Interview: Lessons from a Leader in Telehealth Diffusion: A Conversation with Adam Darkins of the Veterans Health Administration

David Lindeman

Abstract The Veterans Health Administration (VHA) is one of the world leaders in using telehealth to promote independent living for its patient population. The VHA's model uses a care coordinator who supports and monitors a panel of 100–150 patients, with a focus on empowering patients to take roles in self-management. VHA's telehealth program has resulted in successful outcomes including patient satisfaction and reductions in bed days of care and hospital admissions. Adam Darkins, M.D., MPMH, FRCS, identifies key drivers that have led to the organization's successful implementation of telehealth for patients with chronic illnesses: dedicated senior leadership, the presence of an electronic health record, operational innovation, and a desire to avoid higher-cost institutional care for patients. Looking forward, Dr. Darkins expects that telehealth will continue to create an environment in which people are motivated, engaged, and feel responsible for their own health. Dr. Darkins stresses that the opportunity is not in making more advanced technological breakthroughs, but rather in consolidating what is currently available and developing a coherent strategic vision for the future of health care. The VHA's success in telehealth implementation is a result of the organization's ability to connect its vision, strategy, and technology; this success can serve as a blueprint for the nation as it moves forward on health technology adoption.

Keywords Veterans Health Administration · Care Coordination/Home Telehealth (CCHT) · Diffusion · Telehealth · Health information technology

This article provides an overview of the VHA's telehealth program through an interview with one of the leaders in its use and diffusion. These programs, and the strategic and operational considerations in their implementation, can be used as

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models by non-governmental health systems who are interested in adopting telehealth solutions to address their patients' needs. David Lindeman, Ph.D., Director of the Center for Technology and Aging, interviews Adam Darkins, M. D., MPMH, FRCS, Chief Consultant for Care Coordination Services at the U.S. Department of Veterans Affairs (VA).

David Lindeman: *The Veterans Health Administration has one of the largest telehealth programs in the world. Tell us about the program, how it evolved from a pilot-project stage to widespread implementation across the Veterans Integrated Service Networks (VISNs)?*

Adam Darkins: The VHA has a long history of involvement in telemedicine, going back to 1977, when it piloted the use of telemedicine health in Nebraska. But telehealth came to the fore in the mid 1990s. The reasons were not based on technology, but on addressing patient need. The veteran population experience is a precursor of what is going to happen to the wider general population. As the population ages, there is a preference for people to live independently in their own homes. Therefore, telehealth was introduced to expand access, provide care as close as possible to the patient's community, and make the home the preferred place of care when that is appropriate.

The implementation of telehealth was championed by senior leadership at the VHA; also key were the innovation, expertise, and development of telehealth at the operational level. Faced with the need to help support people wanting to live independently in their own homes, a telehealth pilot between 2000 and 2003 took place in the Southeast U.S., part of the VHA infrastructure known as VISN 8, involving Florida, South Georgia, Puerto Rico, and the US Virgin Islands. With more than 800 patients, the pilot included monitoring along with patient self-management and use of relatively simple home telehealth devices. The pilot was associated with reductions in hospital admission and bed days of care, as well as high levels of patient satisfaction, and it formed the basis for the model that was implemented nationally in the VHA after 2003.

Development of the home telehealth program from 2003 onwards was based on targeting patients at risk of going into long-term institutional care, within the older population of veterans (many who preferred to live independently in their own homes). Given the nature of the aging VHA population, a congressional mandate under the Millennium Bill 1999 was moving the VHA further in the direction of non-institutional care. However, it is important to say that there are people who absolutely require long-term institutional care, and this program is not geared towards those patients. Currently there are 43,000 veteran patients whose independent living is being supported by VHA's Care Coordination/Home Telehealth (CCHT) program. These CCHT programs are available at 140 VA Medical Centers, and 40% of Veteran patients receiving care via CCHT live in rural or remote locations.

Lindeman: *In the early decision making process, what specific evidence was necessary to validate or support expansion of telehealth?*

Darkins: Review of the literature had certainly shown advantages to using home telehealth for supporting people with chronic disease who live independently at home, and for reducing hospital admissions. However, the studies were based on small numbers of patients; it had not been previously done to scale.

