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### **Innovations at the interface of primary and specialty care: University of New Mexico Health Sciences Center initiatives**

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# INNOVATIONS AT THE INTERFACE OF PRIMARY AND SPECIALTY CARE

February 2016

# **INNOVATIONS AT THE INTERFACE OF PRIMARY AND SPECIALTY CARE**

Association of American Medical Colleges  
Washington, D.C.

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# Innovations at the Interface of Primary and Specialty Care



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# Innovations at the Interface of Primary and Specialty Care



## Executive Summary

### Overview

In their drive to improve quality and control costs, a growing number of health systems have prioritized the need to reduce the fragmentation of care caused by inadequate communication and coordination between providers and care settings. Given the high and growing referral volumes and the complexity of chronically ill patients, effective communication and coordination between primary care providers and specialists are particularly valuable. These patients are often managed by both primary care and specialist physicians over time.

This report focuses on innovations across three health systems that have successfully targeted programs to improve the quality and efficiency of care at the primary care–specialty care interface: Kaiser Permanente Colorado and AAMC members Mayo Clinic and the University of New Mexico. These systems represent the best clinical innovations that could be applied in academic medical settings.

The report is intended for health system leaders, including primary care and specialty leaders, who recognize the negative consequences of fragmented care and seek examples of successful models to address it. Information in this report was gathered from three sources: published research, phone interviews with leaders at each institution, and site visits to each program. The report provides details about the specific innovations at each site, the primary motivations behind them, and the impact on a wide range of stakeholders, including both primary care and specialty care providers.

### Key Findings

The efforts across the three health systems demonstrate that a range of innovations can be implemented to improve the quality and efficiency of care between primary care physicians and specialists.

At **Kaiser Permanente Colorado (KPCO)**, five innovations were instituted to address the interface between primary and specialty care:

- Using advice referrals (physician-to-physician consults);
- Conducting real-time virtual consults;
- Identifying primary care liaisons;
- Using population management programs within specialty care; and
- Providing educational opportunities and resources for physicians.

Internal data from KPCO indicate significant growth in the use of advice referrals and a concurrent decrease in in-person referrals across various departments. KPCO has also instituted a population-health approach to specialty care, in which more than 25,000 patients have been enrolled in a team-based care program, led by cardiology teams, to improve the outcomes of patients with coronary artery disease.

At the **Mayo Clinic**, innovations include:

- Using electronic consultations (eConsults) among physicians;
- Embedding specialty-trained providers in primary care clinics (and primary care physicians in specialty departments); and
- Developing and disseminating care-process models that clarify roles and relationships between primary and specialty care in managing particular conditions.

# Innovations at the Interface of Primary and Specialty Care



## Executive Summary

These innovations create new operational structures and workflows, leading to new clinical and administrative workforce positions and roles associated with cost savings for the health system and improved outcomes for patients.

At the **University of New Mexico Health Sciences Center, Project ECHO** (Extension for Community Healthcare Outcomes) developed a program to improve health outcomes for people living in rural and other medically underserved areas of New Mexico by more equitably distributing the specialized knowledge and health care delivery practices typically concentrated at academic health centers. Innovations include:

- Training primary care providers to become regional experts in the care of specific complex populations, with ongoing guidance and advice provided by university-based specialists via videoconference; and
- Augmenting the skills of community health workers, who are trained to work closely with specialty services at the university—targeting the specialized needs of a growing population of diabetic patients in rural and other culturally diverse, underserved regions of New Mexico.

Across all sites, successful and sustainable efforts to improve integration of providers required aligning incentives, breaking down barriers to communication, and creating a community of trust among providers. Collectively, these efforts demonstrate a diverse set of effective innovations that achieved better quality, better access, and lower costs. Academic health systems seeking to successfully adapt to high-value care should give serious consideration to opportunities to improve care at the interface of primary care and specialty care.



# INTRODUCTION

# Innovations at the Interface of Primary and Specialty Care



## Introduction

More than one in three patients is referred from primary care to a specialist each year.<sup>1</sup> Once referred, the ongoing care of a patient often involves a complex mix of primary care and specialist-directed care. Ineffective communication and coordination between providers and care settings can lead to fragmented care for patients, with negative implications for quality, costs, and patient outcomes.

Evolving reimbursement models demand that health systems strive to maximize the value of care they deliver. Health systems can find significant opportunities for return on investment in clinical innovations that reduce or eliminate fragmented care. Improving the integration between primary care and specialty care can yield significant opportunities for health systems committed to high-value care.

This report focuses on innovations that have targeted this primary care–specialty care interface. The report will be of value to health system leaders, including primary care and specialty leaders who recognize the high cost of fragmented care and seek examples of successful models to address it.

The innovations highlighted in this report were designed to address widely recognized priorities in transforming patient care,<sup>2–5</sup> including whether, when, and where to refer patients, how to effectively communicate with physician colleagues, how to delineate primary care and specialist roles in serving patients most efficiently and effectively over time, and how to ensure timely access to needed specialty care.

Pioneered at three health systems in the United States, these innovations share a commitment to efficient use of provider time, teamwork, and training to improve both health outcomes and the patient experience of care. These efforts enhance the ability of primary care providers to tap into the expertise of their specialist colleagues with minimal disruption to the workflow of both sets of providers. They improve access to specialty visits for patients who need it. They reduce costs of care for patients and increase patient convenience.

Information in this report was gathered from three sources: published research studies, phone interviews with leaders at participating institutions, and in-depth site visits to these institutions. At each site, the authors interviewed a range of providers and gathered qualitative and quantitative information about the impact of these initiatives on health service utilization, health outcomes, and patient experience.

As quality and cost-effectiveness are increasingly incentivized under emerging payment models, the innovations presented here serve as examples for the academic medical community to consider in its quest to meet the triple aim of improved quality, controlled costs, and improved patient experience.

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# KAISER PERMANENTE COLORADO INITIATIVES

# Innovations at the Interface of Primary and Specialty Care



## Kaiser Permanente Colorado

### Summary

Kaiser Permanente Colorado (KPCO) has instituted multiple initiatives aimed at integrating primary care and specialty care and ensuring that active and ongoing communication takes place among physicians. These include several mechanisms for facilitating and improving informal consultations between primary care physicians (PCPs) and specialists, such as electronic **advice referrals** and, more recently, **real-time virtual consults** using secure video cameras. Other initiatives include the role of **primary care liaisons**, PCPs who allocate time to working with specialty practices to improve communication and processes linking primary care and specialty care. The explicit development of **population management programs within specialty care** is intended to encourage an integrated team approach to particular conditions—such as coronary artery disease—putting nursing and pharmacy teams in place to manage chronic conditions under specialist-directed care protocols. KPCO has also developed unique **educational opportunities and resources** for its physicians that aim to increase PCP scope of practice and ensure that both PCPs and specialists have access to evidence-based guidelines and health plan recommendations on co-management of chronic and acute conditions. All the efforts are aided by the use of KP HealthConnect, Kaiser Permanente's comprehensive electronic health system, which integrates an electronic health record (EHR) with clinical decision support tools.

### Introduction to Kaiser Permanente Colorado

Kaiser Permanente is active in nine regions across the United States and consists of three separate yet interdependent entities—the Kaiser Foundation Health Plan, Kaiser Foundation Hospitals, and Permanente Medical Groups—in each region.<sup>1</sup> Kaiser Permanente Colorado (KPCO) is operated by Kaiser Foundation Health Plan of Colorado and the Colorado Permanente Medical Group. Based in Denver, KPCO is Colorado's largest nonprofit health plan, serving about 565,000 members.<sup>2</sup> The Colorado region does not own hospitals; its physicians work at multi-specialty outpatient sites across the region and as employees of Kaiser within local hospitals owned by other parties.

**Physician Mix.** KPCO employs about 1,000 physicians; just under half are in primary care, and the remainder are in various specialties. (Primary care at KPCO includes adult internal medicine, family medicine, and pediatrics.) The PCPs are distributed among 24 primary care clinics spread across the region, while specialty services are generally concentrated in three locations. Because of this, practicing PCPs and specialists typically do not have regular in-person interaction.

**Patient Population.** KPCO offers a commercial managed care plan and serves some patients on public insurance. About 70,000 members (13 percent) are enrolled in a Medicare Advantage plan, and about 27,000 members (5 percent) are on Medicaid. Latinos make up about 15 percent of members overall, the largest minority group among KPCO members.

At the time of the visit, KPCO anticipated about 35,000 new members as a result of health care expansion under the Affordable Care Act and was awaiting final projections to determine how many physician positions would need to be filled. KP promotes the value of continuity in relationships between doctors and patients, with the goal of every patient having a primary care provider of his or her choosing. Some leaders expressed fears that there would not be enough PCPs available to meet their hiring needs because PCPs are already in short supply in Colorado.

**Payment Model.** As a capitated system, the provider group receives a fixed fee per member and delivers services as needed to the population. All physicians are salaried, with incentive-based bonuses. Salary ranges

# Innovations at the Interface of Primary and Specialty Care



## Kaiser Permanente Colorado

vary across departments, but generally, physicians' base salary within a department is divided into four levels, depending on the number of years out of residency. Physicians are eligible for incentive-based pay bonuses if they meet targets set by their individual department. The targets include metrics that fall into three categories: service, quality improvement, and affordability (reducing cost or waste). Achieving the maximum across all three could result in an incentive equal to 10 percent of base pay. For both PCPs and subspecialists, service metrics include access (based on the number of days to the third next available appointment or on patient survey results on satisfaction with access). Among the quality metrics for PCPs was the percentage of patients diagnosed with high blood pressure who achieved or maintained hypertension control at their last recorded blood pressure check (regardless of where in the KPCO system it took place). Individual physicians receive data reports (some monthly, some quarterly) that show their individual performance on these incentive metrics and on others, in comparison with the average for their department.

**Background Issue: Referral Rates.** Within primary care, reports document referral rates and show what percentage of all referrals made to specialty departments went as "advice referrals" (electronic consults, rather than in-person visits). Use of advice referrals varies widely across providers. While no specific target is set for this measurement, the individual feedback compared with others signals to providers that these are a valued aspect of care and that outliers might self-correct based on these data.

Across all KPCO physicians, the referral rate for in-person consultations rose steadily between October 2008 and October 2011, while referrals for procedures and advice referrals (electronic consults) remained relatively stable, as shown in Figure 1. This observation prompted many of the initiatives discussed in this profile.

### Initiatives Integrating Primary and Specialty Care

*"I think [advice referrals] are convenient because one of the complaints that the primary care physician has always had is, 'Well, I paged the specialist, and I've got to wait for that person to answer, and I'm in the middle of the flow of seeing patients.' ... It's probably a more efficient work flow for everyone, including myself."*—Michael Chen, MD, Regional Department Chief, Urology, Kaiser Permanente Colorado<sup>4</sup>

### Multiple Means for Consultations Between PCPs and Specialists

KPCO physicians have access to several different methods for obtaining advice from specialists. Dedicated phone lines have been a longstanding way to connect PCPs with specialists for consultations between the hours of 8:00 am and 6:00 pm. These include the "heart line" (cardiology), the "bone phone" (orthopedics), and the "mind line" (mental health), as well as phone lines for ENT, neurology, GI, and more. Some lines are actively staffed by a physician or midlevel specialist, while others require the PCP to leave a message and wait for a return call. In addition, there is a 24-hour call center that can be used to reach specialists who are on call. Calls to the center are generally taken by a specialty nurse, with physicians available for support when needed.

