Innovative models for providing clinical pharmacy services to remote locations using clinical video telehealth

Cassie Perdew, Pharm.D., BCPS, VISN 20 V-IMPACT Hub, Boise VA Medical Center, Boise, ID.

Katie Erickson, Pharm.D., BCPS, BCACP, VISN 20 V-IMPACT Hub, Boise VA Medical Center, Boise, ID.

Jessica Litke, Pharm.D., BCPS, VISN 20 V-IMPACT Hub, Boise VA Medical Center, Boise, ID.

Purpose. The use of videoconferencing and other telehealth technologies to expand access to clinical pharmacy services at multiple Veterans Affairs (VA) clinics in rural areas of Alaska and the northwestern United States is described.

Summary. Beginning in 2014, clinical pharmacy specialists at a regional VA Telehealth Hub based at Boise VA Medical Center in Idaho have provided telehealth services for 16 clinics. In one telehealth model, a pharmacist and other remotely located primary care team members (a medical provider, a medical support assistant, a social worker, and a psychologist) conduct telehealth visits with veterans located at VA clinics, with support provided by clinic-based nursing staff; this model has been used to improve medication management services for veterans in sparsely populated areas. In the second VA telehealth model, a remotely located pharmacist uses telehealth technology to participate in clinical encounters along with primary care team members located at the patient site; this model allows on-demand remote coverage in the event of planned or unplanned absences of clinic-based pharmacists. Since the Telehealth Hub was established, pharmacists have engaged in video encounters and provided other telehealth-based clinical services to more than 1,200 veterans with diabetes, hyperlipidemia, hypertension, and other chronic conditions.

Conclusion. Within the VA healthcare system, telehealth technology has been demonstrated to be a cost-effective and well-received means of providing clinical pharmacy services in rural areas.

Keywords: clinical video telehealth, disease state management, health services accessibility, pharmacists, primary care, telemedicine

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Veterans Affairs (VA) medical centers have implemented the use of innovative telehealth technologies to provide timely access to healthcare while maintaining quality and managing costs. Former VA Deputy Under Secretary for Health for Policy and Services Madhulika Agarwal stated, "Our goal is to ensure that Veterans have optimal health and that we deliver the best health care with a focus on timely access and with an exceptional experience." The role of telehealth in the Veterans Health Administration (VHA) is to provide the right care at the right time in the right place.[1] Telehealth technologies such as face-to-face clinical video telehealth (CVT), home telehealth, and care coordination "store-and-forward" programs have enabled veterans to access care from their local VA community clinic or from the privacy of their own home (Table 1).[2] An additional benefit is the minimization of travel for the patient and associated travel costs to both the patient and the system.[1]

One of the most versatile tools to deliver care by numerous professions is CVT: synchronous, real-time, live,

Address correspondence to Dr. Perdew (cassie.perdew@va.gov).

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secure, and reliable videoconferencing that enables patient assessment and development of a treatment plan, including care coordination with staff located at the VA facility where in-person care is provided (referred to as the patient site). It is estimated that 40–45% of veterans live in rural or highly rural areas, as defined by federal Rural–Urban Commuting Area codes (Figure 1), and these areas often lack highly trained healthcare specialists.[1,3] CVT helps meet the needs of veterans by addressing problems of unavailable or delayed care and bringing care closer to those who may have difficulty accessing it for multiple reasons, such as transportation difficulties and geographic barriers. Wennergren et al.[4] described the use of CVT at the Indianapolis VA medical center and how it allowed veterans to access specialists while remaining in their community. Those researchers demonstrated that CVT was cost-effective and well received by veterans, with an overall satisfaction score of 96%. The results of this study support the idea of matching innovative modalities like CVT with the expertise of a clinical pharmacist to improve patients' access to high-quality medication management, especially for those residing in rural or highly rural areas.

KEY POINTS

- Innovative modalities such as clinical video telehealth (CVT) technology can create new opportunities to support and improve patient, provider, and clinic access to clinical pharmacy services in rural areas.
- Through CVT and other methods, a clinical pharmacy specialist with prescribing authority under a scope of practice, working as a member of a primary care team, can manage chronic disease states and provide real-time drug information support.
- Provision of clinical pharmacy services via telehealth technology holds great potential for improving healthcare access and quality in nonurban areas.

