Project ECHO: Knowledge Networks for the Treatment of Complex Diseases in Remote, Rural, Underserved Communities

United States
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Concise Summary: Help us pitch this solution! Provide an explanation within 3-4 short sentences.

The U.S. Dept of Health and Human Services’ Healthy People 2010, was one of the first programs to identify the elimination of health disparities as a national health goal. Rural, uninsured, and underserved populations represent three of the most significant sectors of inequality in the provision of health care in the U.S. system. Additionally, many patients in rural and underserved areas with chronic complex diseases such as HCV, substance use and mental health disorders face difficulties in accessing the specialty treatment they need. The ECHO model addresses this problem by giving physicians who specialize in treating complex and chronic conditions like HCV access to technology, enabling them to share knowledge about best practice protocols using a case-based learning approach to co-manage patients with primary caregivers in rural communities and prisons in New Mexico. Conservative estimates suggest that approximately 34,000 New Mexicans, including 2500 prisoners are infected with HCV, and the state leads the nation in deaths from chronic liver disease and cirrhosis. Prior to the launch of project ECHO, less than 1600 rural residents and no prisoners had received treatment for chronic liver disease. Since its inception in June 2004, Project ECHO has established 21 HCV treatment centers in rural New Mexico and at prisons around the state, resulting in an addition 3500 patients are receiving treatment during this time who were otherwise unlikely to have received any treatment at all. Given the success of the model to date, additional ECHO clinics have been launched for rheumatology, substance use and mental health disorders. Empowering primary caregivers at rural clinics has several long term effects. Rural physicians gain expertise, earn required continuing education credits, and are encouraged to remain in remote communities by having one of their highest priority needs answered: an opportunity to continue learning and to interact with professional colleagues.

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About You

Location
Project Street Address
Project City
Project Province/State
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Project Country

Your idea
Project ECHO (Extension for Community Healthcare Outcomes) is an innovative, collaborative partnership of an academic medical center with a network of rural health clinics, Public Health Service, and the Department of Corrections for the delivery of health care and clinical education in the management of complex, common and chronic diseases in underserved areas, using hepatitis C (HCV) as a model.

The key component of the ECHO model is a disruptive innovation called a Knowledge Network. In a one-to-many knowledge network, the expertise of a single specialist shared with several primary healthcare providers, each of whom sees numerous patients.

The flow of information in a Knowledge Network is NOT unidirectional; the specialist and community-based primary care providers gain invaluable feedback and case-based experience through weekly consultations.

Teledicine and internet connections enable specialists in the program to co-manage patients with complex diseases using best practice protocols, case-based knowledge networks and learning loops. Learning loops are case-based educational experiences in which community providers learn through three main routes: (1) longitudinal co-management of patients with specialists, (2) other primary care providers on the network via shared case-management decision making and, (3) short didactic presentations on relevant topics, such as vaccination for hepatitis A and B and diagnosis of depression. These learning loops create deep domain knowledge about the area in question—here HCV—among rural providers, enabling them to provide the highest quality treatment for their patients Systematic monitoring of treatment outcomes is an integral aspect of the project. We believe this methodology will be generalizable to other complex and chronic conditions in a wide variety of underserved areas to improve disease outcomes. The primary beneficiaries of this innovation are patients in underserved areas.

Delivery Model

Project ECHO uses teleconferencing and videoconferencing; Internet-based assessment tools; online presentations; and telephone, fax, and e-mail communications to connect specialists with primary care providers in prisons and rural areas and to promote the use of identified best practices. Telemedicine and Internet connections enable specialists and primary care providers to co-manage patients with HCV infection, increasing the capacity of rural clinicians to provide treatment for HCV. Project ECHO participants must have access to the Internet and telephone service (including a fax machine and a speaker phone). Video conferencing is optional but enhances the interaction between the partners and specialists and requires broadband access and a video camera. Project ECHO network partner organizations are recruited through statewide health care conferences, presentations, and partner contacts. Project ECHO network clinicians include pharmacists, nurse practitioners, primary care physicians, and physician assistants. Once a provider organization joins the Project ECHO network, members of the UNM HCV team visit the site to conduct a 1-day training workshop. After completing orientation and training, network clinicians present and discuss their HCV patients during weekly 2-hour telemedicine clinics. The clinics use a standardized, case-based format that includes discussion of treatment complications and psychiatric, medical, and substance use issues. During these clinics, network clinicians collaborate with specialists in gastroenterology, infectious...
Project ECHO is designed to develop network clinicians’ skills so that they can deliver the highest quality HCV care with less need for specialist assistance. Because specialists have limited time available, a project based only on consultations with the UNM specialists would have limited ability to expand HCV care.

