Innovation in the North: Are Health Service Providers Ready for the Uptake of an Internet-based Chronic Disease Management Platform?

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Abstract. Remote and rural regions in Canada are faced with unique challenges in the delivery of primary health services. The purpose of this study was to understand how patients and healthcare professionals in northern British Columbia might make use of the Internet to manage cardiovascular diseases. The study used a qualitative methodology. Eighteen health professionals and 6 patients were recruited for a semi-structured interview that explored their experience in managing patients with cardiovascular disease and their opinions and preferences about the use of the Internet in chronic disease management. Key findings from the data suggest that a) use of the Internet helps to maintain continuity of care while a patient moves through various stages of care, b) the Internet may possibly be used as an educational tool in chronic disease self-management, c) there is a need for policy development to support Internet-based consultation processes, and d) while health providers endorse the notion of electronic advancement in their practice, the need for secure and stable electronic systems is essential.

Keywords. primary health care, CVD management, Internet consultation, chronic disease management

Introduction

Cardiovascular diseases (CVD) are the leading cause of death in the Western world [1]. In Canada, the budgetary drain from cardiac-related illnesses is growing at an astounding rate. Not only are 33% of Canadian deaths cardiovascular-related but CVD management now has an annual economic burden of approximately 18 billion dollars [1]. Four out of 10 Canadians in their 60’s report having some type of CVD (i.e., angina pectoris, myocardial infarction (MI), or hypertension) and the rate of prevalence continues to climb as people age [1]. Prevalence of CVD is expected to jump from 2.8 million to 4.2 million over the next decade as baby boomers enter their 60’s.

Remote and rural regions in Canada are faced with unique challenges in the delivery of primary health services. Barriers to health care in remote regions include...
shortages of physicians and other allied health professionals. As well, accessibility to health services is impeded by geography [2]. Not only do some communities have limited access by road, but the long and harsh Canadian winters can restrict travel, including for health care. In British Columbia (BC) the Northern Health Authority (NHA) encompasses one third of the province yet serves only 7.2% of the total population of BC. Disproportionately, 13% of the population of the NHA has CVD but cardiac rehabilitation programs are unavailable to many of these patients. There are only 8 communities with populations over 10,000 people and over 60 smaller communities, predominantly First Nations, many of which are remote and isolated. These geographic and demographic features cause a shortage of human resources, infrastructure, and supplies for health care. Consequently, the need for innovation, integration of services, and collaborative approaches to deliver services in NHA are critical.

Recently, an infusion of Federal funding brought Internet access by satellite to remote and rural Canadian communities. This made innovative delivery of health services possible. The purpose of this study was to understand in what ways healthcare professionals and patients in the NHA could use the Internet to manage CVD.

1. Methods

The study used a qualitative methodology. Six physicians, five nurses and 7 allied health professionals were recruited for a semi-structured interview that explored their experiences in managing patients with CVD and their opinions and preferences about the use of the Internet in chronic disease management. Further, 6 patients were recruited to explore, by means of a semi-structured interview, their experiences in self-managing their CVD and their opinions and preferences about the use of the Internet in disease management. All participants were from the NHA. This data collection effort was part of a larger provincial study conducted by the British Columbia Alliance on Telehealth Policy and Research team.

1.1. Recruitment and Participant Characteristics

A total of 24 interviews were conducted. Six patients diagnosed with a CVD were recruited through flyers in medical settings and by word-of-mouth. Five out of the 6 patients were male, four were married and one was single. The sole female patient was married. All patients were 60 years or older. One patient lived in a community of more than 10,000 people; three patients lived within a 50 km radius of a community of more than 10,000 people, and two patients lived in communities of fewer than 5,000 people. All the patients had been diagnosed with CVD for at least one year. All patients were receiving cardiac care at a tertiary care centre in Vancouver, B.C.

Initially, physicians, nurses and allied health professionals in the NHA were selectively recruited based on their involvement in managing CVD. E-mails were distributed explaining the purpose of the study and requesting participants. Six physicians responded to the request and were compensated $100 for one hour of their time. Two in-hospital nurses responded to the initial request. Following these initial interviews, the interviewer would ask if there were any other health professionals that might be interested in participating. The rest of the participants were recruited by following up on the referrals (see Table 1).
1.2. Data Collection and Analysis

The data were gathered over four months. All the interviews were conducted by the same research assistant. Thirteen interviews with professionals were conducted at the interviewee’s place of business and five were conducted by telephone. Four patient interviews were conducted at the patient’s home; two were conducted by telephone. All interviews were recorded, transcribed and entered into the NVivo 8 software package for classification and organization of information. Analyses were guided by a grounded theory approach [3].

2. Key Findings

2.1. Current Electronic Use

In their daily practice, 16 of the allied health professionals used the Internet to keep their own education current. The two participants that did not use the Internet were a community-based physiotherapist and an exercise specialist. The participants who were using the Internet, visited sites that offered current disease-specific synthesized information. Up-To-Date, MD-consult Allnurses, Medline and E-Medicine were the web sites most frequently mentioned. All of the health professionals used e-mail (all health professionals were initially contacted by e-mail) but the amount of usage varied. Seven of the health professionals had forwarded educational web links to their patients. The physicians and one nurse regularly accessed the chronic disease management tool kit from the BC Ministry of Health. NHA has an electronic medical record (EMR) system so physicians had electronic access to their patients’ medical records and some lab tests and X-rays that were conducted in the NHA. All physicians appreciated being able to gain instant access to medical tests and all were optimistic that, within the NHA, they would be able to access more tests and X-rays online. None were aware if they could access medical tests ordered elsewhere in the Province but all thought that it would be beneficial. Some physicians had clinics with wireless capability and carried a laptop from room-to-room to access patient records. Four out of the 6 patients used the Internet at least once a week. Three patients and the wife of one patient used the Internet to find information about CVD. Two patients were not interested in using the Internet.

