Project ECHO: a model for complex, chronic care in the Pacific Northwest region of the United States

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Summary

The Pacific Northwest of the US is a large, sparsely populated region. A telehealth programme called Project ECHO (Extension for Community Health Outcomes) was tested in this region in 2009. Weekly videoconferences were held in the areas of hepatitis C, chronic pain, integrated addictions and psychiatry, and HIV/AIDS. Rural clinicians presented cases to a panel of experts at an academic medical centre and received management advice and access to best practices. During the trial, more than 900 clinicians participated, and more than 700 patient cases were presented. At the end of June 2012, a total of 23 videoconference clinics for hepatitis C had been held, 16 clinics in addiction and psychiatry, 97 in chronic pain and 13 in HIV/AIDS. The Project ECHO model improves access to health care. It may provide a way to bring specialist care to rural areas in developing countries.

Introduction

Almost 20% of Americans live in rural communities.[1] However, the smaller, poorer and more isolated a community, the more difficult it is to access high-quality health-care services. Not surprisingly, access to health care is an important rural health priority.[2] A University of Washington (UW) telehealth project has been used to improve access to health care. The project teaches rural providers how to evaluate and treat complex, chronic health conditions by using telehealth and case presentations. This improves local expertise, increases access to specialist care and integrates it at the local level, increases rural providers' job satisfaction, and reduces professional isolation.[3]

Healthcare challenges in the Pacific Northwest

The predominantly rural Pacific Northwest (PNW) region of the US has large, sparsely populated areas.[1] The PNW region encompasses 27% of the total US land area, but just 4% of its total population. Overall, one in four PNW residents lives in a rural community.[4] Rural residents differ from their urban counterparts in several important ways. First, some conditions, such as hypertension, cardiovascular heart disease, obesity, and chronic joint and low back pain are significantly more common in rural than in urban residents.[5] Second, rural populations are older and poorer than urban populations.[6] Third, 20% of rural residents lack medical insurance, compared with 17% of urban residents overall.[7] As a consequence, rural

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residents more often report that household members delay or do not receive medical care because of cost.[5] Finally, American Indians, Alaska Natives and Hispanics are over-represented in rural populations.[8] Members of these racial/ethnic groups are also twice as likely as their White counterparts to lack health insurance.[9]

A related problem is the shortage of primary care providers in the PNW. It has been estimated that 27% of rural primary care physicians in the PNW will retire in the next 10 years.[10] Unfortunately, newly trained American physicians are unlikely to fill this gap, as they continue to avoid primary care, particularly in rural settings. Physician retention is also difficult in rural areas, with low rates of job satisfaction and poor access to specialty referral networks among the key contributors to loss of primary care providers.[11] Notably, the cost of recruiting and replacing a primary care provider can exceed $250,000.[12] Given all these challenges, telehealth is an attractive approach for providing specialist care to rural populations and alleviating burdens on rural primary care providers in the PNW region.

Project ECHO model

The Project ECHO model (Extension for Community Health Outcomes) was developed at the University of New Mexico (UNM) to provide better access to liver specialists for patients with hepatitis C.[13] Regularly scheduled telehealth clinics are operated that bring together community-based primary care providers and specialists. Community providers learn best practices in chronic disease management through learning loops, in which they co-manage patients with specialists and expand their knowledge through case-based learning. Over time, these learning loops result in improved knowledge, skills and self-efficacy among participating providers.[3] This increases access without having to recruit additional providers. A significant outcome for clinicians was the confidence they gained to serve as local experts, thus increasing local capacity.[4,14] Another benefit was reduced professional isolation and increased professional satisfaction, which improve provider retention.

A clinical trial conducted at the UNM demonstrated that the care delivered in Project ECHO was as safe and effective as that delivered by specialists at an academic medical centre.[15] Patients with chronic hepatitis C treated through the project had the same cure rate as those treated at the academic medical centre. Moreover, patients treated through Project ECHO had a lower serious adverse event rate, 6.9% vs. 13.7%. A higher percentage of patients in Project ECHO were Hispanic, a demographic group that is typically associated with poorer response to treatment.[14] Finally, the cure rates in the trial were equivalent to those reported in other, non-telehealth clinical trials.[16,17]

Adaptation to the Pacific Northwest

In 2009, the Robert Wood Johnson Foundation funded a pilot project to extend Project ECHO's treatment module for hepatitis C to Washington State. Videoconferences were added in the areas of chronic pain, integrated addictions and psychiatry, and HIV/AIDS.

The UW Project ECHO built on previous telehealth programmes. Many participating clinics had videoconferencing equipment and were familiar with the technology and process. In addition, the UW Project ECHO team recruited federally qualified health clinics that served underinsured and poor patients. Later, the project expanded to other PNW states. The number of participating clinics was capped at approximately 20 to accommodate regular videoconferences with each clinic.

