BCEHS | BC Emergency Health Services
Provincial Health Services Authority

# Community Paramedicine Program

# Final Evaluation Report

*"This is a health service that says, yes!"*


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## Executive Summary

This final evaluation report of the outputs and outcomes achieved by the Community Paramedicine program (CP) is clearly a **"good news" story.** As of January 2019, 104 skilled and knowledgeable Community Paramedics (CPs) are providing primary care services[1] to people in remote and rural British Columbia (BC) communities. **Almost 1,600 patients have been serviced and over 19,600 home visits have been conducted.** They have accomplished the following:

- **Served 83 of 99 eligible rural/remote communities**;
- **Cared for 1,597 "**unique" rural/remote BC residents;
- **Conducted 19,671 home-visits**;
- **Responded to 346 acute calls (911)** while on CP shifts.

Since its inception in 2015, BC Emergency Health Services (BCEHS) leads the project and has created a support infrastructure to facilitate program advancement, and long-term effectiveness and sustainability. Components of this infrastructure includes the following:

- **Partnerships -** with BC Ministry of Health, regional health authorities[2], Ambulance Paramedics of BC (CUPE Local 873), communities and local health care teams;
- **"Orientation" –** Online and in-person pre-service training components to enable CPs to learn the new knowledge and gain the skills and confidence required;
- **CP Mentors –** twenty-one (21) experienced individuals provide ongoing support to CPs in the field;
- **CP Management Team;**
- **Systems for evaluation** to enable evidence-based decisions regarding improvement, and to demonstrate outcomes for accountability.

Since inception (2015) as the Community Paramedicine Initiative, there were **two primary objectives:**

1. Contribute to the stabilization of paramedic staffing in rural and remote communities.
2. Bridge health service delivery gaps identified in collaboration with local primary care teams.

**The CP Delivery Goal** is to be consistent with Quadruple Aim.[3]

**The focal population has been persons age 65+ with one or more of the priority conditions below.** In brackets are the key activities associated with the condition:

- Heart Failure (monitoring blood pressure, pulse, weight);
- COPD (oxygen saturation, medication self-management support);
- Diabetes (physical assessment, medication self-management; support, vitals and head-to-toe checks) to contribute to stabilization[4]; and
- At-risk for falls (risk assessment and home safety screening).

Recently, CPs have begun to provide palliative care, and some have been providing Naloxone training and meeting other identified needs. In addition to conducting home visits, CPs work closely with

[1] CPs typically hold part-time positions (0.53 or 0.67 FTE), and work 10 hour/day.

[2] Northern, Interior, Island and First Nations Health Authority have been most involved in the development, but other health authorities are now collaborating as well.

[3] The initiative aligns with, and supports, the Ministry of Health's strategic directions, including Quadruple Aim. See 2015 *Primary and Community Care in BC: A Strategic Policy Framework.* Dimensions of care captured in the Quadruple Aim **framework** includes improved patient experience and health of populations, as well as reduced costs of care and improved care provider work life and well-being.

[4] Services provided depend on referral and patient need.

colleagues in local primary care teams and hospitals, and conduct health education sessions at community events. They have recently begun to use home health monitoring (HHM). CPs are supported by their Unit Chiefs, CP Mentors and the BCEHS CP management team.

Evaluation activities began at program inception[5], with development of a Framework (2015) that served as a blueprint for monitoring and evaluation. This was followed by a "Snapshot Report" (2017), then an Interim Evaluation Report (2017), which focused on formative issues and early outcomes. This Final Evaluation Report (2019) includes a summary of outputs and outcomes achieved, which are related to the program objectives, goal and evaluation questions specified in the Framework. A separate technical report contains all of the data summaries from which this Final Report was created.

Qualitative and quantitative data for this report were gathered on CP recruitment and orientation, implementation in communities, CP work with patients, and work with health partners and systems. The report includes insights from key stakeholders: the CPs themselves, CP Mentors, local health partners, community partners, health care administrators and, of course, patients. Patient data was gathered directly using a patient reported outcome measure (PROM), specifically the EQ5D5L survey tool, a patient experience survey, and through in-depth case studies of three communities served by CPs.

Overall, data results indicate that program objectives and goal are either being achieved or well on their way to doing so.

**Summary of results for Program Objective #1:** Contribute to stabilizing staffing in rural / remote communities

- **a.** The program is attracting and retaining paramedics to work in rural / remote communities. Most success has been realized with hiring local paramedics.
- **b.** The program improved individual practitioners' job satisfaction and professional competencies.
- **c.** CPs are integrated in local care teams and routinely collaborate with other health care providers. They are welcome contributors at community events.
- **d.** Community Paramedicine is now defined in BCEHS policy documents. Provincial policies, procedures and practice guidelines have been articulated.
- **e.** CPs can improve emergency responses in some situations.

**Summary of results for Program Objective #2:** Bridge health service delivery gaps in communities, identified in collaboration with local primary care teams, and consistent with CP scope of practice.

- **a.** CPs are bridging delivery gaps at the local level by working collaboratively with local primary care teams and extending their reach and working directly with patients in their homes.
- **b.** The program has increased local capacity to address identified health challenges.
- **c.** CPs are not duplicating existing services but are making them more effective. They have established a new type of health service delivery.

[5] Catalyst began by first developing the Evaluation Framework that outlines both formative and summative evaluation (2015).

**Summary of results for Program Delivery Goal: Quadruple Aim**

There is strong evidence of improvement in #1: Patient Experience and #4: CP Well-being. Early evidence indicates potential for positive impact on #2: Patient/population Health. No data were available regarding improving # 3: Cost of Outcomes.

1. **Patient experiences**: Patients and caregivers expressed satisfaction with CP services and indicated their experiences had improved. A relationship with the CP matters to patients and their families.
2. **Health:** EQ5D5L data indicated that 52% of patients cared for by CPs improved or maintained health. CPs helped patients understand their conditions and treatments, improve ability to navigate systems and access services, and develop confidence and skill in self-care. Health partners and care providers agreed, noting improved self-care action and adherence to medications.
3. **Costs of outcomes:** BC Health system data to address this question was not available at the time of writing this report.
4. **Health care provider well-being:** CPs generally found the role to be rewarding. Highlights included relationships with patients and caregivers, appreciation of community members, ability to share knowledge and work as a team, and help facilitate aging in place.

## Recommendations

The chart below summarizes recommendations that emerged from the data, and references these to the program objectives, delivery goal (Quadruple Aim) component, and evaluation objectives.[6]

| Recommendations with Suggested Actions aligned to Program Objectives, Quadruple Aim Components & Evaluation Objectives | Program Objective | Quadruple Aim Component | Evaluation Objective |
|---|---|---|---|
| **A. CP Practice** | | | |
| **1.** Continue/strengthen pre-service and in-service supports for learning and practice change. | **2** | **1, 2, 4** | **2** |
| The CP Program Management Team has developed effective means to support the complex transition from recruitment to successful CP (Orientation, CP Mentors and Community of Practice). Additional supports were developed to enable CPs to work effectively in new priority areas such as palliative care, and with new tools such as HHM. Continue to equip CPs to meet emerging patient needs and system priorities, such as mental health. | | | |
| **2.** Continue to work with key stakeholders to address factors (identified in this report and elsewhere) that limit CP effectiveness, efficiency and sustainability. | **1, 2** | **1, 2, 4** | **3, 4, 5** |
| Engage Unit chiefs, CPs and Mentors, policy/decision-makers and community partners to resolve concerns such as station-level supervision and practice support, kilo shift complexities, challenges of part-time employment (vs. full-time positions in some locations), and co-location in First Nation communities. | | | |

[6] Five evaluation objectives (see Section 1.3): **1.** Determine the extent to which the program achieved its objectives and supported related decision-making; **2.** Inform BCEHS as to how well the program delivered services in alignment with the Quadruple Aim, BC Ministry of Health's strategic directions, and the BCEHS Strategic Plan; **3**. Identify important lessons to be learned and recommendations for future implementation; **4.** Analyze the changes that have occurred and provide evidence to support policy and practice changes for the program; **5.** Analyze implementation, focusing on program structures and processes.

| | | | |
|---|---|---|---|
| **B. CP Program Management Team** | | | |
| **1.** Create plans for moving the findings and recommendations of this report to action. | **1, 2** | **1, 2, 4** | **2, 3, 4, 5** |
| Integrate these findings and recommendations with insights gathered from other experiences and create a plan to operationally address the challenges and opportunities, and improve the program, CP practices and supportive policies. | | | |
| **2.** Plan for sustaining Community Paramedicine in BC. | **1, 2** | **1, 2, 4** | **2, 4** |
| Although CP is a sound program, it is vulnerable to external pressures that could limit growth and impact in the future. Determine the leadership, structures and policies needed to sustain and improve the CP program generally and take advantage of opportunities for learning and informing practices. | | | |
| **C. Evaluation and Knowledge Utilization** | | | |
| **1.** Continue to improve evaluation for informing practices and policies, and accountability. | **1, 2** | **1, 2, 3, 4** | **3, 4** |
| The team has capacity for getting quality data for actionable results. Engage key implementers (i.e., CPs, CP Mentors, and Unit Chiefs), Evaluation Advisory Committee members and other champions in identifying key questions, enhancing survey data quality and collection, accessing provincial data, mobilizing knowledge and utilizing findings. Progress has been made in engaging patients - the direct beneficiaries and key stakeholders -in program evaluation. The ability to continually gather patient insights and measure their outcomes will be essential to improving service, creating support structures and policies, and sustainability. | | | |
| **2.** Update the evaluation framework, including logic and key evaluation questions | **1, 2** | **1, 2, 3, 4** | **1, 3** |
| Evaluation documents often become dated and should be refreshed every three to five years to ensure continued strong alignment to provincial and national strategies. | | | |
| **3.** Refine evaluation of the Quadruple Aim components. | **1, 2** | **1, 2, 3, 4** | **2** |
| This program is demonstrating success in components #1, #3, and #4. It is possible to obtain quality data on patient health and costs for outcomes achieved, and will likely be necessary for sustaining the program, but this will require partners' commitment. | | | |

BCEHS and its partners have successfully designed and implemented a program capable of addressing key challenges faced by senior residents in rural and remote communities. The CP program management team has demonstrated ability to learn and use knowledge to improve effectiveness. CP is a success story and lessons from this evaluation provide insight into how this program can be strengthened and thoughtfully sustained.

# Contents

Executive Summary ..... i
Contents ..... 1
Section 1. Introduction ..... 2
1.1 Background ..... 2
1.2 Community Paramedic Scope of Practice ..... 2
Section 2. Evaluation Results ..... 5
2.1 Program Usage Data Summary ..... 5
2.2 Program Response to Interim Report ..... 7
2.3 Program Objective #1: Stabilize Staffing ..... 8
2.4 Program Objective #2: Bridge Health Care Gaps ..... 16
2.5 Program Delivery Goal: Deliver Care Consistent with Quadruple Aim ..... 21
Section 3. Summary and Recommendations ..... 26
3.1 Summary ..... 26
3.2 Recommendations ..... 28
Appendix 1. Evaluation Methodology ..... 30
Evaluation Background and Approach ..... 30
Description ..... 31

# Section 1. Introduction

## 1.1 Background

Community Paramedics (CPs) in-home provide primary care services in 99 rural and remote BC communities across five health authorities (Northern, Interior, Island, Vancouver Coastal and Fraser). BC Emergency Health Services (BCEHS) leads program development and implementation, but works closely with BC's Ministry of Health, regional health authorities, the Ambulance Paramedics of BC (CUPE Local 873), the First Nations Health Authority, and others.