The number of over 80-year-olds that the VHA is providing care for has tripled since the year 2000. Therefore, a key to taking things forward has been showing

outcomes. In the initial pilot, the outcomes showed reductions in bed days of care, hospital admissions, and hemoglobin A1c. The pilot also resulted in high levels of patient satisfaction and no diminishing of health status by virtue of managing people at home. This program has been very much based upon collecting systematic evidence to show the benefits that it gives to the patient.

As the program has grown, there is corresponding outcomes data at a national level that substantiates the advantages to patients shown by the initial pilots. Success breeds its own success, and positive outcomes are vital to marketing the program more widely to reinforce buy-in from clinicians and managers. We have an annual telehealth meeting for key staff from around the country. We also have a newsletter to make information more widely available.

Lindeman: *What are the programmatic elements that need to be in place in order for the program to succeed?*

Darkins: From its inception, the VHA took a systems approach to implementing the Care Coordination/Home Telehealth program. Rather than creating a whole new clinical silo, it was about integrating current resources to manage and expand the program. Therefore, a key to how it was taken forward was systematizing processes; these were grouped into three areas: clinical processes, technology processes, and business processes.

We believed that the care should be very standardized, such that the veteran patient would be able to get the same kind of care no matter where they were in the VHA system. The basic model was one in which a care coordinator, typically an RN or a social worker, supports a panel (a population between 100 and 150 veteran patients). The care coordinator doesn't provide the direct, hands-on care, but he or she is monitoring a patient, supporting education and self-management, and determining whether somebody is deteriorating, and if so, guiding them and intervening to help prevent avoidable hospital admissions. It should be stressed that the program is about management of chronic disease and avoiding deteriorations that might take place over a matter of days. It is not designed to care for people with acute, life-threatening conditions in the home.

Also, a vital prerequisite is to have an electronic patient record. Home telehealth in the VHA enables just-in-time decisions that support chronic care management, and having an electronic patient record as a decision support tool is very important.

Lindeman: *Could you expand on the importance of the role of electronic health records for this program?*

Darkins: Home telehealth implementation is very much helped by having an electronic patient record. Patients utilizing telehealth are patients for whom traditional paper charts exist in several volumes, so these might not be available to make decisions in health care organizations. The electronic record in the hospital normally only contains information on what happens when patients come into the clinic or hospital. Home telehealth can be seen as extending the hospital's electronic patient record into a longitudinal record that is better adapted to managing chronic disease.

The VHA has widely embraced the electronic patient record, not just in certain areas, but across the whole system. The home telehealth programs were introduced with the advantage of an existing systemwide adoption of the electronic health record. The ability to adopt a national electronic health record, which is used by tens

of thousands of staff each day to deliver care, is really a singular achievement. It attests to a culture and working environment in which people are very accepting of how new information technologies can really transform the delivery of care. This type of organizational culture and attitude, along with the sophisticated nature of the VHA electronic health record, has been very important to the success of the home telehealth program.

Lindeman: What are some of the related tools and technologies that could be used by organizations outside the VHA to introduce telehealth?

Darkins: Patients' self-management is very important. In implementing the home telehealth program to support chronic disease management, VHA developed an algorithm to match patients needing this care to the appropriate technology. The most frequently used technologies are ones that enable monitoring of vital signs and communication on disease management questions between caregivers and the patient. The disease management questions pertain to understanding the patients' symptoms, and also increasing their knowledge about their condition and behaviors that may exacerbate their condition. Messaging and monitoring are important technologies in this context. Other technologies include video conferencing into the home and other digital technologies to acquire images from the home.

Lindeman: What role does training play in the VHA telehealth program?

Darkins: Training is of crucial importance, but it is often not thought about when developing new and innovative programs. In order to sustain a program and grow it at the levels that we have done, training has been vital to give staff the skills and competencies to be able to deliver this care. At the inception of the national program in 2003, a national training center for home telehealth was established. The majority of training, which takes three weeks for a new clinician recruited into the program, is done virtually. We have capacity to train hundreds of staff each year to help sustain the program.

Lindeman: How did patients and providers respond to the idea of home telehealth? Did you meet much resistance? And what do you think about the stereotype that older adults are more resistant to technology adoption?

Darkins: Though it might seem that the use of technologies is rather remote and impersonal, technology actually supports relationships between the patient and the care coordinator. The technology is there as a facilitator in that relationship. About 10% of patients who are offered the program would prefer to have traditional face-to-face care, which means that 90% are very happy with this kind of care. As with many other areas of health technology implementation, the patients are often very enthusiastic. We've seen mean satisfaction scores of more than 85%.

