the part of some stakeholders. At the same time, the Boundary PoC was a "made in the Boundary" solution and was largely tailored to the Boundary, which was key to its overall success. As primary care transformation initiatives are rolled out across the province, there is a risk of taking a too prescriptive approach to how things should look in different communities and endeavouring for too much alignment in approaches, particularly when considering the differences between urban and rural communities with regard to how health care is delivered.

The ratio of non-physician/NP team members to physician/NPs matters and should not be too diluted. The ratios in the Boundary was 1:3 or 1:4 of team members to physicians/NPs for nurses and 1:11 for the social

worker. The case study highlighted that this was just adequate for nurses but inadequate for the social worker. It also highlighted that a myriad of inefficiencies results from having ratios that are insufficient. It takes consistent working together for providers to develop a relationship with team members such that they are aware of each others skills and preferences and can rely on each other and work as an optimized team. When the ratios are too low it also reduces continuity of care for the patients, as the team member is not present in a specific clinic often enough to be available for the patient. Although adding team members to primary care clinics likely improves care even at low ratios, there is likely a ratio below which the new team members are no longer really a "value add".

Ongoing and repeated communication is essential when engaging in change. Even in very functional health care system cultures, there will be differing understandings of what is being changed and why in PMH/PCN implementation. There were many misunderstandings in the Boundary PoC implementation that required ongoing communication to resolve. Some physicians who agreed to the PoC implementation did not understand that it would result in changes in the hospital. Acute care staff did not initially have an understanding of the PoC process. The coop staff had some challenges in their first few weeks due to lack of orientation. Sorting out the scheduled visit outcome data required significant communication among physicians and IH staff. Over time, most of the needed communication with regard to Boundary PoC implementation occurred. But this communication took time and effort and an ongoing commitment on the part of all parties to ensure that it happened. Ensuring that the relationships are in place to allow the communication to occur and having someone in a change management position to help ensure the connections are made is essential to successful primary care transformation.

A robust orientation for new team members, providers and MOAs and ongoing team meetings can help optimize the implementation of team-based care. While efforts were made to provide orientation to the new team members in the Boundary, it was mostly ad hoc, and each clinic took their own approach. Overall, the teams in the Boundary have for the most part worked out how to work together, but there was a general feeling that more orientation, with more time spent shadowing more established team members in other clinics, and the providers in would have been better. Physicians, in particular, are critical for orienting new team members and explaining, for example, their expectations regarding chronic disease flow sheets. However, physicians in the Boundary were often too busy providing care to provide these explanations in a formal manner. Instead a lot of the orientation was done "on the fly". While this for the most part worked, team members could have been brought up to speed more quickly with a more systematic approach. Similarly, MOAs play a critical role in triage and gatekeeping within clinics, and yet received little in the way of orientation and direction. Team meetings, which could have been critical for exploring and optimizing the ways that the teams worked together, were sporadic and difficult to schedule. More exploration of where the team members can best add value might further optimize the teams in the Boundary.

PMH implementation sets the stage for PCN implementation. In the Boundary, it was decided to start with PMH implementation in phase one and move on to PCN implementation in phase two. There were many reasons for this decision, including trying to keep the scope of the changes manageable, and focus on clinic-level changes first. The lessons learned and relationships built and strengthened from PMH implementation set the stage for an easier transition into PCN implementation as the clinic coop staff and providers are increasingly working with IH services. Although PCN implementation is still at the very beginning stages, without the coop staff available to do some of the legwork of this integration, it is unlikely PCN implementation would be working as effectively as it is in the Boundary.

Recommendations

There are various recommendations emerging from the Boundary PoC case study. Some of the recommendations below are for the Ministry of Health and GPSC in considering the broad implications of rolling out team-based care, patient medical homes and primary care networks in BC. Many of these

recommendations are also for CSCs in considering key issues that will have to be addressed in primary care transformation. More specific recommendations for practices interested in implementing team-based care are also provided.

