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Helmsley Trust Support For Telehealth Improves Access To Care In Rural And Frontier Areas

ABSTRACT Rural residents in need of health care face many challenges. In 2009 the Leona M. and Harry B. Helmsley Charitable Trust created the Rural Healthcare Program to improve access to and quality of care in areas of the upper Midwest challenged by health care workforce shortages and low population density. The program has focused its efforts on telehealth in seven upper Midwestern states. Since 2009 the Rural Healthcare Program has approved $22 million in grants to eighty-five rural hospitals to implement eEmergency services. The service’s videoconferencing technology connects rural emergency department staff with emergency physicians and nurses located at the service’s “hub.” Initial analyses indicate that eEmergency has helped participating rural hospitals increase patients’ access to specialists, increase the use of evidence-based treatment, decrease time to transfer a patient to a facility able to provide a higher level of care, and reduce unnecessary patient transfers. This article describes the health care challenges rural communities face and the telehealth projects supported by the Helmsley Trust’s Rural Healthcare Program.

In 2009, when the Leona M. and Harry B. Helmsley Charitable Trust was determining its initial funding focus areas, research was conducted to find a sector with great need for health care and little philanthropic funding where the trust could make an immediate and significant impact. The research identified a region in the upper Midwest challenged by limited access to health care, distance to care, low quality of care, poor population health, a disproportionately elderly population, and lack of available funding for telemedicine technology. The area also received a disproportionately small amount of philanthropic funding.

To fulfill its goals for improving rural health care, the Helmsley Trust created the Rural Healthcare Program in 2009. This article describes the health care challenges that rural communities face and summarizes some of the projects funded by the Rural Healthcare Program to enhance rural health care through telemedicine.

Rural Communities Face Numerous Challenges

One of the major challenges in rural health care is the shortage of primary care physicians. There is considerable disparity between densely populated, urbanized states and more rural states. For example, in Maine there are 133 primary care physicians per population of 100,000, and in Massachusetts there are 196 per 100,000 people. By comparison, in Wyoming there are ninety primary care physicians per 100,000 people, and in Minnesota there are 143 per 100,000. The national average number of primary care physicians per 100,000 population was 121 in 2013. Once metropolitan areas in the upper Midwest are taken out of consideration, the shortage of primary care physicians becomes more noticeable. For example, in Montana there are 97 primary care physicians per 100,000 people. However, the majority of physicians are located in the more urbanized communities.

In 2010 Montana had eleven counties comprising 16,120 people and encompassing 23,787 square miles that did not have a single primary care physician.

Rural areas also suffer from population loss. The vast majority of counties serviced by the Helmsley Trust’s Rural Healthcare Program reported a population loss in the 2010 census. As rural areas continue to lose population, they also lose the economic ability to maintain local restaurants, shopping, and entertainment options, which are critical tools to attract and recruit young health care providers and their families. Moreover, many small communities do not have a large enough population base to economically maintain a single physician practice.

Shortages of physicians and other
health care providers in rural communities make it difficult to appropriately staff a hospital. As a result, the limited number of primary care practitioners (physicians, physician assistants, and nurse practitioners), and particularly the few specialists, who do work in rural communities are required to work many hours and frequently be on call. Often, rural clinics and hospitals must reduce hours for service provision.

The vast majority of the counties served by the Rural Healthcare Program are designated by the Health Resources and Services Administration (HRSA) as Health Professional Shortage Areas for primary care (such a designation means that there are more than 3,500 people per primary care physician). Some areas are also Medically Underserved Areas/Populations, meaning the area’s residents have a shortage of personal health services or face economic, cultural, or linguistic barriers to health care.

In some rural communities it is not uncommon to find the lone physician nearing retirement age, which puts the community at risk of losing its provider. If the community is able to recruit another provider, he or she would likely only recently have completed his or her medical residency and would have little experience managing complex patient care without peer support. Many rural communities cover their emergency department (ED) or entire physician need with what are termed locum tenens physicians—that is, temporary physicians contracted by a recruiting agency to provide care on a rotating basis at local medical facilities to fulfill unmet community staffing needs. Locum tenens physicians typically travel to rural communities from larger communities or even other states, which makes it difficult to maintain a patient-provider relationship.

