



# Virtual Care BC

Home Health Monitoring Common  
Evaluation Framework:

An Integrated Approach to Assessing Value

October 2018

**MINISTRY OF HEALTH  
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**DOCUMENT CONTROL**

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January 10, 2018	T. Scolnick	0.2	Revised draft. Input from G. Leake.
May 30, 2018	N. Thambirajah	0.3	Revised draft with input from Canadian evidence base and assessment of current home health monitoring evaluation frameworks in use in British Columbia.
June 7, 2018	N. Thambirajah	0.4	Incorporate feedback from G. Leake.
June 14, 2018	N. Thambirajah	0.5	Final feedback from G. Leake. Version distributed to working group.
June 21, 2018	N. Thambirajah	0.6	Reflect feedback from Infoway and HHM Common Evaluation Framework Working Group. <b>Changes redlined in orange text and track changes.</b>
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October 22, 2018	N. Thambirajah	0.10	HHM Common Evaluation Framework Working Group endorsed version. Ready for JMC.
November 13, 2018	N. Thambirajah	0.10	HHM Common Evaluation Framework endorsed by JMC.

**COMPANION DOCUMENTS**

Document	Status
Home Health Monitoring Common Evaluation Framework: Information Strategy	Endorsed by HHM Common Evaluation Framework Working group on February 25, 2019.
Home Health Monitoring Common Evaluation Framework Implementation Suite (includes common surveys, communication plan, and standard reporting template)	Surveys endorsed by HHM Common Evaluation Framework Working group on February 25, 2019. Remainder to be completed by March 31, 2019.

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## Document Purpose

To propose a common evaluation framework for all Home Health Monitoring (HHM) initiatives across British Columbia that received support from the Strategic Investment Fund.

## Document Audience

All health authorities currently delivering HHM initiatives, the Virtual Care Strategy Branch and the Health Sector Information, Analysis and Reporting Branch at the Ministry of Health. This document, in its final form, will be approved via the existing governance structure for HHM initiatives that are funded by the Strategic Investment Fund.

## Context

Virtual Care is the delivery of health care at a distance using information and communications technologies and processes. Virtual care can improve patient access, communication between patients and healthcare providers, and may reduce the costs for delivering health care to British Columbians in all parts of the Province, including less accessible rural and remote communities.

Virtual care can deliver the same high-quality care that patients expect from an in-person consultation while reducing time constraints and travel burdens, particularly for straightforward medical visits and needs. Primary care providers also increase their access to advice and support from specialists physically located elsewhere. Virtual care allows for technology to be used as a supplemental tool in patient's overall care plans. It is not always a substitute for in-person face-to-face interactions. It can be used to reduce the frequency and/or need for in-person visits when clinically appropriate.

Home Health Monitoring (HHM) is a leading and transformative example of virtual care that enables more community, home-based, and integrated care when and where patients need it. HHM initiatives target specific populations with chronic and episodic health conditions and allow healthcare providers the opportunity to remotely monitor patients in their homes to identify issues and changes, and to intervene in a timely fashion. HHM projects engage clients and their families to support patient's quality of life by educating patients and caregivers about chronic conditions and symptoms, and giving patients the freedom to self-manage their condition(s) from their homes and away from traditional hospital settings. This may be particularly helpful for patients and their family members from rural and remote communities.

HHM initiatives generally reduce acute care utilization, resulting in reduction of health system costs (e.g. includes unnecessary clinician appointments, fewer emergency department admissions, hospitalizations, 9-1-1 and ambulance service use).