For Ministry Health, GPSC and CSCs

- Understand that developing a collaborative vision and language, understanding the data, and creating a workable primary care transformation model take time, and are critical steps that will facilitate the implementation phases of a project.
- Be strategic about how to engage physicians and realistic about how much time they can devote to primary care transformation. Identify and support local physician leaders who have more time to offer to the process.
- Carefully weigh the pros and cons of alternative employment structures for new team members. A cooperative structure with a multi-organization board could allow for maximum effectiveness in team-based care while maintaining diverse oversight.
- Provincial stakeholders should work through Divisions using their local knowledge, change management expertise and capacity for doing the work to engage physicians and health authorities in primary care transformation, and ensure that Divisions have sufficient change management resources to do the work.
- Support relationship development at the CSC level across the province and understand that primary care transformation requires considerable goodwill, flexibility and commitment from Divisions, physicians/NPs, and health authorities.
- Promote the establishment of primary care transformation models with clear outcome targets, regional-level indicators, clinic-level indicators, and a commitment to using data and undertaking evaluation to understand the effects of primary care transformation.
- Take the time to understand the local health care system, relationships and patterns of care before developing a primary care transformation model. In particular, understand the differences between rural and urban health care systems and do not try to impose a “one size fits all” solutions.
- Have a robust plan for community and aboriginal engagement and ensure that there are enough of them at the table that their voice can be heard. Consider patient advisory groups to inform issues around access, QI projects and outcome priorities.
- Provide sufficient ratios of team members to physicians/NPs to make a difference in the local primary health care system and make the change meaningful enough for physician and nurse practitioners to engage in the design process.
- Accept that ongoing and repeated communication with regard to the changes that are occuring and the reasons for them is necessary to support all parties in the primary care transformation process.
- At a provincial level, consider possible programs or incentives for capital builds that add physical space to practices, enabling participation in primary care transformation.
- Facilitate sharing of best practices for team-based care, making use of conference events and province-wide communications.
- Clearly lay out the prerequisites for primary care transformation participation, including a commitment to QI and optimizing team-based care, and work with early adopters.
- Start with PMH implementation and then move into PCN implementation. Both are critically important for improving patient care.

For Practices

- Review your panel to identify the types of team members needed. A complex panel with a large number of chronic disease patients may be best served by a nurse, while a panel with large number of social determinants of health issues may require a social worker. Undertake the Practice Support Program panel assessment process so you can generate patient registries. Analyse a few typical days in your practice to identify the types of appointments that could be done by team members.
- Meet with other physicians in your practice to plan for team-based care. Although some issues will be addressed on an ad hoc basis, it is important to have a plan. Can all physicians refer to the new team members at any time? How will you communicate with new team members? Will they perform the same tasks for every physician or support each physician in a different way? Can your MOAs refer walk-in or same day appointment requests to team members?
- Identify or create appropriate space for the team members. Assess how your existing space will work for patient and team flow. Determine if you have an extra exam room or two, or if team members can use physician rooms when they are not present.
- Provide a thorough orientation for new team members. Provide as much clarity up front as possible for new team members in terms of their role and the types of appointments they will be doing. Consider having them shadow you and established primary care team members in other practices before starting to see patients. Outline expectations with regard to specific tasks, such as chronic disease flow sheets, or excision preparation. Ensure they receive sufficient EMR orientation.
- Ensure team members have equipment and EMR access. Team members will require full EMR access as well as an exam bed and other critical equipment, such as blood pressure monitors, thermometers, suture removal kits, depending on the tasks they will be undertaking.
- Engage in team-building and hold regular team meetings. Hold regular meetings to build a sense of team, and discuss and modify team processes as needed. Prioritize working effectively together. Don't forget that your MOA is an important part of the team and will play an active role in determining how the team functions. They need to be included as well.
- Support ongoing team education. Support team members' needs for ongoing education by allowing them to participate in training courses, facilitating the establishment of peer mentors where needed and supporting the development of a community of practice for other primary care team members in your area.
- Undertake and support patient education regarding the new team structure and what to expect when they come to their primary clinic and utilize the ED.