The program began in April 2015 with nine prototype communities. By December 2018, the program had grown to 104 positions, 23 of which were full-time.

**Two primary objectives** ground community paramedicine in BC:

1. **Contribute to stabilization of paramedic staffing** in rural and remote communities by having CPs with the ability to augment additional shifts in emergency response capabilities.
2. **Bridge health service delivery gaps** in communities, identified in collaboration with local primary care teams and consistent with the paramedics' scope of practice.

**The program delivery goal** is to "Deliver care consistent with **Quadruple Aim"** (Figure 1).

**The program objectives align with, and support, the BC Ministry of Health's strategic directions** as stated in *Primary and Community Care in BC: A Strategic Policy Framework* (2015):

- *Improving Health*: Develop innovative ways to promote and support individual responsibility for health and healthy living;
- *Developing primary care locally and improve access* to specialized care: explore ways to overcome transportation barriers for rural residents including high and low acuity transport; and,
- *Encouraging local innovation* in meeting health needs: create partnerships to find innovative solutions to transportation and access issues.

**Figure 1.** Quadruple Aim projects contribute to improvement in four areas, as below:


## 1.2 Community Paramedic Scope of Practice

CPs in BC are Primary Care Paramedics with IV endorsement who are oriented to use their skills in non-urgent settings - in patients' homes or community settings. They provide services within their scope of practice and in partnership with local health care providers.

Since the Interim Evaluation Report in 2017, the following services were added:
- Home Health Monitoring (for HF, COPD and Diabetes)
- Palliative Care

Community paramedicine is intended primarily for patients age 65+ living with chronic conditions such as heart failure, chronic obstructive pulmonary disease (COPD), and diabetes, or are at risk of falls. CP services include (but are not limited to) monitoring blood pressure, assisting with diabetic care, identifying fall hazards in homes, supporting medication self-management, post-injury or illness evaluation, and assisting with respiratory conditions. Such work contributes to advancing principles put forth by the Ministry of Health,[7] including the support of

[7] BC Ministry of Health (2015). *Primary and Community Care in BC: A Strategic Policy Framework.*

integrated and comprehensive patient-centred health care involving health promotion and disease prevention.

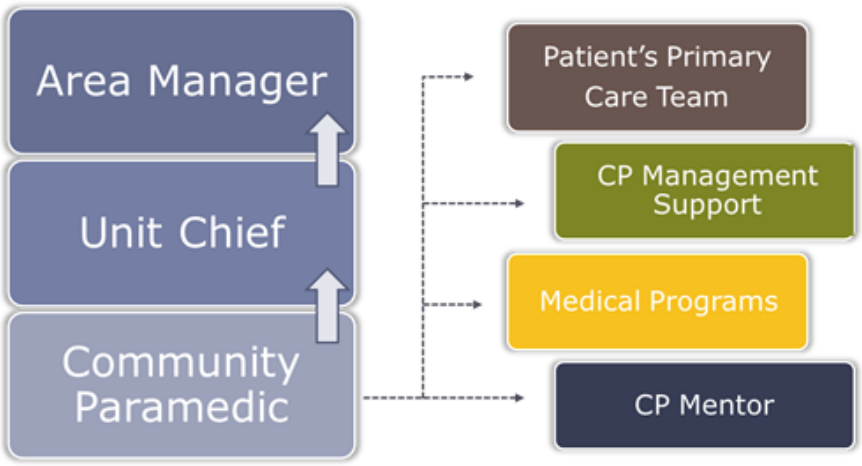
The communities selected to receive CPs were either rural, small rural, or remote (as defined by the Ministry of Health) and had an existing ambulance station. Priority was given to ambulance stations with on-call staff only, indicating the greatest need for increasing stability of paramedic service.

It takes time and effort to engage local stakeholders, promote integration of this new role with health care teams, and become known and trusted in communities. CPs meet with local stakeholders[8] to learn about local needs and approaches, convey information and answer questions about their role, and generally build partnerships. They participate in local events, communicating health promotion and education concepts, and relationship building. CPs typically connect with many local people in a typical 10-hour shift:

- Patients in their homes,
- Patients' care providers[9];
- First responders (including fire and police);
- Community members;
- The station Unit Chief or Area Manager

Each CP reports to the local Unit Chief (under the Area Manager). However, CPs are supported in their roles with patients and community by experienced "CP Mentors"[10], as well as the provincial BCEHS CP program management team and structure. Figure 2 shows key interactions.

**Figure 2. Interactions for reporting (left) vs. support and patient care (right)**




**Key "enablers" that should contribute to success** were identified at inception as follows:[11]

- Strong visible support from project sponsors and regional health authorities;
- Clearly defined scope of practice and effective scope management;

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[8] Including representatives in health, municipal government, band councils and others.
[9] Including physicians, nurse practitioners, nurses, and other staff at local clinics and hospitals
[10] CP Mentors were originally called "Regional Training Officers" or RTOs
[11] Cited in the Evaluation Framework (2016 02 23; p.5): Community Paramedicine Initiative Project Overview, Nov 16, 2015 + three additional noted by CP program management team.

- Effective relationships among stakeholders and practitioners;
- Effective utilization of resources and roles relating to community health service delivery gaps; and,
- Integration and collaboration in patient-centred care.

## 1.3 Evaluation: Advisory, Objectives and Reports

BCEHS established an Evaluation Advisory Committee (EAC, 2015), with representatives of key stakeholders. This committee met at key points to update and advise on the evaluation. **The purpose of the evaluation** is to inform BCEHS as to how well the Community Paramedicine program is doing in contributing to its own objectives and, more broadly, delivering services in alignment with the BC Ministry of Health and the BCEHS Strategic Plan.[12] Catalyst Research and Development Inc. was contracted in 2015 to frame and guide the evaluation. Work began with developing the Evaluation Framework (2016) with the CP program management team. This document articulated key questions, program logic, and outcomes and indicators mapped.

**The evaluation objectives** were stated as follows:[13]

1. Determine the extent to which the program achieved its objectives and supported related decision-making.
2. Inform BCEHS as to how well the program delivered services in alignment with the Quadruple Aim, BC Ministry of Health's strategic directions, and the BCEHS Strategic Plan.
3. Identify important lessons to be learned and recommendations for future implementation.
4. Analyze the impacts or changes that have occurred and provide evidence/ data to support policy and practice changes for the program.
5. Analyze implementation, focusing on the program's structures and processes.

**The evaluation methodology** has been relatively consistent with that described in the Evaluation Framework. Appendix 1 provides a summary with updates.

**Four written reports** were produced after the Evaluation Framework (and in addition to developmental consultations with CP program management team) as follows:

1. The *Snapshot Report* (2017) - provided early formative feedback to support CP Management Team learning and adjustments to program and practices;
2. The *Interim Report* (2018) - provided both formative and early outcome evidence to inform program development;
3. This *Final Report* (2019) - provides a summary of outputs and progress toward outcomes and specific questions identified in the Evaluation Framework[14], and is organized under these.
4. The *Technical Report* (2019) – provides the data summaries from which the Final Report is drawn.

**Several processes helped to strengthen the evaluation** and increase confidence in results:

- Creating the evaluation framework at inception helped identify potential challenges, which helped build in processes to collect good data.[15]
- The need to include the patient voice was identified at the outset, which led to inclusion of patient representatives (2) on the EAC and direct data collection with patients, (quantitative and qualitative)

[12] In the program's most recent Business Case, it also mentions: the evaluation is for the purposes of informing, learning, improvement and [not only, as above] accountability.

[13] These objectives are outlined in the most recent iteration of the EAC's Terms of Reference (2016 01 27, p. 1).

[14] The outcomes are located in the Program Logic Model (see Evaluation Framework 2016).

[15] As example is identifying the need to obtain permissions to receive Ministry data (e.g., health services)

- Use of mixed methods and multiple lines of evidence enabled the triangulation of findings and generation of more reliable results.
- Diverse stakeholders[16] accessed to deepen understanding of program value.
- Patient voice was captured through EQ5D5L (PROM), Patient Experience Survey and Sharing Circle.
- Conducting community case studies to deepen understanding of successes and challenges directly through in-person sessions with key stakeholders, including patients.
- Two webinars (2018 02) to share and discuss key Interim Report results with CPs, build understanding of, and appreciate, the importance of collecting high-quality data.
- Other efforts, as well as the above, were intended to raise response rates for surveys, especially as summative reporting would include more ways to gather patient responses (i.e., EQ5D5L tool). These efforts were successful.

**Significant limitations** were as follows:

- Low response rate for the Pre/Post Orientation survey. This limited the number of matched pairs available for analysis (n=15, deemed too low for significance testing). Complex identifiers and participant memory likely contributed and can be addressed in future.
- Although the evaluation framework included the CP program impact on the broader health system, and multiple meetings were held to obtain that data, evaluators could not obtain de-identified and aggregate data in time. BC Ministry of Health data for patients who receiving care from CPs was not available at the time. Once available, the CP team will integrate it and produce a brief.

**Catalyst believes that these limitations do not affect the value of the evidence provided in this final report.** The data shows trends indicating the importance of deploying CPs in rural and remote communities to address patient health and wellness challenges, bridge health system gaps and strengthen delivery of health promotion and primary care services, including prevention. In addition, the inclusion of the patient voice has resulted in findings that speak to patient-centred care. This report has a rich array of information that will assist organizational learning and decision-making as BCEHS continues to move community paramedicine into its regular operations.

# Section 2. Evaluation Results

This section presents a summary of program usage and triangulation of data to address key evaluation questions in the Evaluation Framework (2016) relevant to final reporting. Wave 1 data, detailed in the Interim Report, informed program improvement and expansion decisions, for the Pre/Post Orientation Survey. All the data, presented below, are organized under evaluation questions from the program objectives and goal.

## 2.1 Program Usage Data Summary

From January 1, 2016 to December 31, 2018, **CPs and mentors provided care to 1597 "unique" British Columbians** living in the rural and remote communities selected, through **19,671 patient home visits**.

[16] E.g., local care providers, community and union leaders, regional and provincial leaders.

CP patients have the following characteristics:

- 84% are age 65+;
- 50% are Male and 49% are female, with 1% not specified[17];
- 96% are English-speaking;
- 51% live alone while 32% live with a spouse; and,
- 74% receive a visit from the CP within seven days of referral.[18]

**Nurses initiated 47% of CP services** while physicians initiated 40%.

**On average, CPs visit patients 12 times** and provided services including, but not limited to, blood pressure monitoring, physical assessment, supporting medication self-management, diabetes follow-up, and falls risk screening. The number of services provided to a patient is dependent on patient need as well as the referring provider's request.

