

## Innovations in Health Care Delivery

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*Quality Matters* is a newsletter from The Commonwealth Fund. Published bimonthly, the newsletter explores issues of quality and efficiency in health care.

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Welcome to *Quality Matters*, a bimonthly roundup of news and opinion on quality and efficiency, information technology, performance improvement initiatives, and policy innovations.

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### Improving the Quality of Rural Health Care Through Collaboration

*By Sarah Klein*

**Summary:** *A number of academic medical centers are using collaborative care models and distance learning programs to broaden the scope and improve the quality of health care services in rural communities. While varied in structure, many of these programs seek to expand the knowledge of local providers and enhance the linkages between urban and rural medical centers, in hopes of reducing disparities in care between the rural and urban populations they serve.*

Although 20 percent of Americans live in rural communities, less than 10 percent of the country's physicians practice in those areas. The scarcity of rural health professionals contributes to increased rates of hospitalizations for patients with conditions such as such as asthma and pneumonia, which might be avoided if patients receive timely and effective primary care.<sup>1</sup> The scarcity also may be at least partially responsible for the greater incidence of chronic health conditions such as hypertension, heart disease, and emphysema among rural residents.

Poverty and lack of insurance also impede consistent and comprehensive access to medical care in rural communities. Nearly one-quarter of all adults in rural communities are uninsured, and nearly

60 percent of the rural uninsured come from families with a low income, defined as 200 percent of the federal poverty level or less.<sup>2</sup> A lack of money, time, or both often prevent residents from traveling to the urban medical centers that offer the services they need.

A number of academic medical centers are attempting to address these challenges with innovative programs designed to increase the capacity of rural providers to deliver primary and specialty care. Many of these medical centers are using collaborative care models that link rural physicians, nurses, and caregivers with urban specialists to address needs that might otherwise require a referral to an urban medical center. This month's case study features the work of one such program at the University of New Mexico, which uses telemedicine, case-based learning, and disease management techniques to guide rural community providers in applying best practices for patients with hepatitis C.

But the University of New Mexico program is one of several. The University of Virginia Health System in Charlottesville is partnering with health systems, health departments, and community groups in and around Appalachia to identify and address local health needs. As part of the Blueprint for Health Improvement and Health-Enabled Prosperity—a strategic plan to address health disparities in southwest Virginia—the academic medical center is training nurse practitioners in Appalachia to perform video-colposcopies on women who exhibit cervical dysplasia. The procedure, which is critical to preventing and/or identifying cervical cancer, is monitored in real time by Peyton T. Taylor, Jr., M.D., a gynecologic oncologist at the health system, who mentors the nurse practitioners and provides them with ongoing training, which is necessary for credentialing. "He's a remarkable frontline caregiver teaching them to be remarkable

frontline caregivers," says David Cattell-Gordon, the health system's director of rural network development.

The first of two trainees began working this past summer in a health department office, where the health system has provided video equipment. Subsequent trainees will work in federally qualified health centers in the region, providing a diagnostic service that otherwise would not be available to uninsured women in this area.

The health system also has been helping Johnston Memorial Hospital, a 135-bed hospital in Abington, Va., establish a breast cancer program in its cancer center. Its medical staff will participate early next year via videoconference in the health system's tumor board, a multidisciplinary group of health care providers who meet to review diagnostic information and discuss treatment options. The health system is training four nurses in the area in advanced care coordination for cancer cases. "What we want to be able to do is improve outcomes from cancer in the region," Cattell-Gordon says.

The U.C. Davis Health System in California, meanwhile, is linking its specialists with rural primary care physicians who are treating patients with complex conditions such as HIV/AIDS and hepatitis C. The specialist, primary care physician, and patient meet as a group using videoconferencing equipment, but over time the health system is finding the primary care physicians are becoming more self-sufficient in providing such care and reserving consultation for more complex cases.<sup>3</sup> The Sacramento, Calif.-based health system, which provides a wide range of telemedicine service to more than 80 locations in California and is reimbursed for those services through contracts with local providers and insurance, among other sources, also supports rural hospitals by

providing infectious disease consultations to those hospitals that don't have infectious disease specialists on staff, using telemedicine linkages. "We're moving the expertise around to where it is needed," says Thomas S. Nesbitt, M.D., M.P.H, associate vice chancellor for strategic technologies and alliances at U.C. Davis School of Medicine.

### **Reaching Rural Residents**

Some of the programs have gone a step further by trying to engage rural residents in health prevention programs. The University of Kentucky, for instance, has been working to address high rates of obesity and tobacco use in rural communities by encouraging residents to participate in tobacco cessation, exercise, and parenting programs.

Its Health Education through Extension Leadership (HEEL) program—a collaborative effort of the University of Kentucky's College of Agriculture, its extension service, and the university's health colleges—relies heavily on extension agents to reach rural residents. The agents, whose positions were created through the U.S. Department of Agriculture's Cooperative State Research, Education, and Extension Service and whose salaries are paid by the U.S.D.A. and state and local governments to translate the research and innovation developed at land-grant colleges and universities to the public through educational programming, are influential in the counties where they live and work.

In Kentucky, the agents have helped to introduce public health researchers to local communities and revise approaches to prevention programs. "They know everyone in the community," says F. Douglas Scutchfield, M.D., director of the Center for Public Health Systems and Services Research

at the University of Kentucky's College of Public Health in Lexington. And those relationships helped bridge a gap between the university researchers and rural residents. After holding a focus group about tobacco cessation in one community, the researchers "learned they weren't doing it right and that family was key. And that if in fact they could engage the family in helping [the smoker] quit they were going to have a better success," Scutchfield says.