As a closed system, all PCPs and specialists have access to a single EHR for all patients, which facilitates communication. Because retrieving high-value communication from other providers can be laborious in the EHR, several PCPs described using a prominent section of the EHR (the problem list) as a space for shared communication among physicians. Here, PCPs can document their actions and their recommendations in a clear care plan that is available to all other KP clinicians involved in the patient's care. Likewise, specialist physicians have a central place to look for updates to the patient's care plan and a place to record their own recommendations for the PCP to readily access the next time the patient is seen.

# Innovations at the Interface of Primary and Specialty Care



## Kaiser Permanente Colorado

### Challenge: Rising In-Person Referral Rates

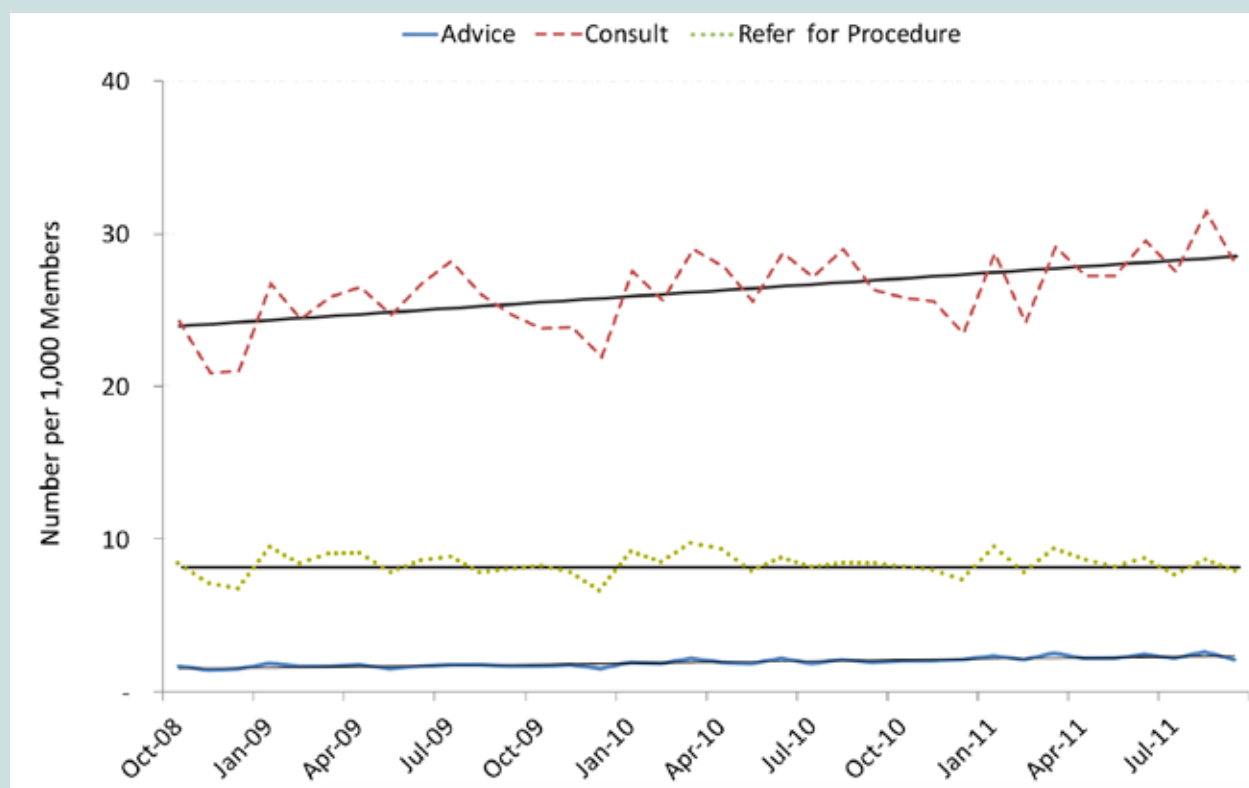


Figure 1. Referral trends per 1,000 members for advice referrals (electronic consults), referrals for in-person consults, and referrals for procedures, October 2008–July 2011.<sup>3</sup>

**Advice referrals (advice-only referrals)** are KP's version of electronic consultations—that is, a means for virtual consultations between PCPs and specialists. They are sent physician to physician (primary care to specialist, or specialist to specialist) directly through the EHR in a manner similar to ordering an electronic referral, and a response is expected within a short time frame (generally 24 to 48 hours, set by individual departments). Both the consultative question and the specialist's response are sent in free-text form and become part of the patient's electronic record. Advice referrals have been in place for a number of years, but since 2012, there has been a push to provide more education and outreach to PCPs to encourage their use.

One advantage of advice referrals is that patients can go to their regular PCP, with whom they have already developed a relationship and who generally has shorter wait times to get some specialty needs met. Dr. Ann Wells, an internist who also serves as medical director for disease management in the Department of Population and Prevention Services, said that the use of advice referrals also strengthens the patient's relationship with the

# Innovations at the Interface of Primary and Specialty Care



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PCP because the patient sees that his or her primary doctor is willing to seek advice from other clinicians on behalf of the patient, and then can communicate it to the patient in a way that takes into account the patient's overall health status, personal priorities, and health literacy—factors to which the PCP is already attuned.<sup>5</sup> Advice referrals also hold advantages for PCPs, who can improve their confidence in appropriate referral thresholds and prereferral evaluation and expand their comfort in managing particular conditions through communication with the specialist. In some specialties, such as urology, referrals are screened by the physician on call, and about 6 to 8 percent of referrals from primary care are sent back for further previsit testing or with treatment advice to the PCP. Urology saves considerable wasted effort by actively screening referrals in this way; over one year, this effort saves the equivalent of one half-time urologist or the sum of a full-time urologist's new patients in that year.<sup>4</sup>

Because specialists often have longer wait times than PCPs, many patients prefer to see their PCP rather than wait for a specialty appointment, but they can request a referral from their PCP or may self-refer to any specialty, if they prefer.

**Real-time virtual consults** can take place through the use of hand-held digital cameras with secure, two-way video that allows PCPs to engage in tele-consults with specialists while the patient is present in the exam room. Cameras are distributed among all PCP clinics in the Colorado region, with about one camera for every 10 PCPs. The most common specialty consulted using cameras is dermatology, where it is helpful for the specialist to be able to see skin rashes and lesions. To use the camera, the PCP must receive a quick tutorial and log in to a Cisco system, which requires signing up for a login separate from the one used to access the EMR.

Over the first five months of 2013, about 350 consults to dermatology used these cameras. Abby Miller, business manager for the Colorado Permanente Medical Group, estimates that about one-third of PCPs treating adults have used the cameras. More widespread uptake may be hampered by the login and training requirements mentioned above. In addition, the fact that the consults take place in real time rather than asynchronously means that the PCP also has to ensure that the dermatologist assigned to tele-consults is available at the other end, before the call. Physiatrists are also accessible with the cameras, and outreach is being made to other specialty departments as well.

### Primary Care Liaison Program

In August 2012, Adult Internal Medicine launched the Primary Care Liaison Program to further improve the way that PCPs and specialists work together. Each primary care liaison is a practicing PCP who devotes about 0.1 to 0.2 FTE to the role and works under the guidance of the regional department chief of internal medicine. Liaisons are assigned to work with individual specialties to understand problems at the interface between their department and primary care, and how those problems can be solved. At the time of our visit, there were six positions for liaisons, each responsible for two to three specialty departments. One result of the liaison program has been that specialty-specific clinical decision support aids have been embedded into HealthConnect to prompt the PCP to consider sending an advice referral when he or she enters a referral for a condition that does not require a specialist visit or when previsit testing would be helpful.

The response of specialty departments to the liaisons has been positive overall. According to Dr. Steve Haley, regional operations chief for coordinated care and operations, some specialty departments were initially skeptical of the liaison program because of the extra time they felt it would take for specialists to meet with the liaison, taking them away from patient care.<sup>6</sup> Now, the specialty departments generally assign one person

# Innovations at the Interface of Primary and Specialty Care



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to meet with the liaison, and those who have participated have seen the value of communicating with primary care because patients come to see them having already been screened or having had the appropriate previsit workup. The specialties that had access problems because of long wait times for appointments tend to be the ones that most appreciate the chance to shift some of the demand for their services to primary care. Leadership is closely monitoring the progress of the liaison program and assessing its success in providing more coordinated, efficient care. An issue that liaisons may approach in the future is creating reminders for specialists to send patients back to their PCPs, rather than continuing to see patients for routine care.

### Outcome: Advice Referrals Sent to Medical Subspecialties Show Upward Trends

Between January 2011 and May 2013, the number of advice referrals sent from all departments to medical subspecialties increased from around 1.75 referrals to nearly 3 referrals per 1,000 members. This reflects the increasing popularity of advice referrals to medical subspecialties, as shown in Figure 2.

