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The Benefits and Barriers to Telehealth for Chronic Health Conditions

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## PERMISSION

Title           The Benefits and Barriers to Telehealth for Chronic Health Conditions  
Department    Nursing  
Degree         Master of Science

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## Abstract

As life expectancy increases, it is expected that the growing number of aging population will face an increase in chronic illnesses. Thus management of individuals with chronic illnesses will require establishing a primary care provider who can closely monitor these patients which may require frequent follow up visits. However, access to healthcare can pose a challenge to this specific population. In terms of access, this implies the availability of healthcare providers, transportation, and cost factors. Telehealth can be a solution to manage patients with chronic illnesses. In the case study presented, telehealth was the form of communication utilized for the health visit. A literature review was conducted to outline the benefits of telehealth and also to determine where technology may pose a challenge. Lastly, challenges were discussed with suggestions on how to overcome barriers to implement telehealth.

### Background

It is estimated by 2030, the population of adults over the age of 65 will double to 71 million in the United States (Center for Disease Control and Prevention [CDC], 2011). As life expectancy increases, it is expected that the growing number of aging population will face an increase in chronic illnesses (Wertenberger, Yerardi, Drake & Parlier, 2006). It is estimated that approximately 80% of people over the age of 65 will experience at least one chronic disease while 50% will face at least two chronic illnesses (CDC, 2011). In fact, one in every two adults in the United States currently has at least one chronic illness (CDC, 2012). Thus management of individuals with chronic illnesses will require establishing a primary care provider who can closely monitor these patients which may require frequent follow up visits. However, there are many challenges that individuals with chronic illnesses may face. Some of these challenges include access to healthcare. In terms of access, this implies the availability of healthcare providers, transportation, and cost factors.

According to the U.S. Department of Health and Human Services, there is a national shortage of primary care providers due to the growing aging population and expansion of healthcare coverage with the implementation of the Affordable Care Act (2013). By 2020, it is projected that “without changes to how primary care is delivered, the growth in primary care physician supply will not be adequate to meet demand, with a projected shortage of 20,400 physicians”(U.S. Department of Health and Human Services, 2013, p.8). Telehealth can be utilized as an alternative form on how primary care is delivered by providing ease of access for both patient and provider, thus allowing a greater amount of patients seen in a given time frame. Transportation services and housing affect the ability of special populations to access care (Nagel, Pomerleau & Penner, 2013). Telehealth would eliminate the need for patients to leave

the confines of their home. This is especially beneficial for individuals suffering from disabilities and frailty where commuting to a healthcare facility can be cumbersome (Luptak et al, 2010). Furthermore, those living in rural areas have limited access to healthcare due to the proximity of health facilities. Telehealth would ensure individuals living in rural areas access to care while saving time and inconvenience. In terms of cost, telehealth would be a cost-effective especially for those needing long term care because it would promote patient self-management and decrease the need for hospital admission.

Finding an alternative to traditional office visits to decrease wait time, the need to commute and increasing cost effectiveness is a goal for improved healthcare services. It is also important that both patient and provider are comfortable and satisfied with this form of care and communication. The purpose of this paper is to examine the role of telehealth and how it can be utilized to increase access to care without jeopardizing the quality of care. The question remains if telehealth is the solution for managing patients with chronic illnesses. In examining telehealth, it is important to address the benefits and challenges faced with this form of care and finding ways to overcome the barriers.

### **Case Report**

Mrs. MS is a 58 year old Caucasian female who is being seen via telehealth. Approximately three weeks prior, the patient was seen at urgent care for hypertension and was prescribed Metoprolol 50mg PO QD. At this follow up appointment, the patient complains of fatigue and headache since the start of Metoprolol. She also noticed elevated systolic blood pressures that are only present when evaluated by a healthcare professional. However, during her daily home blood pressure checks, she reports systolic blood pressures in the 120's.

The patient's family history included heart disease on both mother and father side. She admits to a history of smoking one pack per day but has quit approximately 10 years ago and a history of consuming one glass of wine each evening. Her CAGE score was negative for risk of alcohol dependence. Her diet includes "red meats and starches" where she states, "This is my typical diet." In her review of systems, she voiced no complaints other than a headache that was not associated with changes in vision, dizziness, numbness, shortness of breath or chest pain. No history of migraines reported. She voiced generalized fatigue since the start of Metoprolol. Her only other medication includes a daily multivitamin.