The smoking cessation program is still in its pilot stage; however, a 10-week weight loss course the extension agents have promoted is showing results. Of 1,829 people who participated in a weight loss program offered in roughly half the counties across the state, 722, or 39 percent, succeeded in losing 5 percent of their body weight, and 80 percent of those surveyed three months later reported they were maintaining the loss. The HEEL program, which also works to improve cancer screening, mental health awareness, and self-care for diabetes patients, receives an annual appropriation of \$650,000 through Congress. It uses its county-level programs as pilots and leverages data from them to apply for grants that enable it to expand programs elsewhere, Scutchfield says.

Having dedicated, local agents can be crucial to reaching residents of rural communities, where cultural barriers include distrust of outsiders, says Burton Halpert, Ph.D., associate professor of sociology and medicine at the University of Missouri Kansas City. Halpert tapped the agents' expertise in the 1990s to increase childhood immunizations in rural communities as part of a U.S.D.A. rural health initiative. Rural residents "tend to be older, more independent, and less trusting of outsiders," Halpert says.

## Using Extension Centers to Bring Evidence-Based Care to Rural Practices

Extension centers, which were created nearly a century ago to help modernize American farms by applying the research and technology developed at land-grant colleges and universities, have traditionally focused on agriculture, home economics, and youth development, but the notion of using extension offices and their agents—or a similar model—for health care has been gaining traction.<sup>4</sup> In June, Kevin Grumbach, M.D., a professor of family and community medicine at U.C.S.F. School of Medicine, and James W. Mold, M.D., M.P.H., director of research for the department of family and preventive medicine at the University of Oklahoma Health Sciences Center, proposed establishing a national Health Care Cooperative Extension Service to help primary care practices implement chronic care models, advanced access scheduling,<sup>5</sup> group medical visits, and other innovations.

The Substance Abuse and Mental Health Services Administration (SAMHSA) created a similar program for mental health services in 1993, when it funded 11 extension centers (now 14 regional centers) around the country to increase the use of evidence-based models of treatment. The Prairielands Addiction Technology Transfer Center was one of the first. Housed at the University of Iowa College of Public Health in Iowa City, the center trains providers and health care facilities in five states on evidence-based models of care, disseminates academic research, provides guidance to new substance programs at health care facilities, and conducts training on topics shown to have an impact on outcomes, such as the use of interviews to elicit a patient's motivations for changing his or her behavior. The program also has identified local problems, such as low rates of certification for drug and alcohol

counseling among minority providers, and helped to address them, says Anne Helene Skinstad, Ph.D., Psy.D., program director. The center operates on a budget of \$500,000 per year, which is funded by SAMHSA, matching funds from states, and grants from foundations.

Building on the extension center model, Congress already has appropriated \$643 million for the Health Information Technology Extension Program, which will create regional centers to provide technical assistance and guidance to rural and urban health providers as they implement electronic health record systems using money from the American Recovery and Reinvestment Act.

The health reform bill passed by the U.S. House of Representatives in November would increase incentive payments for primary care doctors practicing in underserved areas and would provide billions of dollars in new funding for community health centers, which play an important role in rural health care. The bill also would expand the National Health Service Corps to address work shortages in high-need areas.

### Funding the Model

Finding funding for academic medical centers that enhance the capacity of rural providers to deliver medical care may depend on the programs' ability to demonstrate the cost-effectiveness of their work. There is not a great deal of research on the topic, but many see anecdotal evidence. Rob Sprang, M.B.A., director of Kentucky Telecare, remembers the child in the Medicaid program who made eight visits to a primary care physician and one emergency department visit for a skin condition before a pediatric dermatologist accurately diagnosed the problem through a telemedicine visit as flea bites.

Currently, many of these programs rely on a mixture of grant funding and revenue from contracts with correctional institutions and other facilities that have difficulty recruiting health care professionals. The physicians that provide consultations via telemedicine are paid by Medicare, Medicaid, and some private insurers, but "we are not where it is at parity with a face-to-face visit," Sprang says. He says many physicians participate because they feel an obligation to help the

rural communities. They know "there are patients that cannot or will not travel for economic reasons."

But the lack of stable funding is distracting. "It's this anxious mix of foundations and grants and clinical revenues from here and there. We're always cobbling together an approach, rather than having the foundation solidly in place so we can demonstrate outcomes," Cattell-Gordon says.

## Notes

1. J. N. Laditka, S. B. Laditka, and J. C. Probst, [Health Care Access in Rural Areas: Evidence that Hospitalization for Ambulatory Care–Sensitive Conditions in the United States May Increase with the Level of Rurality](#), *Health and Place*, published online January 10, 2009.
2. Rural Health Research and Policy Center, Profile of Rural Health Insurance Coverage: A Chartbook, June 2009.
3. Although such programs have the potential to raise concerns among specialists about competition, they have not in Davis. "There aren't a lot of specialists anxious to go and practice [in rural communities]," says Dr. Nesbitt.
4. Many of the programs described in this piece are headquartered at academic medical centers at state schools. While not all are land-grant universities, many share a commitment to serve the health needs of residents in their states.
5. K. Grumbach and J. W. Mold, [A Health Care Cooperative Extension Service: Transforming Primary Care and Community Health](#), *Journal of the American Medical Association*, June 2009 301(4):2589–91.

## Case Study: Project ECHO Expands Access to Specialty Care for Rural Patients

By Martha Hostetter

***Summary:** An innovative project in New Mexico uses telemedicine, case-based learning, and disease management techniques to expand access to care for patients with hepatitis C and other chronic, complex conditions. Specialty providers based at the University of New Mexico help guide rural community providers in applying best practices to manage care. The community providers build their knowledge of particular conditions and serve as expert consultants in their regions.*

### Issue

Because of severe shortages of specialty providers in rural areas, people with complex conditions such as hepatitis C or rheumatoid arthritis often have to travel long distances or wait months to get treatment. Such problems are compounded by the fact that many rural

patients are poor and/or uninsured. Given these barriers, such patients often forgo treatment or wait until they have severe complications before seeking help.