## Strategic Direction

HHM protocols and pilot projects are funded by the Province's Strategic Investment Fund (SIF) and governed by the SIF Executive Governance Committee. A HHM protocol is the detailed plan of medical treatment or procedures delivered by HHM health providers (e.g. nurses, community paramedics, physicians, support staff, therapy staff, counsellors, etc.). At the end of

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October 2017, the SIF Executive Governance Committee approved extending funding for HHM services through July 2021. By March 31, 2018, and as part of the SIF funding extension, the Ministry of Health (the ministry) and health authorities agreed to develop a proposal for an operational mandate and governance structure for ongoing provincial HHM program that consists of:

- Centralized responsibility for:
  - prioritizing, developing and overseeing the consistent application of services,
  - enabling coordination between health authorities as appropriate,
  - strategic liaison with the vendor,
  - expansion, and
  - evaluating results.
- Health authority-level responsibility for:
  - monitoring and clinical oversight,
  - adopting individual services, including change management and clinical integration, and
  - various programs.
- Funding model options.

## Issue Statement

In the absence of a clearly articulated vision for evaluating SIF-funded HHM initiatives, each health authority has developed evaluation frameworks that reflect regional and organizational preferences. While these evaluation frameworks are valuable and an essential reflection of key achievements to date, a universal method for evaluating SIF-funded HHM initiatives does not currently exist but is required to:

- Evaluate whether HHM projects achieved their stated objectives;
- Support the Ministry of Health strategic and business decision-making to achieve its future vision for the delivery of HHM across British Columbia;
- Compare HHM projects effectively between health authorities;
- Measure sustainability and identify change management actions required to improve service delivery;
- Measure patient, patient caregiver, and provider satisfaction;
- Improve clinical/population and public health outcomes;
- Provide valuable insight for how remaining SIF funds should be spent on future HHM projects; and,
- Contribute to developing protocols that can be scaled across the Province while also retaining flexibility for condition- and geography-specific considerations.

## Evaluation Framework Approach

### Context

Current evaluation frameworks in British Columbia are based on Canada Health Infoway's [Benefits Evaluation Framework](#), and/or the Institute for Healthcare Improvement's [Triple Aim Framework](#). This is generally consistent with how other jurisdictions across Canada evaluate virtual health care or home health monitoring projects.

### Approach

The Ministry of Health proposes an evidence-based approach that leverages findings from a rapid synthesis literature and jurisdiction scan for how virtual health care and home health monitoring projects are evaluated across Canada, as well as a summary of how home health monitoring projects are currently evaluated in British Columbia.

The draft Common Evaluation Framework model is based on Ontario's Investment Management Asset Assessment Guide (2018): a unique approach to evaluation in Canada that focuses on measuring the value of assets in terms of their ability to generate benefits to patients, providers and the health system along key dimensions such as outcomes, user experience and integration. The Ontario model does reflect aspects of the Triple Aim framework and the benefits evaluation framework, but demonstrates an innovative and marked shift away from transaction-based evaluation.

### Common Evaluation Framework Objectives

1. Evidence-driven investment decisions for Home Health Monitoring;
2. Support the strategic objectives of the Ministry of Health and the Province of British Columbia that includes:
  - creating a quality, integrated and coordinated delivery system for primary and community care that is patient-centric, effective in meeting population and patient needs;
  - delivering a quality service experience for patients in terms of access, appropriateness, acceptability, safety and efficiency;
  - identifying change management actions required to improve service delivery; and,
  - improving outcomes and the service experience for patients.
3. Enable validating that value expected from investments are generated, and that investments continue in protocols that most effectively advance patient-centric solutions and objective #2;
4. Measure the value of protocols in terms of their ability to generate benefits to patients, providers and the health system along key dimensions such as patient-centric care and improved health outcomes, user experience, sustainability, and integration;
5. Enable a shift away from tracking value with a transactional lens (e.g. #sites, #users);
6. Consistent framework and standard set of criteria across digital health investments will enable comparison of value generated by these protocols.