The patient's physical exam was normal with no significant findings other than a blood pressure reading of 160/80. Labs that were ordered during this visit included a BMP, TSH, Lipid Panel where again there were no significant findings other than a slight elevation in her total cholesterol. Due to her family history of heart disease and given her newly diagnosed hypertension with elevated total cholesterol, a 12 lead EKG was ordered which showed normal sinus rhythm. Based on her history, physical, and lab results a diagnosis of hypertension, hypercholesterolemia, and medication induced fatigue was made.

A plan was developed with the patient that addressed each diagnosis. In regards to her hypertension, it was determined that the patient suffered white coat hypertension since her blood pressure was only elevated in the presence of a healthcare provider. No dose adjustments were made with her beta-blocker. However, the patient was to continue daily monitoring of her blood pressures and to report any consistent systolic pressures over 140's and diastolic pressures over 90's. Since her total cholesterol was only slightly elevated, the patient and healthcare provider opted for therapeutic lifestyle changes which included diet modification and encouraged light exercise such as walking in order to help reduce her total cholesterol. The patient was offered

nutrition and dietician consultation which she was not interested at this time. She was also educated on the common side effects of Metoprolol which included fatigue. If fatigue continues, patient was educated on the possibility of medication change at the next telehealth visit.

Patient was to follow up through telehealth in a month to reevaluate blood pressure control and lipid panel where it was discussed that an anti-lipid may be prescribed if TLC was not effective in lowering her total cholesterol. Furthermore, if headache persisted and is accompanied with vision changes and numbness, she will need to contact EMS immediately. The patient was agreeable to the plans discussed.

### **Literature Review**

The management of the patient in this case study was completed via telehealth which saved the patient time from travel and allowed for the delivery of care directly in the comforts of her own home. A literature review was conducted to determine the benefits and challenges of telehealth delivery. A search was conducted using the University of North Dakota Harley French Library website. A systematic search of the literature was conducted using the online database CINAHL with key word search utilizing MeSH and Boolean terms of *telehealth* AND *access* AND *challenges* which resulted in twenty-five articles. After limiting publication date to within the past eight years, a total of twenty articles were generated. After reviewing the list of articles, seven articles were deemed pertinent in addressing the benefits and challenges of telehealth. From one pertinent article, three additional relevant articles were found in review of the reference section.

### **Benefits of Telehealth**

Telehealth can be beneficial in many aspects such as increasing access to care by decreasing wait time, travel, and cost. However, it is important to explore how participants



themselves view this form of communication. Telehealth can promote self-management and independence, lessen the physical and financial burden, increase practitioner and patient relationship, and can be easy to use with appropriate training.

**Improved self management.** Telehealth can promote self-management and independence by encouraging patients to understand and control their own health. A qualitative study was conducted by Lamothe, Fortin, Labbe, Gagnon and Messikh (2006) at three sites in Canada to investigate the impact of telehealth services on patients and providers. Inclusion criteria were elderly patients with at least one chronic illness. In terms of technology, each patient had at least a minimum of a monitor equipped with peripheral apparatus that measured weight, temperature, blood pressure, and a pulse ox. Sample size was 82 patients where a total of 47 patients who stayed with the study consistently for three months were interviewed. Patients reported the following: increased sense of security, perceived increased efficiency of nurse monitoring with increased availability of physician, increased understanding of their own health, and improved self-monitoring. It was also found that patients who were able to use technology, had an interest in telehealth, and motivated in self-care management added to the successful use of telehealth.

**Lessen the burden.** In terms of financial and physical burden, telehealth can eliminate the needs for travel especially those in vulnerable populations and living in rural areas. In another qualitative study, conducted by Sevean, Dampier, Spadoni, Strickland and Pilatzke (2009), they examined how patients and their families who live in rural/remote communities view telehealth consultation as a form of health care delivery. There were a total of 10 patients and four family members in this study. Inclusion criteria included: adult over the age of 18 years of age, had participated in telehealth within the past year, a willingness to participate in survey,

and can physically participate in survey. After careful analysis of each interview, three themes emerged in regards to telehealth which included: lessening the burden, maximizing support, and “tailoring specific eHealth systems to enhance patient and family needs” (Sevean et al, 2009, p.2577). It was found that participants of telehealth felt it lessened the burden in terms of cost, travel, lost wages, time, and physical limitations. In terms of maximizing supports, it increased access to family members, local care providers and allowed for a familiar home environment for the participants.