Clinical pharmacy services using CVT

Potential disparities in rural and urban patients' access to clinical pharmacy specialist (CPS) services have been identified.[5,6] VA CPSs tend to be clustered in medical centers. Consequently, primary care providers in VA community-based outpatient clinics are less likely to establish collaborative relationships with these pharmacists and make use of their services.[7] Patterson et al.[5] found that veterans residing in urban areas were more likely to have a CPS encounter than veterans in rural areas (rates of CPS service use were 24.9% and 19.7%, respectively). Nearly half of all veterans had received CPS services through a telehealth encounter, but less than 0.2% of those encounters involved the use of CVT. Based on this finding, the researchers suggested organizational changes to increase the presence of CPSs in VA community clinics. Utilization of CVT and other telehealth modalities is a way to provide primary care clinical pharmacy services to rural community clinics lacking routine access to a CPS.[8]

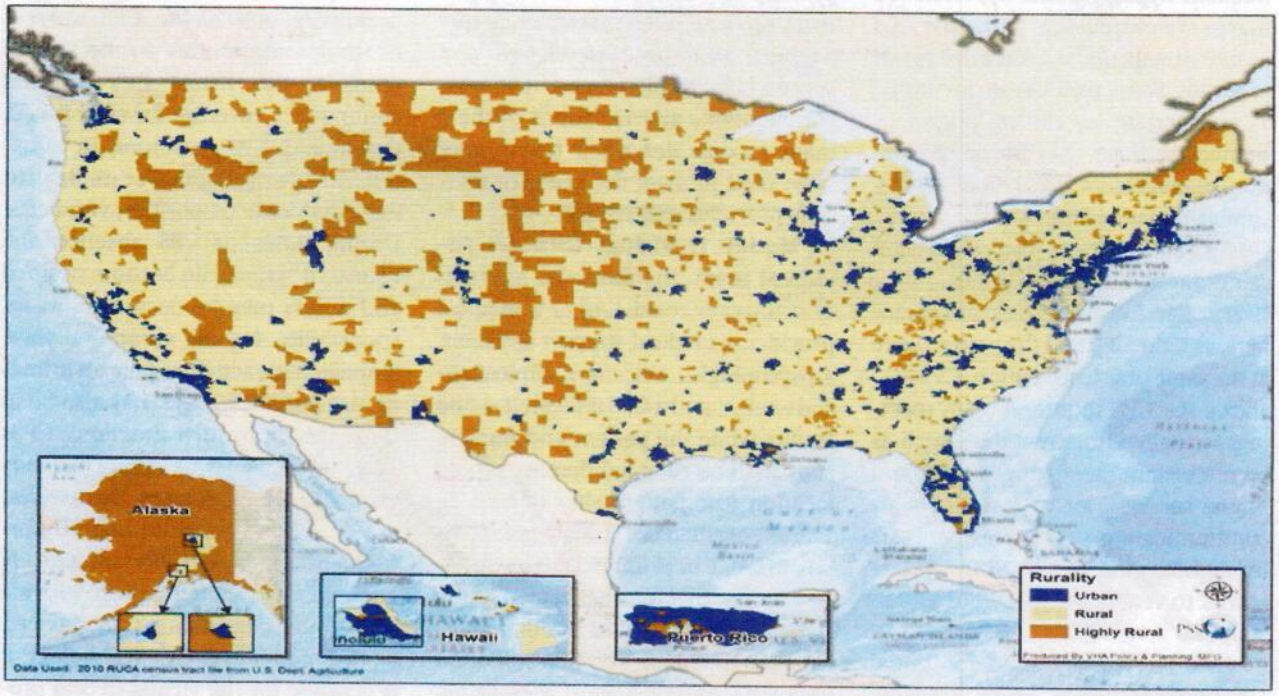
By improving both provider and patient access to a CPS, the CPS can improve primary care provider access in rural clinics. Primary care CPSs provide follow-up between primary care provider visits and initiate, adjust, or discontinue medications to target improved outcomes in patients with chronic diseases such as diabetes, hyperlipidemia, and hypertension and those who need pain management. CPSs are highly trained specialists who have commonly earned a doctor of pharmacy degree, completed postgraduate residencies in ambulatory care or equivalent practice experience, and earned board certification. As integral members of teams providing healthcare within a patient-centered medical home model (organized within VHA as Patient Aligned Care Teams [PACTs]) CPSs practice at the top of their license as providers with prescribing authority under a scope of practice. They provide intensive medication management for high-risk patients through team-based care and population management, thus reducing the workloads of providers and other team members. CPSs can often provide same-day access for medication-related needs or medication-related adverse events.[7]

Table 1. Telehealth Modalities Used in the VA Healthcare System[2,a]

Modality	Description
Clinical video telehealth	Allows patients to come to a local VA outpatient clinic and see a clinical pharmacy specialist or other primary care team member in real time; the clinician may be located at a clinic or hospital hundreds or thousands of miles away
Home telehealth	Allows patients to connect to a clinic or hospital from their home using telephone lines, cellular modems, and cell phones for monitoring of symptoms and measurement of vital signs (with the help of a care coordinator)
Care coordination store-and-forward telehealth	Involves the acquisition and storage of clinical information (e.g., data, images, sound or video recordings) that can be forwarded to (or retrieved by) another site for clinical evaluation

[a]VA = Veterans Affairs.