Some rural hospitals have a makeshift “physician apartment,” where the on-call provider can spend the night. This type of arrangement is intended to assist physicians who may live twenty to thirty miles out of town. The physician apartment may also encourage a physician to remain available instead of risking travel during inclement winter weather.

Often, on nights and weekends nurses receive emergency patients when a physician is not on site. This can be stressful, as overnight nurses are frequently just out of nursing school and have less seniority and less experience. There is typically minimal staffing overnight in rural hospitals, and this makes it more challenging when an emergency case presents or multiple patients arrive simultaneously.

### Serving Rural And Frontier Counties

Much of the upper Midwest has population densities far below the national average of roughly eighty-eight people per square mile. For instance, the most densely populated state in the upper Midwest is Minnesota, with sixty-seven people per square mile, whereas Montana and Wyoming are both below seven people per square mile. Many of the areas served by the Rural Healthcare Program can be described as either rural or frontier. Although there are many definitions of rural and frontier, the Rural Healthcare Program uses the following definitions from several sources: The Rural Assistance Center defines frontier counties as those counties with a population density of fewer than seven people per square mile. The Census Bureau defines rural counties as those having a population of fewer than 2,500 and 7,499 people per square mile.

Of the seven states targeted by the Rural Healthcare Program (Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota, and Wyoming), only Iowa does not contain a frontier county. Online Appendix Exhibit 1 provides an illustration of frontier counties in the other six states. Rural patients often encounter difficulties when traveling to seek care at the nearest medical facility. The states included in the Rural Healthcare Program feature mainly agricultural terrain and are accessible primarily by secondary roads with minimal cell phone reception and little traffic. Travel is often affected by extreme cold; blizzard conditions; and slippery, icy roads in the winter and early spring months and by scorching heat and road construction in the summer and fall months. Roadways through hilly and mountainous terrain in parts of Wyoming and Montana can become impassable for weeks at a time in the winter. These difficulties are even more of an obstacle to care for patients who are critically ill or elderly.

In the region where the Rural Healthcare Program operates, the elderly population constitutes a greater percentage of the population than is the case in more urban locations. The population in the upper Midwest is expected to grow disproportionately older at a faster rate than in other more urban parts of the country. Appendix Exhibit 2 shows the percentage of population age sixty-five and older by county for the entire United States. Within the seven states served by the Rural Healthcare Program, there are numerous counties where residents age sixty-five and older make up 20–44 percent of the county population. In addition, the upper Midwest has and will continue to have the highest concentration of people age eighty-five and older. The percentage of the sixty-five and over age group is expected to continue to grow as youth move out of the Midwest to more populated areas for education and career opportunities. With an aging population comes a higher prevalence of chronic disease and cancer, as well as significant demand for elder care and other forms of health care.

### Using Technology To Enhance Rural Health Care Access

One particular challenge facing rural communities is how to effectively provide high-quality emergency care. Technology may be part of the solution, and a number of organizations in the Midwest have focused on providing emergency services via telehealth. These include Nebraska’s teletrauma system, Sanford Health’s One Call (Fargo, North Dakota, and Sioux Falls, South Dakota), and Essentia Health (Duluth, Minnesota) teleEmergency Services.

Several private funders have supported rural telehealth programs of various types; these include the Blue Shield of California Foundation, the Verizon Foundation, the California Emerging Technologies Fund, the Robert Wood Johnson Foundation, and the Duke Endowment.

Government agencies making grants in rural telehealth include the Department of Agriculture, Centers for Medicare and Medicaid Services (CMS) (specifically, the Center for Medicare and Medicaid Innovation), and HRSA’s Of-
fice of Advancement of Telehealth.