New Mexico has a high proportion of residents who are poor (19.3 percent vs. 13.2 percent nationally) and uninsured (23.2

percent vs. 15.4 percent across the nation). And while more than one-third of residents live in rural or frontier areas, only 20 percent of the state's physicians practice there.

**Objective:** Project Extension for Community Healthcare Outcomes (Project ECHO) is designed to enhance the capacity of community health care providers to safely and effectively treat chronic, complex diseases such as hepatitis C in New Mexico's rural and medically underserved communities.

**Organization and Leadership:** Project ECHO is based at the Health Sciences Center at the University of New Mexico School of Medicine, the state's only academic health center, in Albuquerque. Sanjeev Arora, M.D., professor of medicine (gastroenterology and hepatology) at the Health Sciences Center, is the director and principal investigator of Project ECHO. Participating community providers treat patients in the state's prisons, federally qualified health clinics, rural family practice residency programs, Indian Health Service clinics, and primary care practices.

Project ECHO began in 2004 with \$1.5 million in funding from the Agency for Healthcare Research and Quality, and matching funds provided by the state. Since 2006, the New Mexico Legislature and the Department of Health have provided annual funding of \$1.6 million.

**Target Populaton:** Project ECHO providers treat patients in the following areas:

- asthma;
- child, adolescent, and family psychiatry;
- chronic pain;
- diabetes/cardiovascular risk reduction;
- hepatitis C;
- high-risk pregnancy;

- HIV/AIDS;
- integrated addiction/psychiatry;
- medical ethics;
- occupational medicine;
- pediatric obesity;
- psychotherapy; and
- rheumatology.

These clinical conditions are targeted because they are common, require complex treatment, and have a significant impact in terms of health and economic consequences. In addition, disease management for these conditions has been shown to produce good outcomes.

This case study focuses on Project ECHO's work with hepatitis C patients. In 2004, approximately 28,000 New Mexico residents had contracted the virus, yet less than 5 percent of them had been treated. In addition, thousands of prisoners had tested positive for the disease (with many more suspected of having it), but none had been treated. Lack of treatment can lead to severe complications, cirrhosis, or death. New Mexico has the highest rate of deaths from chronic liver disease or cirrhosis in the nation—linked both to hepatitis C and alcohol abuse.

Hepatitis C is curable in from 45 to 80 percent of cases, but treatment entails an intricate drug regimen and management of potentially severe side effects. Since many hepatitis C patients have psychiatric and substance abuse problems, effective treatment also requires patient education and behavioral changes.

**Timeline:** Project ECHO was launched in 2004. In all, there are 255 treatment sites around the state, including 21 focusing on hepatitis C.

**Process:** Project ECHO is based on four platforms:

- the use of teleconferencing and videoconferencing;
- case-based learning;
- disease management, focused on evidence-based care protocols; and
- use of a Web-based disease management tool to track outcomes.

Providers are recruited to participate in Project ECHO through presentations and the networks of partner organizations. At each of the 21 hepatitis C community practices, participants include a lead clinician (a physician, nurse practitioner, or physician assistant) as well as nurses or medical assistants who help manage patients' care. None of these sites had treated hepatitis C patients before joining.

Project ECHO is free and providers can earn continuing medical education credits for their participation. When a new provider joins, a team visits their practice to conduct a training workshop and assist with installation of technology for data sharing and audio/video conferencing. In addition, community providers visit the University of New Mexico to shadow clinicians as they treat hepatitis C patients.

Community providers take part in weekly hepatitis C clinics, called "Knowledge Networks," by joining a videoconference or calling into a teleconference line. There are two hepatitis C clinics each week: one for rural providers and one for those who treat prisoners, who tend to have high rates of recent substance abuse and psychiatric illness and therefore have different treatment protocols than other patients. The providers take turns presenting their cases by sharing patient medical histories, lab results, and treatment plans. University of New Mexico specialists from the fields of gastroenterology

and hepatology, infectious disease, psychiatry, pharmacology, and substance abuse listen to the case histories, ask questions, and provide advice. Project ECHO pays these specialists by reimbursing their university departments for the time they spend on such consultations.

Working together, the community providers and specialists manage patients' care following evidence-based protocols. (Community providers are ultimately accountable for patients' care, with specialists serving as consultants.) A major decision point is whether to initiate treatment—a process that can last as long as 18 months—or to first encourage behavioral changes that can improve outcomes such as weight loss or alcohol cessation. Discussion also centers on medication regimens, the best ways to handle the side effects of treatment, and issues related to psychiatric conditions or substance abuse.

According to Arora, this case-based approach creates a "learning loop," with community providers comparing notes, taking part in shared decision making, and learning from each other as much as the experts. It is effective, he says, because providers learn by "doing" rather than by reading medical literature or attending conferences. Community providers attend biweekly lectures (via video or teleconference) on clinical issues such as vaccination for hepatitis A and B and diagnosis of depression.