Once representatives of a rural clinic expressed interest in participating, they were asked to identify an appropriate clinical team to work in the chosen disease area (e.g. hepatitis C,

HIV/AIDS). The project offered weekly multispecialty advice, after-hours access to specialists, and no-cost continuing medical education credits. In return, the site agreed to present at least 10 patients annually, complete semi-annual surveys and provide timely updates of patients on antiviral therapy. The typical rural team consisted of a primary care physician and a nurse practitioner or medical assistant. Two sites used a pharmacist as the primary point of contact.

The orientation process included a site visit by project staff. The site visit accomplished three goals. First, the videoconferencing connection was tested between the site and UW. Second, a clinical update was provided in the disease domain which would be covered in the weekly videoconference, including a review of the latest diagnostic and treatment guidelines. Finally, site clinicians presented two or three cases to the UW clinicians and received clinical feedback as well as mentoring about concise case presentation. These components of the site visit were designed to build trust between the community clinic staff site and UW specialists, while enhancing the specialists' understanding of the local clinic context.

Telehealth operations

Each hour-long weekly videoconference began at noon to minimize the effect on clinic routine. The site team completed a standard intake form in advance and faxed it to the project team at least 24 hours before the videoconference. These forms had no patient-identifying data, but they included basic demographic information, current medications, relevant past medical history, laboratory results, pathology reports and radiological imaging. An agenda for case presentations was distributed to participants in advance by email. The clinicians at UW began the videoconference with a 15-min didactic session on a topic relevant to the disease or condition to be discussed (Figure 1). Periodically, these sessions summarized national and international conferences. For participants who could not join the conference, a recording could be retrieved afterwards through a secure web site.

After the didactic session, rural clinicians presented their cases to the multi-specialty panel while other rural clinicians listened. The UW team advised the clinician on the case, following up with a written multi-specialty impression and recommendation faxed within 24 hours. Other rural clinicians also offered their suggestions and experience during the videoconference. The number of cases discussed ranged from 2–3 per hour for chronic pain, HIV/AIDS, addiction and psychiatric problems, to as many as 15 cases per hour for hepatitis C.

Outcomes

The pilot project was successful, as judged by the number of patients co-managed and providers who attended. At the end of June 2012, the project had provided 23 different videoconference clinics for hepatitis C, with 263 participating clinicians representing a total of 399 patients (see Table 1). Of this total, 167 patients had started antiviral therapy for hepatitis C, including 50 with newly approved protease inhibitors. The pilot project has expanded to include chronic pain, HIV/AIDS, and addiction and psychiatric problems. The locations of the participating clinics are shown in Figure 2.

Challenges

An initial challenge was to find an appropriate location for videoconferencing equipment in rural clinics. Participating sites often installed the equipment in conference rooms or in common areas such as kitchens or break rooms. Unfortunately, this prevented quiet, confidential consultations in which clinicians had ready access to patient charts. We

therefore installed software on desktop computers in clinicians' offices, adding a webcam and a microphone. This created a more intimate user experience, and cost much less than previous layouts. Another challenge was the lack of administrative support for clinician participation and the overriding demand on clinicians to see more patients. Despite the videoconferences being held in the middle of the day, clinicians reported seeing fewer patients on the day of the videoconference. In response, we made the case to site administrators that clinicians were receiving continuing medical education and were more satisfied in their jobs because of project participation, thus reducing the chance of clinician turnover. This was accepted as a reason to permit participating clinicians to see fewer patients than non-participating clinicians. Nonetheless, eight participating clinicians left rural sites. In over half of these cases, the clinic continued its participation because an entire team was involved, and another member of the same team became the point of contact with the project.

Another problem was the reluctance of some participating clinicians to present cases. In interviews with participants, we found a variety of reasons for this hesitancy. First, some rural participants were intimidated by the number of experts attending and felt they would be revealing their lack of expertise in public. Second, clinicians were too busy to complete the intake forms. Lastly, rural participants occasionally found that there were simply too many opinions provided, some of which were contradictory. We therefore reduced the number of academic specialists at the UW and visited sites more often. During these visits, we encouraged clinicians to present their cases in order to establish trust and open dialogue. We have worked to make both the intake form and the discussions more concise and to give concrete recommendations before moving onto the next case presentation.

A final and continuing challenge is financial sustainability. The project has been funded almost exclusively by grants and eventually these monies will run out. Accordingly, we have worked with third-party payors, such as Medicare and Medicaid, to reimburse both the academic medical centre and participating sites. In New Mexico, several Medicaid managed care organizations have agreed to reimburse both UNM Project ECHO (at a rate of $400 per case) and each participating rural site (at a rate of $150 per case). We continue to work in this area, both to estimate the cost savings and return on investment and to develop a long-term business plan.