Many telehealth projects use a combination of private and public funding. A current example is a Social Innovation Fund grant (through the Corporation for National and Community Service)12 to the John A. Hartford Foundation to provide care for depression in the general population in rural areas of Alaska, Idaho, Montana, Washington, and Wyoming.13

Lessons From eEmergency

The Helmsley Trust partnered with Avera Health, a not-for-profit health care system based in Sioux Falls, South Dakota, to bring specialty care to small rural hospitals via a program called eCare. One of eCare’s many service lines is eEmergency, which connects rural patients and providers with urban, specialty-trained emergency physicians and registered nurses via live, two-way video. Some of the information reported here stems from rural grantee reports and Avera Health documents submitted to the Helmsley Trust.

**How it Works**

The eEmergency service is provided via a dedicated two-way videoconference device installed in a central location of the participating rural ED. The technology includes a polycom camera, screen, microphone, and speaker with a broadband direct connection to the eEmergency hub. Rural ED staff members at participating hospitals that have contracted with Avera Health for eEmergency have access to the service. In all cases, the two-way interaction is initiated by the rural hospital. A physician, physician assistant, nurse practitioner, locum tenens, or nurse can initiate an interaction for support ranging from translation assistance to complex patient care management. The service gives rural ED staff immediate and direct access to board-certified emergency physicians and experienced critical care nurses. The eEmergency physicians and nurses are physically located at a “hub” in Sioux Falls, South Dakota, and they are available twenty-four hours a day, every day of the week.

Once the local staff activates the system, the connection from the rural ED to the hub is direct, and the video cameras in both locations turn on. The eEmergency hub physician and nurse can see the local ED and talk with staff there. At the same time, local staff can see the hub staff with whom they are consulting. The hub staff is solely dedicated to responding to eEmergency cases.

The eEmergency service also provides access to a secondary consultation, with, for example, a cardiologist or neurologist as needed. Emergency physicians can advise nurses, nurse practitioners, physician assistants, and physicians at participating hospitals on particularly difficult or unique cases; manage a resuscitation remotely; and also serve as a second set of eyes when there may be multiple patients—for example, in the case of an automobile accident. The eEmergency physician and nurse can also assist with charting information about the patient, placing orders for treatment, and calling in additional local staff to assist as needed, thus freeing up the rural ED nurse to provide hands-on care to the patient and family members.

When assisting with patient transfers, eEmergency staff members follow the rural hospitals’ normal transfer protocols and do not transfer patients strictly to Avera Health system tertiary hospitals. In addition, by offering three-way video to the larger regional tertiary hospital if a transfer to that facility is being arranged, eEmergency works with each rural hospital to uphold relationships between the rural hospital and the closest larger, regional tertiary hospital that can provide a higher level of care.

**Expanding Grants**

In 2009 the Helmsley Trust’s Rural Healthcare Program initially granted $6.3 million to Avera Health to expand its infrastructure to reach all twenty-nine of Avera’s rural hospitals located in Iowa, Minnesota, Nebraska, and South Dakota. The Rural Healthcare Program later expanded the eEmergency grant program to include rural hospitals throughout the program’s seven-state funding area by granting $16.5 million to fifty-six critical-access hospitals. Funding has totaled more than $22 million to date. Through its Rural Healthcare Program, the Helmsley Trust continues to offer grants for equipment and connectivity so that rural hospitals can implement eEmergency services.

Currently, eighty-three hospitals in the program’s seven-state funding area use eEmergency services; the program’s use in all but one was made possible through the program’s grants. Another six hospitals are in the process of being connected, again with assistance from Rural HealthCare Program grants. Participating hospitals are a mix of independent, county-owned, and city-owned hospitals, as well as hospitals owned by health systems other than Avera.

**Early Lessons**

Following are some highlights of the eEmergency service experience during 2009–11 in the Rural Healthcare Program’s seven-state funding area as reported by participating rural hospital EDs and by Avera in its April 2012 eEmergency Final Report.

Through the eEmergency service, more than one million rural residents across 495,000 square miles had video remote access to board-certified emergency physicians for the first time. More than 7,200 patients were treated via eEmergency. The service also helped arrange 11,000 patient transfers, which included a portion of the patients treated via eEmergency as well as patients not treated through eEmergency but where transfer assistance was requested.