## Proposed Common Evaluation Framework

Category	Outcomes	Indicators	How it would be measured
<b>BENEFITS</b>	<b>Impact on Outcomes:</b> the impact that a protocol has on advancing patient-centric care and improving health outcomes	<i>Impact on providers' ability to deliver care</i>	<p><b>Illustrative Considerations:</b></p> <ul style="list-style-type: none"> <li>• When the protocol is applied or utilized as intended, does the functionality result in an improvement in providers' access to patient data or ability to share information?</li> <li>• Are you better able to facilitate team-based care through the use of the HHM protocol?</li> <li>• Does the protocol provide access to evidence-based leading practice information?</li> <li>• Does the protocol encourage the application of evidence-based leading practices?</li> </ul> <p><b>Options for Measurement:</b></p> <ol style="list-style-type: none"> <li>1. Create a survey containing the questions listed above for health providers using the protocol after its completion (or at three months), six months, and at one year. Survey should use a Likert scale. Consider the use of focus groups.</li> </ol>
		<i>Impact on patient-centred care</i>	<p><b>Illustrative Considerations:</b></p> <p>Consider the degree to which the protocol changes the level of patient-centred care as defined by the <i>Picker Institute's Eight Dimensions of Patient-Centred Care</i>:</p> <ol style="list-style-type: none"> <li>1. <b>Patients' Preferences</b> (Was the patient's values respected?)</li> <li>2. <b>Emotional Support</b> (Were patient fears associated with their illness alleviated?)</li> <li>3. <b>Physical Comfort</b> (Was pain management, hospital surroundings and assistance with daily activities adequate?)</li> <li>4. <b>Information and Education</b> (Was the patient and their caregiver/family informed and educated about their clinical status and processes of care?)</li> <li>5. <b>Continuity and Transition</b> (Did the patient and their caregiver/family receive information on medication, physical limitations and dietary needs after discharge)</li> <li>6. <b>Coordination of Care</b> (How effective was the coordination of clinical care, ancillary and support services and front-line patient care?)</li> <li>7. <b>Access to Care</b> (Did the patient have timely access to hospitals, clinics and doctor's offices?)</li> <li>8. <b>Family and Friends</b> (Were family and friends involved in decision making, supported as caregivers, and their needs recognized?)</li> </ol> <p><b>Options for Measurement:</b></p> <ul style="list-style-type: none"> <li>• Issue surveys listing the questions above plus the ones below to providers, caregivers, and patients at the end of the program. Surveys should use a Likert scale. Focused interviews should also be included where appropriate.</li> </ul>

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			<p><b>Patient and Caregiver/Family satisfaction</b></p> <ul style="list-style-type: none"> <li>• Surveys for both patients and their caregivers/families to assess satisfaction with the following: <ul style="list-style-type: none"> <li>○ Client service associated with this protocol</li> <li>○ Quality of health care</li> <li>○ Teaching/coaching services available</li> <li>○ Progress with health goals</li> <li>○ Likelihood of recommending the program to other patients with similar medical problems</li> </ul> </li> <li>• Surveys should use a Likert scale. Leverage the Infoway SUS Survey tools already in use by 3 health authorities.</li> </ul> <p><b>Note:</b> Aspects of this are reflected in the VIHA, VCH, PHSA, IH, and Fraser evaluation frameworks.</p>
		<p><i>Impact on health outcomes</i></p>	<p><b>Illustrative Considerations:</b></p> <ul style="list-style-type: none"> <li>• Health outcomes are defined as changes in health status that occur because of a health care intervention. In most cases, these are patient-reported measures, often referred to as patient-reported outcomes or PROMs. Health outcomes represent one of many outcomes of care for patients, which can be categorized as follows: <ul style="list-style-type: none"> <li>○ Health outcomes – was there a change in health status?</li> <li>○ Health-related outcomes – proxy measures of post intervention health status such as adverse events (e.g. readmission and infection rates)</li> <li>○ Did the protocol reduce patient readmissions to the hospital and/or emergency department?</li> <li>○ Is the patient better equipped post protocol to understand and manage their condition?</li> </ul> </li> </ul> <p><b>Options for Measurement:</b></p> <p><b>Change in health status</b></p> <ul style="list-style-type: none"> <li>• Responsible health providers to provide a clinical assessment of the patient’s health status prior to patient initiating program, followed by an assessment at 3 months (or the end of the protocol), 6 months and one year. (currently HAs rely on patient reporting)</li> </ul> <p><b>Health-related outcomes</b></p> <ul style="list-style-type: none"> <li>• <i>For COPD:</i> <ul style="list-style-type: none"> <li>○ Baseline: count of &lt;7 days re-admissions to hospital over the past six months prior to commencing protocol (the mean value, median, range, and mode for the patient group);</li> <li>○ Baseline: count of &lt;7 days re-admissions to an emergency department over the past 6 months prior to commencing protocol (the mean value, median, range, and mode for the patient group);</li> <li>○ Count of &lt;7 days re-admissions to hospital (the mean value, median, range, and mode for the patient group);</li> </ul> </li> </ul>