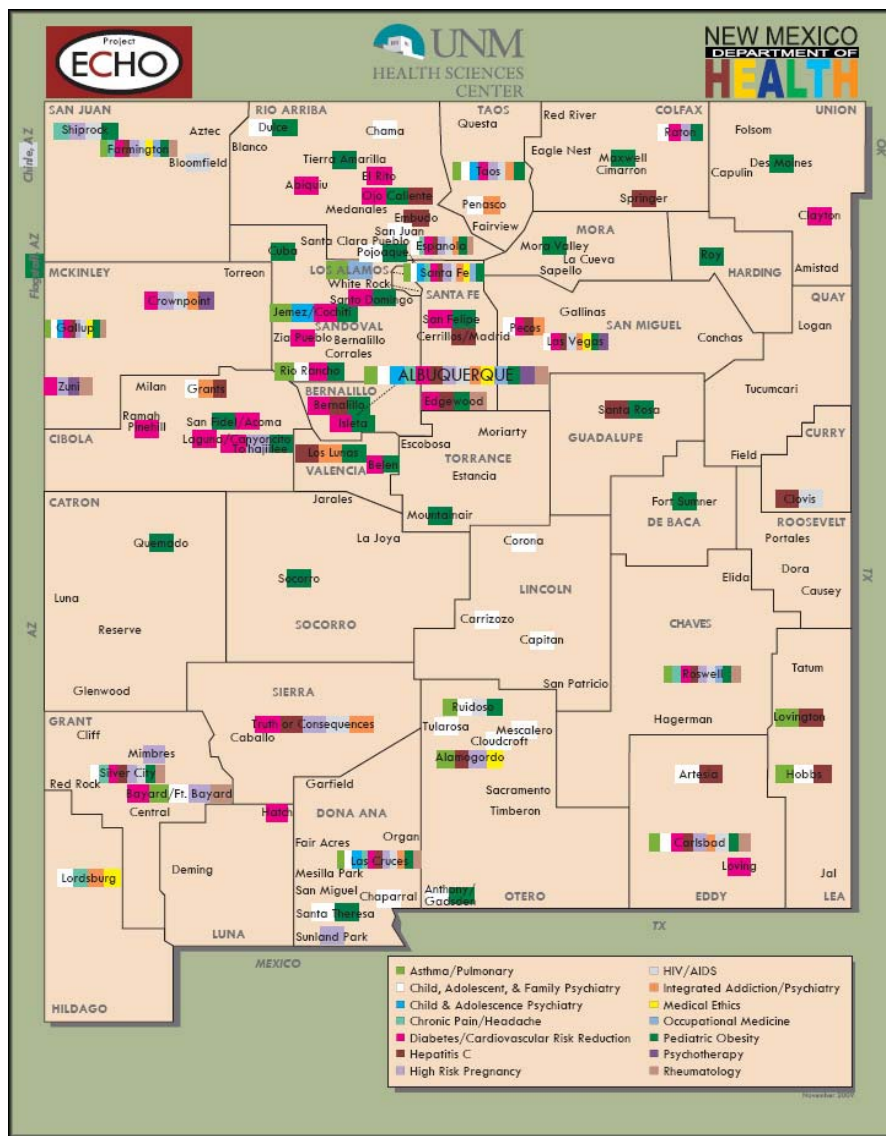
Using an electronic disease management tool, specialists at the University of New Mexico monitor the treatment process and outcomes. This oversight helps to ensure that community providers are following evidence-based care protocols. When needed, the specialists recommend mid-course corrections. For example, if a patient's lab test results suggest he is not complying with prescribed interferon injections, they might

suggest to his community provider that the patient come into their office for weekly injections. Remote monitoring of care gives Project ECHO's leaders insights into the way the care protocols play out in busy clinics, enabling them to make improvements.

Planners follow a regional strategy, seeding expertise in particular clinical areas throughout the state (Figure 1). Primary care

providers teach disease management skills to their coworkers and serve as expert consultants for their peers in the region. The goal is for care teams at the community clinics to learn to work together to manage chronic conditions, so that primary care providers gain competence in identifying and treating high-risk hepatitis patients while nurses and other office staff become adept in patient education and support.

Figure 1. Map of Project ECHO Treatment Sites



Note: Each color bar represents a treatment site in a rural area.

Source: ECHO Project, University of New Mexico Health Sciences Center, 2009

"We don't want every doctor in every part of the state to be an expert on hepatitis C," says Arora. "We want to create centers of excellence throughout the state."

**Key Measures:** To gauge the effectiveness of this care delivery model, leaders track the following measures:

- participating community providers' self-reported knowledge and skills of hepatitis C care; and
- quality and safety of care, as assessed through health outcomes.

**Results:** Project ECHO has expanded access to care for hepatitis C patients who otherwise would not have received treatment. Since 2004, there have been 400 Knowledge Network clinics, through which some 50 rural and prison-based clinicians

have received more than 4,000 consultations on hepatitis C patients. The clinicians have earned a total of 5,100 continuing medical education/continuing education hours. Through this process, 21 community or prison-based clinics have become "centers of excellence" in hepatitis C care.

After participating in ECHO for 12 months, community providers (physicians, physician assistants, and nurse practitioners) complete surveys evaluating the program. On all measures, providers reported having greater knowledge of and confidence in treating hepatitis C patients after participation (Figure 2). Notably, their self-reported ability to serve as local consultants for hepatitis C improved significantly. ECHO's leaders have used the results to improve the program, for example adding lectures on topics such as drug interactions and substance abuse.

**Figure 2. Project ECHO Community Clinicians' Competence in Hepatitis C Care**

**Scale: 1 = none or no skill 7 = expert can teach others**

Community Clinicians N=25	Before Participation in ECHO	After 12 Months
Ability to identify suitable candidates for treatment for hepatitis C.	2.8	5.6
Ability to assess severity of liver disease in patients with hepatitis C.	3.2	5.5
Ability to treat hepatitis C patients and manage side effects.	2.0	5.2
Ability to assess and manage psychiatric co-morbidities in patients with hepatitis C.	2.6	5.1
Serve as local consultant within my clinic and in my area for hepatitis C questions and issues.	2.4	5.6
Ability to educate and motivate hepatitis C patients.	3.0	5.7

Note: Based on clinicians' self-assessments (N=25). Source: ECHO Project, University of New Mexico Health Sciences Center, 2009

Although these results are from a self-selected group of volunteers, such motivated individuals are what the program needs to succeed. "This is not for everyone," Arora

says. "Many primary care physicians think diseases like hepatitis C are specialist diseases—not part of their job. But some have a desire for greater specialized

knowledge and feel committed to help underserved patients who can't come to the city for care."