Additionally, the eEmergency service was credited with avoiding 1,200 patient transfers to other hospitals—these were cases where the rural hospital, via survey information, indicated that the secondary consult provided by eEmergency enabled the local hospital to maintain care there when in the past the patient would have been transferred to a larger regional tertiary hospital. Those avoided transfers were estimated to have saved $9.8 million that would have otherwise been charged to Medicaid, Medicare, private insurance, patients, and other payers for ambulance and air transfers.

In 30 percent (2,160) of the 7,200 patient cases in which patients were...
treated via eEmergency, the hub physician was available before the local physician was—an average of ten minutes sooner. This is because the local physician is often attending to other patients in the clinic or hospital, or is on call after hours and must travel from home to the hospital. In these situations, the nurse or other nonphysician staff in the rural ED activated the eEmergency system before the local physician was available.

Quality initiatives such as a recent focus on chest pain procedures at participating rural hospitals helped those hospitals institute best practices that had a positive impact on patient care. For example, in the past year patients with chest pain treated through eEmergency were 2.19 times more likely to receive aspirin prior to ED discharge than patients who were not treated via the eEmergency system.

**Innovation For Seniors**

Avera Health eCare projects such as eEmergency are not the only innovative, technology-based projects funded by the Rural Healthcare Program. To serve the growing elderly population, the Helmsley Trust partnered with the Good Samaritan Society in 2010 to launch and study a program called LivingWell@ Home. The Good Samaritan Society is the nation’s largest not-for-profit provider of long-term care.

The program uses sensor technology (including motion, sleep, humidity, and fall detection sensors), telehealth services, personal emergency response systems, and case management to help seniors continue living at home. The sensor technology is noninvasive, wireless technology installed in a client’s home. The sensors detect movement, monitor sleep quality, and collect other information about day-to-day activities. The information is transmitted via a secure Internet site to a registered nurse, who compares the data with a client’s usual patterns of daily living.

The sensor technology can provide early detection of clinically meaningful events such as urinary tract infection, reactions to medicine, chronic obstructive pulmonary disease, and congestive heart failure. The Helmsley Trust and Good Samaritan Society hope to demonstrate the ability to lower health care costs, reduce ED and inpatient hospital visits, help people age in place, and save lives.

**Remaining Barriers**

A number of barriers continue to delay or sometimes even prevent the use of telehealth in rural settings. Following is a summary of the policy hurdles that the eEmergency service and other telehealth projects of the Helmsley Trust are facing.

**Reimbursement**

Many telemedicine services are not reimbursable by Medicaid, Medicare, or other payers. For example, eEmergency services are purchased directly by hospitals, which pay an annual subscription fee. Medicare rules limit reimbursement to rural providers in several ways. For example, various classifications of hospitals and types of services are treated and paid for differently. The Helmsley Trust works primarily with critical-access hospitals (hospitals licensed for twenty-five or fewer beds) that have swing bed services (beds can be used for either acute or skilled nursing facility–level care as approved by CMS). However, there are many other classifications of rural hospitals—all having different qualification criteria and different payment provisions. This varied system is complicated and confusing, especially to minimally staffed critical-access hospitals without coding or reimbursement specialists on staff. All telemedicine should be considered as an important mode of health care delivery. It should be eligible for reimbursement, and billing should be standardized and simplified.

**Nursing Home Patient Recertification**

Telemedicine could play an important role in the rural setting to facilitate the recertification of Medicare patients living in skilled nursing facilities. But Medicare regulations will not reimburse for a recertification conducted via telemedicine. Federal regulation mandates that physicians do in-person Medicare recertification visits with patients at skilled nursing facilities to ensure that they are still eligible for skilled nursing care. Certification is required upon admission, every thirty days for the first ninety days, and then every sixty days.

**Physician Certification and Credentialing**

The physician certification process, which is specific to each state, makes it difficult for doctors to provide care via telehealth to patients in multiple states. Currently, physicians using telehealth must be licensed in each state in which their patients are located. Such multistate licensing takes time and resources. One solution to this barrier could be the Telemedicine for Medicare Act, or TELE-MED Act, of 2013, proposed congressional legislation (HR 3077). It would “permit certain Medicare providers licensed in a State to provide telemedicine services to certain Medicare beneficiaries in a different State.” Additionally, a Federation of State Medical Boards task force is pursuing another potential solution to multistate physician certification by developing a new system to streamline medical licensure for physicians who wish to practice in multiple states.