**Key Operational Partnerships**

The University of New Mexico (UNM) provides project leadership, specialist expertise, technology and outcomes evaluation. Thirteen federally-qualified rural health clinics are currently partnered with the University of New Mexico to set up centers of excellence for HCV care for residents of rural communities. The Indian Health Service currently provides care for Native Americans in the state and has established a center to treat patients with HCV. Eight prisons in the New Mexico Department of Corrections have partnered with project ECHO. Primary care physicians and other health providers participate in clinics and treat prisoners who have HCV and HIV.

The Indian Health Service currently provides care for Native Americans in the state and has established a center to treat patients with HCV. The Primary Care Association is a principal partner and represents over 50 federally-qualified health clinics through a statewide network linked by T1 lines. The New Mexico Department of Health also provides funding for Project ECHO, acts as a consultant on the network, and has established a treatment site in Las Cruces. These partnerships are the core of the collaborative project and are essential for its success. The primary objective of the project is to enhance the ability of the UNM partners to provide best practice care for common, chronic and complicated illnesses to rural and underserved patients throughout the state.

**Financial Model**

The cost of health care in the United States is higher and continues to increase faster than in other developed countries. Yet a commensurate gain in quality of care and patient satisfaction is not being obtained. (Anderson, Reinhardt et al. 2003; Reinhart, Hussey et al. 2004) Despite higher spending in the U.S., Canada and the European Union have consistently earned higher patient satisfaction scores on cross-national surveys. (Blendon, Benson et al. 1995) A central factor in the disparity between health care expenditures and outcomes in the area of complex disease management is the relative lack of collaboration between the public, the government, and the academic and private sectors in the U.S.

The most effective interventions to improve health care delivery to rural areas are those that support the education of primary care physicians, increase the flow of providers to rural areas, strengthen and support rural health care institutions and integrate rural health care into larger regional systems. The ECHO model principles are designed to help achieve these objectives in rural America and the developing world. The traditional fee for service system does not have an adequate reimbursement methodology for education and training of primary care physicians to enhance collaborative care for underserved populations. To overcome this barrier, ECHO has adopted a public health model of funding. In this model federal and state governments absorb the cost of disseminating best practices by funding academic health centers to start “knowledge networks” for chronic, complex disease care. In the future we anticipate large integrated healthcare systems and health maintenance organizations to set up “knowledge networks” to empower primary care physicians.

To address HIV treatment in many of the developing countries in Africa, the cost of setting up “knowledge networks” requires funding by international agencies and foundations.

**What is your annual operating budget?**

1.3 m

**What are your current sources of revenue? (please list any sources that are foundation grants)**

The project is supported by a federal grant from the Agency of Healthcare Research and Quality, Department of Health and Human Services:

1 UCI HS015135-03

We also receive funding from the New Mexico Legislature and New Mexico Department of Health.

**Effectiveness**

Since June 2004 we have conducted 205 HCV “knowledge network” clinics and provided 2316 consultations for HCV patients. 21 HCV centers of excellence have been established around New Mexico and thousands of high risk patients have been screened for the disease and eligible patients have received a 6-12 month treatment regimen with interferon and ribavirin under the remote supervision of UNM specialists. 71% of rural patients and 74% of prisoners treated were minorities. Outcome studies have demonstrated that the care provided in rural areas and prisons is as safe and effective as that provided in a university-based clinic. Many of these patients are now free of the HCV virus. Without the ECHO project these patients would have suffered the long term effects of HCV including liver cancer or cirrhosis and might have required a liver transplant.

Primary care providers have received more than 3000 continuing medical education credits for participation. Outcomes research to evaluate effectiveness of the education model has revealed that physician competence and professional satisfaction is enhanced rapidly in a highly statistically significant way. As a result of the success of the HCV ECHO model there has been significant demand to treat many other complex and chronic diseases, and we now have ECHO clinics for substance use disorders, mental health disorders, cardiac risk reduction (diabetes, hypertension, hyperlipidemia, obesity, smoking cessation, nutrition and exercise physiology), prevention of teenage suicide, rheumatology and childhood obesity.

The University of New Mexico has adopted this model as an important way to fulfill its mission to improve the health of all New Mexicans.

**Which element of the program proved itself most effective?**

The most effective part of the program has been increased provider knowledge and self efficacy regarding care of HCV which has enhanced capacity for care in rural areas and prisons. The impact on provider knowledge and self-efficacy in treating complex health conditions is assessed through intensive written surveys administered at baseline and repeated every six months. In a survey of 24 participating providers, almost all have reported moderate or major improvements in their knowledge and self-efficacy about a variety of treatment issues.

- Knowledge about HCV management and treatment: Major: 96% Moderate: 4%
- Symptoms of HCV patients in treatment: Major: 79% Moderate: 13%
- Achieved competence in caring for HCV patients: Major: 92% Moderate: 8%
Future funding will be used to demonstrate the effectiveness of the model for HIV care in India and Vietnam.