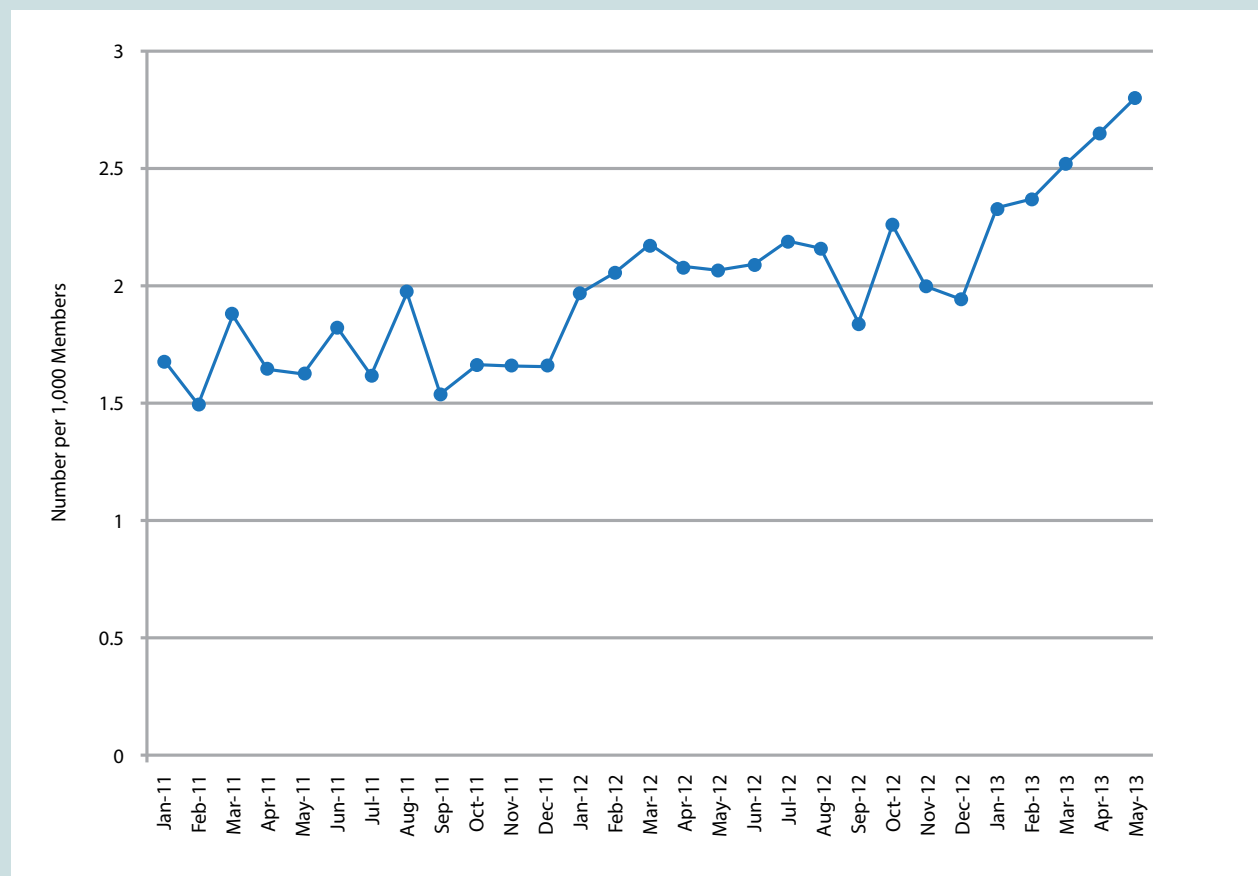


Figure 2. Advice referrals per 1,000 members from all departments to medical specialties, January 2011–May 2013.<sup>3</sup>

# Innovations at the Interface of Primary and Specialty Care



## Kaiser Permanente Colorado

### Outcome: Advice Referrals Sent to Surgical Subspecialties Also Show Upward Trends

During the same period, advice referrals from all departments to surgical subspecialties also increased, but less dramatically, from around 1 referral to about 1.4 referrals per 1,000 members. This is shown in Figure 3.

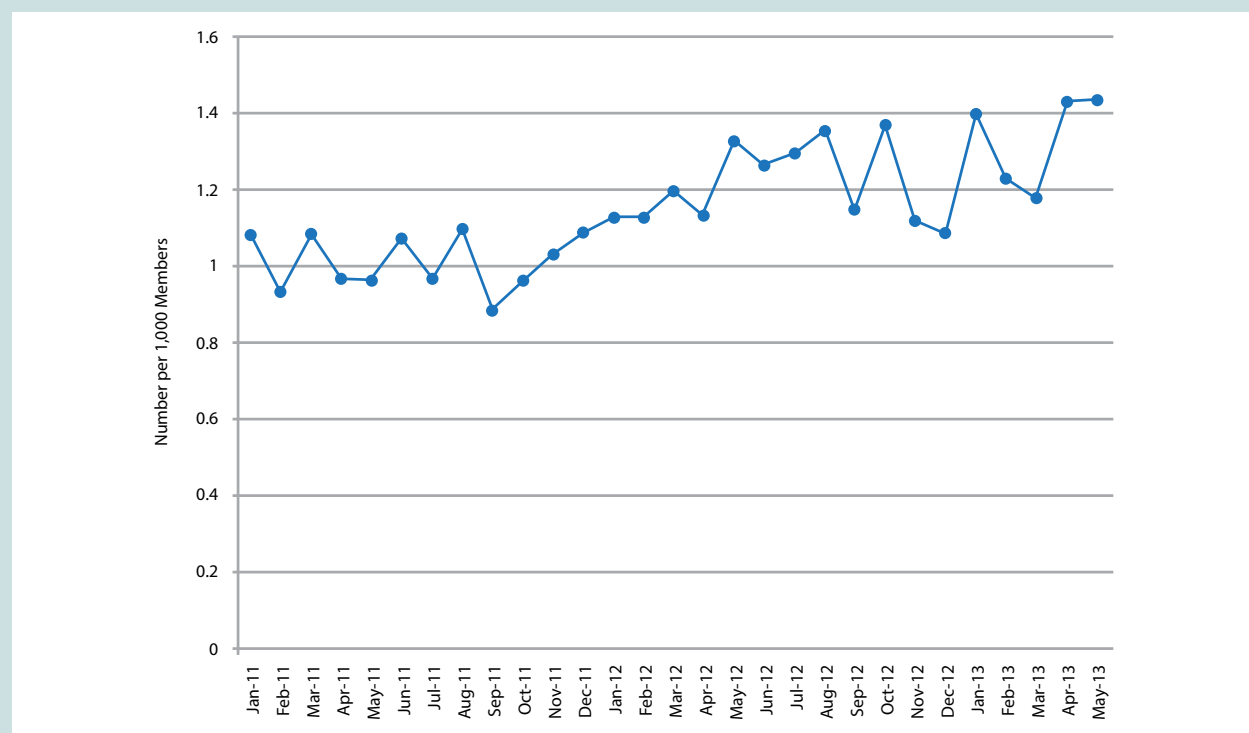


Figure 3. Advice referrals per 1,000 members from all departments to surgical specialties, January 2011–May 2013.<sup>3</sup>

### Outcome: More Than Half of All Referrals to Some Specialty Departments Are Sent as Advice Referrals

Specialties with high percentages of referrals going as advice referrals for April 2013 are displayed in Table 1, along with the percentage resolved within 48 hours (limited to those specialties with at least 10 or more referrals that month).

Table 1. Specialties with a Large Percentage of Referrals Going as Advice Referrals<sup>3</sup>

Specialty	Advice Referrals	All Referrals	% Advice Referrals	% Advice Referrals Resolved in 48 Hours
Infectious Diseases	66	122	54.1%	97.0%
Occupational Medicine	13	13	100.0%	0.0%
Pain Management	20	62	32.3%	90.0%

# Innovations at the Interface of Primary and Specialty Care



## Kaiser Permanente Colorado

### Outcome: Advice Referrals to Dermatology Have Increased

Uptake of advice referrals has been particularly strong for dermatology consults. Overall rates of referrals for in-person consults to dermatology were lower for each month of 2013 that was tracked than they were in 2012. Between October 2012 and September 2013, use of advice referrals to dermatology increased, as shown in Figure 4. Many efforts were put in place during this period to promote advice referrals, so it is impossible to determine which initiative drove the change. But the overall trends in dermatology have been an increasing use of advice referrals (Figure 4) and a decreasing use of in-person consults (see Figure 5).

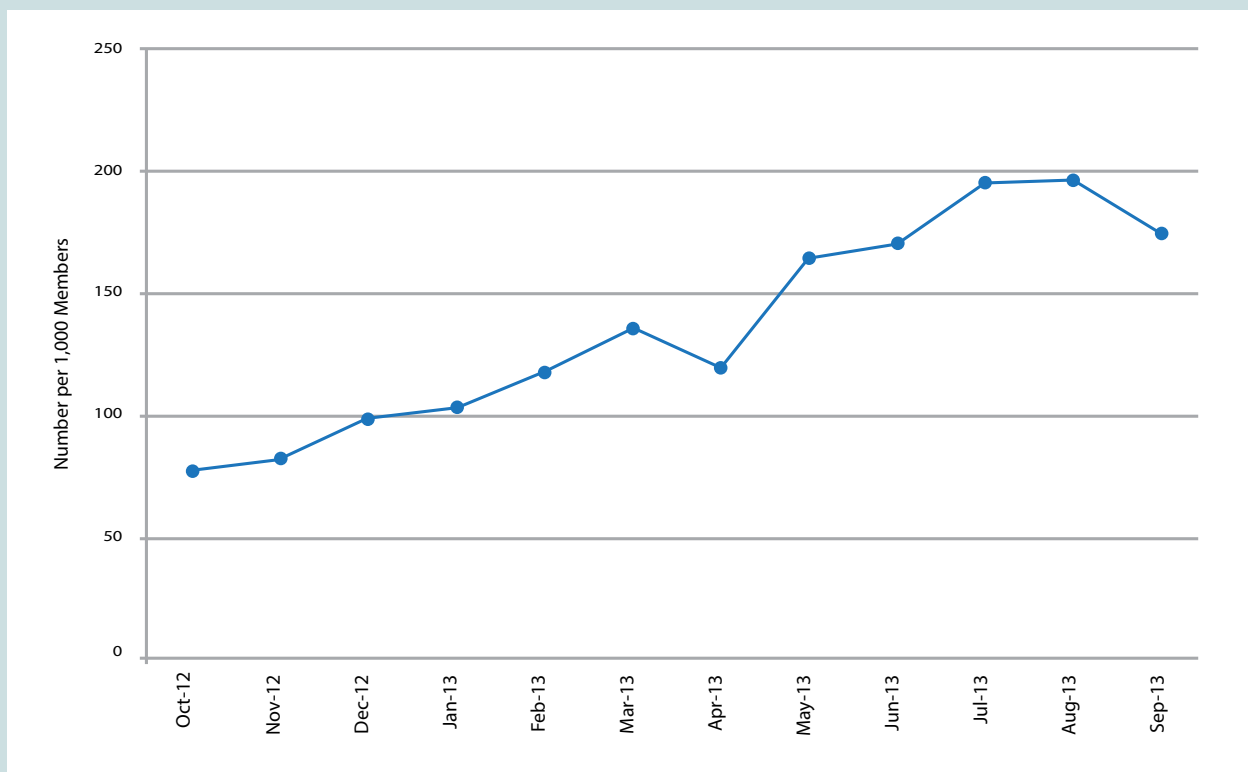


Figure 4. Advice referrals per 1,000 members from all the departments to dermatology, October 2012–August 2013.<sup>3</sup>