Since project roll out, CPs across the province also responded to **346 high acuity 911 calls while on their CP shifts.** This demonstrated the strengthening of response to British Columbians in "urgent" need while at the same time, assisting patients requiring services in their homes to manage their chronic conditions.

**CP services could not be provided in the following cases**:

- 13 requests were for services that were out of scope for CP practice;
- In 35 cases, CP services were not available **due to waitlists** in that area; and,
- 92 referrals were not addressed for "other" reasons (e.g., patient refused service, home unsafe).

**The majority of in-home primary care services provided to patients are in four areas:**

- **Physical assessments** to stabilize patients' chronic conditions (e.g., vitals and head-to-toe checks);
- **Falls prevention and safety assessments (**e.g., home safety screening and falls risk assessment**);**
  - ✓ Falls are the main reason older adults lose their independence[19]
- **Heart failure** (including blood pressure monitoring; pulse and weight check); and,
- **COPD-related care** (including oxygen saturation checks and supporting flare up plans);
  - ✓ COPD exacerbation results in more hospitalizations than any other chronic disease [20]

**CP Initial Home Visit** (from *BCEHS 4.1 Home Visits Policy)*
- Explain purpose and gain verbal consent
- Perform home safety screen & falls risk screen
- Perform head-to-toe assessment and obtain vital signs (and other assessment as needed)
- Provide treatment, care and/or other assessment on 'Request for Service' form/care-plan

[17] Gender not captured in some cases (11% in the interim report of 2017). Data quality has since improved.

[18] Accessibility was tracked since March 2017 for 1374 patients. *Accessibility* is defined as time from referral to CP to actual visit from CP. Data quality has been identified as an issue as 33% of data is input incorrectly. Once these data were removed from calculations, three-quarters of patients are seen by a CP post referral within 7 days.

[19] *Seniors' Falls in Canada, Second Report*, 2014

[20] *The Human and Economic Burden of COPD: A Leading Cause of Hospital Admission in Canada*, February 2010

**Table 1. Services requested and delivered in patient homes by service category**

| Service Category | Total | % |
|---|---|---|
| **Prevention/safety assessments** | 1311 | 34% |
| **Heart failure** | 535 | 14% |
| **Physical assessment** | 461 | 12% |
| **COPD- related** | 419 | 11% |
| **Diabetes** | 350 | 9% |
| **Palliative Care** | 29 | 1% |
| **Education** | 10 | - |
| ***Other**** *(i.e., medication self-management, friendly visit)* | *723* | *19%* |
| ***Total services provided*** | *3,838* | |

***From 'Other Assessments' field on *Request for Patient Specific Service* form**

**CPs and mentors also lead or participate** in community health education and promotion sessions, reaching a total of **7863 community events**. In the first few months on the job, CPs actively promoted their presence and the program within their communities. As they became more established, CPs spent more time participating in community events (e.g., health and wellness fairs, potlatches). This provided opportunities for collaboration with other community members and health service providers, allowed CPs to become more engaged in community life, and increased program visibility.

Key Informant Interview respondents confirmed the high value of allowing CPs to become familiar with, and active in, the communities through such events. This public engagement raised the prominence of the new role CPs had in providing service to citizens in communities; talking about the work they would be doing; and, answering questions. In addition, CPs were able to be used nimbly when needs arose for education on new prevention topics such as the use of naloxone as an antagonist therapy for opioid overdose.

Finally, administrative data outlines the reach of CP work with health team members and in the community. CPs patient home visits accounted for 71.4% of total services, followed by 11% engaging with the communities in locally planned events (e.g., Aboriginal Days, RCMP events, Elder Abuse Day, rodeos, seniors' lunches, school events, Canada Day), and 6.75% engaged with the local health teams for the purposes of collaborative clinical assessment.

## 2.2 Program Response to Interim Report

As a result of learning from the Interim Evaluation Report (2018) and new developments in the health care sector in BC, the CP program management team made many positive changes to the CP orientation and scope of work. Key changes are outlined below.

- **Home Health Monitoring:** CP services were enhanced with the introduction of Home Health Monitoring (HHM), a telehealth service that facilitates reinforcement of chronic disease education and remote capture of patient vitals. It allows CPs to monitor patients, follow up as required, maintain patient-provider connection and alert the care team to concerns. Patients identified as candidates for CP HHM are consistent with intention - primarily older persons living with chronic disease (COPD, diabetes, or heart failure). The goal is to help these patients (n=58 as of 2019 01) live independently and safely in their communities. The CP supports patient use of the equipment, monitors indicators, and alerts the referring health practitioner, as required. This service is now being offered by 94 CPs in 76 BC communities.

- **Palliative Care:** Working with key stakeholders, the CP program trialed a recent course from Pallium Canada on providing palliative care. Since May 2018, CPs supported palliative patients (age 56 to 90) with a diagnosis of Cancer, COPD, HF, liver failure, and Parkinson's disease. This service is now being offered by 100 CPs in 82 BC communities.

> CPs have addressed an important gap for palliative patients who remain in their homes. Visits with these patients are critical for their sense of connection and to mitigate their social isolation. The patient's family/caregivers are relieved to know that a health care provider is with their loved one, checking on their status, and providing social engagement.
>
> *Community partner focus group*

- **Naloxone Training:** In response to the emergent opioid crisis, CPs were trained in providing naloxone intervention (to prevent deaths) and promote health and wellness. The Take Home Naloxone (THN) program supports distribution of kits to high-risk individuals. In addition to bringing this skill to their communities, CPs provided education and training sessions to the public on this important intervention.[21]
- **Community Paramedic 'Community of Practice' (CoP):** To support CPs, the CP program management team formed 12 COPs across BC. Gatherings may be in person or virtually, and promote networking, learning and discussion. The CoP provides opportunities for sharing knowledge, challenges, new insights and emerging practice tips. Participants include CPs, Unit Chiefs, Managers and Health Authority partners.

> 71% of CPs report sharing experiences and discussing ways to improve.
>
> *CP Experience survey respondents*

- **Centralized Scheduling System** – Since the need was flagged, the program management team has worked to implement this incrementally. CPs are supported by 3 coordinators who will process patient referral forms and book clients.
- **Siren Application for CPs** – This captures patients' care visits in an electronic format.

## 2.3 Program Objective #1: Stabilize Staffing

The CP program was designed to contribute to the stabilization of paramedic staffing in rural and remote communities by introducing community paramedics with the ability to augment additional shifts in emergency response capabilities. Data shows that project implementation has resulted in progress towards this objective.

The data are summarized under five key evaluation questions:

**A.** Did the CP program help to attract and retain paramedics?
**B.** In what ways did the CP program impact individual practitioners?
**C.** Has the program improved collaboration/integration at community level?
**D.** Is the program aligned with, and supported by, policies?
**E.** Did the program improve system emergency response capacities?

### A. Did the CP program help to attract and retain paramedics?

**The program is attracting and retaining paramedics to work in BC's rural and remote communities. Most success was achieved with hiring local paramedics.**

[21] See www.stopoverdose.gov.bc.ca/theweekly/overdose-prevention-rural-communities .

## Recruitment and Selection

As of January 2019, **the CP program has successfully recruited 104 CPs to serve in 83 rural/ remote communities selected** across the province.[22] Eighty-four percent (84%) of eligible communities (83 out of 99) now have CP services. Hiring efforts continue in the remaining 16 communities. The most recent data suggests good progress in attracting and retaining CPs in those 16 communities with only 8 vacant communities remaining.

- **8 communities were successful** in attracting CPs, with.53 or .67 position offerings.
- Of the positions in the 8 communities remaining, 4 are considered 'especially difficult to fill'
- **Three positions (0.53 FTE)** were filled, but CPs have since left.

**Table 2. CPs, by hire, completed orientation, working in communities (2016 01 – 2018 12)**

| *By Health Authority* | Communities eligible for CPs services* | Communities with CPs (and % filled overall)* | # of communities waiting for a CP to be hired * | | CPs Hired |
|---|---|---|---|---|---|
| **Interior** | 40 | 35 *(88%)* | 5 | | 45 |
| **Northern** | 26 | 21 *(81%)* | 5 | | 26 |
| **Island** | 25 | 22 *(88%)* | 3 | | 27 |
| **Vancouver** | 7 | 5 *(71%)* | 2 | | 6 |
| **Fraser** | 1 | 0 (0%) | 1 | | 0 |
| **Total** | **99** | **83** ***(84% filled)*** | **16** | | **104** |

CP Experience Survey respondents indicated 67% have 11+ years of experience and 80% indicated they work 6 – 11 shifts/month (only 20% work 12+ shifts/month).

CP Experience Survey respondents indicated there is more that can be done to increase satisfaction with the recruitment and selection process. The data is equivocal in several important areas:

- 61% agree 'the selection process was well organized;'
- 52% agree 'the recruitment process was well organized;'
- 50% agree 'throughout the process my questions and concerns about the role were addressed;' 48% agree 'I understood the role and expectation for the position before I accepted the position.'

## Retention

Survey data shows that CPs will stay once hired, and that the large majority plans to continue in their roles. Over 80% agreed with the statement '*I plan to continue in this role for the next 12 months*.' Responses to the CP Experience Survey question on 'job satisfaction' illustrate some of the variability and issues associated with retention, and perhaps implications for training and support:

- *"For the most part I love the job, but there are some aspects I find frustrating like visiting the mayor, fire chief, police stations. . . I feel my time would be more valuable spent doing more patient visits. I feel that*

[22] Community Paramedicine Program Update: Jan 22, 2019

*is where the program shines - with the patients and not out selling the program. It is selling itself just by us seeing the patients."* (CP Experience survey respondent).

- *"My job satisfaction is about a 3 out of 10. We need more training and resources; better in-place management of things like vacation allotments; shift swaps and off schedule work (flex time). . . There is just not enough hours in the week to complete the work. My acute care skills are also suffering as I cannot afford to take many kilo shifts."* (CP Experience survey respondent).

Respondents in the community case study focus groups and Key Informant Interviews indicated that the best-case scenario (i.e., most successful hires) are when the individuals already live in the community and are crewmembers at the local BCEHS station. Several reasons were given:

- The residents know their CPs;
- The CPs know their communities and tend to be committed to them; and
- CPs already know their local BCEHS station staff and understand the protocol.

Some of the CPs had lived in the communities most of their lives, and most were homeowners. Being hired into the CP program resulted in close to full time work (when the part-time CP position was combined with part-time paramedic work). Having many links kept CPs in their communities, thereby increasing the likelihood and ease of sustaining program continuity.

BCEHS focus group participants identified two significant risks to retention:

- Hiring outside the community.
  - Note that most CPs indicated they had not relocated for the position (79%); for the 21% who had relocated, many agreed (60%) the relocation process was clear (CP Experience Survey).
- Challenges associated when a CP leaves the community, due to the highly relational component of the work increasing the sense of loss communities feel when the CP leaves.

Program success and positive reputation is increasing demand for CPs and also co-locating them in non-station communities, which will need to be addressed. For example, First Nations communities are requesting CPs locate on reserve.