Figure 1. The Veterans Affairs healthcare system uses Rural–Urban Commuting Area (RUCA) codes to define rurality. Developed by the Department of Agriculture and the Department of Health and Human Services, the RUCA coding system takes into account population density and how closely communities are linked socioeconomically to larger urban centers. Urban areas are defined as census tracts with at least 30% of the population residing in an urbanized area, as defined by the U.S. Census Bureau. Rural areas are defined as land areas not designated as urban or highly rural. Highly rural areas are defined as sparsely populated areas where less than 10% of the working population commutes to any community larger than an urbanized cluster (typically a town of no more than 2,500 residents). Map reprinted with permission of the Department of Veterans Affairs.



CPSs provide comprehensive medication management services that have shown a positive return on investment.[7] In addition, using CVT to provide pharmacy services, as stated previously, minimizes travel costs for both the veteran and the system.[1] CVT is a cost-efficient and flexible means of providing primary care CPS support to multiple sites, as described below.

To our knowledge, there are no other published reports on the implementation of telehealth technologies to provide comprehensive primary care CPS services to support multiple remote locations. Previous relevant literature has focused on CPSs providing specific disease state management services (e.g., anticoagulation, specialty pain services, diabetes care) at one site.[9,10] In this article, we describe the 2 main models used within our program to deliver comprehensive primary care services via CVT and telephone to patients and providers at remote locations.

The Telehealth Hub program

The regional VA Telehealth Hub based in Boise, Idaho, is a multicenter program whose reach spans some of the most remote locations in the United States, including locations in Alaska, Washington, Oregon, Idaho, and parts of western Montana. The Telehealth Hub staff consists of primary care providers (physicians, physician assistants, and nurse practitioners), CPSs, psychologists, psychiatrists, licensed clinical social workers, and medical support assistants. Licensed practical nurses (LPNs) and registered nurses (RNs) are also integral members of primary care teams, but those personnel are located at patient sites. The clinical pharmacy services component of this program, initially provided by 1 half-time CPS, has now grown to encompass 6 full-time CPSs working as team members with multiple providers and sites.

Across all sites where telehealth services have been implemented, the emphasis has been on CPSs working as providers in a team-based model and using population management tools to provide comprehensive medication management for chronic disease states in the primary care setting. CPSs are assigned to provider panels, with the ideal ratio being 1 CPS assigned to a total of up to approximately 3,600 patients.[11]

Most patients managed by CPSs are formally referred by primary care providers and other team members when patients with intensive medication management needs are identified; examples include but are not limited to patients with glycosylated hemoglobin values greater than 9%, frequent hypoglycemia, hypertension that is uncontrolled with the use of 3 or more medications, and intolerance to statins. Some patients are identified as appropriate for clinical pharmacy services through the use of population management tools that employ similar patient identification criteria. CVT enables face-to-face visits and same-day access to care by facilitating "warm handoffs" among team members, as if the CPS and the patient were at the same physical location. CVT also allows the CPS to attend team meetings virtually. Other methods, such as secure instant messaging, e-mail, and phone services, are integral tools for communicating with team members throughout the day and providing access to real-time drug information support.

CVT is typically used for initial 1-hour face-to-face visits, utilizing patient-site nursing staff (LPNs and RNs) to "room" patients for the visit. Rooming a patient involves check-in, measuring vital signs on request, providing the patient with a medication list, notifying the provider that the patient has arrived, escorting the patient to a room outfitted for the CVT appointment, and ensuring that the equipment is working properly before leaving the patient to engage in the visit with the CPS. Most follow-up visits are 30 minutes or less and are conducted via telephone due to a need for frequent follow-up or short appointments or as necessitated by the patient's distance from the clinic. On occasion, patients prefer to come to the clinic for face-to-face CVT visits for all their follow-up appointments.

In most cases, due to the complexity of scheduling and a lack of ancillary support staff, CPSs take responsibility for scheduling their own CVT and phone appointments with the patient. In rare cases, a medical support assistant at the patient site calls and schedules the patient. All clinical notes are entered into the electronic medical record, which is easily accessible within the VA healthcare system.

