# Addressing the significant impacts and impediments on expanding access to telehealth for elderly clients in Canadian rural areas

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# Abstract

As the geriatric population increases, their age-related illnesses consume a proportionately greater share of health care dollars, hence addressing the healthcare needs of all Canadians becomes increasingly challenging. A significant proportion of the population, especially seniors, resides in rural or isolated areas, creating challenges for the government to deliver on the Canada Health Act objective of equal access to health care services for all Canadians. The expanded use of technology has rled to the deployment of increasingly sophisticated telehealth tools and services that provide health care to people in distant and remote areas. Telehealth programs have the potential to deliver cost effective health are, enhance patient satisfaction and empowerment, and optimize their health outcomes. This paper explores ways in which that telehealth can bridge the gap between the demand and availability of homecare services to seniors. In rural communities

# Introduction

As the geriatric population increases, their age-related illnesses will consume a proportionately greater share of health care dollars, hence addressing the healthcare needs of all Canadians becomes increasingly challenging. The evolution of technology has stimulated extensive growth in the application of information systems, integrating technologies and the delivery of knowledge to healthcare providers. The rapid expansion of this technology led to the creation of telehealth technologies with the potential to deliver cost-effective health services, enhance patient satisfaction, and empowerment and optimoze health outcomes (Kun, 2001; Jennett & Andruchuk, 2001; Sorrellis-Jones, Tschirch, & Liong, 2006). Telehealth is supported by clinical information systems and telecommunication technologies to provide access to information between the professionals and patients, or between different groups of professionals without time or geographic barriers (Reid, 1996; Gagnon, Lamothe, Fortin, Cloutier, Godin, Gagne & Reinharz, 2005; Miller, 2007).

# Telehealth

The term telehealth is interchangeable with telemedicine and encompasses a broader definition of rural healthcare services that mainly focus on health promotion and disease prevention (Koch, 2006; Sorrellis-Jones et al., 2006). Telehealth is comprised of numerous applications. This article will focus on telehealth which delivers a number of home healthcare services ranging from automated telephones to home videoconferencing (Hebert, Korabek & Scott, 2006; Sorrellis-Jones et al., 2006). The World Health Organization defines home healthcare as the "provision of health services by formal and informal caregivers in the home in order to promote, restore and maintain a person's maximal level of comfort, function and health including support for a dignified death" (Smith, Bensink, Armfield,

Stillman & Caffery, 2005). There have been studies conducted on the technical process of vital signs monitoring and virtual visits (Koch, 2005) but a paucity of research evaluatiing of telehealth applications, (Jennett & Andruchuk, 2001). Inadequate theoretical frameworks or conceptual models for scientific evaluation are available in the literature (Koch, 2005). This article explores ways that telehealth can bridge the gap between the demand and availability of homecare services for seniors in rural communities.

# Background

The Canada Health Act, based on five principles: public administration, comprehensiveness, portability, universality and accessibility commits to all Canadian residents equal access to comprehensive health services regardless of ability to pay. But Canada has a population of approximately 33**,** million people (The World Fact Book: Canada, 2008) distributed over 9,976,139 square kilometres in different geographic locations with varied climates (Jennett & Andruchuk, 2001). The majority of the population resides in urban areas but a significant proportion is distributed in isolated areas with extreme temperatures; creating challenges for the government to deliver the Canada Health Act objective of equitable healthcare services for all Canadians (Jennett & Andruchuk, 2001; Alvarez, 2002). Health Canada (2001) documented that an overwhelming 99.8% of Canada's landmass is comprised of rural districts, but only 10.1% of Canada's physicians are able to deliver the healthcare services to these rural residents (Health Canada, 2001). Life expectancy of residents in some rural regions is less than 75 years (Health Canada, 2001). Most of the rural population consists of children and youth under 19 and seniors over 60 years of age (CIHI, 2006). The primary factor that contributes to dense elderly populations in rural areas is that seniors tend to migrate to quiet neighbourhoods with lower costs of living, whereas the rural youth migrate to urban centres for academic and employment opportunities, (CIHI, 2006). Geographic isolation, lack of expertise and transportation difficulties can

hinder rural residents, especially seniors, from accessing healthcare services in urban facilities (CIHI, 2006). Therefore, telehealth can mitigate the health disparities in rural communities, allowing residents to improve or maintain their health and decrease hospitalization, thus reducing overall healthcare expenditures.