Key Informant Interviewees suggested that overall, the CP position has facilitated increased stability for paramedics to support emergency response in rural and remote British Columbia. It was also noted that the CP position does provide a new professional opportunity to support the viability of living and working rurally in BC. However, it remains challenging to fill positions in some communities

## B. In what ways did the CP program impact individual practitioners?

### The program improved individual practitioner job satisfaction and professional competencies.

This section includes data on three themes: overall job satisfaction, orientation and professional development, and successes and challenges of the role.

**Overall Job Satisfaction**

When asked about job satisfaction, the majority (76%) of CP Experience Survey respondents agreed they are satisfied with their job. Almost all (93%) agree that they are making a valuable contribution to health service delivery and emergency response services in their communities. When participants commented on job satisfaction, they primarily noted satisfaction with contributing to the community and to positive

> I love the client home visit component of the job and the client is satisfied, too. Community education is also much appreciated by people and a good fit for us.
>
> *CP Experience survey respondent*

health outcomes for their patients. The vast majority noted the CP position allowed them to do a more comprehensive job of improving patient outcomes. Only one respondent explained his/her dissatisfaction.

BCEHS respondents agreed they found that the CP role valuable and highly satisfying. Satisfaction with patient engagement is high; health providers affirm in meetings the services the CPs provide make a difference. CPs sense they are trusted by their patients and by the community as a whole. By bringing their training and skills to a patient's home, they appear to be challenging old perceptions about lack of access to health services.

> During a visit, the CP found that his patient with COPD was really ill. The CP called in the ambulance; the patient was brought to the hospital before he really deteriorated. As a result, his hospital stay was only 3 days (vs. 7-10). This action resulted in improved health for the patient, improved health system efficiency, and CP job satisfaction.
>
> *BCEHS team focus group participant*

Stakeholders agree, and thereby validate, that the CP is respected and providing an important community service. In addition, the CP is providing valuable training to other health professionals, as well as their colleagues at the station.

**Orientation and Professional Development**

Many respondents observed the CP role has opened new opportunities. Examples often cited included the opportunity to be relational, case discussions with other health providers and giving community presentations on important health topics. Most were glad to have extended their former "acute-focused" work to a broader career that included health promotion and prevention.

> **77%** of CPs affirmed they are 'learning about cultural sensitivity through engaging with diverse peoples in the community'
>
> *CP Experience survey*

Even with the orientation provided, almost all CPs (94%) appreciated the professional development opportunities offered. They observed continuing to increase in competency (90%) and in knowledge of the community's health needs (94%).

The Post Orientation Survey results showed **most CPs were satisfied with their preparation:**

1. 94% agreed that there were adequate learning resources;
2. 87% agreed Access to evidence-informed practice information;
3. 80% agreed Effective way of learning, with no change (80% W1 &W2);
4. 80% agreed Helpful in building relationships with their patients;
5. 67% agreed it was Helpful in building relationships with other professionals;
6. 67% agreed it was Tailored to their learning and training needs

The survey also showed **CPs felt the experience met their needs for practice** as follows:

1. Knowledge - 93%;
2. Confidence - 87%;
3. Skills - 80%
4. Confidence in working with diverse populations - 73%
5. Ability to support patients in navigating the health system and accessing services - 60%
6. Establishing networks to support practice - 67%

7. Supporting patients in accessing additional information 73%.[23]

The success of the CP Orientation is also indicated by the CPs reporting increased competency (knowledge, skill and confidence) in each of the four learning areas relevant to their role: falls risk assessment; chronic disease monitoring; medication self-management; and health system navigation. Although the sample of matched pairs is small (n=15), CPs appear to begin their work with a high sense of competency each of the four learning areas.

**Table 3. Comparison of Post knowledge, skill and confidence** (%)

| Learning Area | Competency | W1 | W2 |
|---|---|---|---|
| Falls Risk Assessment | Knowledge | 92 | 100 |
| | Skills | 93 | 93 |
| | Confidence | 91 | 93 |
| Chronic Disease Monitoring | Knowledge | 99 | 100 |
| | Skills | 100 | 100 |
| | Confidence | 99 | 100 |
| Medication Self-Management | Knowledge | 99 | 100 |
| | Skills | 99 | 100 |
| | Confidence | 99 | 100 |
| Health System Navigation | Knowledge | 99 | 100 |
| | Skills | 99 | 100 |
| | Confidence | 99 | 100 |

## Successes & Challenges

The CP Experience survey showed successes and challenges regarding team learning and equipment (which have implications for improvement in these areas):

- 71% indicated that their regional CP team meets to discuss experiences and ways to improve;
- 69% indicate that they have the supplies and equipment needed to deliver CP services;
- 44% agree that they received the supervision they need from their unit chiefs; and,
- 46% agree they receive the practice support they need from their Mentor.

BCEHS respondents in the three community case studies' focus groups identified the following gaps/challenges and suggest mitigation strategies as follows:

**Table 4. Insights from the BCEHS local teams**

| Gaps / Challenges | Strategies for Mitigation Suggested |
|---|---|
| The CP role is evolving and Unit Chiefs (UC) need to be part of it to properly support the CP. Some UCs do not fully understand the program and/or support it adequately. | Help UCs build understanding and support in several ways: Speak with the UCs and determine the barriers to understanding and support; Over time, have the UCs take the CP training (or a condensed version of it) so they understand the role and how to support it. If trained, the UCs could actually provide CP care, if needed. |
| Travel time to patients in rural/remote communities can be very long and poses a challenge for CPs in part-time positions because the travel time limits the | Consider a policy change to address this access challenge. |

[23] We noted that scores in #1, #2 and #7 increased from W1, #4 and #6 remained same, and #3 and #5 decreased somewhat.

| Gaps / Challenges | Strategies for Mitigation Suggested |
|---|---|
| ability to manage a higher patient caseload. This can limit access to services for the most remote patients. | |
| Patients with dementia in rural/remote communities also need support. People with no major physiological challenges (i.e., no chronic illness) may have cognitive challenges, and monitoring those can be critical. | Add Dementia care, and consider including other mental health care challenges, to the CP Orientation curriculum. |
| Some CPs still cannot access the SIREN application to print out records[24]. They need to be able to access it so any crew member called to an acute response would know the patient's baseline indicators and understand better their health status prior to arrival. | The CP program team has worked on this since the Interim Report, and will continue to do so. |
| Some CPs must still evolve reports from handwritten notes to a centralized system (e.g., EMR). | BCEHS continue to facilitate CP access to the SIREN system and tablets. |
| Rural settings with poor roads or poorly maintained roads need appropriate vehicle capabilities to be accessed (i.e. AWD/4WD). It is critical in many remote areas. | BCEHS should review the vehicle requirements for CPs in rural/remote stations. |

## C. Has the program improved collaboration/integration at community level?

**CPs are well integrated within local health teams and routinely collaborate with other health care providers. They are welcome contributors at community events.**

**Management continuity**, operationally defined as the extent to which services delivered by different providers are timely and complementary such that care is experienced as connected and coherent, is a core attribute of primary health care. CPs have begun to play a vital role in contributing to better primary care in rural/remote British Columbia, and contribute to care integration, based on the evidence from strong from multiple sources.

Health partner focus group data affirm that CPs are respected members of the health team. All agreed the CPs are now fully integrated in the community's health team, and liaise with physicians, nurses and other hospital staff. CPs participate in relevant acute care, family care and case conference meetings, and provide important details of patient's health from their home visits. Their view of home life and trusting relationship with the patients enables them to provide a 'family-centred' perspective. The CP connects the dots for the team to ensure the patient's needs are met.

> The CPs provide excellent feedback at the meeting table about the patients they have seen over the past week. They bring forward areas in need of follow up by other team members. In situations where something urgent arises in the home, the CPs have the direct numbers of the physicians and community health nurses to report to and receive advice. The result is patients receiving excellent care in their homes.
>
> *Health partner focus group participant*

[24] Note that current administrative data (2019 01) indicates this change will be implemented soon.

BCEHS focus group participants provided depth to understanding why 'community participation' and collaboration with local health teams matter. Some respondents noted that connections with First Nations communities and Indigenous patients have really strengthened; they assess this as a notable success. The CP is redefining the uniform and building trust among these communities.

Many participants noted the value of the CP's mandate to enter homes. As a result, CPs provide information to the case conferences that is really helpful - the home situation of the patient.

> The uniform carries lots of anxiety for many, and also for First Nations communities. Some CPs show up to on-reserve patients out of uniform, to help with this. Or, the community members see the CP at an event, serving lunch, washing dishes, providing BP clinics, etc. All of this is building bridges and increasing wiliness of the population to work with the health system.
>
> *BCEHS team focus group participant*

Most focus group participants observed that growing collaboration with the RCMP has been a success. When the CP is available to attend a call with the RCMP it proves to add value given the CPs knowledge of the home, the neighborhood environment and acute response training.

Participants affirmed that the largest success of the CP program is their recognition as a health system team member. The CP brings new information to local care team discussions, extends reach (through the education programs), improves patient access and increases patients' capacity to navigate the health system. They are valued members of the community health provider's team.

Community partners added the following observations that show the value of CP community work:

- CPs implement health promotion work beyond their mandated population (i.e., senior patients with chronic disease). This results in reaching large segments of community populations that would, otherwise, be left out and who now are aware of the CP's work in the community.
- Health education session arise from conversations in health care team meetings. Community health knowledge needs are identified and, if within their scope, CPs provide the sessions (e.g., on blood pressure control, diabetes, CPR clinics, AED[25], infant car seats, naloxone administration, first aid training, men's health matters, grief/loss, healthy relationships).
- Respondents would like CPs to address other needs as well, particularly mental health and addictions, (e.g., provide "Mental Health First Aid" program), social isolation and palliative care.

Key informant interview respondents serving in diverse roles affirmed that the CP position, and by extension, the services the role provides, has advanced the integration of health care services in rural communities. Specifically, the role supports care planning tailored to patient (and family) needs during critical transition points, including from hospital to home. CPs play vital roles in linking patients to available supports and resources and in advocating for what an individual might be eligible for based on assessments. One individual noted that CPs were "another set of eyes" on patients, and also have the added perspective of reporting how patients are able to navigate within their homes.

> Integration is a "fabled thing" within health care. CPs exemplify what it looks like in practice.
>
> *Health partner focus group participant*

Finally, when CPs were asked about their experiences with collaboration and impacts on continuity of care (CP Experience Survey), they agreed on the following.

- 92% agree 'I am sharing patient information, as clinically appropriate, in a timely way with other organizations/ health care professionals';

[25] Automated External Defibrillator.

- 90% agree 'I am developing good, collaborative relations with other organizations/care professionals I work with on a regular basis';
- 90% agree 'I understand the role of the other health care professionals with whom I work';
- 72% agree 'Care providers outside of our organization incorporate our care plan recommendations into the care of our patients'; and,
- 50% agree 'Referral procedures we use are streamlined'.

In the Pre/Post Orientation Survey, CPs report the training they received on building relationships was helpful (67% W2, up from 60% W1).

All CPs (100%) indicated that they actively promote healthy living and 99% agree with 'I contribute to health education sessions in my community'.