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- Count of <7 days re-admissions to an emergency department (the mean value, median, range, and mode for the patient group);
- Baseline: count of 8-28 day re-admissions over the past 6 months prior to commencing protocol (the mean value, median, range, and mode for the patient group);
- Count of 8-28 day re-admissions (the mean value, median, range, and mode for the patient group);
- Total number of primary care visits 6 months prior to protocol and 6 months after (the mean value, median, range, and mode for the patient group); and,
- Compare this with a similar cohort who did not have the HHM intervention (e.g. qualified for HHM but didn't enrol, or similar COPD acuity level): include matching baseline count over same time period, and matching count after the intervention for the other group ended.
- COPD Assessment Test (PEI).

- *For chronic heart disease:*

- Baseline: total number of hospital admissions 6 months prior to commencing the protocol;
- Baseline: total number of emergency department admissions six months prior to commencing the protocol;
- Count of hospital admissions at 3, 6 and 12 months after commencing the protocol;
- Count of emergency department admissions at 3, 6 and 12 months after commencing the protocol;
- Total number of primary care visits six months prior to protocol and six months after (the mean value, median, range, and mode for the patient group);
- Compare this with a similar cohort who did not have the HHM intervention (e.g. qualified for HHM but didn't enrol, or similar COPD acuity level): include matching baseline count over same time period, and matching count after the intervention for the other group ended.
- Minnesota Living with Heart Failure Questionnaire (PEI); or,
- Self-care of Heart Failure Index Questionnaire (Interior Health, VIHA and VCH).

- *For multi-morbidity:*

- Leverage PAM-13 or the Bristol Multimorbidity Treatment Burden Questionnaire.

**As other protocols are developed, the framework and its supporting implementation tools will be amended to include options for measurement that are suited to the disease / condition.**

Data summary should report sample size, adjust for age (e.g. use standard 5-year age groups), note any confounders, adjust for sex (e.g. report separately for males and females), and reference how patient populations were sampled.