When there has been resistance, this is usually from clinicians in the form of an initial reticence. However, the emphasis on program outcomes and patient satisfaction, as well as the robust training program, has helped overcome this resistance. In addition, a number of staff who helped start the program have now moved on to other senior levels of management in the organization and have become great champions for what we do. Also, our home telehealth training center has developed successive cadres of master preceptors, going back more than 6 years. These master preceptors are key individuals that help solve programmatic issues at the local level, and serve as wonderful ambassadors for the programs. This has profoundly helped information about the program grow at an organizational level, and it has helped very much in terms of increasing buy-in and understanding.

The technologies we have used are relatively simple push-button technologies for an older population. This has not been about taking the most leading-edge technologies, but actually taking rather tried and trusted technologies and making sure that they are being implemented systematically. With very large numbers of patients, the technology must support both the patients and clinicians in an uncomplicated way. This is different from a pilot where someone with a major stake in the program may be prepared to go through many hurdles with technology. When technology such as home telehealth is used in a routine service capacity to deliver care to large numbers of patients, it has to perform its expected function seamlessly in the background, letting the practitioner focus on the patient rather than worrying about the technology.

Lindeman: *From your perspective today, what can organizations outside of the VHA learn from the VHA experience with home telehealth?*

Darkins: The VHA home telehealth program is fundamentally based on addressing patient needs. The patient needs that the VHA has to meet correspond to those of many health care systems in the United States, as well as other countries worldwide (for example, the care of chronic heart failure). However, an aspect of the VHA that makes it attractive to piloting innovations such as home telehealth is that it is an integrated health care system that manages patients across the continuum of care. Also, it has helped to have systematic ways to introduce an associated quality-management infrastructure and contracting for home-telehealth technologies on a national level.

Adoption of home telehealth in the VA has not been based on a command-and-control approach. It is about implementation driven at the local clinical level, because of the immediate benefits: reduced utilization, patient satisfaction, and helping people living independently in their own homes. I believe that what we have done is applicable more widely than just serving the veteran population. Many of the advantages that home telehealth can bring could be attained in the world outside the VHA and can be justified from a cost-economic point of view.

When I started working at VHA and gave presentations about the work that we were doing, which was in the late 1990s, the VHA was seen in a slightly different way. People would sometimes respond to my descriptions of implementing telehealth with, "Well, if the VHA can do this, anybody should be able to do it." In terms of the VHA's ability to undergo transformation, it is really amazing that now more than 10 years later, people are saying, "Well, of course the VHA can do it. But that doesn't mean we are able to do it." The real lesson for me, underlying all this, is that health care and health care organizations do have a tremendous capacity to change, as illustrated by the VHA. A can-do attitude cultivates the accepting of technology, and I don't see a particular reason why that is not transferable elsewhere.

Lindeman: *Could you expand on how organizations justify telehealth implementation from the cost-economic point of view?*

Darkins: The VHA's experience has shown that by actively engaging patients and helping them self-manage their chronic conditions, it reduces their hospital admissions and their lengths of stay, and helps them live independently in their own homes and communities. Therefore, from an economic perspective, there are direct benefits in terms of reducing the need for long-term institutional care. There is also a reduction in admissions to the hospital, which has direct economic consequences.

Lindeman: In looking at the immediate future of health care, what do you see as the major barriers to adoption and diffusion of telehealth by health care providers?

Darkins: There are many organizations that are either implementing home telehealth programs or seriously considering it. We compare notes, and my opinion from this collective learning process is that firstly, it is important to have a clear vision of how the technology is going to be used. This is not a question about implementing technology. If somebody comes along and says, "I have a technology which I believe is really going to make this difference," then that is usually a recipe for failure. But if someone comes along and says, "I have this particular issue, challenge, problem with delivery of care, and I think that we could use technology to support care to manage those people," then that is a clear vision allied to the delivery of care.

Secondly, the federal government has the ability to make strategic investments that are not necessarily dependent on the next quarter's financial returns, as can be the case in the private sector. I believe that telehealth has now proved itself in the home care environment, and the systems and technologies that are available are robust enough that they can be used more widely in non-governmental sectors. Thirdly, how telehealth fits the mission and vision of the organization, as well as organization's leadership, is extraordinarily important. If telehealth is a small, orphaned program, then its only hope is to develop as a kind of new silo. Leadership is key to getting buy-in and enthusiasm further down the organization for successful, systematic implementation.