To meet different sites' needs for primary care teams and clinical pharmacy services, different models of CPS support have been developed and successfully implemented. Different combinations and variations of the 2 main models described below have been used to meet the needs of multiple providers and clinics.

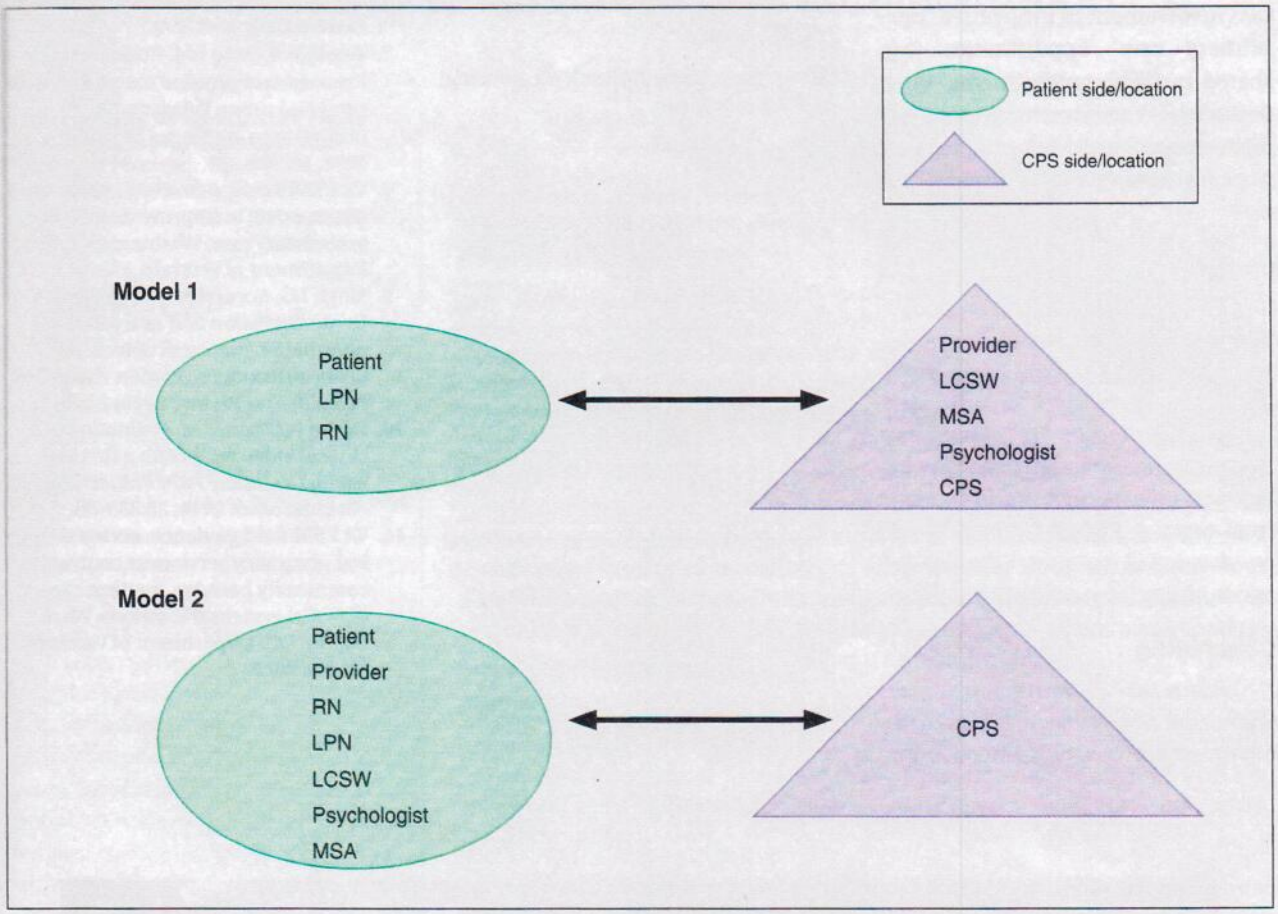
Model 1: Virtual CPS on all-virtual team. In this model, a primary care team consisting of a medical provider, a medical support assistant, a psychologist, a licensed clinical social worker, and a CPS is located at one facility while the patient and nursing staff are located at a different, remote location (the patient site) (Figure 2). The telehealth team is analogous to an onsite PACT or primary care team. Although the CPS may be located at the same physical location as other clinical team members, the CPS still often uses CVT, secure instant messaging, e-mail, and phone to communicate with team members. All members of the primary care team rely on LPNs and RNs at the patient site for additional support, including the rooming of patients for CVT visits. Using this model, CPSs have been able to provide clinical pharmacy services to 7 clinics in the VHA Northwest region.