Future plans

We plan to provide clinics in other chronic, complex conditions, including rheumatology, cardiovascular disease, chronic pulmonary diseases and child psychiatry. In 2012, the Project ECHO programmes at UNM and UW were awarded an $8.3 million pilot grant by the Center for Medicare/Medicaid Innovation to test the model in 'high utilizers' of Medicaid, defined as patients in the top 10% of annual expenditures. We will partner with managed care organizations and community health clinics to provide high-quality care to high utilizers at lower cost. We envisage health-care teams consisting of a primary care clinician, a social worker, a nurse and a community health worker who has been trained in case management and motivational interviewing. These difficult cases will then be presented regularly to a multidisciplinary panel of experts at UW and UNM. The intention is to reduce costs and improve the quality of care.

The same model could also be used in developing countries, where access to specialist care can be difficult for rural residents. In India, partners have established pilot programmes in HIV/AIDS, autism and poisoning. There are interested sites in several other countries. Vietnam, Chile and Uruguay expect to launch their versions of Project ECHO in 2013.

In summary, the Project ECHO model has been successfully adapted to the Pacific Northwest of the US. This model of telemedicine may provide a useful way to bring specialist care to rural areas in both industrialised and developing countries and to perform comparative effectiveness research.

Acknowledgments

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Figure 1.
A typical Project ECHO session in which academic specialists listen to a case presentation by rural clinicians
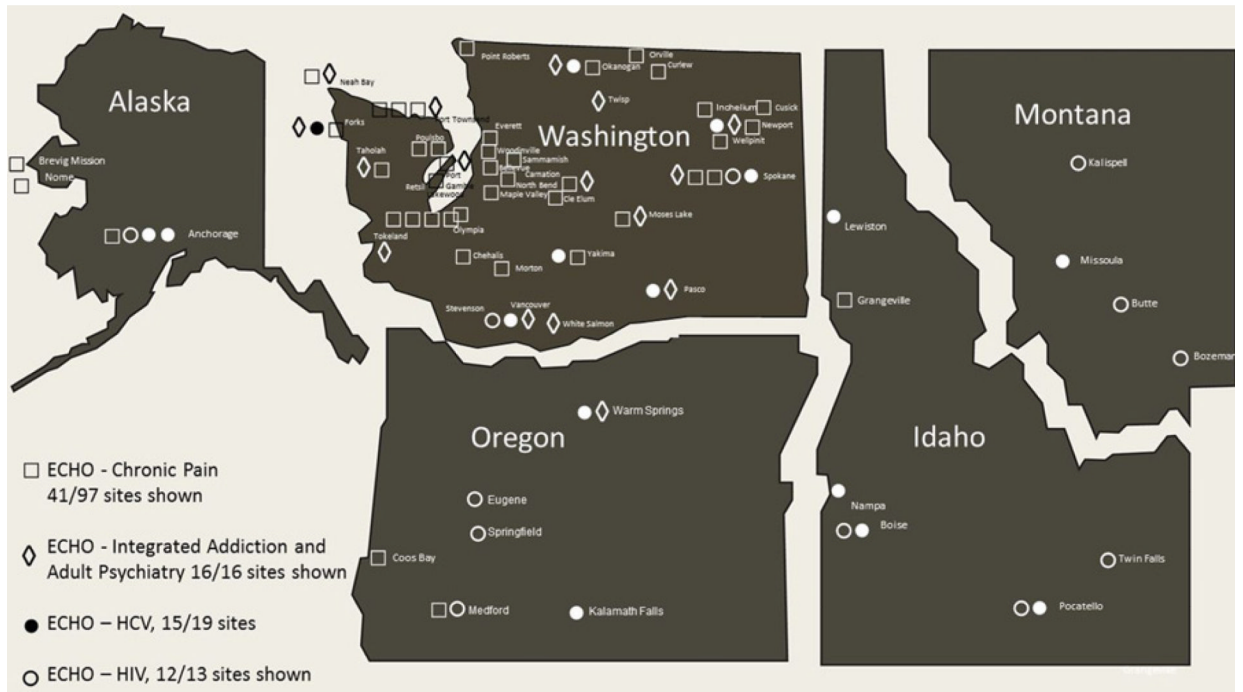
Figure 2.
Regularly participating sites in the Pacific Northwest. The sites span 3800 km and three time zones

Table 1

Number of clinics, clinicians and patients presented

	Year started	No of clinics	No of clinicians	No of patients
Hepatitis C	2009	23	263	399
Addiction and psychiatry	2010	16	239	105
Chronic pain	2011	97	390	101
HIV/AIDS	2012	13	56	50