In addition to state certification, physicians must also have credentials and privileges granted for each hospital with which they interact—another potential barrier to expanding telehealth in rural settings. One point of progress on this front was a CMS rule that aimed to make telemedicine credentialing and privileging less cumbersome for small hospitals and critical-access hospitals. This rule went into effect July 2, 2011. However, although this lessened the reams of documentation required, each hospital must still complete necessary paperwork and get its board to approve each physician who will be practicing from a telemedicine hub in another state.

Physician credentialing requirements at long-term care facilities vary. Such places affiliated with a hospital must follow the hospital’s policies, which would encompass the requirements outlined above. Non-hospital-affiliated long-term care facilities each have their own policies to follow, adding to the complicated nature of getting physicians serving from a telemedicine hub creden-
Limited Connectivity and Bandwidth

The limited online and mobile connectivity that is a fact of life in many rural communities is yet another barrier to rural telehealth. Pharmacists reviewing orders from multiple states must adhere to the regulations in the state where the order originated—a complicating factor.

Pharmacist Participation

Government regulations of pharmacists also pose a barrier to rural telemedicine. For pharmacists to provide services remotely, they must be licensed in each state in which they are dispensing medication. To do this, pharmacists must pass each of those states’ licensing board exams. Also, each state pharmacy board has its own set of regulations that can pose something of a barrier to rural telehealth. Pharmacists reviewing orders from multiple states must adhere to the regulations in the state where the order originated—a complicating factor.

Limited Connectivity and Bandwidth

The limited online and mobile connectivity that is a fact of life in many rural communities is yet another barrier to rural telemedicine. To provide live, high-quality video service in rural areas, more bandwidth is needed. The Helmsley Trust has provided funding to install dedicated broadband lines and work with telephone companies to improve telecommunications services. Rural broadband connectivity rates for these services are higher than metropolitan rates. To access telemedicine services, rural hospitals may have to pay multiple telephone companies because the lines and connectivity cross market boundaries to reach the hub.

The nonprofit Universal Services Administration Corp. manages Federal Communications Commission funds collected from telecommunications carriers and administers programs that use those funds to help communities in need gain access to affordable telecommunications services. It assists eligible entities by reimbursing the difference between what rural and urban hospitals pay. Unfortunately, long-term care facilities are not eligible for Universal Services Administration Corp. reimbursement.

Conclusion

Geographic barriers, low population density, and health care workforce shortages make telehealth a necessary and useful tool for service provision in rural and frontier areas. However, policy must change if the impact of that technology is to be maximized and patients’ access to care expanded. For example, providers must be able to more easily provide care to patients in multiple states, and all telehealth services should be reimbursable.

In addition to the number of people cared for via telehealth in the seven upper Midwestern states served by the Helmsley Trust’s Rural Healthcare Program, square miles covered, dollars saved, and types of services rendered, there are also the human stories behind those statistics. Anecdotal information shared with the Helmsley Trust includes the lone doctor who said that she couldn’t have made it in her rural practice another year without eEmergency; the heart attack patient whose life was saved because he had quick access to a cardiologist via eEmergency who was able to view the patient’s electrocardiogram via video, make a diagnosis, and arrange transport to a hospital with appropriate treatment capability; and a great-grandmother who is still able to live independently at her farmhouse because of telehealth monitoring. And even when one physician could not save a young life, he had peace of mind in knowing that he had done all he could with the remote assistance of experienced emergency physicians.

Care delivery via telehealth is changing the way medicine is practiced today and is the future for rural medicine.

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NOTES


8 Rural Assistance Center. What is the definition of frontier? [Internet]. Grand Forks (ND): RAC; [last updated 2013 Apr 24; cited 2013 Dec 9]. Available from: http://www.raonline.org/topics/definition/


10 To access the Appendix, click on the Appendix link in the box to the right of the article online.