## D. Is the program aligned with, and supported by, policies?

**Community paramedicine is defined by ministerial order and BCEHS policy documents. Provincial policies, procedures and practice guidelines have been articulated.**

### Policy Relevant to Implementation and Practice

In 2015 a Ministerial Order was signed authorizing BCEHS to allow employees who have qualified to become CPs to provide non-emergency services in the community. The Order involved the following delegated authority and responsibility of BCEHS to:[26]

- Select, train, and place CPs in rural and remote communities selected for provincial rollout;
- Maintain a registry of paramedics who have qualified to work as CPs;
- Establish standards of practice, guidelines or protocols that will enable CPs to deliver services in the home and in the community; and,
- Establish continuing competency requirements and monitor compliance by community paramedics.

BCEHS has reviewed existing policies, and developed new ones that clarify the practice of community paramedicine. These policies, procedures and practice guidelines were developed, reviewed, tested and refined in the CP prototype communities to assure relevance. This resulted in a policy manual that outlines the CPs' unique focus and scope of practice.

The policies continue to evolve with the CP role. Future phases may address service gaps identified in other communities, as well as utilizing Advanced Care Paramedics to advance the program. Work in this area was cited in the recently released Auditor General report (2019 02).[27] The advancement of such opportunities were raised in KIIs, as well.

During this evaluation, no concerns were raised about the policies related to ensuring quality of care for patients. Continued discussions on information sharing were provided as evidence of better using the Electronic Medical Record to improve how the CP and other care providers can work together.

[26] See BCEHS 1.1 Overview of draft policy and practice manual (May 2016). The policy manual was completed February 2017.
[27] http://www.bcauditor.com/

Specifically, health partners (focus group) were asked to describe the charting and sharing of information process among the local care team and the CP. They agreed the CP is an integrated team member and therefore participates in information sharing at team meetings and in other opportunities. The CP provides written notes, date and assessments (i.e., patient vitals) to these discussions. However, because the other care providers chart electronically, integrating CP patient information is only possible if it is scanned or put in the physician's patient paper file/ data records. It cannot be accessed quickly on the EMR system and used efficiently and effectively for the patient's well-being.

This change would require a system/policy-level action to include CP medical charts in the electronic health record. The respondents urged decision-makers to examine the feasibility of this to support data systems integration.

### E. Did the program improve system emergency response capacities?

**Community paramedicine can improve emergency responses in some situations.**

Since project rollout, CPs across the province have responded to 346 high acuity (911) calls while on their CP shifts. Seventy-six percent of CPs responded 'less available' for paramedic shifts, due to health education sessions, team meetings, etc. Some are less available because their permanent part-time CP job prevents them take additional shifts on their CP days. The response rate was low, however, so follow-up would help to clarify if this is of concern or not.

> CPs are encouraging vulnerable populations which would not otherwise access health services and therefore their health would deteriorate, to come to clinic and hospital to have their needs met before an emergency event arises.
> *Health partner focus group participant*

When asked about the extent to which the program improved emergency response capacity, BCEHS respondents observed the following:

- Repetitive calls from 'familiar faces' have decreased, leaving the ambulance available to respond more efficiently to other 911 calls.
- 911 calls from CP patients are more clearly emergency calls now, as patients are better able to self-assess their situations.
- Regular CP visits have facilitated observing a loss of capacity/ health and earlier response - before the situation becomes acute.
- Concerning the most urgent and life-threatening calls, the CP is another resource to respond.
- High acuity calls are better managed, as the CP is available to support the response. When the ambulance attends the home of a CP patient, the CP briefs the paramedics on their patient's health status and facilitates more appropriate emergency response. When a palliative patient called, the CP provided appreciated assistance as s/he was trained in palliative care.

Health partners noted that emergency response in their communities is not sufficiently staffed. The regularly scheduled CP position helps because they are paramedics with acute response skills, but given the large geography to be covered, more resources continue to be needed.

## 2.4 Program Objective #2: Bridge Health Care Gaps

The second objective was to 'Bridge health service delivery gaps in communities, identified in collaboration with local primary care teams, and consistent with the paramedics' scope of practice.' The associated evaluation questions were as follows:

A. Did the CP program contribute to bridging the delivery gaps identified at the community level from the health authority and from a *patient experience perspective*?
B. Did the CP program build local community capacities to address identified issues/gaps?
C. Did the program help establish a new type of health service delivery?

## A. Did the community paramedicine program contribute to bridging the delivery gaps identified at the community level from the health authority and from a *patient experience perspective*?

**CPs are bridging health service delivery gaps by working collaboratively with other local health teams, extending their reach, and assisting patients directly in their homes.**

CP Experience survey respondents agree they have bridged health delivery gaps in several ways:

- 93% agreed they make 'a valuable contribution to health service delivery and emergency response services in my community';
- 92% agreed they 'experience successes in delivering CP services';
- 86% agreed they worked with the program's identified population (i.e., diabetes, COPD, heart failure) as part of their patient workload; and,
- 72% agreed 'other health professionals use CP care plan recommendations'.

When asked to provide comments on supporting patients to avoid unplanned acute health visits, CPs responded they had routine conversations with patients on: education about their health conditions; supporting /identifying medication status/use and complications (if any); and symptom management.

CP respondents noted the **following barriers** in delivering services:

- Lack of trust among First Nations communities, seniors and other health professional staff;
- Navigating the health authority system; and,
- Scheduling outreach services outside of regular hours is challenging.

CPs provided the **following successes**:

- *"The local doctors and I have noticed a rapid decline in ER visits with our CP clients."*
- *"I like the success stories with some clients. As well as interacting with/ providing sessions for different community settings and programs that teach healthy living for seniors. We also have had several successes with CPR in schools and rotary clubs."*
- *"I am able to bridge the gaps between patients in their homes and their access to health care providers and information."*
- *"Seeing clients understand the illness they are living with, and seeing how they begin to cope with it more and more feels very successful."*

Community partner respondents were enthusiastic about the extent to which having the CP program located in their community improved health service delivery. Across communities, there was affirmation of the following:

- The local health system has greater coverage and availability due to CPs' responsiveness. There is very little wait time for them and there are no transport problems, as the CP will go to the home. Overall, the perception is that access to care has increased as a result.
- The home visit is key to improved service delivery and appreciated for many reasons. It ensures timely health support for seniors and remote patients. For Indigenous people, the home visit is more relational and helps build trust, enabling more appropriate responses to their health needs.

- Integration of CPs with the health team has closed knowledge gaps. The CP provides current, home-based status updates at case meetings, which were missing prior to the program. CPs are able to fill in gaps on the patient's health status and include the home environment (and dynamics in the neighborhood) in the assessment. This supports the team in getting to the root of health challenges experienced. If/when patients attend clinic or hospital, the nurses know far more about their status, because of the data resulting from consistent CP visits.
- The CPs provide health education to the community. This improves population understanding of key community health concerns, including diabetes, blood pressure, dialysis, and heart and lung conditions.

> On home visits the CP observed the husband and caregiver was developing signs of dementia; the CP brought this to the case meeting and he received help.
> *Community partner focus group participant*

Community partners reported that having CPs participate in case conferences, along with their access to the physicians and nurses, resulted in a better developed, coordinated response that bridged health service gaps. Respondents shared the following examples:

- Providing transport to help patients attend clinic/hospital as required (for regularly scheduled appointments or in response to a developing health challenge) made it possible to eliminate transport related gaps in receiving services. Patients are now receiving consistent care; previously they would stay in their home while their health deteriorated, or call the ambulance.
- Addressing the 'trust gap' in the health system. CPs are relational and established trusted relationships with patients - this approach has encouraged those who would typically not access the system go to the clinic / hospital and receive care. This has mitigated situations that would have deteriorated with delays.

> Having CPs on our health care team doubles the staff we have to serve patients in their homes. As a result our elderly population has far greater access to health care services, which have become more seamless for them.
> *Health partner focus group participant*

Health partner respondents also affirmed the important health service gaps addressed by the CP role in their communities. They cited the following contributions to health service capacity in the community:

- The CP works closely with the homecare providers who are not able to support all the patients that need this service. More patients needing homecare are supported and homecare nurses are apprised of the CPs work, and know how those patients are doing.
- A male CP was able to attend a men's support group and provide health information they would not otherwise have received.
- Female CPs support elderly women's health, building trust, and creating a space for the women to share health details they are reluctant to share with male health service providers.

CPs are the link between the health team based at the clinic/hospital and the patient in the home – and this link is acknowledged as critical across stakeholder groups. This new service provides continuity of care to the patient in the home. Further, the CPs' visits address social isolation and mental health challenges. Rural communities do not have enough health providers and the addition of the CP role to the team is very well received.

## B. Did the CP program build local community capacities to address identified issues/gaps?

**The program has increased local capacity to address identified health challenges.**

Program data and the CP Experience survey both indicated the extent of the community education/health promotion work provided by CPs, as noted above. Respondents agreed they actively promote CP services in their community (91%) and the use of primary health care (89%). They remarked that community awareness about their work was high 91% and that overall, community members are positive about the program 92%. In their experience to date, CPs believe the program contributes positively to the local community 79%.

Further, CPs indicated:

- 80% agreed 'I contribute to health education sessions in my community'; and
- 76% agreed 'I participate in the promotion of healthy living in collaboration with my community'.

Community partner data delineates the extent to which CPs empower communities to address health challenges. In terms of building health knowledge capacity, respondents know the work CPs do in health education and health promotion, and all agreed it was highly valued. CPs' health sessions and participation in many community events, was understood to be very important. In fact, the visibility of the CP in the community was identified as a key factor in trust and relationship building, beyond work with patients.

> Patients are becoming more proactive. With encouragement from the CP, diabetic patients are recording their vital statistics and bringing them to their health visits, contributing to a more comprehensive picture of their health status.
>
> *Community partner focus group participant*

Respondents identified the following examples to underscore their perceptions:

- CPs implement health promotion work beyond their mandated population and this results in reaching large segments of community populations that would, otherwise, be left out.
- The health education sessions arise from conversations in health care team meetings where knowledge gaps are identified. These needs are raised and, if within their scope, CPs provide the sessions (e.g., on blood pressure and control, dialysis, diabetes, CPR clinics, AED [28], infant car seats, naloxone administration, first aid training, men's health matters, grief/loss, healthy relationships).

Community partners affirmed that beyond providing health education, CPs inspire and enable their patients to better manage their own health. Most respondents noted they see patients becoming more proactive about their health. Further, CP home visits mean that stigmatized issues, such as mental health challenges, can be discussed more easily and discretely. In small communities this is a real benefit, as there is little privacy and this is noted as a barrier accessing these types of health services. With the CPs support and encouragement, patients are finding the courage to get help.

Respondents noted that Indigenous patients are becoming more willing to attend clinic / hospital. They attribute this to encouragement of the CP. Previously, patients would stay home until their health deteriorated to the point they needed ambulance transport for emergency intervention and required longer hospital stays.

Finally, health partner participants affirmed CP services and support positively impact patients' capacity to maintain/ improve their health. They offered the following observations:

- CPs cover a vast geographic area and support an important demographic in rural and remote regions - housebound elderly who benefit greatly from house calls. The quality of care for clients in the home has improved as a result, as has their health status.