Finally, underlying it all, there has to be a business driver. In terms of the primary mission of the organization to provide for the veteran population, we very clearly had a business driver in place.

Lindeman: What future trends will affect the use of home telehealth technologies among older adults?

Darkins: I think that one major trend is going to be the readiness and willingness of health care systems to embrace and adopt the technology in a way that works for older adults. There was a slightly paternalistic view that older adults might find this too complicated. For example, when email was available as an easy and inexpensive way to stay in contact with grandchildren and other family members, older adults more than readily embraced that technology. I think that the real determining factor is how the health care system at large engages with older adults.

There are going to be some issues around usability of devices, as sometimes devices can get too complicated and over-engineered. It is important to make sure that these devices are kept relatively simple and straightforward. There are going to be such issues as size of text and use of buttons, for example. The last issue is going to be the price points serving as a barrier, particularly for people on fixed incomes.

Lindeman: What populations is the VHA targeting for telehealth right now?

Darkins: The particular case that made sense to the VHA initially was managing more complex care patients with chronic care needs who were at risk of going into long-term institutional care (two-thirds of the population currently managed are for this care, while the remainder is for chronic care management). Our infrastructure lends itself to providing care for other groups of patients because of the lower marginal cost of adding to an existing infrastructure.

We are looking towards other groups of patients who may benefit from chronic care management, acute care management, and health promotion/disease management. We

are looking to support care management in areas such as weight management, dementia care, and palliative care. Because there is constant change in technology, what will be important is the movement towards use of mobile devices in the home.

Certainly the use of home telehealth devices has shown that it is possible to change the location of care for people with chronic disease. Such care can be delivered using a range of devices, and an exciting prospect on the horizon is that of using mobile devices such as cell phones. But the challenge in making this further transition will be in establishing the systems needed to support this new care environment. The challenge in changing the way health care is delivered is not an exercise in piloting technology to see what is feasible, but in developing the clinical, technical, and business processes to meet the duty of care and make sure that these associated systems are robust, safe, appropriate, and sustainable.

Lindeman: *How do you see informal caregivers or families engaging in telehealth over these next 5 to 10 years?*

Darkins: Many countries face an aging population, while the formal health care workforce to care for that population is diminishing. Therefore, I think the reality is going to be more care taking place in the home and community environment, where informal caregivers will be more important than they are now. Therefore, active engagement with both the patient and their caregiver is really a logical extension of the direction health care is headed if we look at the wider health care horizon.

Taking this direction includes an approach to health care that is more patient- or people-centered. Nationally, we have progressed from health care delivery systems that were once institutional and paternalistic, and we are emerging into a time in which there is much more patient engagement with the health care system in decision making. We are seeing the patient and the caregiver in a more holistic environment. We are in the throes of a cultural revolution and transformation of how health care is both received and delivered.

Lindeman: *What new technologies and platforms are emerging to support telehealth?*

Darkins: Much of the technology capability that is needed to support older adults in improving their health is already available; the pressing issue is how to increase the adoption and usage of these technologies. The issues that have to be addressed are ensuring that the current technologies are engineered to the degree of precision and safety that will enable large populations of patients to be critically cared for. It is about consolidation of what we have, rather than the development of something new that is particularly dramatic.

However, currently we are delivering care for chronic conditions in the home, in a non-acute environment. We are not yet using telehealth to care for acute conditions in the home. In my opinion, the current technology is not yet robust enough to support those acute interventions. There should be ways to look at monitoring more acute aspects of care in the home, if the current technologies were refined and further engineered.

Lindeman: *What might the future of home telehealth for older adults look like 5 or 10 years down the road?*

Darkins: I personally hope that within 5 years, we will see more widespread adoption of telehealth across the health care system. I foresee that within 10 years these telehealth programs will actively engage people through real-time discussions

and decisions about their own health and wellness. At the moment, there is a lag period between being able to connect with somebody who can help with a decision; this cannot happen "real time." I think we are going to have a context in which information about health is going to be ubiquitous. I think that the real impact of home telehealth systems is going to be allowing people to make proactive decisions about their health and engage with a health care system that enables that. It will enable a focus on prevention and self-management, and create an environment in which people are motivated, engaged, and feel responsible about their own health.

