Building Capacity for Health Informatics in the Future
F. Lau et al. (Eds.)
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doi:10.3233/978-1-61499-742-9-54

Community Paramedicine Initiative: Transforming Paramedicine in British Columbia

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Abstract. British Columbia's health care system is facing challenges related to rural access to care and an ever increasing demand for services. These variables are compounded by the anticipated needs of an aging population that can expect to live several of their golden years with a chronic illness. The introduction of community paramedicine in BC allows for a care delivery model that expands the role of qualified paramedics to include the delivery of prevention, health promotion and primary care services in the community. The implementation of the Community Paramedicine Initiative in rural and remote BC highlights a transformational approach to health care delivery empowered by a technology enabled perspective of community needs.

Keywords. Community Paramedicine Initiative, paramedicine, transformation, rural

1. Introduction

To address the increasing and more dynamic demand for health services associated with an aging population [1], an implementation of the Community Paramedic Initiative, which incorporates clinical assessment, follow-up, health education and prevention as part of its engagement, is deploying throughout BC. The necessity to innovate imposed by the impending impact of these real challenges on the health system has prompted an investment in a transformational approach to health care delivery. Initiatives like this one support shifting the trajectory of patient engagement from the hospital to the community.

In partnership with the Ministry of Health, regional Health Authorities, First Nations Health Authority, Ambulance Paramedics of BC, and others, BC Emergency Health Services (BCEHS) is implementing an innovative program that seeks to transform the delivery of care in rural and remote communities by facilitating better access to health care through an expanded role for paramedics. The Community Paramedicine Initiative (CPI) introduces community paramedics as integrated parts of

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the local health care team, focused on prevention, health promotion and primary health care in rural and remote communities.

This initiative has transformed the paramedicine discipline by expanding the role of a paramedic from a reactive care provider in an emergency setting to a proactive care provider working in a non-emergency setting. Current primary care paramedics with IV endorsements are eligible for specific orientation in community paramedicine to become community paramedics.

The prototype phase announced in April 2015 served as a learning ground for developing, testing, and refining the initiative's processes and practices. The provincial rollout announced in April 2016 includes an initial 73 communities, selected using evidence-based methodology and endorsed by program partners. BCEHS is now hiring community paramedics sequentially by Health Authority. All undergo a 14-week orientation to prepare them for providing primary care services to patients in homes and communities.

2. Objectives

CPI seeks to delivery care in a manner that is consistent with the Triple/Quadruple Aim of health initiatives (Health of populations, patient experience, reduce cost per capita, provider experience), but it has two main objectives: Bridge health service delivery gaps identified in collaboration with local health teams, and contribute to the stabilization of paramedic staffing in rural and remote areas to augment BCEHS' emergency response capabilities.

3. Method

3.1 Setting a New Tone

The success of a net new initiative often relies on innovation that is not typically seen in daily business operations. For many aspects of the CPI, the requirements gathering was done simultaneously with the testing. It would be arrogant to assume the requirements could be fully defined without at least prototyping the program; therefore, requirements were initially met with solutions that were quick and low cost to change. This allowed for constant feedback and communication between prototype users and the project team. Both the end goal and the process to get there is net new to the business, and the status quo and existing systems of the business were challenged throughout the project. The development of this program was truly done by assessing and developing program needs from a new lens that is not typically employed by BCEHS.

The Community Paramedicine Initiative in BC is unique as it is the first province-wide initiative of its kind in Canada, and both the program development methodology and final service is new to the business. This meant that the initial requirements were outlined, but the typical process in achieving those requirements was often reformed. All requirements were defined to meet the Community Paramedicine (CP) Business Processes: Referral/Scheduling, Service Delivery, and Program Management.

3.2 Requirements Mature As the Business Matures

Program requirements were cross-referenced with community needs to meet the desires of both sides, and a focus was applied to patient-centric requirements. Because community paramedicine is a net-new business for all stakeholders; interim solutions were developed that allow for quick adjustments to accommodate requirements that may not have been originally identified in the initial requirements gathering. Paper documentation, for example, allows for fast and more cost-effective changes than retroactively adjusting an electronic system to meet a requirement that was not (and could not be) identified in the design phase. These interim measures were not seen as "Band-Aid" solutions, but rather as building blocks towards developing and achieving future systems. This process challenges some of the traditional project methodology, which warns against retrofitting solutions after the design phase and obliges requirements to be fully defined before the development and testing phases begin.

One example of leveraging existing technologies and redesigning post-testing is the use of SharePoint. SharePoint was already a recognized tool at BCEHS for storing and sharing documents throughout the organization, but it was hardly used for scheduling purposes – let alone for scheduling patient interactions. A new SharePoint interface was developed for use in community paramedicine to share education materials, store documentation forms, and to schedule individual patient and community events. This solution meets the needs of the CP Business Processes, but it was not developed as a permanent solution. It was determined early on that the community paramedics will use a separate solution which incorporates referrals/requests for service and scheduling management; however, a full robust set of requirements could not be developed during the first design phase. The nature of the community paramedicine work is so new that neither the project team nor the paramedics themselves could be expected to determine all the requirements without experiencing the work first-hand. Thus, the SharePoint solution was developed as an interim measure, and it was analyzed and renewed to meet the evolving requirements of community paramedicine.