[28] Automated External Defibrillator

- CP caught soaring blood sugar immediately and brought it to the attention of the nurse and physician.
- CP noticed a patient's health was declining rapidly, conferred the nurse from the home and called the ambulance – the patient received needed care in good time.
- Because CPs have good relationships with patients, the patients call the CP first with minor medical concerns instead of the ambulance first (which was previously the norm).
- CP caught two COPD exacerbations prior to hospital admission. Prior exacerbations for these patients resulted in ICU hospitalizations. The CP was instrumental in the prevention of two life-threating hospital admissions.
- CPs help patients manage their medications and have alerted physicians to challenges that led to medication adjustments.

> The CPs relationships with the health team are critical. When in the home they are will contact the nurse or physician to confer on an emerging health challenge. This means the patient is receiving the best possible care. This process may result in avoiding an emergency visit or, receiving immediate transported to the clinic/hospital.
>
> *Health partner focus group participant*

- CPs respond to Lifeline calls and this helps the patient as they have a pre-existing relationship with them; the *CP has become a 'familiar face'*.
- The program is really helpful for emergency, chronic and home visits.

- Health Partner respondents recommended the following:
  - Expand CP training to include other chronic conditions and mental health challenges;
  - CPs need full time positions to accommodate the growing number of patients (and to travel the distances to see them); provide the important health education sessions; and participate in health team meetings; and,
  - CPs are not able to share their records on the EMR which is a loss for other health providers. Addressing this challenge will positively impact patient care.

Key informant interview respondents agreed that the multi-level preparation to implement the community paramedicine program across the province was skillfully carried out and helped to alleviate potential concerns about the deployment of this new service. Such preparations occurred at the provincial, regional (health authority) and local levels through a series of committee meetings, as well as opportunities that fostered relationships and trust at the local level. Visits to the communities by the CP program management team members were seen as extremely valuable and allowed a shared contextual understanding of need at the local level to set the foundation for the service to move forward.

To date, continuing meetings and workshops help to keep those involved up to date on progress being made. When challenges or barriers do arise, solutions can be identified in an efficient way.

## C. Did the program help establish a new type of health service delivery?

**CPs are not duplicating services but are making them more effective. They have established a new type of health service delivery.**

Health partners noted CPs do not duplicate health services and supports currently being provided by other health professionals. The CP role truly provides a new service that is strengthened by the fact that they are both a CP and a paramedic. The relational side of their work and the time they are able to take in the home with the patient are new and highly important additions to the health team. In addition, CP provision of health education sessions brings a health promotion component to the community that is also needed.

Respondents agree that CPs make a unique and needed contribution to health literacy and system navigation. They facilitate their patients' connections to the community clinics and hospitals. They also advocate on patients' behalf in meetings; this alerts the larger health team to the patient's health status with the added information on their home and neighborhood environments. CPs build patient capacity to understand and manage their health challenges and their medications – new skills for many of them. Health partners affirmed patients are generally more knowledgeable about their own health needs and how to find what they need from the health system.

> CPs can facilitate patient transport to ensure they access clinic/hospital as needed. Otherwise, patients use the ambulance. This is a very positive change.
>
> *Health partner focus group participant*

Key informant interviews concurred that the advancement of community paramedicine in the province of British Columbia demonstrates an important commitment to a new service delivered in the patient's home.

## 2.5 Program Delivery Goal: Deliver Care Consistent with Quadruple Aim

When the CP evaluation framework to guide learning was first drafted late in 2015, the decision was made to incorporate the Quadruple Aim framework. This framework was included in order to consider systems level impact of the program on the health and well-being of residents living in rural/remote BC.

Adapted to the CP context, the key questions associated with this framework are as follows:

1. **Patient health care experience**
   - A. Did the CP program improve patients' experience?
   - B. Did it improve access to services and self-management skills of the identified population?
2. **Health of the population**
   - A. Did the program improve the health of the population receiving the services?
3. **Cost of care (to achieve outcomes)**
   - A. Did the CP program reduce the per capita cost of care for identified populations?
   - B. Did the program introduce changes at a system level?
4. **Service provider work life and well-being**
   - A. Have CPs experienced improved work life and well-being?

## Aim 1: Patient Health Care Experience

## A. Did the CP program improve patients' experience?

**Patients affirmed the success of the program in improving their health experience.**

Patient and caregiver sharing circle respondents observed CPs supported them in having the confidence to ask questions (i.e., about new medications) and ask for help. They report the CPs will find answers to their health challenges and get back to them with the information. This makes it possible for the patient to better understand their situation and manage their health. They appreciate the CPs are on time for appointments, reliable and in many cases known, as they have been long term community members. The

> The CP helped us navigate the system to find out about what seniors' care facilities would support Dad and be accessible to us (distance from town). The CP found the options, printed out the assessment forms and helped us to make a good decision.
>
> *Patient and caregiver sharing circle participant*

relationship with the CP matters to these patients.

These respondents further appreciated CPs call their family members/ caregivers to update them on the patient's health status and needs. Both the patient and their family value this. Sharing circle participants reported learning more about how to support their health and wellness independently. Further, CPs enabled their own monitoring of health indicators, including (for some) with HHM. The CPs' regular visits and interest in patient home life helped them feel more secure at home, reduced anxiety and isolation. This helps patients and their caregivers feel better.

> I live alone, with my dog and it's good to have the CP coming around. We don't always talk about my health. Sometimes we talk about hunting and fishing. This is bigger than just health.
> *Patient and caregiver sharing circle participant*

Ninety-one percent of patients responding to the Patient Experience survey described the quality of care and services they received from the CP as either excellent (67%) or very good (24%). Patients rated interpersonal communication with CPs as very positive (e.g., response of 'yes' to actions that demonstrate positive interpersonal communication received ratings of 98% or higher).

Most patients (72%) agreed that, 'My CP met my needs for setting up my home so that I could do things independently'. Several examples of assistance were given. In one case, the CP noticed that a wheelchair ramp was ordered (by the physician over a month before) but not in place. The CP informed the physician who followed up and mobility was restored. Other examples included CPs helping to get heat in the winter, mail delivery, moving a microwave to make it accessible so the patient could prepare meals. There were examples of challenges/delays in securing resources for patient's homes, as well as patients that should move from a home that can no longer be made safe for them. This could be probed further.

In the Pre/Post Orientation survey, the majority of CPs agreed they supported their patients in the following:

- Increased capacity to participate in addressing their own health needs 100% (67% W1);
- Improving access to health information 90% (80% W1);
- Improved knowledge of treatment options 87% (60%); and,
- More likely to address their health needs (53%).

> **80%** of CP patients are **more likely** to address their health needs (53% W1).
> *Pre/Post Orientation survey respondent*

CP Experience survey respondents confirmed their support of patient health experience:

- 96% agree 'I support my patients by providing health information for supporting their health;
- 91% agree 'I support patients in accessing primary care services; and,
- 81% agree 'I review the plan of care with patients upon arrival.

## B. Did the CP program contribute to improved access to services and self-management skills for identified populations?

**Patients confirmed improved access to services and better understanding of their health and wellness.**

> Mom hated the health system and would never go to see a physician. The CP has been her bridge and she is now willing to go to clinic when needed.
> *Patient and caregiver sharing circle participant*

Patient and caregiver sharing circle respondents agreed they feel better talking with nurses and physicians because they have already talked with the CP about their

health. They report knowing better what to do when they go to the clinic – they now understand who can answer their questions. Further, post-appointment with a physician, if wanted, the CPs answer patient questions or explain the new medication, etc. Patients report getting flu and pneumonia shots as a result of the CP encouraging them to take that step. They also feel more cheerful and less anxious about their health – they know the CP will help them.

A few patient or caregiver respondents reported hardly ever accessing the health system. The CP helped them overcome the barriers (i.e., trust, transport challenges) resulting in increased willingness to make and keep appointments. They appreciate the CPs telling them, "If you want me, just phone." These patients and their caregivers report access to health services is much less of a problem. They offered: *this is a health service that says, yes!*

Health Quality of Life (EQ-5D5L survey) respondents were positive in their assessment of their self-care.[29, 30] At the start of their services, 79% of respondents had either no or slight problems with regard to their ability to provide self-care (or self-manage). Survey results indicate that after 6 weeks of care from CPs, 84% *(or an increase of 5%)* report that they had either no or slight problems with their ability to provide self-care, indicating improvement over time.

Building on this evidence, one question on the patient experience survey asked respondents whether they feel more confident about their ability to take care of their health. Eighty-three (83%) percent of respondents reponded "yes" with another 13% responding 'somewhat' (n=236).

> My paramedic is a huge advocate for his patients. If it weren't for him, I wouldn't be seeing my physiotherapist.
> *Patient and caregiver sharing circle participant*

As it pertains to access to services, patients were asked whether their CP knew what kind of care they needed and how to provide it. Ninety-four (94%) percent responded "yes" with another 4% responding somewhat (n=257).

## Aim 2: Health of Population

## A. Did the program contribute towards improved health for the population receiving CP services and supports?

**Patients noted improved health; health partners and key informants agreed.**

Patient responses (n=140) to the EQ5D5L-survey were as follows:

- 32% improved in health status over time;
- 20% had maintained their health; and,
- 34% had mixed results. (That is, some domains improved while others stayed the same or declined.)

These could be considered good early results, especially considering that the patients are elderly and have one or more chronic conditions. While the sample of patients completing this survey was small, the trends are encouraging. Now that the program is fully operational, and data collection is improved, there is hope to clarify the program impact.

[29] The EQ5D5L was completed by patients who had received services from a CP over at least a 6 week period.

[30] Self-care is defined as the practice of taking action to preserve or improve one's own health and is one factor of health on the survey.

Patients and caregiver sharing circle participants reported an increased sense of safety and security. They affirmed CPs checked their homes to ensure safety and found it reassuring to know that the CPs visited regularly and checked in on them. Patients appreciated that if they needed to call the ambulance, it may be their CP who comes to them at that time, too.

Caregivers reported their family members are happier because they have access to a CP. They see the positive relationship that is forming between their loved one and the CP, and have observed how much their family member trusts the CP. They appreciated the CP checks vitals, provides advice on what to do if there is a problem, and when to expect a follow-up visit. They are extremely happy with the CP program and service and how it helps build capacity to improve the health of their family member.

Health partners affirmed the important influence of CPs on patient capacity to self-manage their health challenges. Respondents provided the following information:

- Seeing positive changes with patients adhering to medications better and also coming in to see the physician and nurse, as needed.
- Patients becoming proactive about recording their vitals and bringing the information with them to medical appointments.
- Patients understanding the relationship between signs and symptoms of a pending illness exacerbation and encouraged to pay attention to these signs.
- Patients encouraged to take their loneliness or sadness seriously and to engage with family members, friends or professionals.
- Patients benefitted from the trusting relationship with the CP and found it helped them to attend appropriately to their health, including mental health.