In another survey, community clinicians reported that Project ECHO reduced their sense of isolation and improved their professional satisfaction.

From 2005 to 2009, Arora and his colleagues conducted a prospective cohort study to compare the quality and safety of hepatitis C care delivered by University of New Mexico specialists with that delivered by ECHO-trained community providers. The intervention sites were 14 community clinics and seven prison sites, at which providers treated a total of 257 patients. The University of New Mexico Liver Clinic served as the control site, with 127 patients.

The researchers found that rural and prison-based primary care clinicians delivered care that was as safe and effective as that delivered in the university hepatitis C clinic (Figure 3). There were no significant differences between the rates of patients who were cured or who did not respond to treatment. The rate of major side effects related to treatment was significantly lower among the ECHO population than among patients treated at the university clinic—a difference Arora attributes to the fact that many of ECHO's prisoner patients were large, strong men who are less likely to suffer side effects. Notably, community providers achieved cures for 57.4 percent of their patients. Other studies of community-based hepatitis C treatment found cure rates that were significantly lower.<sup>1</sup>

**Figure 3. Hepatitis C Treatment Outcomes, Project ECHO and University of New Mexico Liver Clinic Patients**

Outcome	ECHO Patients N=257	UNM Hepatitis C Clinic Patients N=127	P-value
<b>Non-response</b>	14.4% (10.5–19.4)	11.8% (7.0–19.0)	NS
<b>Significant Adverse Event</b>	7.8% (4.9–11.9)	15.0% (9.5–22.6)	P<0.01
<b>Sustained Viral Response</b>	57.4% (51.1–63.5)	62.2% (53.1–70.5)	NS

Notes: Non-response means < 2 log drop in hepatitis C viral load at 12 weeks or presence of virus at 24 weeks; significant adverse event refers to major side effects; completion of treatment means patients completed full course of prescribed therapy; sustained viral response means no detectable virus 6 months after completion of treatment, i.e., patient is cured. NS = not significant.  
Source: ECHO Project, University of New Mexico Health Sciences Center, 2009

**Next Steps:** As part of their participation in Project ECHO, community providers use a customized electronic disease management tool to collect and report patient data to

specialists at the University of New Mexico. Project leaders are now developing a more sophisticated electronic system that will help providers manage care through the use of

physician order entry and decision support, automated prompts, and other tools. For example, if a patient's hemoglobin level falls more than 2 grams per deciliter, the system will alert their community clinician and ask whether she wants to lower the dose of Ribavirin, one of the anti-viral drugs used in hepatitis C treatment. It also will include a patient portal, so that patients can track the results of blood tests to assess the progress of their treatment.

In addition, Project ECHO recently launched a program to use the Knowledge Network model to train community health workers throughout the state. There is evidence that community health workers can play key roles in helping patients manage chronic conditions, make recommended behavioral changes, and adhere to treatment plans. Project ECHO will seek health professionals as well as laypeople to assist patients in managing diabetes, hypertension, substance abuse, and other conditions, in addition to hepatitis C.

In 2007, Project ECHO won an international "changemaker" competition sponsored by the [Ashoka Foundation](#) and [Robert Wood Johnson Foundation](#) in which it was designated as a "Disruptive Innovation" that has the potential to "change health care nationally and globally." This recognition led to a \$5 million award from the Robert Wood Johnson Foundation in 2009. These funds will be used to expand Project ECHO's work in New Mexico in six clinical areas (asthma, diabetes, substance use disorders, rheumatology, chronic pain, and high-risk pregnancy) and to replicate the model of treatment for hepatitis C patients in Washington State

**Implications:** Project ECHO demonstrates that care delivered by primary care providers in rural areas and prisons can be as safe and effective as that provided by specialists in

academic health centers. The goal of the project is for community providers to gain enough knowledge of hepatitis C care to become self-sufficient, though they can continue to access the Knowledge Network clinics as needed. According to Arora, providers need less and less support over time, using the clinics mainly to elicit help with complex cases. In addition, the clinics and lectures inform them of the latest research findings.

The project also demonstrates that technology and cross-disciplinary collaboration can be used to leverage scarce health care resources. Many telemedicine projects link specialists with remotely located patients. Project ECHO, by contrast, uses technology to build knowledge and skills among remotely located providers.

In addition to technology, Project ECHO relies on cross-disciplinary collaboration for chronic disease management. Collaboration among specialty and primary care providers is an inexpensive way to increase the capacity to provide complex chronic care in medically underserved communities. "There are certain diseases that get put in the basket of 'specialty diseases'—rheumatoid arthritis, hepatitis C—but in some areas there will never be enough specialists to treat them," says Arora. "How then do you get the primary care physician to do it? ECHO uses existing community clinicians and gives them the expertise and confidence to be able to treat these diseases. This results in a major expansion in capacity."

Such networks also can help alleviate the sense of professional isolation experienced by many rural providers and help them keep up to date with evolving treatment methods.

Research has shown that communication between the primary care providers and specialists is often poor: primary care

providers may not receive feedback about patients they have referred, and specialists may not know the history of patients that have been sent. Project ECHO is one model of care coordination, with primary and specialty care providers working together to care for patients using tools such as videoconferences and shared electronic records.

Because Project ECHO takes a regional approach—seeding expertise in particular clinical areas throughout New Mexico—it may reduce variation and promote evidence-based, reliable care in rural areas, where patients do not have much choice when it comes to selecting their primary or specialty providers.

Other states and even other parts of the world are launching initiatives modeled after Project ECHO. In addition to the hepatitis C program for rural residents Washington state, India is launching a Project ECHO HIV/AIDS program. According to Arora, the care delivery model is not uniquely suited to rural areas, but could work in poor

urban areas or any other community where there are shortages of health care providers.