In 1993, Nova Scotia was the first province in Canada to launch telehealth in order to rectify the inequality and inaccessibility of essential healthcare for residents living between the urban and rural areas and also to reduce healthcare costs (Moore, 2001). In 2005, Persaud and colleagues identified that the cost of face-to-face consultation in Nova Scotia ranged from $240 to $1048, whereas telehealth visits cost considerably less, from $17 to $70 (Persaud, Jreige, Skedgel, Finley, Sargeant, & Hanlon, 2005).

Historically, undergraduate and postgraduate programs have been offered in an urban, hospital-based environment with plentiful opportunities for professional development and resources, discouraging health professionals from practising in remote areas (Walker, 1999; Hutten-Czapski, 2001). Medical schools select the majority of their candidates from urban regions, and as a result, the graduates tend to practise in metropolitan areas, where they are familiar with the physical environments, clinical settings, and available resources (Hutten-Czapski, 2001). Universities are reluctant to take a leadership role in training their medical students to acquire the necessary skills for rural practice (Hutten-Czapski, 2001). This creates unevenly-distributed healthcare manpower across the country; and the amount and quality of care provided can be jeopardized. Therefore, it is difficult to recruit and retain highly-skilled healthcare workers in rural areas (Koch, 2006; Shore, Brooks, Savin, Manson & Libby, 2007) The emergence of telehealth increases access to healthcare services, and links the rural and remote general practitioners, multidisciplinary healthcare team members and their patients with urban facilities to support clinical and educational endeavours in rural areas (Moore, 2001). Health

vulnerabilities emerge among rural residents with low socioeconomic status, poorer lifestyle practices and decreased access to healthcare services; telehealth interventions can ameliorate the inequality and accessibility issues among this underserved population (Shore et al., 2007).

## Literature Review

The government projects that the fast-growing geriatric population will constitute 23% of the population over 65 years by the year 2041; meeting the healthcare needs of this demographic will financially burden our already stretched healthcare system (Alvarez, 2002). In Ontario today, the government already spends half of the total health budget to deliver healthcare services to the province's 1.6 million seniors (Canada Health Infoway Inc., 2007).

Lack of explicit definition on rurality in the literature may hamper the census statistician's ability to accurately measure the Canadian senior population dwelling in rural communities. Denotation of rurality is based on the distance and density of population in relation to urban centres; the extent to which these factors influence and affect the residents of small towns is measured in metropolitan-influenced zones (MIZ) (CIHI, 2006). These communities are classified to the degree of rurality as strong, moderate or weak MIZ, or no MIZ (CIHI, 2006). The people living in weak or no MIZ will have transportation problems as barriers to accessing healthcare services.

The Canadian Nurses Association projects a shortage of 78,000 registered nurses by the year 2011 and 113,000 by 2016; nursing leaders are being forced to scrutinize the utilization of the skills and knowledge of the nursing workforce to meet demands and challenges without jeopardizing the quality of healthcare (Smadu, 2007). It is already a challenge to recruit and retain medical professionals to practise in remote areas; the further shortage of nurses will exacerbate health problems among these residents even more significantly.

It is the advent of easily-available information technology that makes telehealth possible. Telehealth uses interactive systems that may reduce the need for live encounters, saving time and human resources, while still contributing to the efficient quality of healthcare (Dansky, Ajello, & Duncan, 2005). The government of Canada acknowledges there is a need to cultivate an efficient, and affordable healthcare system using information and communication technologies. In 2001, Health Minister Allan Rok announced that the government would contribute $8.5 million in funding for telehealth services in Northern Ontario where patients are often discharged early from hospitals and experience reduced healthcare support once home (Health Canada, 2001).

## Home Telehealth Applications

A common telehealth application uses interactive video systems via telephone lines, connected with digital networks, digital subscriber lines and the internet, where clients can receive immediate attention at their residence from an on-call nurse (Yach, 1998; Russo, 2001; Sorrellis-Jones et al., 2006). The nurse triages the patient's problem and arranges for a video visit with a physician to address the issue (Russo, 2001). This innovative service offers assurance to rural elders that their health will not be neglected, but optimized. Additionally, nurses can follow their patient's care more frequently, providing the satisfaction to nurses that their patients' needs are met (Russo, 2001). This home-based application can also focus on health promotion to inform people of their personal health risks and how to take preventive measures (Yach, 1998).