**Enhance practitioner and patient relationship.** Telehealth can also increase practitioner and patient relationship due to the relative ease of contacting their healthcare provider. In a study completed by Gagnon, Lamothe, Herbert, Chanliou and Fortin (2006), a review of three separate studies that evaluated telehealth in vulnerable populations was conducted. The first study evaluated patients with COPD and cardiac insufficiency. The second study compared traditional home visits versus traditional home visit with the addition of video telehealth visits. The third study was a remote surveillance system where patients sent clinical information through secured internet. In terms of cost effectiveness, it was determined that those that utilized telehealth had a decrease in the utilization of the emergency room visit and a decrease in unplanned admissions. Furthermore, those utilizing telehealth felt they had a better control of their chronic illness due to the connectivity to the provider via technology. In fact, it was found that patients felt more connected to their providers through technology due to improvement in sharing of information. Telehealth estimated saving was \$7,750 per patient per year. Clinicians also felt that the quality of care was positively affected by telehealth.

**Ease of use.** With appropriate training, telehealth can be user friendly. In a study conducted by Luptak et al (2010), a demonstration project explored the use of a Care

Coordination Home Telehealth (CCHT) system to address the needs of aging veteran population residing in rural areas. The project explored patient satisfaction with telehealth in determining it's ease of set up, use, and connectivity to their primary healthcare provider. The project also addressed the issue of providing assistance to older veterans who have limited experience to advance technology. Description of the study participants includes those 65 years or older, use of four or more medications, and high utilization of the healthcare system which include one or more hospital admission or ER visit and/or two or more primary care visits. There were a total of 132 participants in this project. It was found that CCHT is beneficial to older medically compromised rural veterans where they are able to "set up and connect telehealth equipment and monitor complex medication regimes and symptoms on a daily bases" (Luptak et al, 2010, p.9). It was further discovered that the initial training session on telehealth set up was crucial to address any expected problems and enhance user confidence.

### **Barriers to Overcome in Telehealth**

Although there are many benefits to telehealth, there are also some challenges that technology can bring to the healthcare setting. Lamothe et al (2006) found that challenges to telehealth included the following: scheduling staff to address alerts and provide intervention in a timely manner, transferring information to home care nurses, integrating old and new models of service delivery, and the need to hire and train providers in specialized clinical competencies. In terms of challenges, it is important to address the issues of computer literacy, ethical considerations, and long term cost of equipment maintenance.

**Computer literacy.** In a study conducted by Kreps and Neuhauser (2010), they explored the growing trend in eHealth communication which includes online health information websites, electronic health records, and advanced telehealth communication. For the most part, information

technology is beneficial in healthcare due to the ease of access to both healthcare provider and consumers in terms of healthcare information. However, the downside to information technology is the need to develop programs that are user friendly, engaging, and can guide consumers in the right direction in making informed healthcare decisions. eHealth increased patients' self-management and independence. However, it was found that in terms of behavioral health such as promoting healthy nutrition, weight, physical activity and diabetes management, progress was either slow or worsened. This may be attributed to poor development and implementation of specific interventions. Kreps and Neuhauser (2010), stresses the importance of developing programs that are user friendly, accessible, and designed with user input. eHealth should not be utilized "in lieu of" but instead "in adjunct to" other health communication channels.

Participants of telehealth must be comfortable with the use of technology and therefore will need continued training as technology advances. In a randomized trial study conducted by Palmas et al (2006), they focused on the rural versus urban populations in the reasons for enrolling or non-enrolling in telemedicine studies. This study was conducted on underserved elderly patients with diabetes who lived in the rural and urban areas of New York. The study had a total of 1,660 participants where 99.7% responded to telephone interview and a total of 2,231 non-participants where only 27% responded to the telephonic interview. The study found that the leading reason for urban population not to participate in telemedicine was because they felt technology could not help them and secondly, they were uncomfortable with technology. For participants residing in the rural areas who refused telemedicine, they listed the number one reason as already having a busy schedule. They also found that those that were less likely to participate were usually computer illiterate, minority, Spanish speaking, and live alone with low income. In contrast, those who were willing to participate in telemedicine were younger, male, in

better general health, and more computer literate. In order to promote the use of telemedicine in patient population, it is important to focus on training and education to increase adaptation and produce positive outcomes for patients and providers.

**Ethics.** In terms of ethics, it is important to explore how technology affects ethical practices in the healthcare. Demir, Oliver, and Courtney (2006) explored the ethical issues related to the use of telehealth technologies in home settings. Ethical issues related to telehealth include protecting patient privacy and confidentiality, equal access, promoting dependency versus independence, the impact of technology on the relationship between patient and healthcare provider, and the medicalization of the home environment. Technology will increase the ease of access of patient information and therefore patient privacy is a concern. Furthermore, for technology maintenance, a third party may be involved which may jeopardize patient privacy.