To expand this model of care delivery, academic health centers will need financial incentives to help train the primary care workforce to manage chronic conditions. Today, academic health centers focus on research, training, and tertiary care. Federal and state governments could provide funds to encourage academic health centers to take on an additional mission of helping to build capacity among primary care providers to treat complex, chronic conditions. This could expand access to care—without requiring additional providers or extensive retraining.

That may be easier if the cost effectiveness of such programs, compared with traditional specialty care, can be demonstrated. Project ECHO leaders are now partnering with researchers at the University of New Mexico Bureau of Business and Economic Research to assess the economic impact of the ECHO model of care delivery.

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*This study was based on publicly available information and self-reported data provided by the case study institution(s). The Commonwealth Fund is not an accreditor of health care organizations or systems, and the inclusion of an institution in the Fund's case studies series is not an endorsement by the Fund for receipt of health care from the institution.*

*The aim of Commonwealth Fund-sponsored case studies of this type is to identify institutions that have achieved results indicating high performance in a particular area of interest, have undertaken innovations designed to reach higher performance, or*

*exemplify attributes that can foster high performance. The studies are intended to enable other institutions to draw lessons from the studied institutions' experience that will be helpful in their own efforts to become high performers. It is important to note, however, that even the best-performing organizations may fall short in some areas; doing well in one dimension of quality does not necessarily mean that the same level of quality will be achieved in other dimensions. Similarly, performance may vary from one year to the next. Thus, it is critical to adopt systematic approaches for improving quality and preventing harm to patients and staff.*

<b>For Further Information</b>
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## Note

1. L. I. Backus, D. B. Boothroyd, B. R. Phillips et al., [Predictors of Response of U.S. Veterans to Treatment for the Hepatitis C Virus](#), *Hepatology*, July 2007 46(1):37–47. This study evaluated the results of treatment of 5,955 patients with hepatitis C in the entire VA system and found that 1,551 were cured, with a cure rate of 26 percent; I. M. Jacobson, R. S. Brown, Jr., B. Freilich et al., [Peginterferon Alfa-2b and Weight-Based or Flat-Dose Ribavirin in Chronic Hepatitis C Patients: A Randomized Trial](#), *Hepatology*, October 2007 46(4):971–81. In this study of more than 5,000 patients treated in a community setting, the overall cure rate was 44.4 percent in one arm of the study and 40.5 percent in the other.

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## News Briefs

### Hospital Patients Report Greater Satisfaction with Care

According to Press Ganey [survey research](#) published in November, hospital patients' satisfaction with their care reached a record high in 2008. Press Ganey also found an increase in the number of patients who would recommend their hospital to family and friends.

The findings are based on responses from nearly 3 million patients at some 2,000 U.S. hospitals. Patient satisfaction has steadily increased since 2003, a trend the researchers attribute to hospitals' efforts to respond to demands for improvements from both payers and patients. Most of the areas identified as still in need of improvement relate to communication with patients, such as providers' responsiveness to patients' concerns and their efforts to include patients in decision making.

The researchers note that the increase in satisfaction scores coincides with the period when the federal government began publicly reporting information on hospital patients' care experiences on Hospital Compare, using data from the Hospital Consumer Assessment

of Healthcare Providers and Systems. "As of October, seven months after the start of public reporting, inpatient satisfaction scores had climbed more significantly than at any other point in the 24 years that Press Ganey has been tracking that data," they note.

### Hospital Compare to Add Measures of Outpatient Quality

The Centers for Medicare and Medicaid Services announced in November that it will begin reporting hospitals' performance on [11 measures of outpatient quality](#) on Hospital Compare. The measures relate to emergency department transfers for heart attack patients, surgery and infection prevention, and imaging efficiency. Hospitals have been voluntarily submitting data on these measures for the past two years.

### EHR Use Not Yet Linked to Large Quality, Cost Differences

As reported Nov. 15 in the [New York Times](#), a new study assessing the impact of electronic health record systems on hospital care found only marginal differences in quality and cost measures among hospitals that have advanced, basic, and no electronic health record systems.

For the study, Ashish Jha of the Harvard School of Public Health and colleagues compared 3,000 hospitals with different levels of EHR adoption. They examined how well the hospitals performed on measures of providing evidence-based care for congestive heart failure, pneumonia, and surgical infections. They also compared hospitals' average length of stay. For the heart failure category, the researchers found that hospitals with advanced EHRs met standards 87.8 percent of the time; hospitals with basic EHRs met the standards 86.7 percent of the time; and hospitals without EHRs met the standards 85.9 percent of the time. For other measures, there were similarly small differences among the hospitals.

The findings show that health information technology, on its own, will not necessarily improve quality or control costs, the researchers said. The federal government has pledged \$19 billion in incentive payments to help hospitals and other health care providers deploy health information technology, but the providers must show they are making "meaningful use" of such technology to receive them.

### **Quality Not a "Top Priority" for Half of Hospital Boards**

A [study](#) in the November/December issue of *Health Affairs* found that quality of care is not a top priority for board members at nearly half of U.S. nonprofit hospitals.

Just over half of the 922 board chairs of nonprofit hospitals surveyed by Harvard School of Public Health researchers during

2007 and 2008 identified clinical quality as a top priority for board oversight. Chairs of high-performing hospitals—based on their performance on 19 core measures of evidence-based care for heart attacks, heart failure, and pneumonia—were more likely to identify quality as a priority than chairs of low-performing facilities.

Given tight profit margins at nonprofit facilities, it is perhaps not surprising that board chairs focused more on financial performance than quality, the researchers said. Still, they suggested that efforts to engage and educate boards in quality improvement "may be an important target for policymakers hoping to improve care."