The scheduling data from the initial SharePoint solution underwent analysis to determine what changes should be made to the configuration of the scheduling application. After the initial system had been in use for seven months, a data dump was done on the existing information. Of that data, the project team conducted an analysis to answer two questions: Are the users inputting event information consistently such that we can run standardized reports? And are the data fields configured in such a way that running reports will capture the information as intended? In addition to reviewing the data, end-user interviews were conducted to gather user feedback on the usability of the system, and operations and evaluation leads were engaged to ensure that the system is kept in alignment with their priorities.

The findings of the SharePoint analysis produced some concerning results. The most evident was the inconsistencies of data entry between users. The data showed the same event attended by different users was inputted inconsistently, and even repeated events entered by the same user were often inputted differently. Data fields in the event creation page were not used as intended, and it was identified in the end-user interviews that desired fields, which would capture orientation events, were not available. It was also identified in the end-user surveys that there was a need to align the service request forms submitted to Community Paramedics with the scheduling system. Users found it difficult to transfer the information from a service request (used

by members in the community to request various types of services from a Community Paramedic) into the scheduling system. However, a positive observation derived from the interviews was that the users found the system easy to use. Despite the fact that they were unknowingly inputting information incorrectly, the user experience was generally positive.

From that analysis, the SharePoint scheduling was amended to improve the user experience and data usefulness. As per the users' requests, the fields in the scheduling system were changed to align with service request forms and new fields were created. To change user behaviour and to drive more standardized inputs from users, select fields were marked as mandatory, and a reference sheet was created for existing and new users. The input and experienced gained in this process will be used to develop a long-term scheduling solution in the future, and this process allowed for the program to run while simultaneously supporting staff and defining system requirements.

Another instance in which the requirements were defined as they were tested was the development of the CP documentation. Forms necessary to support the CP business processes underwent a similar process as the scheduling process. Net new forms for the initiative were necessary, but it was difficult for the project team and community paramedics to define exactly what was required of those forms even with analysis of similar initiatives. In other words, end-users could not provide insight without first knowing their goals and processes. Therefore, paper forms were designed to accommodate expected changes. Eventually, electronic forms will be implemented, but until the requirements can be fully and confidently defined, a less costly prototype is in use. Batches of forms were developed and put into circulation for use, and they were then reviewed with the users (community paramedics) and the project team to determine what improvements could be made. Versions changes were then applied, the documents were distributed again, and further testing cycles were conducted. This was an incredibly successful method as the requirements for the forms were largely unknown, so having a process in which updates can be made quickly and with little cost, allowed the program to gradually construct documentation and standards that have been tested and proven to be effective.

3.3 Finding the Right Communities

As resources and time are (seemingly) non-infinite, it was necessary that a select group of communities be initially enrolled in the community paramedicine program. Consequently, with many eligible communities to choose from in BC, a tangible and transparent decision process was required. One of the underlying objectives of this project is to improve the type of care and access to care that is often limited in rural areas of BC. With such a large geographical area, rural communities in BC have to battle with constraints due to ocean borders, lakes and rivers, and mountain terrain. Therefore, over 100 communities that met all three of the criteria points were reviewed:

1. Communities that are rural, small rural or remote, as defined by the Ministry of Health [2]
2. Communities served with an existing ambulance station in place
3. Ambulance stations with casual staff only

After further analysis and consultations with health authority partners, communities were prioritized for the Community Paramedicine Initiative and 73 communities were selected. The final decisions and the decision methodology was shared with program partners to ensure a transparent and fair process. It was also noted that communities not selected in the initial roll-out phase may still be eligible for community paramedicine in future optimization of the program.

4. Conclusion

As the health care needs of citizens evolves, so must the services and people that provide such care. Too often in today's industry is a project driven by one piece of technology that is presented as a stand-alone solution for health care services. The project team for the Community Paramedicine Initiative has recognized that one of the best ways to improve the health care experience is to bring people together and develop a program that is driven by the people – not the technology. By evolving the role of a paramedic and transforming the delivery of health care services, the Community Paramedicine Initiative has established a program that benefits both patients and the care providers.

Technology is helping address the issue of access to care for populations in rural and remote areas, but even the best technological solutions have limitations. There is a tremendous intangible advantage of building a relationship and establishing trust with a patient – especially with elderly patients who may not be highly literate with technology – and the Community Paramedicine Initiative seeks to build these connections between the patient and the Community Paramedic. By putting the service and people first, the Community Paramedicine Initiative provides a platform that builds relations between Community Paramedics, patients, local health care providers, and the community.

As the program matures and stabilizes, more technology based solutions can be evaluated to further improve the quality of care, and the adoption rate and probability for success of new technologies will be much higher in communities with a Community Paramedic. Simply having a reputable person in the community that has established trust can improve the success of technological solutions by helping introduce the technology to stakeholders such as patients and care providers. This is one of the hopes for future stages in the Community Paramedicine Initiative.

For now, Community Paramedics will continue to be deployed throughout BC, with the full optimization stage occurring in the fall of 2017. The feedback from Community Paramedics and enrolled communities has been incredibly positive thus far, and positive impacts of the Community Paramedicine Initiative have already been felt throughout BC. The project team will continue to build on this momentum, and Community Paramedics will further transform the delivery of health services throughout BC.

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