> A major contribution of CPs is strengthening continuity of care. They follow the patient from home, to hospital, to home. This continuous support is really helpful.
>
> *Health partner focus group participant*

## Aim 3: Reduced Cost

## A. Did the CP program reduce the per capita cost of care for identified populations?

Unfortunately, at time of writing Catalyst had not received the ministry data which is required to address this question. It is hoped Aim #3 (concerning evaluation question A) will be addressed in the future when the return on investment (ROI) can be calcuated by multi-year data to show the cost recovery resulting from CP program implementation. BCEHS is working on an Administrative Data Population Evaluation that will focus on health care utilization, outcomes and costs using a case-control model. This work will be undertaken pending data from ministry (~2021).

## B. Did the program introduce changes at a systems level?

**Community paramedicine is providing evidence to inform system level changes. CP experience delivers practice-based evidence showing successful results with engaging vulnerable populations.**

As observed above (Section 1.d), key changes identified from prototypes helped to define CP program policy and service levels, as well as community needs and gaps. This evidence was foundational for program roll out; tracking emergent learning was a core activity. Over time, and based on interim evaluation evidence,

new services were added to the CPs' scope (e.g., palliative care and naloxone provision) in order to provide the supports and services relevant to the populations in the local communities.

Health partner respondents highlighted some of the following procedures/ practices informed by the CP program and relevant to health system improvement:

- CPs taking time to build relationships creates a pathway for the patient to enter the health system. This evidence (i.e., the value of relationships) needs to be integrated into the practice of other health care providers.
  CPs are showing the system how to encourage Indigenous peoples to manage their health challenges and seek services and supports. CPs are achieving these outcomes through active listening, building trust and establishing relationships – and it works. We are seeing more Indigenous people accessing the health system.

> Lots of older people think you only go to the hospital to die. CPs support their increased understanding and trust of the health system. They learn it is here for them and can help them for many more reasons.
> *Health partner focus group participant*

- The addition of this program in the community has redefined the 'uniform' among some community residents. In some cases, uniforms have eroded relationships and trust – but having the CP building relationships with vulnerable community members has built trust. It has helped patients to respond with less tension when talking with someone in a uniform. This is positively impacting the work of all those who wear uniforms.

Health partners summarized their reflections by adding:

- We need more CPs. They need to expand their training to do more – such as supporting antibiotic administration. This would relieve the hospital and patients would receive this treatment in their homes.
- We need to ensure our CPs don't burn out.
- CPs need backfill capacity to support sustainability.
- CPs would benefit the community with training in mental health and addictions.

> Our CPs are an integral part of one of the best patient-centred care teams to which I have ever been a part.
> *Health partner focus group participant*

Participants in the key informant interviews have strongly agreed that the introduction of the CP role within BCEHS has advanced integrated, team based primary care in rural communities. They note that this success has been realized in rural communities across the province over the course of just two and a half years. Administrators spoke of the CP role, especially as it provides services within homes, as a needed advancement to fill gaps in services and in being nimble to adjust education to support gaps in service, such as palliative care. Those interviewed speculate that the broader health system is benefitting because of this new service.

Systems level change noted by informants was attributed to the following activities and enablers: the thoughtfully planned and well executed roll-out of the CP program; the strong working relationships developed between the CP program management team and the health authorities; and the ability to do "course corrections" during the early days of the roll-out using the prototype communities.

Because of the strong foundation established for this program, CPs developed strong relationships with the primary care teams within the local communities. This facilitated the ability of the CP to go into patient homes and provide the safety checks.

Finally, recruiting local paramedics into the CP position enabled many CPs to start their position with personal and professional relationships. This helped in advancing the integration of services both within the health care sector and beyond it. The CPs were familiar with the communities and were able to find ways to

integrate their new role into the existing 'ways of working'. A few of the informants said that, although it is quite common for a provincial rollout of new services to have mis-steps, the CP program rollout was relatively smooth. They credited the early ground work done to understand the unique needs of communities, and get the right people for the job.

## Aim 4: Improved provider work life and well-being

## A. Have CPs experienced improved work life and well-being?

### Community paramedicine contributes to provider work life and well being

As noted above, CPs reported, in survey and focus group data, their sense of pride in their work and willingness to continue in the role (Sections 1.a and 1.b). Many reported satisfaction in working with a community and a BCEHS team that is known to them. The CPs have become 'familiar faces' who bring the health system close to the patient – meeting them in their home environments. Most CPs agreed that they found the following professionally rewarding:

> CPs are well established here and successful!
> *Community partner focus group participant*

- Forming trust based relationships with patients and their caregivers;
- Becoming known in the community across ages and genders as a 'friendly, familiar face';
- Being appreciated as a valuable community member;
- Sharing knowledge in educational sessions with community residents and health team members;
- Becoming an integral part of the local health team;
- Supporting first responders (e.g., paramedics, fire, RCMP) with their knowledge of patients, their homes and neighborhoods, and helping to facilitate efficient, effective responses;
- Enhancing the well-being of the community by facilitating the aging population to stay at home, near to their loved ones;
- Redefining 'the uniform' for vulnerable populations (as caring and helpful); and,
- Being invited to events that expanded their reach in providing health and prevention information.

> CPs need to be full time to accommodate the growing number of patients they see; provide their very important health education sessions; and, participate fully in health team meetings.
> *Health partner focus group participant*

CPs agreed one of their greatest challenges is having capacity (time and knowledge) to respond to the growing demand for their services and supports. Their patients, community residents and health partners also share this concern.

# Section 3. Summary and Recommendations

## 3.1 Summary

The data presented on the outcomes articulated in the program's Logic Model shows a clear picture of success. The growing achievements of the program have been traced across the previous evaluation reports (March Snapshot Report [2017 03] and the Interim Evaluation Report [2018 01]) and are consolidated in this final report.

Across the evaluation cycle, the CP program team responded to the data gathered across the four years of implementation, as evidenced by a series of adaptations:

- Creating a "Community of Practice" in response to CPs reporting a need for more opportunities to share experiences and discuss ways to improve;
- Training in palliative care so CPs could better support their patients, as well as learn how to manage their own grieving when their patients passed away;
- Training in naloxone therapy as a community-level response to the opioid crisis; and,
- Webinars for CPs to improve data collection with patients (in response to lower than expected response rates for Interim reporting and ahead of the next challenge

As a result of these improvments, and other efforts to address challenges identified in the evaluation data, the team has established a solid foundation of data capture and utiliztaion to support the longer-term operationalizing of the CP program.

**The data trend is one of clear success for Objective #2 (Bridge health service delivery gaps) and the Program Goal (Deliver care consistent with Quadruple Aim).** Substantial progress was made on Objective #1 (Stabilization of paramedic staffing and augmenting emergency response), though challenges remain. Researchers and practitioners routinely observe the difficulties to recruit and retain skilled professionals in rural and remote (isolated) communities. As with other sectors, the location of the communities is, itself, the barrier in attracting CP staff. These are challenges to be explored further.

Table 5 summarizes progress on particular "enablers" suggested at program inception that were considered key to achieving program success and provides an assessment as to whether these enablers have been realized at this stage of program development.

**Table 5. Enablers that contribute to program success**

| # | Enabling Factors | Assessment | | | NOTES |
|---|---|---|---|---|---|
| | | Partial | Moderate | Complete | |
| 1. | Strong, visible support from project sponsors and regional health authorities. | | | ✓ | The only area in need of further support is 'PD and Team Learning'. |
| 2. | Clearly defined scope of practice and effective scope management. | | | ✓ | |
| 3. | Effective relationships among stakeholders and practitioners. | | | ✓ | |
| 4. | Effective utilization of resources and roles relating to community health service delivery gaps. | | ✓ | | Data collected for this report indicates 'complete' but requires triangulation with health system utilization data (e.g., changes to ED visits). |
| 5. | Integration, collaboration in patient-centred care | | | ✓ | This area is limited only by staff time (i.e., not by process). |

Community paramedicine program implementation continues to be a 'good news story'. Table 6 offers a summary of final report learning.

**Table 6. High-level summary of evaluation findings**

**Program Objective #1**

- The program succeeded in attracting and retaining paramedics to work in BC's rural communities by achieving the most successes with locally hired CPs.
- CPs report the program has provided increased job satisfaction and positively impacted their professional development.
- CPs routinely collaborate with local health teams and are welcomed participants in community events.
- Community paramedicine has begun to improve emergency response.

**Program Objective #2**

- CPs are making strides in bridging health service delivery gaps by working collaboratively with local health teams.
- CPs have positively impacted local community capacity to address health challenges.
- Community paramedicine has helped to establish a new type of health service delivery.

**Program Delivery Goal: Quadruple Aim**

- Aim #1: Patients affirmed the success of the program in improving their health experience. Patients affirmed increased access to services and better understanding of their health and wellness.
- Aim #2: Patients noted improved health; health partners and key informants agreed.
- Aim #3: Community paramedicine is providing evidence to inform system level changes. CP experience delivers practice-based evidence showing successful results with engaging vulnerable populations.
- Aim #4 Community paramedicine contributes to provider work life and well-being.

## 3.2 Recommendations

The following recommendations and suggested actions are offered for consideration:

**Table 7. Recommendations with Suggested Actions aligned to Program Objectives, Quadruple Aim Components & Evaluation Objectives**

| | Program Objective | Quadruple Aim Component | Evaluation Objective |
|---|---|---|---|
| **A. CP Practice** | | | |
| **1.** Continue/strengthen pre-service and in-service supports for learning and practice change. | **2** | **1, 2, 4** | **2** |
| The CP Program Management Team has developed effective means to support the complex transition from recruitment to successful CP (Orientation, CP Mentors and Community of Practice). Additional supports were developed to enable CPs to work effectively in new priority areas such as palliative care, and with new tools such as HHM. Continue to equip CPs to meet emerging patient needs and system priorities, such as mental health. | | | |
| **2.** Continue to work with key stakeholders to address factors (identified in this report and elsewhere) that limit CP effectiveness, efficiency and sustainability. | **1, 2** | **1, 2, 4** | **3, 4, 5** |
| Engage Unit chiefs, CPs and Mentors, policy/decision-makers and community partners to resolve concerns such as station-level supervision and practice support, kilo shift complexities, challenges of part-time employment (vs. full-time positions in some locations), and co-location in First Nation communities. | | | |

| | | | |
|---|---|---|---|
| **B. CP Program Management Team** | | | |
| **1.** Create plans for moving the findings and recommendations of this report to action. | **1, 2** | **1, 2, 4** | **2, 3, 4, 5** |
| Integrate these findings and recommendations with insights gathered from other experiences and create a plan to operationally address the challenges and opportunities, and improve the program, CP practices and supportive policies. | | | |
| **2.** Plan for sustaining Community Paramedicine in BC. | **1, 2** | **1, 2, 4** | **2, 4** |
| Although CP is a sound program, it is vulnerable to external pressures that could limit growth and impact in the future. Determine the leadership, structures and policies needed to sustain and improve the CP program generally and take advantage of opportunities for learning and informing practices. | | | |
| **C. Evaluation and Knowledge Utilization** | | | |
| **1.** Continue to improve evaluation for informing practices and policies, and accountability. | **1, 2** | **1, 2, 3, 4** | **3, 4** |
| The team has capacity for getting quality data for actionable results. Engage key implementers (i.e., CPs, CP Mentors, and Unit Chiefs), Evaluation Advisory Committee members and other champions in identifying key questions, enhancing survey data quality and collection, accessing provincial data, mobilizing knowledge and utilizing findings. Progress has been made in engaging patients - the direct beneficiaries and key stakeholders -in program evaluation. The ability to continually gather patient insights and measure their outcomes will be essential to improving service, creating support structures and policies, and sustainability. | | | |
| **2.** Update the evaluation framework, including logic and key evaluation questions | **1, 2** | **1, 2, 3, 4** | **1, 3** |
| Evaluation documents often become dated and should be refreshed every three to five years to ensure continued strong alignment to provincial and national strategies. | | | |
| **3.** Refine evaluation of the Quadruple Aim components. | **1, 2** | **1, 2, 3, 4** | **2** |
| This program is demonstrating success in components #1, #3, and #4. It is possible to obtain quality data on patient health and costs for outcomes achieved, and will likely be necessary for sustaining the program, but this will require partners' commitment. | | | |

In conclusion, BCEHS and its partners have successfully designed and implemented a program that has demonstrated its ability to collaboratively and innovatively fill health care gaps in rural/remote parts of British Columbia while at the same time, creating a sustainable career opportunity for paramedics. A strong foundation has been set as the program matures.