Model 2: Virtual CPS working with onsite team. In this model, a CPS works remotely from the rest of the primary care team and uses CVT, telephone, and secure instant messaging technology and e-mail to provide full-time clinical pharmacy services for VA clinics. The provider, nursing staff, licensed clinical social worker, psychologist, and medical support assistant are all located at the patient site (Figure 2). This model has been implemented across 9 sites within the Northwest region and has so far met individual clinic needs in 2 scenarios. One scenario involves provision of services to rural clinics serving small populations—settings in which it would be difficult to recruit a qualified full-time pharmacist with ambulatory care experience and, due to cost and demand factors, a full-time position may not be justified. This model provides patients with timely access to previously unavailable CPS services in rural communities. In the second scenario, the virtual CPS provides contingency coverage for established, permanent CPS positions in situations involving planned or unplanned extended leave or position vacancies. During times of CPS absence, the team and system can become strained and access may be decreased, as responsibility for all chronic disease management activities falls on primary care providers, who may also be in short supply. In such situations, CPSs from other teams or clinics (already assigned full workloads themselves) are sometimes asked to help. Unfortunately, as these CPSs are already busy, they are often unable to provide robust and continuous CPS services. As this model uses CVT technology, it is possible for the virtual CPS to provide continuous face-to-face clinical pharmacy services to bridge temporary CPS absences. In both scenarios, veterans are provided timely access to CPS services in their community.

Discussion

Since the program was started in 2014, 6 Telehealth Hub CPSs have provided clinical pharmacy services to 16 VA clinics serving significant numbers of veterans in rural and highly rural areas. Within these 16 VA clinics, CPSs have provided remote care to over 1,200 unique patients receiving chronic disease state management services, primarily for diabetes, hypertension, hyperlipidemia, and tobacco cessation. Patients referred to CPSs for disease state management consultations are seen within an average of 6.4 days of the request, and nonvisit CPS consults (i.e., those for medication management related

Figure 2. Models of clinical pharmacy specialist (CPS) support via telehealth. LPN = licensed practical nurse, RN = registered nurse, LCSW = licensed clinical social worker, MSA = medical support assistant.



to a specific patient and not requiring a visit) are completed in less than 1 day on average.

This program's success is attributed to multiple factors. The Telehealth Hub was established at a site with historically good recruitment and retention of highly qualified CPSs. Provision of necessary staffing, space, and technology to support a CPS by patient sites has also been crucial to success. We have found that initial and semiannual visits by CPS personnel to patient sites are key in establishing, maintaining, and growing relationships with team members at those sites; the visits also help CPSs orient themselves to a clinic's physical environment and patient care culture. We also believe that the willing attitude and optimistic view of primary care team members, other facility and clinic personnel, and veterans with regard to the vision of telehealth and the benefits of CPS involvement in the care process have been vital to the success of the program. Providers and teams have been quick to adopt CPSs as integral team members.

Of course, the program has faced some challenges. CVT appointments, especially for initial visits, have been difficult to establish as standard at all clinics. The clinics where it is most challenging to conduct CVT visits tend to be those that serve areas where patients live exceptionally far distances from the clinic or that lack dedicated staff for rooming patients for CVT visits. In addition, a phone appointment can be more convenient or timely than a CVT visit and is sometimes preferred by the patient. However, we believe that either modality provides a valuable means of bringing timely CPS care to patients in or near their homes and addressing chronic disease medication management needs. Other barriers to this program have included increased documentation requirements and complexities with scheduling due to both clinic resource and pharmacist availability constraints. We continually work to overcome these challenges and gain support to expand the program.

Moving forward, program goals include measuring and reporting quality outcomes and expanding services to more locations. It is also imperative that we keep the program sustainable by incorporating telehealth into postgraduate year 1 and year 2 pharmacy

residency training and also into the pharmacy school curriculum. Additionally, we hope to explore more CPS involvement in innovative "tele–primary care" opportunities (e.g., shared medical appointments, interdisciplinary care meetings) as integral members of the primary care team working to improve patient access and care.

The Telehealth Hub program has identified and characterized 2 models for CPS deployment to provide clinical pharmacy services in support of primary care teams in rural areas. Building on the groundwork already established, CPS support for primary care teams can be expanded to further improve healthcare quality and access in rural areas. Additional models could be developed to meet the unique needs of specific rural health systems.

Conclusion

Within the VA healthcare system, telehealth technology has been demonstrated to be a cost-effective and well-received means of providing clinical pharmacy services in rural areas.

Disclosures

The authors have declared no potential conflicts of interest.

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