An alternate application in telehealth uses two-way interactive audiovideo links between clients and healthcare providers, defined as interactive videoconferencing, and used primarily for disease management control (Yach, 1998; Sorrellis-Jones et al., 2006). The physicians, at their home-based facility, can assess patients at different sites, review patient records, access diagnostic images, discuss problems with patients, and document the telehealth visits through the interactive video system (Yach,

1998; Sorrellis-Jones et al., 2006).

Telehealth Ontario is a toll-free telephone help line that offers health advice 24 hours a day, 7 days a week (Rolland, Moore, Robinson, & McGuinness, 2006). Registered nurses provide confidential health advice, general health information, and advice the caller regarding where their health need would be best met at home, at the doctor's office/walk-in clinic, in a community health centre, or in an Emergency department.

Telemedicine in Ontario is operated by Ontario Telemedicine Network (OTN), and offers both the interactive video and interactive videoconference systems to clients across Ontario (Kmill, Sherrington, & Third, 2007), as well as a variety of other information and communication technology-based services. The OTN has 360 urban and rural sites that deliver healthcare services with 80 different clinical programs; it facilitated more than 23,000 patient consults in 2005/2006 (OTN, 2006). There are 200 partners in Ontario from: (a) academic health science centres, (b) community hospitals, (c) psychiatric hospitals, (d) medical and nursing schools, (e) professional organizations, (f) community care access centres, (g) nursing homes and (h) public health departments (OTN, 2006). Any healthcare provider working in Ontario telemedicine-enabled communities can refer their patients to this innovative program.

## Limitations of Telehealth

A telehealth program, based on face-to-face contact between rural seniors and the nurse, may require more time to establish a personal connection. Effective communication is paramount: creating trust and rapport between the senior and the health service provider is the key to the success of telehealth. Many elderly clients are not computer literate and are reluctant to accept the technology; it is, therefore, essential to assess for and promote basic computer skills of both nurses and clients prior to

adopting telehealth as a new method of care; which can add extra financial stress to our healthcare system. Some nurses are also hesitant to integrate computer usage into their daily practice. Basic computer education as well as education on the required telehealth applications can assist the nurse in overcoming this reluctance and encourage nursing staff to use information systems to assist with their clinical decisions.

Implementing telehealth programs demands enormous financial investment; the purchase of compatible hardware and software, choosing appropriate vendors and the provision of ongoing education and technical support to staff (Jennett & Andruchuk, 2000). Technology serves only as a tool to assist healthcare providers in their practice but it is the healthcare professionals' responsibility to use their knowledge and expertise in selecting the appropriate intervention for their clients.

Lack of organizational support and human relations problems can hinder the expansion of the telehealth program in the rural neighbourhood (Health Canada, 2002). Significant time is required to establish telehealth programs in rural and remote areas: collaborating with and coordinating the geographically-scattered human resources, such as physicians, nurse practitioners and the seniors themselves, can be frustrating. Health care providers and patients alike require positive experiences in order to foster continued use of the technology and service; and they need to feel that their health care needs have been met.

Reimbursing the physicians for offering the telehealth services has been a major obstacle in expanding this program nationwide (Health Canada, 2002), but in Ontario the telemedicine program is funded by the Ministry of Health and Long-term Care (OTN, 2006). Issues relating to accountability, standard care guidelines and what license the professional must possess prior to delivering healthcare activities have not been well-defined (Siman, 1999; Jenkins & White, 2001). Liability issues have raised concerns among the healthcare facilities – for example: who will be designated as ultimately

responsible for the home telehealth patient since so many healthcare professionals are participating in his or her care (Jenkins & White, 2002)?

Confidentiality and privacy issues have been frequently addressed in the literature, and recent legislation provides details regarding patients' rights. It is essential that these guidelines and policies legislate that patient consent must be secured before sharing information among the healthcare team and consultants, for everyone has sanction over their  personal privacy in health issues.

# Nursing Implications

Home telehealth is a patient-centered approach designed to equip individuals with knowledge tailored to the self-management of their health. Nurses offer educational information to clients on health activities and allow clients to actively participate in self help practices, and to increasingly assume the responsibility for decisions regarding their own healthcare, which can promote adherence to their treatment. This service also encourages and empowers rural elders to live independently in their community, using the electronic connection as a means to a social network.

