BGW Analysts
(Group 6)

BGW
system
analysis

Request for Proposal

Version 1.0

RPM: Remote Patient Monitoring

October 6, 2023

Document History

Version	When	Who	What
1.0	October 7, 2023	All members	Initial Drafting

Table of Contents

1. Problem Description / Expression of Need

UVic Health is a regional health authority based on Southern Vancouver Island, providing care to all within this region and surrounding gulf islands. Its goal is to provide timely, effective, and high-quality care to patients anywhere, any time.

The organization is home to a variety of healthcare programs, including acute, emergency, and long-term care, however UVic Health specializes in providing home-based care. This model allows patients, when possible, to be treated in the comfort of their own homes, surrounded by their loved ones.

Recently, across multiple home-based care departments in the health authority, patients and clinicians have expressed a desire for a way to simplify the remote patient monitoring process. Being a registered patient in the home-based care program means that while patients are living at home, they are still considered in-patients of the health authority and are designated a medical team. Due to the distance, patients are given multiple devices to record their health vitals throughout the day based on the severity of their illness and the data being collected is monitored by their care team. Should an abnormality occur, the care providers are notified and are able to reach the patient and respond accordingly in potentially emergency cases.

Currently, UVic Health is providing patients with a variety of separate devices to monitor their patients' health. This includes Bluetooth blood pressure cuffs, stethoscopes, oximeters, thermometers, and fall detection devices. Each solution has its own separate portal that clinicians must access to observe patient data. From the care provider's point of view, having to sort through multiple data monitoring interfaces is time consuming and confusing, as well as making it hard to keep track of patient vitals and information. Patients are also reportedly unsatisfied with the amount of equipment being sent to their homes that they then need to learn how to operate and remember to use regularly. This can be quite the challenge as many of the patients using these devices are more elderly and have trouble navigating new technologies.

UVic Health Authority is looking for a vendor to collaborate with in order to produce an all-in-one solution for their clinical staff and patient needs. This device should be all inclusive when it comes to monitoring the requested health data and patients should not find using this device an excessive burden. Moving to this new device should overall increase the quality of patient care provided at UVic Health.

2. Project Objectives

- Improve patient satisfaction. Elevate the quality of care and overall experience for the patient while in the care of UVic Health Authority.
- Improve care provider satisfaction. Provide a solution that does not add an additional burden to the care team.
- Minimize hospital visits. Reduce accidents that occur due to poor user interface on the patient vital monitoring portal.
- Provide a voice-calling function for patients to reach care providers at any given moment and vice versa. By pressing a button, patients can communicate with their care team about

changes to their medical condition.

- Implement and accident alerting system to ensure patient safety. The device should be able to identify a medical emergency that medical providers are promptly notified about in order to respond accordingly.
- Utilize a GPS function on the device in order for the patient's location to be quickly and accurately noted in order to enable more precise patient tracking and monitoring.
- Integrate the device data into UVic Health's existing health information system including the patient's electronic health record (EHR).
- Have the device's patient vital information be easily accessible, clear, and navigable on the provider's device portal.

3. Current System(s)

At UVic Health Authority, patients are currently given 5 medical vital sign recording devices upon release to their home, in order to continue monitoring their health. These devices include an oximeter to measure patient oxygen levels, a blood pressure cuff to measure the patient's blood pressure, a thermometer to measure the patient's temperature, a stethoscope to measure the patient's heartbeat, and a fall detection device that alerts care providers if the patient falls. All of these devices utilize Bluetooth in order to record patient data that is then sent to and analyzed by their care team. Patients must learn how to use all of these devices and take their vitals at designated times throughout the day, outlined by their care team. Patients have reportedly been unsatisfied with using these devices as the information overload in learning how to use the devices is overwhelming, the 5 devices are hard to keep track of, and the monitoring processes is very tedious.

In order for care providers to view the patient's vital sign information, they are required to access a separate portal for each device, search through all the patients, and determine if the health data being recorded is of concern. This process is repeated for each patient in the care team is monitoring. Care providers have expressed that the way the system records data and the way to know if the patient is in need of medical attention is extremely time-consuming and very interruptive of their workflow. Care providers cannot easily tell who needs to be prioritized first, where to look to find all relevant medical data, and due to needing to compare multiple information portals at a time, sometimes miss important patient medical alerts.