# Innovations at the Interface of Primary and Specialty Care



## Kaiser Permanente Colorado

### Outcome: In-Person Referrals to Dermatology Have Decreased

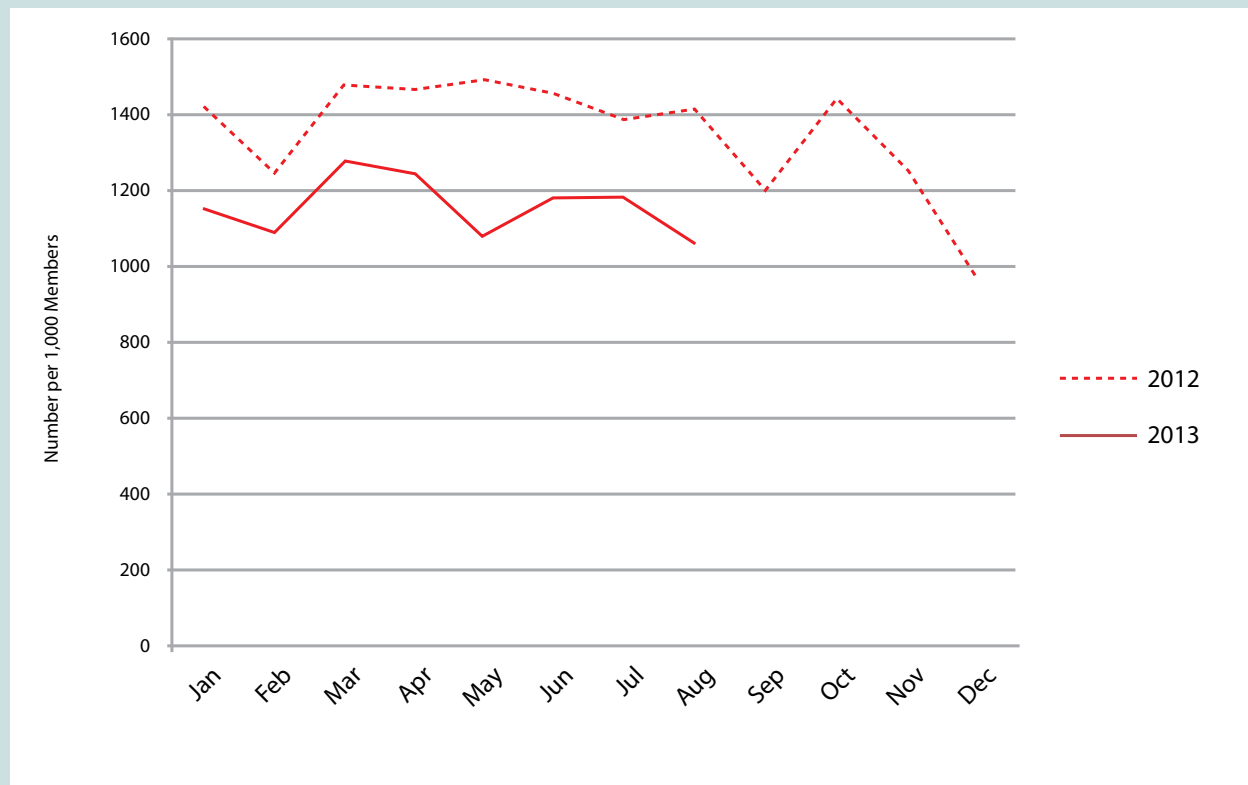


Figure 5. Referrals per 1,000 members for in-person consultations from all departments to dermatology, 2012 and 2013.<sup>3</sup>

### Population Health/Panel Management Approach in Specialty Care

The CCCS (Collaborative Cardiac Care Services) program, which originated at KPCO in 1998, is one example of the way KPCO has taken a population health approach in specialty care. To improve the health of patients with coronary artery disease, KPCO has created specialty care teams to help patients address lifestyle and medication issues that are important for managing the condition but are not adequately addressed in regular office visits. Any patient who is diagnosed with acute coronary syndrome is automatically enrolled in this program unless the patient or physician explicitly declines. Patient data are mined monthly to identify new patients with a history of cardiovascular disease who may have had episodes before they joined KPCO. In addition, cardiologists can refer individual patients to the program at any time.

Once patients are identified and enrolled, intensive outreach and services are provided by care coordinators, RNs, clinical pharmacists, and, to a lesser extent, the patient's cardiologist and PCP. Patients are followed by their care team for as long as they remain KPCO members, or until they choose to leave the program. Patients

# Innovations at the Interface of Primary and Specialty Care



## Kaiser Permanente Colorado

requiring no change in therapy or treatment plan for 12 months are directed to follow up with their primary care teams for continued management, but the program continues to follow them. If any patient misses a goal (for example, fails to have blood pressure checked, does not pick up medications, blood pressure rises above threshold), that patient is contacted immediately. More than 25,000 patients have been enrolled in the CCCS program, and more than 12,000 of them are being actively followed for outcomes such as cholesterol screening rates, low-density-lipoprotein cholesterol (LDL) levels, rates of cardiac events, and mortality rates.<sup>3</sup>

Programs using a similar model to address other conditions, including heart failure, hypertension, depression, asthma, kidney disease, diabetes, and prediabetes, have also been launched. In the view of John Merenich, MD, medical director of KPCO Clinical Informatics Decision Support and a key player in the implementation of the CCCS program, evidence-based protocols and nonphysician-staff-led delivery of care will achieve a higher quality of care than physician-led care using individual discretion for a majority of patients with chronic illness.<sup>7</sup> Dr. Merenich sees the role of the specialist physician as a leader who designs and reviews the treatment protocols and only intervenes in special cases where other staff who can follow up with the patient more intensively have not been able to reach the patient, manage patients who fall off of the protocol, or resolve conflicts in care. When patients do need a physician's care, this could be either a PCP or a specialist, depending on who is better equipped to handle that particular type of condition (for example, the specialist's strength may lie in treating rare or complicated cases within that specialty, while the PCP's strength may lie in managing multiple conditions within the same patient or addressing health issues that arise from the patient's social circumstances).

### Outcome: KPCO Collaborative Cardiac Care Service (CCCS) Program

Begun in 1998, the CCCS program has been tracking health outcomes in patients for more than a decade to document the effectiveness of the program in improving patient health.

- When enrolled within 90 days of a heart attack, patients in the CCCS program have an 88 percent reduced risk of dying of a cardiac-related cause compared with similar patients with no exposure to the program.<sup>8</sup>
- An early analysis conducted in 2000 of more than 1,700 patients enrolled in the Clinical Pharmacy Cardiac Risk Service (CPCRS, the pharmacy team component of CCCS) demonstrated that the portion of patients screened for cholesterol increased from 55 percent to 97 percent, and the portion of patients with LDL cholesterol levels below 100 mg/dL (considered optimal for patients with cardiovascular disease) more than doubled, rising from 22 percent to 48 percent.<sup>9</sup>

Nationally, fewer than 20 percent of coronary artery disease patients survive 10 years after their first heart attack. On the basis of this rate, the CCCS program estimates it prevents more than 135 deaths and 260 emergency interventions annually as a result of improved care.<sup>10</sup>

# Innovations at the Interface of Primary and Specialty Care



## Kaiser Permanente Colorado

### Targeted Continuing Medical Education (CME) for Primary Care and the Electronic Clinical Library

CME sessions for PCPs provided within KPCO are specifically directed at increasing comfort, confidence, and competence in managing an expanded scope of care. Specialties and conditions for these sessions are selected based on data from referral/advice referral use and on liaison feedback. Specialists give presentations about best practices in the care of certain common conditions that can be managed in primary care, questions that should be asked of the patient or tests that should be performed before a referral is made, and conditions that do not require a referral (for example, recent presentations included one by a neurosurgeon emphasizing that most back pain is not operable and advising PCPs on ways to manage it and red flags that may necessitate a referral, and another by a surgeon about rectal bleeding and best practices for managing it within primary care).

In addition, a “CME fair” is held four times a year in primary care. Each time, a different specialty is invited to send four physicians, who staff individual conference rooms and target specific conditions through a case-based discussion. Time is blocked off for PCPs to participate and have conversations with the specialists about their patients with these particular conditions. The intent is to foster familiarity and dialogue between PCPs and subspecialists, as well as to target areas of identified clinical need to improve PCP comfort with management.

**Electronic Clinical Library.** Each of KP’s nine regions throughout the United States has a Care Management Institute (CMI) that contributes to the national electronic clinical library accessible to all KP physicians and other providers. Rather than being merely a repository of articles and textbooks, which it also contains, this library houses evidence-based guidelines of best practices for the management of conditions. The aim is to “make the right thing easy to do” by giving providers an easy reference tool that they may consult, with actionable steps to support them in developing care plans for individual patients. The library provides a common reference point for guidelines that both PCPs and specialists can consult to promote shared understanding of the best ways to manage conditions that may fall outside a physician’s training or to reflect recommendations that have been updated since the provider’s last formal training on the topic. Representatives from the Care Management Institute in each region build the virtual library by drawing on the latest medical literature, as well as by tracking outcomes in KP’s own patient populations. The library incorporates the KP formulary and is also tailored to KP physicians’ workflow. In addition, the clinical library has a patient education section that provides access to educational handouts, available in up to 10 different languages, that physicians may print out as resources for patients.

### Multi-Specialty Embedding

The embedding of multi-specialty teams in surgical specialty departments contributes to the overall goal of making care more efficient. For example, a physiatrist and a pain anesthesia specialist are embedded in the neurosurgery clinic. Patients with back pain see the physiatrist first, and only patients who are good candidates for surgery are subsequently seen by the neurosurgeon. This ensures that more of the neurosurgeon’s time is spent on cases that require surgery. With the same goal in mind, KPCO has also embedded a family medicine physician who specializes in sports/musculoskeletal medicine in the orthopedics clinic.

# Innovations at the Interface of Primary and Specialty Care



## Kaiser Permanente Colorado

### Outcome: Increasing Surgical Yield

Leaders at KPCO, like their counterparts in other health systems, seek to make the most of the procedural expertise of their surgeons. A common metric reflecting this is “surgical yield,” which represents the percentage of patients a surgeon sees in clinic who proceed to have a surgical procedure. Embedding a physiatrist in the neurosurgery clinic has increased surgical yield, which has grown from less than 19 percent to 30 percent. As a result, KPCO has been able to decrease neurosurgeon staffing by the equivalent of one FTE.<sup>11</sup>

### Workforce Implications

*“Our Colorado region achieved quality care results by aligning people and technology in the most efficient care delivery system. It was not newer or more expensive treatments, but an integrated approach to deliver the right care at the right time. Maximizing information for the clinician means optimizing care for the patient.”*—George C. Halvorson, Chairman and CEO, Kaiser Permanente<sup>10</sup>

KPCO’s efforts to improve coordination and communication between primary care and specialty care have important implications for the physician workforce. At KPCO, the Urology Department provides an example of the way that recommending specific referral guidelines and allotting some physician call time to screening referrals received from other departments to ensure completeness saves visit time equivalent to one half-time specialist. Across KPCO specialty departments, the primary care liaisons work with individual specialties to develop referral guidelines and other protocols that ensure that when patients are sent for an in-person referral to specialty services, they arrive with all previsit testing completed and can save themselves and the physician an extra visit.

In addition to referral guidelines and screening, the use of advice referrals allows many conditions that would have been referred to be managed by the PCP, thus decreasing wait times for specialty services by removing those patients who may not need to see a specialist. Embedding other specialists within a department—such as a physiatrist in a neurosurgery department—serves a similar function and ensures that the patient receives the right care at the right time. At KPCO, this has resulted in the ability to cut back one FTE subspecialist in that department and could potentially serve as a model for other specialties.

Finally, the CCCS program and others that follow the same model of physician oversight of active patient management by pharmacist and nurse teams shows extremely promising results in terms of both patient outcomes and a new staffing model involving team-based specialty care. Continued study of models that rely on protocols carried out by nonphysician team members who can provide follow-up care and monitoring of patients with chronic conditions is merited as the population of Americans with chronic disease increases.

# Innovations at the Interface of Primary and Specialty Care



## Kaiser Permanente Colorado

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# MAYO CLINIC INITIATIVES

# Innovations at the Interface of Primary and Specialty Care



## Mayo Clinic

### Summary

Over the past decade, the Mayo Clinic in Rochester, Minnesota, has introduced several initiatives that aim to improve coordination at the interface of primary and specialty care. The initiatives include (1) the use of **electronic consultations** (eConsults) among physicians; (2) the **embedding** of specialty-trained nurse practitioners and physician assistants in primary care clinics (and primary care physicians in specialty departments); and (3) the development of **care process models** that define roles and relationships between primary and specialty care in the management of particular conditions.