Appendix 1: Attribute Descriptions of a PMH in BC

The following 12 PMH attributes are taken from the GPSC website. http://www.gpscbc.ca/what-we-do/patient-medical-homes

Patient centred, whole person-care: Care is easily navigated and centered on the needs of the patient, family, and community. Patients are empowered in optimal self-management, and contribute to the development and assessment of the practice and community care models. Care will be delivered in a culturally appropriate manner with recognition of social determinants of health and attention to marginalized populations.

Commitment (A personal family physician): A Patient's Medical Home (PMH) will ensure that patients have access to a personal family physician (or in some cases a NP) who will be the most responsible provider (MRP) of his or her medical care. Physicians have a defined patient panel and patients and physicians have a shared understanding of their mutual therapeutic relationship.

Contact (Timely access): Patients are able to access their own family physician or PMH team on the same day if needed. Patients know how to appropriately access advice and care on a 24/7 basis.

Comprehensive care: The PMH provides delivery of, and linkages to comprehensive services. The specific comprehensive services provided through the PMH and network of PMHs are determined by context, considering both community need and also available resources. A set of core services will be included regardless of context: I. Care of patients across the life cycle (newborn to end of life and palliative care), II. Care across clinical settings (eg ambulatory / office practice, hospital and LTC institutions, emergency care settings, care in the home) and geographic service areas (remote, rural, urban, metro), III. The full spectrum of services provided within the regulated scope of family practice (e.g health promotion and prevention, diagnosis and management of undifferentiated presenting problems, acute and chronic disease management, mental health care, maternity care) and appropriate procedural medicine.

Continuity of care: Longitudinal relationships support patient care across the continuum of patient care, spanning all settings. The enduring relationship between the patient, family physician (or NP where appropriate) and PMH team is key, and needs to be supported by informational continuity (two way communication that informs appropriate and timely care).

Coordination of care: The PMH is the hub for the coordination of care through informational continuity and personal relationships and networks with other PMHs, inter-professional team members within and linked to the practice, and linkages to speciality and specialized services across the care domains. Where services are provided outside the Patient Medical Home, simple and clear pathways will be established to support patients as they transition to and from specialized services. Patients are empowered to participate in the coordination of their care through access their own medical information and shared decision making with their physician/PMH team.

Team-based care: The PMH generally includes more than one FP working with an expanded inter-professional team within the practice, and / or linked to the practice, with a focus on person-focused relationship-based care. Providers within the practice are working to optimized scope.

FP networks supporting practice: FPs are part of a clinical network working together to meet the comprehensive care needs of their patients and the patients of other PMHs in the community including extended hours of service, cross coverage, and/or on-call.

PMH networks supporting communities: The PMHs are networked through the Divisions of Family Practice (or other similar community care service organization where Divisions may not exist) to enable better coordination, partnership and integration with health authority and non-governmental community services (Primary Care Home), and the broader system of health care.

Information technology enabled: Physicians, providers, and staff in the practice are IT enabled, including optimized EMR use and data collection methods to inform quality improvements in patient care and practice workflow. The EMR is able to link appropriately with other providers and parts of the system, including other community providers, pharmacies and acute care facilities. Virtual care options including access to appropriate email, telephone, and video conferencing advice/consults are used and optimized.

Education, training and research: The PMH promotes mentoring, peer coaching for continuing professional development, training and research. This will include providing support to new grads and recruits coming to the community, providing training to medical students, residents and allied health providers within the practice, participating in peer-led small-group learning sessions, and research within the PMH or as part of a network.

Evaluation and quality improvement: Physicians, other providers in the PMH, and patients are involved in clinical quality improvement activities at a professional, practice, community and system level.