4. Intended Users of the System

There are two intended user groups for the remote patient monitoring system: patients and care teams.

The patients will interact with the device in their own homes and are responsible for wearing the device. Typically, those wearing the device are older and less accustomed to using technology.

The care teams interact with the device primarily through the portal that tracks and collects patient data as the device is being worn. Care teams are usually responsible for monitoring many patients are a time and don't have a lot of extra time to dive into detail about each individual patient's recorded data.

5. Known Interactions within or outside the Client Organization

Interactions within UVic Health Authority surrounding the remote patient monitoring solution include the following:

1. The patients using the device.

   Patients who require use of the device will be interacting with the system throughout the duration of the designated monitoring period. Ideally, patients should be directly contacted via the device by their care team if there is a need. If the care providers are unable to get a hold of the patient through the device, they will be contacted by the phone. Should anyone outside of the care team wish to reach the patient for any reason, that communication will be facilitated through the discretion of their care team.

2. Care providers using the device.

   Care providers will be using the device before it is deployed to the patient's home to ensure that they understand how to use the device and that everything is working properly. They will also be instructing patients on how to use the device. Care providers can be reached through their work cell phones that they always have access to for urgent matters. For all other communication purposes, care providers can be reached through their email.

3. Care providers using the patient vital sign monitoring portal.

   Care providers are the only group of people who are interacting and analyzing the data that is being recorded in the portal to preserve the patient confidentiality agreement. Care providers can be reached through their work cell phones that they always have access to for urgent matters. For all other communication purposes, care providers can be reached through their email.

4. Technical team supporting the device and portal.

   Once the device and portal are in the hands of the health authority, their technical team will be responsible for the maintenance, tracking, and troubleshooting of the devices. They are who should be conducting the communication between UVic Health and the vendor. The team can be reached through their work email and should more urgent communication be required, team members can be contacted directly through their work phones.

The communication starts from the vendor, then reaches the technical team and as applicable, care providers then patients are notified. Other than communicating with the vendor, there should be no other external communication from UVic Health Authority about the remote patient monitoring solution.

6. Known Constraints to the Solution

1. Keeping track of multiple streams of information at once.

   As a large amount of information is coming from multiple steams at once (five patient vital monitoring devices), it is hard to keep track of it all. Due to the sheer volume of information intake, it is easy to accidentally overlook critical information as data is being sorted and organized.

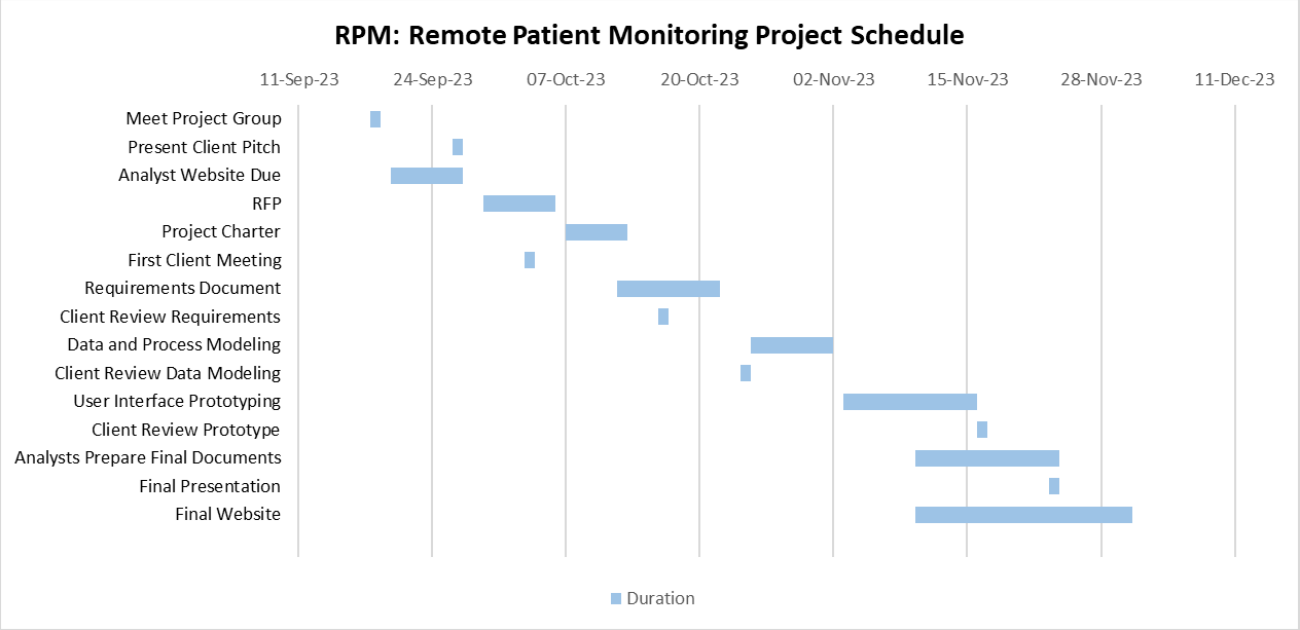
2. Intruding on patient's everyday life and care provider workflow.