### Introduction to the Mayo Clinic

The Mayo Clinic is the oldest and largest integrated, not-for-profit medical group practice in the world. Founded as a private group practice in Rochester, Minnesota, more than 100 years ago, the organization evolved into the clinic that is known today as a destination medical center for high-quality tertiary and quaternary care. In addition to the main campus in Rochester, the Mayo Clinic includes campuses in Scottsdale and Phoenix, Arizona, and Jacksonville, Florida. The Mayo Clinic also owns and operates the Mayo Clinic Health System, a network of community-based clinics and hospitals serving more than 70 communities that are divided into four regions: Minnesota, Iowa, Wisconsin, and Georgia. Together, these locations employ more than 4,000 staff physicians and scientists and serve more than 1 million patients annually.<sup>1</sup>

The clinic also extends its reach through the Mayo Clinic Care Network, an affiliated group of more than 20 health systems, clinics, and hospitals within North America<sup>2</sup> that have access through a subscription to Mayo Clinic information-sharing tools such as eConsults and MayoExpert (described later). This allows patients to benefit from Mayo expertise through a local provider without the need to travel to a Mayo Clinic campus.

The remainder of this section describes some of the particular features that shape the structure and practice of clinical care at Mayo.

**Employee and Community Health (ECH).** ECH is a multi-specialty initiative aimed at improving care for Mayo Clinic employees, their dependents, and local residents of Rochester.<sup>3</sup> ECH brings together about 120 physicians and 350 allied health staff from four departments—Primary Care Internal Medicine (PCIM), Family Medicine (FM), Community Pediatrics and Adolescent Medicine (CPAM), and Integrative Behavioral Health (IBH)—to serve a local population of 139,000 patients. The needs of these patients (about half of whom are employees and their dependents, and half, residents of the local area) are different from those of patients who travel to the clinic from outside the region, typically for highly specialized care for a specific diagnosis or treatment. Through ECH, providers manage patients and populations over the long term, incorporating both preventive care and behavioral health alongside acute and chronic disease management.

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**Center for Innovation (CFI).** The Mayo Clinic also houses CFI, which works to create solutions to health care delivery challenges. Working under a mission to “transform the experience and delivery of health care,” CFI staff serve as internal consultants to clinical departments at the Mayo Clinic that seek to provide care that is more accessible, affordable, and value-driven.<sup>4</sup> CFI develops new care-delivery models, equipment, and technology. Before rolling out new initiatives to individual clinics, staff can observe real patients and providers in practice and incorporate feedback into process improvements in a CFI-managed outpatient lab.

**Physician Compensation.** All Mayo Clinic physicians are salaried. Salary adjustments are determined, in part, by evaluation criteria that vary across units. According to Dr. Robert Stroebel, who was PCIM chair and Midwest director of the Office of Population Health Management at the time of the site visit, switching ECH physician compensation to a value-based metric was a major transformation that allowed many of the innovations discussed in this profile to flourish. Primary care physicians (PCPs) in ECH are evaluated on metrics based on the “triple aim” of quality, patient satisfaction, and cost. In terms of cost, PCPs are evaluated in part using a metric that measures the costs associated with caring for their set panel of patients. In practice, this metric has proven difficult to apply on an individual provider basis because one or two high-cost outliers in the panel can skew the numbers.

## Initiatives Integrating Primary and Specialty Care

### eConsults

*“We are oriented toward thinking about different ways to provide health care, including using technology to improve efficiency and effectiveness.”*—Doug Parks, Administrator for ECH and Information and Knowledge Management Systems<sup>3</sup>

Electronic consults, or eConsults, are electronic messages sent between clinicians about general or patient-specific questions; in some cases, they may replace the need for an in-person referral.<sup>5</sup> Mayo Rochester’s Department of Medicine first introduced eConsults in 2005, but use increased substantially after a pilot run by CFI in 2009. CFI intensively promoted eConsults through newsletters, posters, videos, and other means, resulting in 1,200 internal eConsults being sent during the 2009 pilot.<sup>6</sup> Currently, eConsults are divided between internal consults (conducted between physicians within Mayo Rochester) and external consults (to Rochester physicians from physicians at facilities within the Mayo Clinic Care Network). Both internal and external eConsults have increased rapidly in the past few years, but internal eConsults are far more frequent, as shown in Table 2.

Table 2. Number of Internal and External eConsults at Mayo, by Year

Year	Internal eConsults	External eConsults
2011	3,686 <sup>7</sup>	114 <sup>7</sup>
2012	5,200	562
2013	7,600 <sup>a</sup>	1,600 <sup>a</sup>

<sup>a</sup> The projected number to be conducted during 2013, based on trends through mid-June.

# Innovations at the Interface of Primary and Specialty Care



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Although it is possible for internal eConsults to be sent between PCPs, from PCPs to specialists or vice versa, or even between two specialists in the same department, in practice, the majority at Mayo are from one specialist to another specialist in a different department. In 2012 and 2013 (through mid-June), about 30 percent of internal eConsults were generated in PCIM, FM, or CPAM, while the remainder were predominantly specialist to specialist.

**How It Works.** The referring physician clicks an “eConsult” button from within the electronic medical record (EMR) and chooses a specialty to consult from a list. The physician enters the consultative question into a box in free-text form, and it is sent to the specialty department. There, the request for consultation is triaged and sent to a physician in that department who can respond. In some departments, an appointment is blocked off in that physician’s calendar (for example, 15 minutes) for the response. The referring physician is not required to summarize the patient’s history; rather, the physician assigned to respond to the eConsult is expected to look at the patient’s clinical notes to understand the patient’s history. Physicians who have received an eConsult assignment are expected to respond within 48 hours, and more than 90 percent of eConsult responses are sent within this window.

The eHealth team, consisting of a physician, administrator, and ancillary administrative staff, tracks eConsults and monitors responses; physicians who have not responded within the appropriate time frame receive a phone call. The receiving physician responds with a clinical note, and the referring physician receives an inbox message that the note is waiting. The eConsult is automatically documented in the EMR, appearing in the patient’s record along with other visits.

**Time Burden and Physician Compensation.** The burden of the eConsults system on the referring provider is minimal: the completion of a free-text question. The referring provider does not have to write any additional history about the patient. Thus, the PCPs interviewed did not view using the eConsults as more work than a traditional referral (in fact, it is very similar to the form for sending a referral electronically). It is more work for the receiving provider to answer, but specialist physicians who respond to eConsults earn 1.74 relative value units (RVUs). This is the same credit they would earn for an in-person visit. Because responding to an eConsult takes only one-third the time of an in-person visit, on average (15 minutes for an eConsult versus 45 minutes for a specialist appointment), there is a financial incentive for specialists to participate.

### eConsults Example: Improving Efficiency Between Primary Care and Dermatology

One area where eConsults have been particularly effective at saving specialist time is skin lesions. Mayo PCPs are expected to do a considerable number of procedures in the office, such as removing skin lesions and sending them to pathology. Once the PCP receives the results, he or she can send an eConsult to dermatology and receive information about any follow-up procedures the patient might need. As a result, the patient can be scheduled directly for the next procedure rather than having to see a specialist in person first.

**Challenges to Implementation.** According to interviews with clinicians in Rochester, one of the challenges of increasing use of eConsults is the view among some physicians that eConsults pose a threat to the “traditional Mayo model of care.” Another challenge has been some physicians’ hesitancy to respond to external requests for eConsults because they do not know the requesting physicians in the affiliated network personally and, therefore, may have questions about the reliability of their clinical notes. These challenges have gradually been overcome by collecting internal data and monitoring the program to ensure that quality of care is maintained.

# Innovations at the Interface of Primary and Specialty Care



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### Outcomes: eConsults Are More Likely to Generate Return Visits to Primary Care than Are Referrals to Specialists

A study conducted at the Mayo Clinic found that Family Medicine patients for whom an eConsult was requested were more likely to have an “early return” office visit to FM for any reason within two weeks than were those who received a face-to-face referral to a specialist (38.2 percent for those who received eConsults and 27.6 percent for those who were referred;  $p < 0.01$ ).<sup>8</sup> However, the patients for whom eConsults were requested were **no more likely** than patients who were referred to return within two weeks for the **same** reason, suggesting that the increased likelihood of a return visit was not because the condition a patient originally sought care for was incompletely treated through the eConsult and that the patient’s relationship with primary care as a resource for new problems may have been strengthened. Although the results suggest that using eConsults may not reduce the total number of patient visits within the system overall, they do suggest that using eConsults may shift some of the volume of visits from specialty to primary care. Treating patients in primary care is typically more cost-effective for the payer and more convenient for the patient.

### Embedding Specialists in Primary Care Practices

A second set of initiatives that aims to improve coordination between primary and specialty care within the Mayo Clinic involves embedding various types of specialists (from mental health, orthopedics, and endocrinology, for example) in primary care offices. This section will describe these initiatives, as well as a case of “reverse embedding,” where primary care services are provided within a specialty clinic.

**Integrated Behavioral Health.** Mayo Clinic Rochester has embedded several different types of specialty-trained professionals in primary care practices. The longest-standing of these programs has been the integration of behavioral health services into primary care as part of the statewide Depression Improvement Across Minnesota, Offering a New Direction (DIAMOND) program, developed by the Minnesota-based Institute for Clinical Systems Improvement (ICSI) based on a treatment model developed at the University of Washington. In March 2008, the Rochester campus became one of the initial rollout sites for this project, which promotes a collaborative care model for depression that draws on primary care physicians, psychiatrists, and RN care managers. While the program varies somewhat by clinic, its hallmarks include a focus on widespread depression screening in primary care and the development of a registry of patients identified with depression that tracks responses to treatment over time.<sup>9</sup> It also incorporates a focus on relapse prevention.

**How the DIAMOND Program Works at Mayo.** Patients who are identified as suffering from dysthymia or moderate cases of major depression meet with a behavioral health care manager located in the same clinic as their primary care provider. This is generally done through a “warm handoff,” where the patient is walked over and introduced to the care manager on the same day as their initial visit. The care manager performs a more thorough mental health screening and compiles other patient information to review in consultation with a psychiatrist and to jointly develop a care plan based on the patient’s individual needs. A stepped-care approach is used for medication and intensity of therapy. If the patient’s condition warrants psychiatric care, the patient can be referred directly. Care managers follow up with patients through phone calls or office visits to monitor treatment and make adjustments, if necessary. Treatment is tracked along with patient outcomes in order to build an evidence-based body of knowledge on treatment efficacy and to measure

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the costs associated with the program (including costs associated with hiring care managers and consulting psychiatrists, patient health care utilization rates, and estimates of costs saved by patients returning to work).

Before the DIAMOND program was implemented, many local Mayo patients with depression went outside the clinic for behavioral health services, which was costly to the system and less convenient for patients. Embedding a behavioral health care manager in primary care clinics and providing access to consults with a psychiatrist allow patients to access specialty-level care in a familiar environment. In turn, the program has demonstrated cost savings.