In terms of equality of access, it is important to evaluate the affordability of technology and technology literacy. It was questionable as to whether those in lower socioeconomic status can keep up with the ever advancing technology. Even though telehealth will increase patient's self-management, there was also concern with becoming too dependent on technology and healthcare will become too automated. The relationship between patient and healthcare provider can be impacted with telehealth due lack of physical contact considered the "human touch". Lastly, Demir et al (2006) addressed how technology in the homecare setting can be obtrusive and may change the traditional view of the home environment.

**Cost of maintenance.** In terms of equality of access due to the cost of technology, a study conducted by Winters and Winters (2007) evaluated if different bandwidth in technology made a difference in the quality of care delivered. There was a review of three pilot studies on

videoconferencing and utilizing telehealth technologies to provide care to patients on three different levels: face-to-face, low bandwidth, and high bandwidth. Each of the three studies utilized two to three different levels of interaction. The first study, with 12 participants, was the interaction between healthcare practitioners and survivors of stroke. The second study, with 30 participants, evaluated simulated practitioner-patient interactions for undergraduate nursing students. Lastly, the third pilot study, with 30 participants, was advanced practice nursing (APN) students performing cardiopulmonary assessments through face-to-face interactions compared to low-bandwidth. The purpose of the study was to determine a method of telehealth that was affordable without sacrificing quality of care. In the first two pilot studies, it was found that both practitioners and participants were satisfied with high-band width telehealth communication. In the last study involving the APN students and cardiopulmonary assessment, the low band width telehealth communication was effective for their intended purpose. In terms of equity of access, telehealth can be utilized in both high and low-bandwidths.

Although cost will be saved in terms of travel and time utilized, the initial cost of equipment and equipment maintenance will need to be addressed. Lewis, Synowiec, Lagomarsino and Schweitzer (2012) performed a systematic review of 16 countries' innovative health programs that utilize information communication technology (ICT). The purpose of the review was to examine the cost-effective types of technology being used and how ICT is being utilized. It was found that 42% of ICT use was to extend access of health care in rural areas, 38% to improve data management, and 31% to enhance communication between physicians and patients outside the typical clinic facilities. The largest type of ICT was phones, 71%, and computers, 39%. In summary, for successful implementation of ICT, it was important to have sustainable source of funding and a support system for the adaptation of new technology.

While telehealth is currently funded through study programs, it is important to evaluate future funding for telehealth. In a qualitative study conducted in Taiwan by Lu, Chen and Chi (2014), it explored how people with chronic health conditions viewed the use of telehealth. The study mentions the difference in how telehealth is financed in different countries which can affect the view of telehealth from country to country. For example, in Taiwan, healthcare is universal, a National Health Insurance system. Inclusion criteria for the study includes: patients older than 50 years of age, diagnosis of hypertension and/or diabetes, received home telehealth care for at least 3 months, are literate and willing to share their experiences with telehealth. The study found four reoccurring themes in the recorded interviews: perceived support and security, enhanced disease self-management, concerns with using the devices, and worry about the cost. Similar to other studies in telehealth utilization, participants had a positive experience with telehealth where they felt an increase in self-management of their chronic condition and increase in responsiveness from healthcare provider. However, there was a concern about complexity and maintenance of the device and also the affordability of a monthly service fee. Currently, the government fully reimburses the equipment for telehealth. There was concern as to cost if the government was to stop funding this service.

Initial implementation of these services is time consuming. It is important to stress the need of educating both providers and patients on how telehealth can be utilized in order to increase compliance from both parties. Emphasis is placed on the need to include all participants (healthcare providers and patients) in the planning stages of implementation of telehealth and a continuing education for both parties. It is important to involve all stakeholders in design of the program, identify potential barriers to telehealth and assess readiness for telehealth prior to start in order for telehealth be successful.

### Learning Points

- Telehealth increases patient's sense of self-management and independence.
- Telehealth increases relationship with provider due to increased responsiveness and availability.
- There is a need to provide appropriate education to both patient and provider in order to establish comfort and confidence in using telehealth.
- Telehealth does not have to be used "in lieu of" but instead "in adjunct to" other health communication channels.
- Success of telehealth depends on proper planning with all stakeholders: patients, healthcare providers, and health care institutions.
- Future funding of telehealth needs to be addressed.



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