   As patients must record their health vitals are multiple points throughout the day and with varying devices, it can take a lot of time and energy to do so that would otherwise be spent doing more enjoyable things. Cycling through multiple devices can be overwhelming and undesirable for many patients. Due to the time-consuming nature of sorting through patient information, it is a very intrusive process in care providers' daily workflow. It can be very overwhelming as well as confusing when it comes to sorting and interpreting information,

3. Patient privacy and security concerns when collecting patient health data, relative to using Bluetooth and wireless information transmission.

   When recording patient health information, it is very important to honor their right to privacy and confidentiality. Using many devices and Bluetooth to send over information may be a cause of concern surrounding potential information breaches.

7. Project Schedule



8. Project Team

BGW Analysts:

1. Yulei Jiang, system analyst, V00019319, jylzxy@gmail.com.
2. Amelie Wang, system analyst, V00975441, ameliewang86@gmail.com.
3. Kacey Friesen, system analyst, V00978721, kaceythai2014@gmail.com.
4. Eleonora Stoynova, client, V00976502, enstoyynova3@gmail.com
5. Rick Kuang, system analyst, V00974275, weichenkuang77@gmail.com.
6. Sherry Gu, client, V01009566, sherryzgu5149@gamil.com.

9. Glossary of Terms

Home-based care: medical support service that allows a person to live safely in their home.

Patients: used in the context of intended user group of the devices. These users are typically older and more technologically inept. They have health concerns that require regular monitoring however are stable enough to reside at home as opposed to at a designated health care facility.

Remote patient monitoring: type of telehealth in which healthcare providers monitor patients outside the traditional care setting using digital medical devices, such as blood pressure monitors, pulse oximeters, and blood glucose meters.

In-patient: a patient who stays in a hospital while under treatment.

Blood-pressure cuff: a medical device consisting of a piece of rubber or similar material that is wrapped around a patient's arm and then inflated in order to measure their blood pressure.

Stethoscope: a medical instrument for listening to the action of someone's heart or breathing, typically having a small disk-shaped resonator that is placed against the chest, and two tubes connected to earpieces.

Oximeter: an instrument for measuring the proportion of oxygenated hemoglobin in the blood.

Thermometer: an instrument for measuring and indication temperature, typically one consisting of a narrow hermetically, sealed glass tube marked with graduations and having at one end a bulb containing mercury or alcohol that expands and contracts in the tube with heating and cooling.

Fall detection device: device that automatically employs the technology to detect and get fast assistance for someone who is prone to falls.

Portal: a system that allows care providers to access, observe, and analyze patient information collected wirelessly through patient devices.

Vendor: a company offering something for sale.

Electronic Health Record (EHR): an electronic version of a patient's medical history, that is maintained by the provider over time, and may include all of the key administrative clinical data relevant to that persons care under a particular provider, including demographic progress notes, problems, medications, etc.