Virtual medication therapy management: The cornerstone to a pharmacy renaissance

Jonathan Newsome

Abstract

Objective: To introduce an innovative clinical service that can be used to reduce medication errors and improve quality of care in the rural environment, in order to assist in eliminating or alleviating disparities in health based on geographical location.

Summary: Virtual medication therapy management (MTM) will be a tool to assist underserved populations, specifically residents of rural communities. It will use videoconferencing software to provide MTM services to populations that lack access to care. For virtual MTM to be effective, specific measures must be implemented to comply with the Health Insurance Portability and Accountability Act, and state regulations must be established to standardize the practice.

Conclusion: The virtual MTM model is a feasible and promising model for advancing MTM services. With commitment and cooperation from various health care fields, virtual MTM could be the cornerstone of a health care renaissance.

Keywords: Virtual medication therapy management, technology, innovation, rural setting.


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Jonathan Newsome, PharmD, is Assistant Professor, School of Pharmacy, South College, Knoxville, TN.

Correspondence: Jonathan Newsome, PharmD, School of Pharmacy, South College, 400 Goody’s Ln., Knoxville, TN 37922. Fax: 865-288-5902. E-mail: jnewsome@southcollegetn.edu

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Compared with urban residents, residents of rural areas routinely report fair or poor health, more chronic conditions (e.g., diabetes), and increased mortality from heart disease. One factor that contributes to these disturbing facts is access to care. Rural residents have fewer routine visits with their primary care provider, resulting in less preventive services received. According to van Dis, although 20% of Americans live in rural areas, only 9% of the nation’s physicians practice in rural areas. This provides a challenge for rural residents because they face longer distances to reach health care delivery sites. One innovation developed to assist patients with this dilemma is telepharmacy. Telepharmacy is defined by the National Association of Boards of Pharmacy as “the provision of pharmaceutical care through the use of telecommunications and information technologies to patients at a distance.” Telepharmacy services can be conducted via telephone or videoconferencing. The literature shows that either method can provide quality pharmaceutical care to underserved populations, especially rural residents.

Stubbings et al. examined using a telepharmacy service at Kaiser Permanente. At the Kaiser Permanente Colorado Region, a clinical pharmacy call center (CPCC) provides drug therapy information to patients, collects essential information necessary to properly review drug therapy regimens, and facilitates collaboration with physicians to develop evidence-based guidelines for addressing allergic rhinitis and other clinical services. All of these services are essentially completed via telephone conversations, and the impact of the program has been well documented. Since January 2000, CPCC has saved members more than an estimated $16.2 million. To compare the two methods, Clifton et al. reviewed the use of two-way videoconferencing to provide counseling to patients at six urban and rural clinics. Patients at the clinics were satisfied overall with the counseling and had a decrease in medication costs. (The decrease in medication costs also could be attributed to the remote dispensing process that was involved in this study.) In addition, the majority of the patients indicated that they had no preference between traditional face-to-face counseling and two-way videoconferencing.

Although the literature speaks to the effectiveness of counseling provided both face to face and via the telephone, limitations seem to be associated with providing clinical services solely via telephone, such as an inability to demonstrate proper technique for inhalers or glucose meters, an inability to review medication vignals, and the loss of face-to-face contact that makes pharmacy a trusted profession.

The use of telepharmacy in the rural community also should include disease management. Evidence indicates that 27% of rural residents are obese compared with 24% of urban residents and that diabetes, heart disease, and high blood pressure are more common among rural residents. A study conducted within the Department of Veterans Affairs Tennessee Valley Healthcare System used telepharmacy via a messaging device to provide diabetes services with the goal of improving glycosylated hemoglobin (A1C) over 6 months. The patients used their glucose meter to transmit data to the messaging device. A registered nurse would contact the patient, evaluate any specific health concerns, download the information from the messaging device, and transmit data to the clinical pharmacist in charge of managing the patient’s diabetes. The pharmacist then would prepare an electronic note with his or her recommendations. The study compared 36 patients who were involved in the program with 67 patients who were not involved. At the conclusion of the study, an overall reduction in A1C in the intervention group of 2.1 ± 1.7% was achieved compared with a reduction of 1.6 ± 1.2%
in patients not in the intervention group. This study is another example of the effectiveness of using technology to provide clinical services. However, without videoconferencing capabilities, the pharmacist was unable to provide instruction on how to use a glucose meter, review pill bottles to assess adherence, or provide visuals regarding proper nutrition. Based on the information presented, the next key movement in health care must target rural communities. This revolution should involve an increase in the use of audio–video technology to improve health outcomes. This revolution should be virtual medication therapy management (MTM).