**Payment Model.** The DIAMOND program includes a bundled payment model for care. Participating medical groups receive a monthly payment from health plans for each patient enrolled in the program to cover the cost of additional care services, such as the care manager and consulting psychiatrist.<sup>10</sup> In addition to the Mayo Clinic plan, seven other health plans in Minnesota are also reimbursing clinics for delivering DIAMOND services.

### Outcomes: Improved Remission Rates and Decreased Per-Member-Per-Month (PMPM) Costs Using a Collaborative Care Model for Depression

- An early self-evaluation by ICSI conducted two years into the program compared patients receiving typical treatment for depression in primary care in Minnesota with those enrolled in the DIAMOND program. Twenty-six percent of patients were in remission six months after enrolling in the DIAMOND program versus 5.8 percent of patients receiving the usual care for depression in Minnesota.<sup>10</sup> Researchers within the Mayo Clinic found that patients enrolled in the DIAMOND program at their clinics achieved better health outcomes and remission rates than those receiving usual care.<sup>11,12</sup> On the other hand, an external evaluation of the DIAMOND program by the National Institute of Mental Health did not find improved depression outcomes.<sup>13</sup> However, that study did not include any data from Mayo patients, the largest subset of DIAMOND enrollees.
- Another study suggests that collaborative care management (CCM) treatment for depression in primary care may be more cost-efficient for treating the population as a whole. When compared with a clinic without the CCM model, mental health–related costs as a proportion of total spending for the population served in a CCM clinic declined significantly ( $p < 0.0001$ ).<sup>14</sup>
- In an internal analysis conducted at the Mayo Clinic, for every \$1 spent on DIAMOND care costs in 2009, Mayo Clinic saved \$1.74 in total mental health expenses.<sup>15</sup>

More recent models of embedding clinical specialists in primary care include embedding a certified nurse practitioner (NP) with training in endocrinology in primary care clinics beginning in 2011, and a physician assistant (PA) trained in orthopedics beginning in 2012. The primary role of these specialists is to be readily available in the primary care clinic for different types of consultations, either directly with patients or for advising PCPs. Depending on the situation, PCPs can refer patients directly to these clinicians, bring a patient who is already in the building to the specialist clinician's office in a warm handoff, or even bring the specialist clinician into the exam room with the PCP and patient—physically or virtually through a video consult or provider messaging system, depending on the arrangement with that specialty department. Physically located in ECH, these practitioners go beyond mere co-location and become part of the primary care team by attending departmental meetings and by understanding the primary care approach to population

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management. By working together in the same space, specialist and primary care clinicians report becoming more familiar with one another and more comfortable seeking and giving input on patients.<sup>16</sup>

At the time of our visit, ECH was considering the need to develop a distinct pool of specialists to serve its patient population. The typical Mayo specialist sees a patient population that is disproportionately from outside the region, without easy access to longitudinal care by Mayo physicians. This creates an incentive to conduct more intensive evaluations up front, but this approach was not always well suited to the ECH population served by Mayo's primary care team. By identifying a subset of specialists who were designated specifically to support the primary care physicians and their patient population and who could conduct the evaluations up front, more efficient and effective care could be provided. Because this model has been well received by providers and patients alike, it may be expanded and tested so that its impact on the overall cost-effectiveness of care can be evaluated.

**Primary Care Services within a Specialty Practice.** The Division of Nephrology and Hypertension's **Project RED (Re-Engineering Dialysis)** presents an example of "reverse embedding," where PCPs are available on a consultation basis for patients receiving dialysis for end-stage renal disease. Patients come in for dialysis three days a week but are not seen often in primary care because of the patient's burden of having to schedule an additional appointment in a different location. The nature of their kidney disease, however, means that these patients require complex disease management, often resulting in high utilization of the emergency room when they do not have regular access to primary care. Furthermore, nephrologists traditionally have referred them to other specialists for issues that could be managed in primary care, such as respiratory infections, ingrown toenails, and skin rashes.

At the time of our visit, four FM physicians were available for consultations with dialysis patients, in addition to their regular panel of patients. These physicians meet with an average of two dialysis patients per week and also communicate with a social worker embedded in the dialysis clinic, especially around issues of starting home health care and providing information for paperwork necessary to receive other health services. As the dialysis staff have gotten to know the FM physicians better, they have increased their use. While thus far the demand has remained low enough for dialysis patients to receive same-day access to the FM physicians, other staffing arrangements are being explored to ensure that the program runs smoothly even as demand increases. Additionally, other specialties and clinics that see a large volume of patients who are disconnected from primary care—such as mental health centers—may be explored as possible locations for co-locating primary care clinicians.

### The MayoExpert Online Tool and Care Process Models

*"We recognized the need for a new educational model that would capitalize on the learning opportunities arising in daily clinical practice and simultaneously enhance clinical practice through improved patient management."* —David A. Cook, Professor of Medicine and Medical Education and Associate Director of Mayo Clinic Online Learning, and colleagues.<sup>17</sup>

**MayoExpert** is an information system that is integrated with individual EMRs across 74 clinical sites within the Mayo Clinic Care Network. First introduced in 2007, it is designed to be easily accessible through the Web on desktops as well as certain mobile devices—such as phones and tablets—in order to be used by clinicians at the point of care.<sup>18</sup> MayoExpert promotes information management, standardized clinical practices, and the documentation of learning in clinical contexts. One of the ways it does this is by providing access to frequently asked questions (FAQs) and care process models developed by experts at the Mayo Clinic.

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**Care process models** are evidence-based, best-practices guidelines that interdisciplinary workgroups at the Mayo Clinic have developed for managing particular conditions. Rather than being strict protocols, they are sets of recommendations for clinicians that represent agreements between PCPs and specialists and are designed to facilitate high-quality care and discourage care that is variable, fragmented, less safe, and/or more costly. By making the guidelines and FAQs easily accessible, a variety of clinicians (including physicians, advanced practice providers, residents, and fellows) have access to a reference tool outlining best practices for managing individual conditions. This includes evidence-based, expert-approved steps taking the provider from patient symptom through testing to diagnosis and treatment—essentially disseminating specialists' expertise so that it becomes available to front-line providers.<sup>17</sup>

Beyond care process models, MayoExpert also includes process elements related to education, training, and credentialing. For example, the tool includes a directory of experts with contact information for use by clinicians who would like to follow up with additional questions about individual cases. It also includes direct links to other resources, such as research articles by Mayo Clinic authors, other library materials, and patient education materials.<sup>17</sup> A learning portfolio tracks continuing medical education (CME) activities for providers; providers can obtain CME credit by studying any FAQ or care process model and describing how this information changed their competence, performance, and/or patient outcomes.<sup>17</sup> These reflections are then reviewed by physician leaders to determine whether credit is granted, and credit earned through off-site CME activities can also be entered into the learning portfolio.

### Early Outcomes: Information on Use of MayoExpert

While evaluations to assess the effectiveness are still under way, basic information on use was measured by reviewing data from 2012 and recently published.<sup>17</sup>

According to the findings, MayoExpert has achieved fairly widespread uptake, especially among staff physicians, residents, and fellows. Specifically, in 2012, MayoExpert was used at least once by:

- 71 percent of staff physicians (2,578 out of 3,643 total)
- 66 percent of advanced practice clinicians (900 out of 1,374 total)
- 75 percent of residents and fellows (1,728 out of 2,291 total)<sup>17</sup>

The most commonly accessed resources within MayoExpert in 2012 were FAQs and care process models:

- In 46 percent of sessions (4,619 out of 10,007), an FAQ was viewed.
- In 30 percent of sessions (3,047 out of 10,007), a care process model was viewed.
- In 2 percent of sessions (226 out of 10,007), the directory of experts was checked.<sup>17</sup>

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### Workforce Implications

Efforts to improve coordination and communication between primary and specialty care at the Mayo Clinic have potentially important implications for the physician workforce. Each of the innovations implemented at the Mayo Clinic to bridge primary and specialty care prompts a rethinking about the alignment of resources in order to improve coordination of care.

First, the growing use of eConsults has increased interaction and broadened the roles of both PCPs and specialist physicians. By receiving specialist input electronically, PCPs are able to increase the number of conditions they can manage in primary care—not only maintaining their role as a patient's primary source of routine care, but also taking on an increasing role in helping patients manage particular specialty conditions. Data collected by the Mayo Clinic showed that for every 1 averted referral to a specialist, 10 additional specialty visits are avoided downstream. This discovery has caused administrators to look more closely at billing data to identify what they call “primary care sensitive” codes—that is, billing for services provided in specialty departments that could be managed at lower costs in primary care. If these efforts were to spread to a larger number of health systems, they could result in demand for specialists to serve an expanded role as “consultants” to other types of providers. The specialists might continue to see patients with complex specialty needs in person but spend a larger amount of time advising primary care colleagues who—with access to clinical decision support tools such as MayoExpert and eConsults—could manage a larger number of conditions within primary care. This, in turn, could lead to more time-efficient care for the patient and more cost-effective use of care within the health system. If patients were to get a larger number of needs met through their primary physicians, demand for primary care services could increase while potentially reducing wait times for patients needing access to specialty input. Research to measure these potential effects could help better inform discussions about workforce implications.

Like eConsults, embedding specialist clinicians from fields such as behavioral health, endocrinology, and orthopedics in primary care practices could potentially help relieve long wait times for patient access to specialty care by increasing the number of patients who can be treated in a familiar setting. It has also shown early signs of helping to decrease the number referred for in-person visits with specialist physicians. These specialist clinicians presumably help relieve some of the burden on PCPs who may feel they cannot devote as much time as is needed to a U.S. population increasingly suffering from chronic conditions. Physicians in specialty departments, on the other hand, may feel relief at having the chance to focus more closely on patients who need specialty care and to reduce patient wait times by removing the need to see more routine cases. Alternatively, specialists may feel burdened by the complex needs of the patients who come to see them in person. These two possible responses have important implications for job satisfaction and retention of both primary care and specialty physicians, thus meriting continued study.

Finally, giving clinicians access to online tools, such as the MayoExpert FAQs and care process models, helps disseminate specialist knowledge to other clinicians, potentially allowing more testing and diagnosing to be done according to evidence-based, expert-reviewed guidelines in primary care and/or by advanced practice clinicians before patients are referred to specialty care. If patients are then referred with all recommended tests having been performed, this could potentially increase the efficiency of specialty visits, which could in turn potentially increase capacity for new patients in specialty care. It will be important to continue to monitor and evaluate the program to determine its ability to mitigate capacity issues and to assess the effects of all these innovations on provider satisfaction as well.