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			<p><b>Patient self-efficacy for managing chronic or episodic disease:</b></p> <ul style="list-style-type: none"> <li>• Survey to assess self-management skills after program completion. Two questions: <ol style="list-style-type: none"> <li>1. Does the protocol enable you to better manage your own health; and,</li> <li>2. I understand my chronic / episodic health condition better because of being in this program.</li> </ol> </li> <li>• Survey should use a Likert scale. Consider using the Stanford Patient Education Self-Efficacy tool (VCH and PHSA).</li> <li>• <b>Note:</b> PEI, VIHA, VCH, IH, and PHSA currently assess self-efficacy</li> </ul>
<p><b>Sustainability of Outcomes:</b> creating a baseline to evaluate the sustainability of outcomes associated with the protocol relative to the incremental investments required</p>		<p><i>Level of investment provided to achieve outcomes to date</i></p>	<p><b>Illustrative Considerations:</b></p> <ul style="list-style-type: none"> <li>• Please describe the current operating/project funding model for the protocol, noting contributions by organization, and provide a thematically ordered list of expenses, following GAAP (e.g. the model should account for SIF funds, Ministry of Health contributions, Infoway, and any other grant contributions, and Health Authority contributions).</li> <li>• Please describe the staff required to for the operating/project resource model for the protocol, noting position titles, resource time (e.g. full-time, part-time, or average hours a week and year), and average annual salary for each resource.</li> <li>• If applicable, please describe the current capital funding model for the protocol, noting contributions by organization, and provide a thematically ordered list of expenses, following GAAP.</li> <li>• Are there subscription or licensing fees associated with the protocol that are paid for by the protocol owner/HHM partner? If so, what are the associated fees for your protocol?</li> <li>• Did the cost of the protocol vary from the original budgeted amount? If so, why?</li> </ul>
			<p><b>Option for Measurement:</b></p> <ul style="list-style-type: none"> <li>• The illustrative questions should be quantitatively and qualitatively answered for the period over which funding was allocated to the protocol. A summary of the total expenditures by fiscal year, and percentage change year over year should be included.</li> </ul>
		<p><i>User Adoption</i></p>	<p><b>Illustrative Considerations:</b></p> <ul style="list-style-type: none"> <li>• Provide data on the total number of patients referred (by source), total number of patients enrolled, and total number of patients that complete the protocol. Please provide information why (if any) patients dropped out of the protocol. If there are significant changes in the number of patients between referral to enrolment to completion, provide an explanation.</li> <li>• Is your organization adequately resourced to sustain the protocol? Could it scale the protocol up and if so, by how much?</li> <li>• To what extent has the protocol been adopted in your organization? How many patients? How many clinicians? What are the future projections for adoption over the next three years?</li> </ul>

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			<ul style="list-style-type: none"> <li>• Provide data that compares the forecast patient uptake with the actual patient uptake.</li> <li>• Provide data that compares the forecast device kit requirement with the actual device kit deployment.</li> <li>• Are users using the technology associated with the protocol as intended or are they relying on historical or traditional modes of interaction?</li> </ul> <p><b>Options for Measurement:</b> Provide a quantitative report that includes a qualitative analysis that interprets data and provides an explanation of trends. Data should refer to original project documentation for forecasting, data collected during the protocol (e.g. referral numbers, drop-outs, etc.), and reference any processes or criteria that could impact enrolment or uptake. If patient numbers are slow to increase, please explain why.</p>
	<p><b>Impact on Health System:</b> the ability the protocol has to improve resource utilization</p>	<p><i>Degree to which a protocol results in improvements in system efficacy</i></p>	<p><b>Illustrative Considerations:</b></p> <ul style="list-style-type: none"> <li>• Do the outcomes of the protocol result in expansion or increase of services available for the same spend?</li> <li>• Do the outcomes of the protocol result in reduction of effort or duration to deliver services?</li> <li>• Does the protocol lead to upstream interventions (e.g. preventative medicine) for potentially expensive solutions to a problem (e.g. avoidable emergency department visits)?</li> </ul> <p><b>Options for Measurement:</b></p> <ul style="list-style-type: none"> <li>• The illustrative questions above should be quantitatively and qualitatively answered over the future three-year fiscal period. A summary of the total savings (if any) by fiscal year, and percentage change year over year should be included.</li> </ul> <p><b>Measuring Acute care resource utilization:</b></p> <ul style="list-style-type: none"> <li>• Count of visits/patient 12 months prior to program, after 3 months monitoring duration, and 12 months following program completion (NFLD, PEI);</li> <li>• Total number of admissions/patient 12 months prior to program, after 3 months monitoring duration, and 12 months following program completion (PEI);</li> <li>• Total length of stay/patient 12 months prior to program, after 3 months monitoring duration, and 12 months following program completion (PEI); and</li> <li>• Number of ambulance call-outs/patient 12 months prior to the program, and after 3, 6 and 12 months (NB).</li> </ul> <p>Data summary should report sample size, adjust for age (e.g. use standard 5-year age groups), adjust for sex (e.g. report separately for males and females), note any confounders, and reference how patient populations were sampled.</p>