### **FDA Announces Initiative to Reduce Medication Errors**

In early November, the Food and Drug Administration (FDA) [announced](#) an initiative to reduce preventable medication errors. Millions of people are harmed each year through inappropriate medication use—often the result of lack of information about a medication, a patient, or patient's condition, the agency said.

In the "Safe Use Initiative," FDA officials will reach out to health care professionals to identify the drugs and therapeutic scenarios that are most often associated with adverse events. The agency will generate national estimates of error rates for specific drugs and therapies, and develop targeted programs to improve medication safety by ensuring both prescribers and patients have access to information at the point of care.

## Recent Publications of Note

Selected articles on quality improvement from a number of journals, including the *American Journal of Medicine*, *Annals of Internal Medicine*, *Archives of Pediatric and Adolescent Medicine*, *BMJ*, *Health Affairs*, *Health Services Research*, *International Journal for Quality in Health Care*, *Joint Commission Journal on Quality and Safety*, *Journal of the American Medical Association*, *Journal of General Internal Medicine*, *Journal of Patient Safety*, *Journal of Safety and Quality in Health Care*, *Medical Care*, *The Milbank Quarterly*, *The New England Journal of Medicine*, and *Pediatrics*. The articles are nominated by Editorial Advisory Board members from a preselected list.

### Putting a Price on Quality Improvement

In an attempt to quantify the cost of inpatient quality improvement activities, researchers surveyed four urban, nonprofit, acute care teaching hospitals from a high-performing health care system. The researchers found the hospitals spent between \$200 to \$400 per discharge, or 1 to 2 percent of total operating revenue, on activities that fell into categories of patient safety, quality measurement and reporting, staff incentives and education, patient satisfaction, information systems, and leadership efforts on quality improvement. The hospitals demonstrated great variability in how they allocated funds for those activities. Resources dedicated to patient safety projects ranged from \$10 to \$80 per discharge, while those for computerized physician order entry ranged from \$20 to \$140 per discharge. L. M. Chen, M. S. Rein, and D. W. Bates, [Costs of Quality Improvement: A Survey of Four Acute Care Hospitals](#), *Joint Commission Journal on Quality and Patient Safety*, November 2009 35(11):544–50.

### Emerging Digital Divide Among Hospitals

A national survey of acute care hospitals found those caring for a higher proportion of Medicaid patients, elderly black patients, elderly Hispanic patients, and a substantially lower proportion of Medicare patients were less likely to use electronic medication lists and electronic discharge summaries, as well as clinical decision-support tools, compared with hospitals that care that for the lowest proportion of such patients. The researchers found that these hospitals lagged in quality

performance as well, although the survey findings suggested that association could be mitigated by the use of electronic medical records. The researchers note that federal guidance and technical assistance may be necessary to ensure that states participate in recent Medicaid incentive programs designed to spur adoption of health information technology in safety net hospitals. A. K. Jha, C. M. DesRoches, A. E. Shields et al., [Evidence of an Emerging Digital Divide Among Hospitals That Care for the Poor](#), *Health Affairs* Web Exclusive, Oct. 26, 2009.

### Targeting Care Management at Costliest Patients

The authors of this perspective propose expanding care management programs as a means of reducing costs and enhancing quality for patients with multiple chronic conditions, who account for the vast majority of Medicare expenditures and could benefit from support in managing their medical conditions. Because care management services are intensive and expensive, the authors argue they should be targeted to patients with complex problems who are at high risk of requiring costly care. Payment incentives may also help to encourage physicians and hospitals to participate in care management programs. T. Bodenheimer and R. Berry-Millett, [Follow the Money—Controlling Expenditures by Improving Care for Patients Needing Costly Services](#), *New England Journal of Medicine*, October 2009 361(16):1521–23.

### **Variation in Hospital Mortality Associated with Inpatient Surgery**

Using data from a multi-center clinical registry of patients who had undergone one of 42 inpatient general and vascular operations between 2005 and 2007, researchers found that hospitals with low and high mortality rates had no clinically important differences in rates of post-operative complications. But researchers found that patients at hospitals with very high mortality rates (i.e., hospitals in a quintile with an average risk-adjusted mortality rate of 6.9 percent) had nearly two times the likelihood of dying after the development of a major complication, compared with patients at low-mortality hospitals (i.e., hospitals in a quintile with an average risk-adjusted mortality rate of 3.5 percent)—21.4 percent versus 12.5 percent, respectively. The study, which included 84,730 patients, emphasizes the importance of recognizing and managing post-surgical complications once they occur. A. A. Ghaferi, J. D. Birkmeyer, and J. B. Dimick, [Variation in Hospital Mortality Associated with Inpatient Surgery](#), *New England Journal of Medicine*, October 2009 361(14):1368–75.

### **Comparing Safety Climate Between VA and Other U.S. Hospitals**

In this study, researchers compared the hospital safety climate in 29 Veterans Health Administration (V.A.) hospitals with that of 67 independent, public and private acute care hospitals, using a cross-sectional survey of hospital employees, including senior managers, physicians, and frontline employees. While employees' perceptions of the safety climate in the V.A. and non-V.A. hospitals were similar, there were significant differences with respect to specific dimensions, including the level of senior management's engagement and

organizational resources devoted to safety—with employees of non-V.A. hospitals expressing more confidence in hospital safety than employees in V.A. hospitals. The researchers suggested that the advantages associated with the V.A. system's intense focus on safety improvement may be less important in promoting a patient safety culture than other factors such as "hospitals' emphasis on creativity and innovation and their leaders' abilities to motivate, implement and sustain improvement." S. J. Singer, C. W. Hartmann, A. Hanchate et al., [Comparing Safety Climate Between Two Populations of Hospitals in the United States](#), *Health Services Research*, October 2009 44(5):1563–84.