2.2. Facilitators for an Internet-based Platform

A common thread in all the interviews was the desire to have more information from other health professionals. As one physician reported, “The biggest gap is that, when...
people go south [to Vancouver], we do not get information that is useful. So, if [the Vancouver specialists] had a communication person [who] could make a phone call, e-mail, or FAX me [with] a sheet saying that a certain person has been discharged, [it would be helpful]. And, it would be helpful for me if they would write on the sheet when they want me to see [the patient].” To address the continuity of care, a health systems manager recommended an electronic system with the capability to automatically flag those patients released from a tertiary care facility and to supply the discharge summary with the contact names for the specialist and specialist nurses. Currently, the onus is on the patient to initiate all follow-up care. If a patient, after being discharged from tertiary care, does not make an immediate appointment with their family physician, the office staff of the clinic, who are unaware of the patient’s health status, may make an appointment booking for several weeks later. As one physician stated, “I would say the connection after discharge [from tertiary care] is loosey goosey and … a lot of times, discharge summaries are late, up to three months a lot of times. The only summary we’ll get is the one someone has in their hand, which is useful if it is legible, but we have no warning that they’ll come necessarily.”

An Internet-based platform provides the ability to quickly obtain patient information and share medical information with the patients. Physicians in NHA have access to the EMR system and the other health professionals see the benefit of having faster access to the input made by other professionals regarding patient care. One allied health professional said, “It would be helpful if there was an electronic patient chart that was accessible by the entire team of health professionals. As different health consults occurred, a chronological documentation of the patient/provider information would occur, making it easier for all to see what consult/lab tests, etc. occurred and what suggestions were made in the consultations.” Physicians thought more accurate information shared among professionals would be the result of such a system. It would be a more time-efficient system with less time spent by physicians sorting through the referral notes from other professionals.

Health providers stated that a virtual program would afford the health provider with the same access to information as the patients, “I have seen my patients that have come back from St. Paul’s on the congestive heart program and they seem to get extra education down there, but unfortunately, their education does not spread to me. And so, I am learning from what the patients are being told and not from anyone else. I think that either I am missing what is available to me, or I just have not been told what is available, or where to access that stuff but I think that there should be more education for me as well…I think that there needs to be more education for the physicians in the periphery because they are such a long way away from [the tertiary care setting].”

2.3. Barriers to an Internet-based Platform

The primary barrier, as voiced by all participants, to an Internet-based virtual care program was concern about security and privacy. Health providers differed on the emphasis they placed on security. Their level of concern ranged from acknowledging that security was a key issue to “until you have guaranteed me with 100% certainty that no hacker can access the information, that the web site management will not be sold to the highest bidder; patient information will not be sold to a third party, I will not use a virtual care program.”

Lack of time and lack of training to learn a new system were also key reasons not to use a virtual care program. The current EMR system of the NHA could be a possible
solution for these concerns; there were no negative comments about the current system and some physicians made reference to the large cost that was involved in implementing their current electronic system. A virtual program that mimics the current system or piggybacks on the current NHA EMR system may eliminate the time and learning needed for yet another system.

3. Limitations

The limitations of this study reflect the nature of qualitative methodology. First, recruitment of health professionals was mainly accomplished electronically. Hence, the experiences of interviewees may not have accurately represented the entire population of health providers in the NHA. A further limitation to qualitative methodology is that there may have been something fundamentally different about those individuals who chose to participate as opposed to those who chose not to. These limitations must be taken into account when, as with this study, investigators are interested in examining the motivations for embracing change.

4. Discussion

The present study provides support for the idea that health providers can utilize an Internet-based disease management platform as a tool to maintain continuity of care for the patient. Previous research has shown that patient outcomes are significantly better when collaboration exists among various health professionals to deliver health care needs [4]. However, in the NHA, there are no cardiologists, which means that many patients who have a cardiac-related illness must travel out of the region to receive specialized care. This study found that when patients require tertiary care, the primary care providers may experience a delay in receiving information about their patients. Delayed communication between tertiary care centers and primary care centers may be detrimental to positive health outcomes [5].

The present study found that remote providers supported an online co-management model of care. Patients might receive better care as they moved through the health system. An on-line chronic disease management platform could mean that all providers would have access to current patient information. These findings support previous research in which it was found that a web-based standardized communication system between the emergency department and family physicians improved continuity of care [6].

With increasing accessibility to the Internet, it is realistic to use an Internet-based platform to provide collaborative chronic disease management options. This study found that while health providers endorse the notion of electronic advancement in their practice, the need for secure and stable electronic systems was essential. Health providers surmised that the uptake of technology would be most successful when new systems were compatible with their current electronic systems. Disparities in Canada between rural regions, such as northern BC where there is a lack of health care accessibility, and urban regions continue to grow [7].

The findings of this study have implications for the future delivery of Internet-based chronic disease management in northern, rural, and remote areas of Canada. Human resources, service delivery, and geography comprise the largest challenges in
NHA. The need for innovation, integration of services and collaborative approaches to northern remote health services is critical. Advancing Internet technology allows for the possibility of innovative delivery of health services, which can alleviate the human resource shortage and close the geographic gap between rural patients and urban services. The urgency in developing and implementing viable co-management practice models becomes apparent when recognizing that remote and rural regions are challenged with personnel shortages, overburdened health providers and higher CVD rates. An interdisciplinary team working to their highest skill level using an Internet based platform may be a more efficient use of monetary and human resources and may enhance patient care.

References