Nurses can benefit from telehealth and use this information technology to communicate and collaborate with other multidisciplinary team members such as physicians, pharmacists, dieticians, and physiotherapists, or share information between clinicians from other facilities to support clinical decision-making. Telehealth applications permit nurses to activate other services to attend the needs of their clients. Nurses can access the patients' clinical information on-line and using web-based solutions in a timely manner, allow nurses to deliver consistent quality of care to more seniors in the comfort and safety of their own homes (Russo, 2001). Using the electronic housecall or virtual visit, the nurse can reduce the travelling time required for visits to seniors' homes, which could lead to increased case loads, promoting the wellness and care in these communities in a more efficient and effective manner.

This could lead to improved job satisfaction which retains nurses in the profession. Telehealth technologies can be used to support nurses in professional growth and development; nurses can attend teleconferences to update their knowledge or to enrol in distance-learning courses at universities through the internet (Russo, 2001). Information technology can offer nurses easy access to relevant, evidence-based knowledge to guide their critical thinking skills in their daily practice. It gives the opportunity for nurses to explore different solutions to assist patients in disease-prevention or management or in clinical decision-making. Home telehealth technology frees nurses to exercise their autonomy and accountability. It also permits them to raise the awareness of both the public and the governments that fund telehealth, in order to expand the public's access to this important service.

## Future Strategies

The government has established incentive-based programs in order to recruit and retain greater numbers of highly-skilled healthcare professionals to work in rural areas. Universities should allocate some of the seats in medical, nursing, pharmacy and other health care discipline schools to rural youths, offering incentives to return to practise in their home towns upon graduation. Universities should take leadership actions in integrating rural health into nursing and medical curriculum to prepare and motivate students to work in these remote regions. Universities could offer clinical rotations in the rural community or use the telehealth centre as a clinical placement where medical students can receive practical experience in this field. They may then bring back different perspective to universities. Nursing programs should introduce rural nursing and nursing informatics in undergraduate programs. The nursing governing bodies across the country could work to expand the responsibilities of advanced practice roles to further accommodate the point of service to remote areas.

There currently are insufficient theoretical or conceptual frameworks available to guide nurse scientists in evaluating the legal, ethical, organizational, economic, clinical, usability and technical

issues related to telehealth (Koch, 2005). Nurse leaders can, however, borrow theories from other fields such as psychology or social sciences, to navigate research studies in order to seek appropriate theoretical frameworks to evaluate the effects of telehealth in serving rural seniors. Nurses need to be proactive in developing standardized terminology, or facilitate an electronic health record process to provide consistent care and accuracy in data collection for research studies. Nurses should be active participants in research studies, scrutinizing the significant impacts and benefits and exploring the limitations to expand the access of telehealth programs to rural seniors. With empirical knowledge, nurses can integrate new ideas to advance the understanding of rural health in a systematic and objective manner, identifying which health care interventions (electronic or otherwise) lead to improved health outcomes. Healthcare providers should engage in research studies to examine the importance of information systems to substantiate clinical decisions, especially in remote areas with limited resources. Using evidence-based information, nurses can take this opportunity to address this critical health issue and the solutions among rural seniors to gain support from the provincial and federal governments in policy-making and planning.

The healthcare system has encouraged patients to take responsibility for managing their own care. Therefore, healthcare providers are honour-bound to select an approach that focuses on the infrastructure of the remote community, an approach that can empower the community to take responsibility for maintaining the health and wellness of its residents. It is incumbent upon the future healthcare system to bring services closer to clients' homes in the rural areas, and provide immediate information through telecommunication technologies allowing patients to become active participants in their own care.

# Conclusion

Telehealth or telemedicine can be the technology-enabler to support independent living of our elderly population by augmenting: (a) the existing network of care, (b) reducing the travelling time requirements and waiting times, (c) diminishing replication and redundancy in diagnostic tests and images, (d) improving patient satisfaction, and (e) facilitating an early consultation with healthcare specialists, leading to positive health outcomes (Alvarez, 2002; Dansky et al., 2005). Telehealth is still in it infancy; there are still challenges to resolve before this promising idea can be part of the infrastructure of a superior health system for the future. There is a demand for researchers to evaluate and quantify the effects of telehealth on the rural seniors. Telehealth or telemedicine is a strategy that can help the Canadian government to deliver the five principles of the Canada Health Act to all Canadians - in rural regions as well as urban centres, to maintain the health of our country's people. Therefore, telehealth is an efficacious way to provide high-quality patient care with our limited health resources.

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