### **Calculating the Effect of P4P Programs**

In an effort to determine how the design and selection of pay-for-performance (P4P) strategies affect providers' incentives to improve quality, researchers used publicly available data on hospital performance to calculate hospital bonuses under five common P4P models. The bonus payments were based on the number of patients who received recommended care for acute myocardial infarction, heart failure, and pneumonia. Using the results of the simulation, researchers outlined the advantages and disadvantages of each payment strategy. As an example, the researchers found rank-order systems are useful to create payment gradients when the bonus pool is limited, and that target-attainment models combined with improvement and percentage-payment strategies come closest to rewarding both performance level and improvement. R. M. Werner and R. A. Dudley, [Making the 'Pay' Matter in Pay-for-Performance: Implications for Payment Strategies](#), *Health Affairs*, September/October 2009 28(5):1498–1508.

### Costs, Quality of Care at Retail Clinics

A study of claims data from a large Minnesota health plan demonstrated that overall costs of care of three conditions (otitis media, pharyngitis, and urinary tract infections) were 30 to 40 percent lower at retail clinics than in physician offices and urgent care centers, and 80 percent lower than in emergency departments. The study also found the quality of care provided at the retail clinics was similar to that provided in physician offices and urgent centers and was slightly superior to that in emergency departments. Further, the researchers found that visits to retail clinics did not disrupt opportunities to receive preventive care at physician offices, as some critics of retail clinics contend. A. Mehrotra, H. Liu, J. L. Adams et al., [Comparing Costs and Quality of Care at Retail Clinics with That of Other Medical Settings for 3 Common Illnesses](#), *Annals of Internal Medicine*, September 2009 151(5):321–28.

### Effect of Order Entry and Decision Support on Pediatric Medication Errors

By analyzing the rates of prescription errors in a 12-bed pediatric intensive care unit before and after computerized physician order entry (CPOE) was implemented and before and after a clinical decision support system (CDSS) was added to limit medication doses by weight, researchers were able to determine that CPOE implementation alone had only a minimal impact on reducing prescription errors. But when CPOE was combined with CDSS to limit doses by weight, the number of prescription errors dropped dramatically. Using both tools, overall prescription errors were reduced by 83 percent and adverse drug events were reduced by 72 percent. G. Kadmon, E. Bron-Harlev, E. Nahum et al., [Computerized Order Entry with Limited Decision Support to Prevent Prescription](#)

[Errors in a PICU](#), *Pediatrics*, September 2009 124(3): 935–40.

### Limits to Diabetes Care Management Using EHRs

A study of the methods and processes for coordinating diabetes care in four Kaiser Permanente medical centers, which used four different care models, found all relied heavily on electronic health record (EHR) systems. While the EHRs provided sufficient information to prevent gaps and overlaps in care, it did not address certain care coordination challenges, including communication problems that arose when providers differed about treatment priorities and actions. Instead of addressing such differences, many providers simply reversed the preceding caregiver's treatment priorities or plans. The researchers also noted that challenges arose when patients' needs went beyond the discipline-specific focus of the caregiver and when physicians, midlevel providers, and nurses had conflicting expectations of one another's roles. L. H. MacPhail, E. B. Neuwirth, and J. Bellows, [Coordination of Diabetes Care in Four Delivery Models Using an Electronic Health Record](#), *Medical Care*, September 2009 47(9):993–99.

### Fatigue, Distress, and Perceived Medical Errors Among Residents

Researchers studying the association between fatigue and distress with self-perceived major medical errors among resident physicians found that higher levels of fatigue and distress are independently associated with self-perceived medical errors. The study showed the risk of internal medicine residents reporting a major medical error could increase 15 percent, 20 percent, and 28 percent, respectively, as fatigue, depression, or both increase. Because resident distress can and does occur independently of fatigue, residency programs must guard against both burnout and

depression in residents. C. P. West, A. D. Tan, T. M. Habermann et al., [Association of Resident Fatigue and Distress with Perceived Medical Errors](#), *Journal of the American Medical Association*, September 2009 302(12):1294–1300.

### **Data Network to Support Comparative Effectiveness Research**

This article provides an overview of the Distributed Ambulatory Research in Therapeutics Network (DARTNet), a federated network that links health data from geographically and organizationally separate databases in eight organizations, representing more than 500 clinicians and 400,000 patients. The network enables researchers to conduct comparative effectiveness research by gathering de-identified patient information from electronic health records, laboratory tests, imaging results, pharmacy utilization databases, and billing systems. DARTNet, which was funded by the Agency for Healthcare Research and Quality, also can be used to prompt physicians to obtain specific information during a patient encounter and is designed to support learning communities by identifying high-performing practices and systems. W. D. Pace, M. Cifuentes, R. J. Valuck et al., [An Electronic Practice-Based Network for Observational Comparative Effectiveness Research](#), *Annals of Internal Medicine*, September 2009 151(5): 338–40.

### **A New Charter for Primary Care**

After outlining the political, economic, policy, and institutional factors that have led to a decades-long decline in U.S. primary care, the authors of this paper propose a plan to reverse its devaluation. "The New Charter for Primary Care" calls for dramatic changes in medical education, provider reimbursement, practice infrastructure, and performance measurement to balance the supply of primary care providers with secondary/tertiary care providers. Among the recommendations: adjusting reimbursement to recognize the value of individual and population health, care coordination, and comprehensive, personalized longitudinal care and redirecting graduate medical education funds from hospitals to graduate educational training programs, with the requirement that half of these funds be targeted to primary care training. The authors argue that efforts to improve primary care through the introduction of patient-centered medical homes, while important, are insufficient to overcome the fundamental imbalances in payment and resources devoted to primary care in the U.S. L. G. Sandy, T. Bodenheimer, L. G. Pawlson et al., [The Political Economy of U.S. Primary Care](#), *Health Affairs*, July/August 2009 28(4):1136–45.

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