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			<p>Data summary should also provide the mean value, median, range, and mode for the patient group. Change over time as per requirements for interval reporting should be presented numerically as well as in percentage format.</p> <p><b>Note:</b> VIHA, VCH, PHSA and Fraser measure % of ED and hospital admissions avoided at 90 days. VCH measures number of bed days saved. VIHA also collects information about age, gender/sex, and employment for both clinicians and patients but unclear how this data is used.</p>
	<p><b>User Experience:</b> the experience that users have with the protocol</p>	<p><i>Impact of protocol on workflow and throughput</i></p>	<p><b>Illustrative Considerations:</b></p> <ul style="list-style-type: none"> <li>• Is the protocol reliable and easy to use?</li> <li>• Does using the protocol require additional steps to complete tasks?</li> <li>• Will the outcomes of the protocol result in or support the increased efficiency or effectiveness of work effort?</li> <li>• Will the outcomes of the protocol result in or support replacement of less efficient or effective methods?</li> <li>• Does the protocol save users' time?</li> <li>• Provide the number of health care providers who provide treatment for the condition associated with the protocol. Of these providers, what percentage use the protocol?</li> <li>• How many patients were these providers able to monitor/provide services to prior to/without the protocol? How many patients are these providers able to monitor/provide services to with the protocol?</li> <li>• How many patients can one nurse monitor at any given time using this protocol? How many without the protocol?</li> <li>• To what degree does the HHM monitoring solution integrate with your existing service structure, workflow and roles?</li> <li>• Did you have to redesign your existing service structure, workflow and roles to implement the HHM protocol?</li> </ul>
			<p><b>Options for Measurement:</b></p> <ul style="list-style-type: none"> <li>• Issue a standard survey that lists the questions above to all health providers using the protocol at six months and again at one year after the protocol is implemented. Survey should use a Likert scale. Consider the use of focus groups.</li> <li>• <b>Note:</b> VIHA and IH query similar considerations.</li> </ul>
		<p><i>Level of specialized support for deployment and adoption</i></p>	<p><b>Illustrative Considerations:</b></p> <ul style="list-style-type: none"> <li>• Does the protocol require specialized support for deployment to new users?</li> <li>• Are providers (i.e. any health professional) providing technical support to patients?</li> <li>• Are appropriate learning materials and support available or will they need to be developed?</li> <li>• Does the deployment of the protocol require a lengthy and/or complicated process?</li> <li>• At the onset of implementation for a new site/user, will this protocol require a significant change to systems or processes at the user site to achieve intended outcomes? Are new sites required to expend significant effort or have significant</li> </ul>

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			<p>development experience?</p> <ul style="list-style-type: none"> <li>• Is the deployment easily reproducible?</li> </ul>
			<p><b>Options for Measurement:</b></p> <ul style="list-style-type: none"> <li>• Develop a survey and determine target audiences. This should target individuals responsible for implementation and operations.</li> </ul>
		<i>Users' satisfaction with the protocol</i>	<p><b>Illustrative Considerations:</b></p> <ul style="list-style-type: none"> <li>• Are stakeholders supportive of the protocol? Did it meet or exceed their expectations?</li> <li>• Did the protocol reduce travel time for patients, and/or providers, and/or caregivers?</li> <li>• Does the protocol perform as expected in a complete, accurate and relevant way?</li> <li>• Is the protocol easily accessed and available?</li> <li>• Is the protocol interface easy to understand and does the protocol work well in the users' context?</li> <li>• Can the user easily access assistance with the protocol if needed?</li> <li>• Is the functionality of the protocol reliable?</li> <li>• Include a question about patient's mental health status?</li> </ul>
			<p><b>Options for Measurement:</b></p> <ul style="list-style-type: none"> <li>• Issue a survey separately to patients, caregivers, and health providers that lists the questions above. Survey should use a Likert scale. Report results separately by each group</li> <li>• Consider using a modified Zarit Burden survey or two-factor model (addressing personal and role strain) survey for caregivers. (SASK)</li> </ul> <p><b>Note:</b> VIHA and IH evaluates user satisfaction.</p>