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## Mayo Clinic

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#### Mayo Clinic

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# Innovations at the Interface of Primary and Specialty Care



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UNIVERSITY OF NEW MEXICO  
HEALTH SCIENCES CENTER  
INITIATIVES

# Innovations at the Interface of Primary and Specialty Care



## Project ECHO at the University of New Mexico Health Sciences Center

### Summary

Project ECHO (Extension for Community Healthcare Outcomes) at the University of New Mexico Health Sciences Center (UNMHSC) is a distinctive health care education and delivery model. The project expands the capacity of primary care clinicians in the state's rural and underserved areas to safely and effectively treat chronic, complex conditions. A severe shortage of health care providers with the specialty expertise required for optimal management of complex chronic conditions, such as hepatitis C, chronic pain, and HIV/AIDS, in underserved areas contributes to stark health disparities in New Mexico and beyond. Project ECHO puts specialists at UNMHSC in touch with primary care clinicians throughout the state through regular **teleECHO clinics** (videoconferences) to discuss patient cases and receive didactic training, with the aim of enabling primary care clinicians to become comfortable delivering complex, specialty-level care directly to patients. These teleECHO clinics have been replicated at several academic health centers across the United States and globally. While the teleECHO clinics are the most well-known component of Project ECHO, a more recent development includes **community health worker (CHW) training programs** in diabetes care and recovery from addiction. These programs present a new training model for community health workers to use in concert with primary care and specialty providers to better manage complex conditions.

### Introduction to Project ECHO

*"Project ECHO is developing capacity for safe and effective treatment of chronic, common, and complex diseases in rural and underserved areas while monitoring outcomes to ensure quality of care. Project ECHO serves as a model that other academic medical centers and primary care clinicians can build on to provide complex specialty medical care to underserved populations."*—Sanjeev Arora et al., 2011<sup>1</sup>

**University of New Mexico Health Sciences Center.** The University of New Mexico (UNM) was founded in Albuquerque in 1889, and the UNM School of Medicine received full accreditation and graduated its first class in 1968. Founded to help meet the state's physician workforce needs, the UNM School of Medicine remains the only MD-granting institution in the state, which is known for its programs in rural medicine, family medicine, and primary care.<sup>2</sup> In 1994, the School of Medicine joined with other UNM health professional programs and science departments to form the UNM Health Sciences Center (UNMHSC). Today, UNMHSC encompasses colleges of nursing and pharmacy, a health sciences library, the UNM Hospital, and a regional medical center at Sandoval, in addition to the medical school. The UNM Hospital, a 600-plus-bed academic medical center (AMC), serves about 500,000 outpatients per year and contains the state's only Level 1 trauma and burn center.<sup>3</sup>

**Project ECHO.** Project ECHO at UNMHSC was created in 2003 by Dr. Sanjeev Arora, a liver specialist. The project aims to improve health outcomes for people living in rural and other medically underserved areas of New Mexico by more equitably distributing the specialized knowledge and health care delivery practices concentrated at academic health centers.<sup>4</sup> A severe shortage of health care providers with the specialty expertise required for optimal management of complex chronic conditions, such as hepatitis C, chronic pain, and HIV/AIDS, in underserved areas contributes to stark health disparities in New Mexico and beyond. Before Project ECHO started, the wait time for specialist treatment for hepatitis C patients in the Albuquerque region could be as long as six months.<sup>5</sup> Many patients live outside the region and must travel several hours to receive care. Failing to treat such common conditions in a timely manner results in increased morbidity and mortality. Additionally, because optimal treatment for complex diseases is rapidly evolving, it is difficult for clinicians to stay up to date on the latest treatment guidelines.

# Innovations at the Interface of Primary and Specialty Care



## Project ECHO at the University of New Mexico Health Sciences Center

Project ECHO provides training and support in chronic and complex disease management in order to improve the capacity of primary care physicians, physician assistants (PAs), and nurse practitioners (NPs) to safely and effectively treat common chronic and complex diseases in rural and underserved areas. As of 2014, this training has been provided to more than 3,000 doctors, PAs, nurse practitioners, nurses, and community health workers who have treated more than 6,000 patients with a variety of chronic conditions in New Mexico.<sup>6</sup> Project ECHO at UNMHSC also aims to demonstrate an AMC's capacity to play a leading role in developing partnerships that improve health outcomes in underserved populations and to model the role that teaching hospitals can play in educating physicians and other health professionals throughout their careers.<sup>4</sup>

### TeleECHO Clinics: Co-Management of Complex Patients Using Video Technology

Project ECHO began with one teleECHO clinic for hepatitis C in 2003. Since then, this model has been applied to 11 common complex conditions or specialties, each with its own dedicated clinic held at regular intervals at UNMHSC (see Table 3).

Table 3. List of Dedicated TeleECHO Clinics at UNMHSC, 2014

Condition/Specialty	Clinic Frequency	Clinic Duration
Advanced Liver Care	Monthly	1.5 hours
Child and Youth Epilepsy	Weekly	1.5 hours
Chronic Pain	Weekly	2 hours
Dementia	2X/Month	1.5 hours
Endocrinology	Weekly	1.5 hours
Hepatitis C	Weekly	2 hours
HIV/AIDS	Weekly	1.25 hours
Integrated Addiction and Psychiatry	Weekly	1.5 hours
Palliative Care	2X/Month	2 hours
Rheumatoid Arthritis	Weekly	1.5 hours
Women's Health/Genomics	Monthly	1.5 hours

# Innovations at the Interface of Primary and Specialty Care



## Project ECHO at the University of New Mexico Health Sciences Center

**How It Works.** When a primary care practice joins Project ECHO, clinicians from the site attend a two-day, in-person orientation conducted by Project ECHO staff in Albuquerque. The orientation provides an immersion in the clinical specialty content, describes treatment protocols, and introduces the case-based presentation format and the communication technology necessary for regular teleECHO clinics. The orientation and basic software necessary for these clinics are provided to partner sites free of charge. The preferred technology is a secure Web-based videoconferencing service, provided by an outside vendor and customized by Project ECHO, which community sites can use free of charge. Community sites can also use their own preferred tool as long as it meets particular industry standards.

After attending orientation, interested clinicians are divided into disease-specific learning networks that meet regularly via videoconference. They are invited to attend teleECHO clinics to present patient cases from their community clinics and receive feedback and guidance from a team of UNMHSC specialists. The specialist clinicians review and discuss patient cases with the primary care clinicians. This allows the primary care clinicians to treat patients in their home communities rather than referring them to specialists who are already in short supply. Community clinicians also learn from brief didactic presentations made by the specialists about new treatment protocols and best practices for disease management, as well as from each other and the cases their fellow community clinicians present. This allows them to stay up to date on new treatment options, such as new hepatitis drugs that reduce treatment time and are associated with fewer side effects, and to gain continuing medical education (CME) credit through participation.

All participating clinicians are surveyed regularly to measure their satisfaction with the clinics and their comfort level with managing complex conditions. Within a subset of clinics with sufficient grant funding (see the section on program funding, p. 34), patient data are also tracked systematically. Community clinicians and Project ECHO staff enter basic information about patient cases and the prescribed treatment into a Web-based database to track treatment processes and outcomes over time. By receiving timely updates on patients from community providers, specialists can recommend midcourse corrections if recent lab results or other indicators suggest that the treatment is not working as anticipated. Data on patient outcomes are also collected in this way to ensure quality of care and build knowledge about effective treatment.

**Clinicians.** In addition to physicians, the program is open to a variety of health professionals, and a significant number of PAs and NPs in primary care clinics participate. In New Mexico, NPs may practice and prescribe without physician oversight, including prescribing controlled substances. Primary care clinicians who participate in Project ECHO are located at a variety of regional sites, including federally qualified health centers, rural hospitals, Indian Health Service facilities, prison sites, the New Mexico Department of Health, and private practices serving low-income communities.<sup>4</sup> Participating community clinicians receive continuing education credits (CME, CEU, CE) at no cost, and their clinics are eligible for designation as Centers of Excellence in the management of particular conditions.

As of 2014, Project ECHO had provided CME to health care clinicians in more than 300 clinical teams in 74 communities across New Mexico, totaling more than 57,000 hours of CME.<sup>7</sup> Generally, a primary care clinician will choose to specialize in one area and will participate regularly in that particular teleECHO clinic rather than attend multiple clinics. In some cases, several clinicians from the same clinic—such as a community health center—may each choose different areas for training, thus increasing the breadth of expertise within the clinic.

# Innovations at the Interface of Primary and Specialty Care



## Project ECHO at the University of New Mexico Health Sciences Center

On the university side, teleECHO clinics for each condition are staffed by an interdisciplinary team of specialty providers. For example, the hepatitis C clinic team consists of a hepatologist, a pharmacist, a psychiatrist, and a nurse. Other teleECHO clinics also incorporate various types of pain specialists, physical therapists, social workers, and others as part of the specialty team, depending on the targeted condition.

In addition to including community clinicians throughout the state, Project ECHO has involved multidisciplinary learners at various stages of training. For example, the program has partnered with family practice and residency programs in several rural areas of New Mexico to expose newer practitioners to the model. Medical, nursing, and pharmacy students have also learned about collaborative interprofessional practice through observation of and participation in teleECHO clinics.

**Patient Population.** While the teleECHO clinics do not treat patients directly, they allow primary care clinicians to present patient cases (including history, symptoms, and applicable test results) and receive guidance about treatment. The primary care clinicians at Centers of Excellence may also accept referrals for treatment of patients with applicable conditions from other clinicians in the community who do not have the capacity or the specialized knowledge to treat them. This process saves the patient considerable time and cost traveling to receive care from a specialist and increases the chances the patient will follow through with treatment.

As of 2014, Project ECHO had performed more than 10,000 patient consultations for chronic diseases and specialty care through more than 1,000 teleECHO clinic sessions. TeleECHO clinics aim to reduce geographic, economic, and racial disparities in treatment outcomes by bringing access to specialty services to isolated, poor, and minority communities. A large proportion of consultations serve patients from ethnic and racial minority groups. For example, in the hepatitis C clinics, 69 percent of patients from rural health centers and prisons were minorities.<sup>8</sup>

**Payment Model.** Primary care clinicians are paid as usual, billing for services provided or being paid a salary or monthly fee according to their practice payment model. UNMHSC specialty departments that provide staff for teleECHO clinics are reimbursed by Project ECHO for the time spent in the teleconferences.<sup>5</sup>

**Program Funding.** Project ECHO has garnered considerable grant support to develop and sustain the program. The program has received funding from the U.S. Department of Health and Human Services Agency for Healthcare Research and Quality (AHRQ), the AHRQ Minority Research Infrastructure Support Program (MRISP), the Center for Medicare and Medicaid Innovation, the Robert Wood Johnson Foundation, the GE Foundation, the Reynolds Foundation, the New Mexico Department of Health, and annual allotments from the New Mexico state legislature. As with other grant-funded initiatives, ongoing sustainability remains a challenge.<sup>6</sup> The oldest and one of the most well-funded initiatives to date has been the hepatitis C teleECHO clinic, allowing for more systematic inquiry into the impact of this particular clinic.

**Replication Sites.** Project ECHO has provided technical assistance to many other universities and health care systems in both the United States and abroad to help them implement similar programs through their own funding streams. For example, the U.S. Department of Veterans Affairs has launched a nationwide pilot of the ECHO model called Specialty Care Access Network, and the U.S. Department of Defense has implemented Army Pain ECHO, a chronic pain management program.<sup>6</sup> Altogether, Project ECHO has expanded to 22 states and five countries. Project ECHO has trained providers to run affiliate programs at 31 universities, assisting providers in 26 specialties in more than 1,000 clinics. Specialties include rheumatology, HIV, addiction, women's health, hypertension, dementia, breast cancer, childhood obesity, diabetes, and chronic pain.