Lindeman: *Where do we go from here?*

Darkins: Technology has a way of being implemented at the time that it is ready. Consolidating what we have is the important piece in moving from early adopters like VHA to the wider health care community. I don't think that there is some particular technology innovation that is needed to bring about this dramatic change; it is about culture change and making sure that economic and other incentives are aligned. As things stand, I believe there is a golden opportunity to develop a coherent strategic vision of what health care would look like. As current health care technologies are being implemented, we are creating the legacy infrastructure of what will be with us in 5 or 10 years. When you build a house, you do not decide where you are going to put the bathroom after you have framed the house and put the drywall in. You determine where your bathroom and kitchen will be in advance, rather than trying to retrofit. The functionalities that we need from telehealth in the future will be determined by the foundations that are being laid now, hence the importance of a strategic vision for telehealth.

I think there is a disconnect between current visions of what the future might look like for an empowered older population, and the technologies and steps needed to get there. The sense of reality that comes from connecting the vision, the strategy, and the technology through critical lessons from organizations like VHA and other early adopters needs to be shared and critically examined. Rather than go back to square one, it makes tremendous sense to learn from those who have already been there, so that new programs can stand on the shoulders of existing ones. I personally do not think there is any real issue about how to introduce telehealth into the wider health care environment, other than the commitment for it to be done, and for the necessary organizations and people to make it happen in a concerted manner. It feels like the time is right and that a combination of events is making this possible in a way that five years ago would have seemed unimaginable.

Biography

Adam Darkins, MD MPHM, FRCS, is the Chief Consultant for Telehealth Services in the Office of Patient Care Services at the U.S. Department of Veterans Affairs (VA). Telehealth Services is a program office responsible for a major disease management program deployment that incorporates home telehealth. VHA is among the world leaders in telemedicine and telehealth development. The views expressed by Dr. Darkins are his and should not be construed as representing those of the VA. Information on VHA Telehealth programs is available at: http://www.carecoordination.va.gov/telehealth/index.asp.

For Further Reading on Topics Covered in this Interview

VHA Home Telehealth Program

Darkins, A., Ryan, P., Kobb, R., Foster, L., Edmonson, E., Wakefield, B., et al. (2008). Care coordination/home telehealth: the systematic implementation of health informatics, home telehealth, and disease management to support the care of veteran patients with chronic conditions. *Telemedicine and e-Health, 14*(10), 1118–1126.

Joseph, A. M. (2006). Care coordination and telehealth technology in promoting self-management among chronically ill patients. *Telemedicine Journal and e-Health, 12*(2), 156–159.

Tuerk, P., Fortney, J., Bosworth, H., Wakefield, B., Ruggiero, K., Acierno, R., et al. (2010). Toward the Development of National Telehealth Services: the role of Veterans Health Administration and future directions for research. *Telemedicine and e-Health, 16*(1), 115–117.

Chumbler, N. R., Kobb, R., et al. (2007). Healthcare utilization among veterans undergoing chemotherapy: the impact of a cancer care coordination/home-telehealth program. *The Journal of Ambulatory Care Management, 30*(4), 308–317.

VHA EMR

Kupersmith, J., Francis, J., et al. (2007). Advancing evidence-based care for diabetes: lessons from the Veterans Health Administration. *Health Affairs, 26*(2), w156.

Asch, S., McGlynn, E., Hogan, M., et al. (2004). Comparison of quality of care for patients in the Veterans Health Administration and Patients in a national sample. *Annals of Internal Medicine, 141*(12), 938–945.

VHA Algorithm

Kobb, R., Hilsen, P., & Ryan, P. (2003). Assessing technology needs for the elderly: finding the perfect match for home. *Home Healthcare Nurse, 21*(10), 666–673.

David Lindeman is the Director of the Center for Technology and Aging (CTA), and the Co-Director of the Center for Innovation and Technology in Public Health (CITPH). Both Centers are affiliated with the Public Health Institute. The mission of CTA is "to improve the independence of older adults dealing with chronic health care issues by promoting the adoption and diffusion of beneficial technologies." CTA was established by a grant from The SCAN Foundation. Dr. Lindeman has worked in the field of aging and long-term care for 30 years as a health services researcher and administrator.