## Analysis Approaches and Data Sources

Depending on the type of indicator and its associated measurement, different approaches to measurement will be required. Please refer to the *Home Health Monitoring Common Evaluation Framework: Data Strategy* (2018).

### Population Sample Size

The target population sample size must be sufficient to provide statistically significant results. This requires a minimum 50 per cent confidence level to substantiate the probability of the event one is investigating occurring in the target population. Is the sample population representative of the larger population suffering from the targeted health condition? If so, why? If not, why? How precise is the data? Calculate the confidence interval. This data must be included in the evaluation report, and should have been included as part of the project planning process in terms of target setting, and leveraging baselines established from other organizations that have already implemented the protocol.

### Qualitative Analysis

Qualitative data is gathered from observations, focus groups, surveys and key informant interviews of clients, caregivers and providers, to understand common and divergent perspectives within and between stakeholder groups as they interact with HHM and the health care system. Clients, including patients, caregivers, clinicians and nurses, are asked questions pre-, mid- and post-implementation. Qualitative analysis looks at clinical care and non-clinical care client experiences, and satisfaction with HHM personnel, education, services and technology. Qualitative data will:

- Gather baseline/benchmark data
- Capture anecdotal and client-specific feedback
- Improve HHM services
- Improve client experience and satisfaction
- Improve protocol and project implementation processes, and
- Assess protocols and projects for transition to operational activities and scaling to other BC health authorities.

### Focus Groups

Focus groups will bring together small groups of patients, caregivers, clinicians and nurses, to discuss their experience and satisfaction with HHM services. Successes and challenges can be discussed in a group setting to identify what works and what requires improvement.

### Key Informant Interviews

Key informant interviews provide context on HHM services from implementation through to project completion and outcomes. Interviewees are selected based on their role in projects. Island Health anticipated conducting 13 semi-structured interviews as part of their 2017 HHM project expansion, as follows:

- HHM Senior Specialist (n=1)

- HHM Clinicians (n=4): One clinician from each geography
- Hospital Liaisons (n=4): One liaison from each geography, and
- Primary Care Providers/Specialists (n=4): Primary Care Providers/Specialists who have experience referring their patients to HHM. A minimum of one Primary Care Provider/Specialist will be interviewed from the geographic areas under study.

## Quantitative Analysis

Quantitative data is mainly gathered from health authority records for utilization and outcome measures, and from Telus data around service provision and kit delivery. Examples of data sources and descriptions, drawn from the Island Health HHM expansion project, include:

- **HHM Program Data:** The HHM Program Data comes from reports run in the TELUS RPM / Tunstall solution. The Island Health HHM clinicians and project team have access to data on all patients who have been registered in HHM through the TELUS RPM / Tunstall application.
- **TELUS Data:** This data is about the technical operations for TELUS RPM / Tunstall and the equipment assignment process to each client. It will be accessed by request to the TELUS HHM Operations team.
- **Discharge Abstract Database (DAD):** DAD is a national database that contains data on hospital discharges submitted to the Canadian Institute for Health Information (CIHI). The DAD contains demographic administrative and clinical data. Data retrieved from the DAD will be retrospective in nature.
- **Admissions Discharges and Transfer (ADT):** This dataset tracks patient movement throughout the hospital. The dataset contains information on patient location and service, and keeps a record of any event during the patient encounter that result in changes, such as transfers, discharges and care level changes. The Cerner PM and HL7 messaging systems populate the data for the ADT dataset.
- **FirstNet:** FirstNet is the Emergency Department information system that is part of the Cerner information system. FirstNet captures information about the patient including the, triage date/time, cubicle assignment date/time, nurse consult date/time, physician consult date/time, ER discharge date/time, attending physician Medical Services Plan number, emergency department admitting source, admitting mode, etc.