Through the evidence collected for this evaluation, results demonstrate that CPs have spent time developing meaningful relationships with partners, in both the community and health sectors, and have used their newly acquired skills and training, particularly in the area of chronic disease management, to work in ways to suit both the local community context as well as to respond in impactful ways to the needs of patients. By continuing to seek out multiple lines of feedback using a variety of strategies (e.g., Community of Practice, mentorship strategies, ongoing CP experience surveys, patient experience surveys), the program and its management can continue to stay nimble and responsive to emerging health needs. Such insight will also alert it to new opportunities for expansion.

Finally, by playing an active role in engaging in evaluative thinking, BCEHS has demonstrated its own ability to learn and use knowledge to improve effectiveness. CP is a success story and lessons from this evaluation provide insight into how this program can be strengthened and thoughtfully sustained.

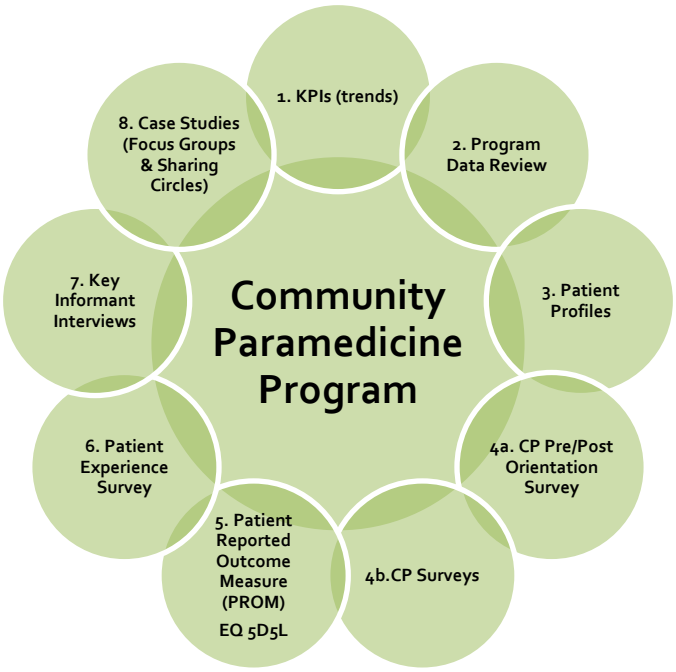
# Appendix 1. Evaluation Methodology

## Evaluation Background and Approach

This evaluation provides a mixed method data collection process (using both quantitative and qualitative data) and accesses multiple lines of evidence (i.e., perceptions of: CPs, stakeholders involved in the implementation, and patients [health outcomes and experience]). Mixed methods ensure robust triangulation of implementation evidence, across eight lines of evidence.

Note that full data reports are available in the Technical Report (2019) created for this evaluation.

**Figure 1. Data Collection**




Primary data captured for this final report (up to January 30, 2019) derives from those respondents who meet the following criteria:

- **Pre/Post Orientation Survey**: CP respondents with a six-month time period elapsing between the pre and the post completion;
- **CP Experience Survey**: CP respondents with a minimum of six months CP work in field and reported as Wave 1 (W1) and Wave 2 (W2);[31]
- **EQ 5D5L:**[32] Patients who had a minimum of two visits with the CP, with a minimum of six weeks between Time 1 (T1) and Time 2 (T2);
- **Patient Experience Survey:** with respondents who have received CP services and supports with a 6 month period of time (April to September 2018);
- **Key Informant Interviews**: with stakeholders (n=6) and one "mini focus group" (n=3) who had knowledge of the implementation process of the community paramedicine program; and,

[31] Note that some W1 respondents may also have completed W2 in order to capture their longer-term experience with the program.

[32] EQ 5D is a patient outcome measure survey (self-report).

- **Case Studies (focus groups and patient sharing circles):** with CPs, community stakeholders, local health teams and patients who have participated in the program and/or received CP services and supports.

## Description

1. **Key Performance Indicators** (KPIs): The KPIs for this program (approved by EAC in September 2016) are as follows:
   a. **CP Services by type:**
      - # CP services provided (overall) and by "unique" patients
      - # Patients seen by condition (diabetes, heart failure, and COPD)
      - # CP services requested, broken down by type (high level)
      - # Community events attended
   b. **Access to CP services:**
      - # Days from time of booking to first meeting with patient
   c. **CP services adequate for services requested:**
      - # and % of events CPs unable to attend due to capacity constraints
      - # Declined referrals (due to scope limitations)
      - # Days from time of booking to first meeting with patient
   d. **Health system outcomes (exploratory):** Since inception, the program and evaluation teams have been working with the Ministry representatives to access data to explore whether the implementation of CPs had an impact on acute services. Specifically, we have requested metrics on ED visits (aggregate, seven days post initial visit with CP) by three patient types: diabetics, heart failure, and COPD.

The CP program has been reporting these KPIs (a, b and c, above) in their CP regular bi-monthly updates. This report forms part of the program's bi-monthly update to the health authorities served by CPs across the program's cycle. The data is reported in aggregate and shows trends over time, in this final report.

2. **Program Data**: The data for this final report covers the period of January 2016 – December 31, 2018, and is reported in aggregate. Data will cover information about those who have completed the orientation program to take on the role of CPs, as well as the types of services delivered by CPs. Data included in this report are:
   a. **Program Statistics:**
      - # Referrals, by whom
      - # Services provided by condition, by type (detailed)
      - # Community events attended by CPs, by topic
   b. **Staffing Statistics:**
      - # CP positions
      - # Part-time positions
   c. **Community Statistics:**
      - # Communities selected to receive CP services
      - # Communities with CPs in field

3. **Patient Profiles:** This information includes the age, gender, primary language spoken at home, and co-inhabitants (supports) living with the patient. In addition, we have summarized the health services delivered to the patients served by CPs from January 1, 2016 to December 31, 2018.

4. **CP Surveys (two types)**:

   a. **PrePost Orientation Surveys:** The CPs completed the 'Pre' survey before starting the Orientation program. The 'Post' survey was completed after six months of practice within the expanded scope of practice. The survey captured knowledge / skills / confidence data relating to the four learning areas of: falls risk assessment; chronic disease monitoring; supporting medication self-management; and health system navigation. The data is reported as matched pairs; for the interim report we had n=15 pairs of data (from the prototype and Northern Health communities, only). Note that at pre-survey data collection n=41 surveys were completed, indicating a 36% response rate at post-survey completion. For this summative report, the data is reported as matched pairs, with n=15 pairs of data. A total of n=76 pre-surveys were completed, indicating a 20% response rate at post-survey completion.

   b. **CP Experience Survey:** The CPs completed this online survey after a minimum of six months experience in the field and the data was captured in two waves, with the second being in 2018 11, for this report. The survey captures CPs' experience in the following domains: recruitment; professional development and team learning; design and delivery; collaboration and continuity of care; patient work; community engagement; and job satisfaction. W1 data was completed by n=28 respondents (from the prototype and Northern Health communities [2017 11]) and represents a 100% response rate. This data was used to inform Interim Reporting and is not included in this report. W2 data was completed by n=94 (of a possible 104 CPs) with a 90% response rate.

5. **Patient Outcome Measure Survey:** Obtaining patient reported outcome measures (PROMs) is one of the Quadruple Aim measures. Data is derived from the EQ-5DL survey, a validated tool that captures patient self-reported health outcomes. This survey was administered during home visits with clients at Time 1 (T1) and, a minimum of six weeks later, Time 2 (T2). For this report we have matched data from n=140 clients during the second wave of administration (Sep2017 – December 2018).

6. **Patient Experience Survey:** A short 10-question patient experience survey was administered by phone to those receiving CP services over the past 6-month period. Either the patient or their family member was asked to complete the survey. Questions from the survey were drawn from the Health Quality Council of Alberta Home Care Client experience survey (2015 version) as well the Toronto Community Paramedic Survey (2015).

7. **Key Informant Interviews (KIIs):** Interviews were undertaken with key stakeholders who could provide an assessment of how well the program has delivered on its strategic goals and objectives at both a provincial and regional level. This data is intended to support decision-making about further development of the program. A total 9 individuals were interviewed for this report; three participated in a "mini" focus group.

8. **Case Studies:** Three (3) case studies were implemented in communities purposively selected by the CP program management team to ensure inclusion of three different Health Authorities and community diversity. The locations selected were Hazelton (Northern Health), Anahim Lake (Interior Health) and Ucluelet (Island Health). The evaluation consultants spent one day at each community and collected qualitative data from three groups of key program stakeholders, using a focus group methodology:
   - BCEHS Team: including CPs, Paramedics, Unit Chiefs, District Manager
   - Community stakeholders: including town counselors, mayors, Indigenous leaders, RCMP
   - Community Health Partners: including head nurses, nurses, physicians, Indigenous health service providers, community nurses, FNHA nurse

In addition, the consultants hosted a more informal sharing circle with patients and their caregivers, to garner insights in to their experiences with the program at Anahim Lake. Unfortunately, the other two communities were not able to recruit patients for data collection.

**Combining multiple research methods and sources of data** allowed for corroboration across measures and aided in the generation of findings that are rich, meaningful, with implications that are useful. **The mixed methods approach** enabled analysis and integration of quantitative and qualitative data to address the high-level evaluation questions. Each type of data was first analyzed separately, then integrated at a later stage.

- **Quantitative Analysis** was undertaken using Microsoft Excel, as required, using primarily descriptive statistics. This analysis method was used to report on a variety of indicators.
- **Qualitative Analysis** was undertaken using content analysis and grounded theory principles. Responses were coded, themed, compiled and reported with the goal of providing depth and meaning to learnings derived from the quantitative measures. Quotations were purposively selected to provide feedback representative of a key finding that we wanted to draw out.

Finally, the program has been in discussions to study the long-term impact of providing CP services using a case/control study design. This study will be organized and carried out by Provincial Health Services Authority (PHSA) and is separate from the Catalyst evaluation contract. As this report depends upon receipt of health system data, the timing of this report is TBD (but anticipated in 2021).