4) The project director has given more than 50 oral presentations at national and international meetings including presentations in Japan.
3) The project was featured in a public television series “Remaking American Medicine” on the Health and Human Services web site:


Scaling up Strategy

We envision a system in which large urban tertiary healthcare centers and academic health centers worldwide will form the hubs of “knowledge networks” each supporting numerous rural centers of excellence to provide care for chronic, common, complex diseases.

Our primary goal is to disseminate these concepts worldwide so that other healthcare systems and nations can use the principles for enhancing healthcare for underserved populations. Our efforts to date include:

1) The publication of two peer reviewed articles on the model.

2) The project was selected as a success story by AHRQ (Agency of Healthcare Research and Quality) and highlighted on the Health and Human Services web site: <a href="http://tinyurl.com/27xa3w" target="_blank">tinyurl.com/27xa3w</a>
3) The project was featured in a public television series “Remaking American Medicine”

4) The project director has given more than 50 oral presentations at national and international meetings including presentations in Japan, Vietnam and India.
5) We have established a collaboration with the National AIDS Control Organization of the Govt of India to use the ECHO model as part of the HIV control program.

Future funding will be used to demonstrate the effectiveness of the model for HIV care in India.
**Stage of the initiative:**

1

**Expansion plan:**

Our short term plan is to expand the ECHO model for care of other common, chronic, complex diseases in rural New Mexico and prisons. In April 2006 we initiated a program to increase access to chemical dependency treatment for underserved residents across the state of New Mexico. Because New Mexico leads the nation in the incidence of death from heroin overdose the initial focus for the substance use clinic has been on opiate dependence; over the next year we will expand to include alcohol and other substance use disorders. The ECHO substance use clinic has provided Buprenorphine training (8 hours of face-to-face training per provider) and federal certification at no cost to 60 physicians, more than doubling the number of providers in New Mexico who can prescribe Buprenorphine for opiate addiction. We plan to develop 10 additional Centers of Excellence throughout the state for the treatment of substance abuse and associated behavioral health disorders (similar to what is being accomplished for treatment of HCV). Other ECHO clinics in various stages of implementation are HIV care, rheumatology consultation, autism, cardiac risk reduction, high risk pregnancy, occupational health disorders, childhood obesity, and prevention of teenage suicide. Over the next year we plan to partner with the government of India to use the ECHO model for expanding access to anti retroviral treatment for HIV in rural India.

**Origin of the Initiative**

In 2003 we developed the ECHO model in response to a major community need. Estimates suggest that 34,000 people in New Mexico are infected with HCV. More than 40% of these patients are uninsured and many live in remote rural, and underserved communities with no access to treatment. Most rural clinics do not have the expertise to treat these patients and the only University clinic in New Mexico lacked the capacity to provide treatment, which requires first weekly and then monthly physician and nurse visits for 12 months. Additionally, the round trip distance from the centrally located clinic in Albuquerque can be as high as 500 miles for many patients. Project ECHO began with the goal to expand access to HCV treatment for all patients in New Mexico by using technology, best practice protocols, and case based learning to leverage scarce specialist resources in the treatment of HCV.

**Sustainability**

**What are your two main challenges to finance the growth of your initiative**

One main challenge in expanding project ECHO is provider turnover in rural areas and prisons. When provider turnover occurs at a Center of Excellence, the University project ECHO staff have to start from scratch and retrain new providers. Provider staff in rural areas and prisons are often overworked and therefore are pulled in many directions. Therefore the project works best if some funding can be provided to rural sites to hire additional staff. The main challenge in expanding to other countries is the absence of adequate healthcare infrastructure and teleconferencing equipment. In some cases, infrastructure improvements such as reliable power and high speed internet connections are required. An additional $500,000 per year of operating costs will allow us to pilot the project in India.

**How did you hear about this contest and what is your main incentive to participate?**

Dr Scaletti, Associate Director of ECHO discovered this contest on the internet. Our main motivation is to raise awareness of the ECHO model, to make contacts with potential partners and have the opportunity to apply for future funding for our international expansion.

**The Story**

**Do you have an annual financial statement?**

No. We are a part of the University of New Mexico financial system.

**Do you currently have an annual financial statement that tracks profit/loss?**

In the Department of Internal Medicine we have active monitoring of financial information including all revenue and expenses at the Department Level. Project ECHO is treated as a separate cost center with full financial reporting capability.

**Please describe the amount (and/or type) of funding you need to implement your initiative, at year 1 and at year 5.**

Funding will be used for the following expenses:

1) Salaries for program staff in India
2) Cost of internet and videoconferencing for knowledge network clinics in India
3) Personnel costs at the University of New Mexico
4) Travel and supplies

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