## Surveys

Survey questionnaires are sent to clients, including patients, caregivers, clinicians and nurses, by mail with pre-stamped return envelopes, and online. In some cases, survey questionnaires will be administered by phone. Refer to pp 7 – 11 of this document for details on surveys required for this evaluation framework. All SIF-funded HHM protocols must use the common surveys developed as part of the implementation packet for the CEF.

Evaluation questions for patients relate to:

- Use/interactions with HHM technology
- Experience with client education and materials
- Experience and comfort taking medical/biometric measurements
- Experience and interaction with HHM monitoring staff
- Comfort levels with chronic condition self-management

- Satisfaction with the technology service provider
- Satisfaction with the HHM program overall

Evaluation questions for caregivers relate to:

- Use/interactions with HHM technology
- Experience with client education and materials
- Experience and comfort taking medical/biometric measurements
- Experience and interaction with HHM monitoring staff
- Satisfaction with the technology service provider
- Satisfaction with the HHM program overall

Evaluation questions for provider staff relate to:

- Use/interactions with HHM technology
- Experience and satisfaction with training
- Experience interacting/communicating with patients
- Experience with documenting patient interactions
- Experience with client education and materials (e.g., ease of use, readability/plain language)
- Experience with HHM technology and the clinician station
- Satisfaction with the technology service provider
- Satisfaction with the HHM program overall

## Reporting

All reporting for the Common Evaluation Framework will use a standard template, and will be intended for executive Ministry of Health consumption. The reports will also support planning processes in the Virtual Care Strategy Branch, Ministry of Health.

Complete integration of the Common Evaluation Framework into project planning and execution processes is required for all proposals for SIF funding. Project objectives for any HHM project must align with the indicators defined in the Common Evaluation Framework.

Evaluation reports must be submitted to the Ministry of Health 3 months (or shortly after the end of the protocol if it is not a three month protocol) after implementing a HHM project, and again at 6 months, 9 months, and at one year. If the project requires an implementation period exceeding one year, quarterly reports are required after the first year that align with the Ministry of Health's quarterly financial reporting. Thereafter, quarterly reports that align with Ministry of Health quarterly financial reporting must be submitted on an ongoing basis once the HHM initiative becomes operational.

Reports are expected to provide results as per the Common Evaluation Framework but should also provide an executive summary and highlight project / program progress, issues, risks, mitigation strategies, budget expenditure to date against total budget allocation, number of patients included, population sampling approach.



## Data Strategy

The Common Evaluation Framework Working Group will identify a common set of terminology for data collection and evaluation (i.e. a business data glossary), a common understanding of referencing and accessing metadata, the manner in which the data is collected, data use, data reuse, confounders, sources of truth for data, data sharing, and governance. The key deliverable resulting from this work effort will be called the “Data Strategy for the Home Health Monitoring Common Evaluation Framework.”

## Audience and Stakeholders

The audience and stakeholders for HHM protocol and project evaluation includes (*to be confirmed*):

- HHM patients,
- HHM caregivers,
- HHM clinicians,
- HHM program managers,
- HHM program sponsors,
- Hospital liaisons,
- Health authority decision-makers and staff,
- Ministry decision-makers and staff,
- Primary care providers and specialists,
- SIF Executive Governance Committee, and
- TELUS Health professional services resources and HHM teams.

## Review and Quality Improvement

1. The Common Evaluation Framework will be refreshed as needed and reviewed three years from its implementation date of December 2018.
2. The Common Evaluation Framework may also be reviewed as determined through consultation between the Ministry of Health and external stakeholders.