**Health monitoring units**

Virtual MTM will have many purposes, including the ability to promote medication regimen adherence, reduce polypharmacy, contribute to disease management, and most importantly, provide an accessible health care site for rural communities.

The first and most crucial element will be using patients’ cell phones to store and transmit confidential health information. Using cell phones allows patients to be proactive in their health care and stay abreast of their medical and medication histories. In addition, because most patients are already familiar with their cell phones, implementing use of medical software on these devices appears to be the most logical choice. The challenges involved with using cell phones to transmit health information include determining the proper software and establishing security measures to maintain privacy of confidential information. When dealing with private health data, compliance with the Health Insurance Portability and Accountability Act is essential. Current mobile platforms are not secure enough to protect against confidential information releasing, and future platforms (e.g., trusted platform module) may have strong security support but not allow patients to install monitoring software without completing a complicated platform certification process. Shin9 devised an idea to overcome these barriers by imagining whether health care providers could distribute health-monitoring units (HMUs) to their patients to act like SIM (subscriber identity module) cards in their cell phones. HMUs would be able to store secret keys and compute some cryptographic functions. The units could verify the authenticity of data forwarded by software used to maintain health data. HMUs also would add “message authentication codes to messages sent to the provider, and, without the HMU, the device cannot prove authenticity”9 of the data. HMUs could be used in conjunction with electronic medical record software, which could be downloaded to a mobile device such as the Greenway PrimeMobile provided by Greenway Medical Software.9 Of course, not all patients will have the cellular capabilities to store and transmit this information due to financial hardships. For these patients, alternative storing and delivering methods must be applied, such as using USB (Universal Serial Bus) flash drives.

**Videoconferencing software**

The second element of virtual MTM will be establishing communication devices (e.g., laptops, tablets, televisions, mobile devices) that will provide patients with access to health care providers within a given geographic area. For instance, comprehensive medication reviews (CMRs) can be conducted face to face between pharmacists and patients using virtual programs. During CMRs, pharmacists review patient medication therapy for drug therapy problems and provide recommendations and counseling as necessary. By performing a CMR virtually via videoconferencing software, the pharmacist would be able to see the patient’s vials to determine the prescribed date, refill date, quantity, physician, and pharmacy information. This videoconferencing element would allow rural residents to literally be seen by health care providers 50 miles away.

An example of a two-way videoconferencing system is Polycom,10 which was used in the study of Clifton et al. Frost & Sullivan, a business research and consulting firm, believe “Polycom has developed a solution that addresses many of the security and usability challenges”11 with the development of the Polycom V2IU. The Polycom V2IU only opens the ports necessary to function, allowing the firewall to remain effective and prevent the intrusion of malware and Trojans, and it has security measures to prevent “eavesdropping and snooping.”11 Polycom also is available as a mobile app, which will allow patients and pharmacists to communicate without patients having to leave their home.11 Ideally, virtual MTM would be a home-based telehealth system for the convenience of the patient. However, we live in a world in which financial restrictions limit the ability of underserved populations from purchasing the necessary technology to carry out these services. In these particular cases, partnerships with private practice physicians or community clinics (e.g., via collaborative practice agreements) could facilitate delivery of these services to patients via laptops.

**State regulations**

For virtual MTM to be successful, state regulations regarding telepharmacy are needed. The American Society of Health-System Pharmacists House of Delegates adopted a policy position advocating that boards of pharmacy “adopt regulations that enable the use of United States-based telepharmacy services for all practice settings.”12 Casey et al.12 documented the progress of various state boards of pharmacy (SBOPs) establishing regulations regarding telepharmacy. The investigators focused primarily on six states (North Dakota, Montana, South Dakota, Texas, Idaho, and Utah) but did address the progress of other states. The authors concluded that...
Special Feature  Virtual MTM

most states have not adopted regulations that define the circumstances under which telepharmacy services are allowed in hospitals. The majority of the regulations tend to focus on community pharmacy settings. The authors believed that this focus resulted from concern by SBOPs about potential safety problems in community settings, “as well as a desire to ensure the availability of local pharmacy services through protection of the market share of local pharmacies.”12 Casey et al. also stated: “Many of the hospital telepharmacy efforts that are under way are pilot projects or are operating under temporary waivers of state regulations.”12 For virtual MTM to become common practice, regulations regarding telepharmacy must be clearly defined by SBOPs.

Conclusion
Virtual MTM is a feasible and promising model for advancing MTM services. The model also will address another challenge facing the health care system: health disparities. The technology needed to implement this model has been created to a certain extent, but modifications will have to be made to accomplish the overall goal. Based on available information, this model could be common practice within the next 10 to 20 years. With commitment and cooperation from various health care fields, virtual MTM could be the cornerstone of a health care renaissance.

References