Table 4 lists U.S. replication and expansion sites of Project ECHO as of 2014.

# Innovations at the Interface of Primary and Specialty Care



## Project ECHO at the University of New Mexico Health Sciences Center

Table 4. Project ECHO Replication and Expansion Sites in the United States, 2014<sup>6</sup>

ECHO Partner Site (State)	Clinical Specialties Addressed
Baylor St. Luke's Medical Center (TX)	Hepatitis C
Beth Israel Deaconess Medical Center (MA)	Gerontology, Hepatitis C
Community Health Center, Inc. (CT)	Chronic Pain, Hepatitis C, HIV, Opioid Addiction (Buprenorphine), Quality Improvement Coaching
LA Net (CA)	AAPA Preventive Care, Adult Psychiatry, Nephrology
Ochsner Health System (LA)	Liver Care
St. Joseph's Hospital & Medical Center (AZ)	Hepatitis C
University of California, Davis (CA)	Pain Management
University of Chicago (IL)	Breast Cancer Survivorship/Women's Health, Childhood Obesity, Hepatitis C, Hypertension, Pediatric ADHD
University of Nevada (NV)	Antibiotic Stewardship, Autism, Diabetes/Endocrinology, Gastroenterology, Marriage and Family Therapy Intern Supervision Clinic, Mental Health, Rheumatology, Sports Medicine
University of New Mexico Center for Development and Disability (NM)	Autism
University of New Mexico Envision New Mexico (NM)	Asthma/Pulmonary, Childhood Overweight Medical Management, Pediatric Nutrition, Psychiatry
University of South Florida (FL)	General HIV, Adolescent/Pediatrics HIV, Hepatitis C/HIV Co-Infection, HIV in Spanish-speaking Population, Psychiatry, and HIV
University of Utah (UT)	Advanced Liver Care, Chronic Pain, Hepatitis C
University of Washington (WA)	Chronic Pain, Hepatitis C, HIV, Multiple Sclerosis
University of Wyoming Institute for Disabilities (WY)	Assistive Technology
U.S. Department of Defense/Army (worldwide)	Chronic Pain
Veterans Administration Health System (12 sites across United States)	<i>At one or more sites:</i> Cardiology/CHF, Chronic Pain, Deep Brain Stimulation, Dermatology, Diabetes, Diabetes Self-Management Educators, Endocrinology, Epilepsy, Gastroenterology/IBD, Gynecology, Heart Failure, Hepatology/Hepatitis C/Liver, HIV, Infectious Diseases, Mental Health, Nephrology/CKD, Neurology, Nursing, Otolaryngology, Pain Management, Pre-Operative Clinic, Pulmonary/COPD, Sleep Medicine, Spinal Cord Injury/Plastics, Surgery, Urology, Vascular Medicine, Women's Health

(Further updates are available at <http://echo.unm.edu/locations/>.)

# Innovations at the Interface of Primary and Specialty Care



## Project ECHO at the University of New Mexico Health Sciences Center

### Outcome: Primary Care Clinician Treatment Outcomes Equivalent to Specialist Treatment

- On the basis of a prospective cohort study of patients who initiated treatment for hepatitis C between 2004 and 2008, the cure rate provided by ECHO-trained clinicians (58.2 percent) was found to be statistically equal to that of university-based specialists (57.5 percent).<sup>8</sup> Furthermore, compared with cure rates reported in previous studies of community-based treatment for hepatitis C, cure rates among ECHO-trained clinicians have been significantly higher (49.7 percent versus 20 to 34 percent among patients with HCV genotype 1 infection).<sup>8</sup>
- In the same study, fewer patients in the ECHO cohort had a serious adverse event during treatment than in the university-based cohort (6.9 percent vs. 13.7 percent;  $p = 0.02$ ), and fewer patients in the ECHO cohort had a serious adverse event leading to termination of treatment (4.2 percent vs. 8.9 percent;  $p = 0.05$ ).<sup>8</sup>

### Outcome: Reduced Wait Times for Access to Specialty Care

- According to records maintained by the UNM Hepatitis C clinic, patients waited **more than six months** for a specialty appointment in 2003; by 2010, patients were waiting just **two weeks** for guidance from the team of specialists to be communicated through the patient's primary care physician.<sup>6</sup>
- Similarly, wait times for chronic pain and headache patients seeking specialty appointments at the UNM clinic were **more than 12 months** before the start of the chronic pain teleECHO clinic; by 2014, it took about **two weeks** for a primary care physician to receive input from specialists on a patient case.<sup>6</sup>

### Outcome: High Rates of Primary Care Clinician Satisfaction

- Community-based primary care clinicians participating in Project ECHO report improving their knowledge, clinical expertise, and connection with peers through participating in the program. In a 2010 survey, 95 participants (including clinicians, health workers, and educators) rated statements about the benefits of participating in Project ECHO; the mean scores and standard deviations for select items are shown in Table 5.

Table 5. Primary Care Clinicians Self-Report Benefits of Participating in Project ECHO, 2010<sup>9</sup>

Statement: Through Project ECHO telehealth clinics ...	Mean (SD) <sup>a</sup>
I am learning best-practice care in chronic disease (n=94)	4.68 (0.59)
I am connected with peers whose opinion I respect for professional advice and consultation (n=95)	4.55 (0.73)
I am developing my clinical expertise (n=95)	4.48 (0.66)

<sup>a</sup> Respondents were given a 5-point response scale ranging from 1 (strongly disagree) to 5 (strongly agree).

# Innovations at the Interface of Primary and Specialty Care



## Project ECHO at the University of New Mexico Health Sciences Center

### Other Initiatives Integrating Primary and Specialty Care

#### Training Program for Community Health Workers in Specialty Care (Diabetes Management and Addiction Recovery)

Project ECHO has developed the **ECHO Community Health Worker (CHW)** training program for diabetes care in order to meet the needs of a growing population of diabetic patients in rural and other underserved regions of New Mexico. This program incorporates both distance and hands-on learning. It enrolls CHWs who may already be working in a primary care clinic but desire further training in diabetes management. The program aims to increase primary care diabetic management capabilities by bringing specialty expertise about the condition and its management into the primary care setting. While optimal diabetes management requires considerable patient knowledge and engagement, primary care clinicians generally lack the time and training to provide in-depth education and counseling to those patients most in need. Even when primary care clinicians are able to provide such services, overall shortages of primary care physicians, nurses, and certified diabetes educators limit the number of patients who can be reached.

The program, largely supported by grant funding, trains CHWs in diabetes management using didactic and case-based learning over the course of six months. There is no financial cost to participants; free tuition and travel reimbursement for in-person training sessions ensure that cost is not a barrier to participation. Participants first attend an in-person group training session over two days. Trainees learn the basics about diabetes and medications, as well as relevant behavioral, health, and nutritional information. Hands-on activities include a diabetic foot exam, capillary blood glucose measurements, blood pressure measurements, and communication skills (including motivational interviewing). After completing the introductory training, trainees participate in weekly teleECHO sessions that each include an additional training presentation, participant case presentations from CHWs already working with diabetic patients in the clinical setting, and informal discussions, question/answer sessions, and resource sharing. Participants continue these weekly sessions for six months, returning for a two-day on-site training session halfway through the program. A total of 125 community health diabetes workers have been trained in five cohorts of 25 each.<sup>10</sup>

The program provides a learning environment where CHWs from different backgrounds and different parts of the state can train together. Thus far, the training program has trained rural, urban, Native American, Hispanic, and Caucasian CHWs who cover a broad range of ages, levels of education and experience, and language backgrounds. The training aims to allow the diabetes specialists to serve in a wide variety of settings, including clinics, community- or hospital-based diabetes or heart health programs, and home visit programs, or in elder care or assisted living centers.<sup>10</sup>

The **Community Addiction Recovery Specialists (CARS) Program** is an additional program for training paraprofessionals (including CHWs, medical assistants, health educators, and peer support specialists) to provide specialized expertise in addiction treatment. After a two-day, in-person training, the paraprofessionals participate in a weekly teleECHO clinic on integrated addictions and psychiatry for three months and complete a practicum that includes observation and/or participation in outreach or clinical programs in support of treatment and recovery (for example, harm reduction, suboxone education, and clinic visits for drug screening and treatment).<sup>7</sup> As of June 2014, a total of 125 CHWs had been trained in this program.<sup>6</sup> No formal evaluations of this ECHO program were available at the time of publication.

# Innovations at the Interface of Primary and Specialty Care



## Project ECHO at the University of New Mexico Health Sciences Center

### Training Outcomes: Diabetes Management Program

- Pre- and posttest results conducted with the inaugural class of diabetes management trainees show that provider participants demonstrated significant improvements in diabetes knowledge, increasing from an average of 58 percent correct answers on the pretraining standardized test on diabetes knowledge to 70.7 percent correct answers at the end of the six months, a 12.7 percent increase ( $p < 0.001$ ).<sup>10</sup>
- Trainees' confidence in relevant clinical and nonclinical skills also increased, with average confidence ratings in nonclinical skills increasing from 3.65 at baseline to 4.28 after training, for an effect size of 0.91 ( $p < 0.001$ ), and confidence ratings in clinical skills increasing from 3.26 at baseline to 4.43 for an effect size of 1.41 ( $p < 0.001$ ).<sup>10</sup>

### Workforce Implications

*"ECHO expands access to best-practice care for underserved populations, builds communities of practice to enhance professional development and satisfaction of primary care clinicians, and expands sustainable capacity for care by building local Centers of Excellence."*—Sanjeev Arora et al., 2010<sup>9</sup>

The multiple initiatives that fall under the umbrella of Project ECHO have potentially important implications for both the health care workforce as a whole and for coordination between primary and specialty care in particular. Dr. Arora has described Project ECHO as a "force multiplier"<sup>4</sup> because it exposes a broader range of clinicians (including primary care physicians, nurse practitioners, and CHWs) to expert knowledge traditionally held by specialists who tend to be concentrated in urban academic medical centers, and it aims to empower these existing community clinicians to treat patients with complex, chronic conditions right where they are—in their home communities.

**Patient Access to Care.** Through the creation of primary care Centers of Excellence and the CHW and paraprofessional training programs, an increasing number of underserved patients receive local access to current evidence-based specialty care. This model allows patients more timely access to care and saves travel time and money for those living in remote parts of the state. It also means that a larger number of patients can receive care, as many of them may have gone without treatment for chronic conditions in the past because there were no specialty providers available locally.

**Clinical Training and Support for Providers.** On the provider side, the multiple initiatives encompassed by Project ECHO benefit rural clinicians and others working in underserved areas, such as prisons and tribal communities, by providing regular, low-cost opportunities to continue clinical training, interact with colleagues in other parts of the state facing similar populations, and ultimately serve a wider range of patient needs. Interviews with primary care clinicians participating in the teleECHO clinics demonstrated that these clinicians value the sense of community that developed through regular professional interactions with colleagues sharing similar interests.<sup>11</sup> The reduced sense of isolation and increased professional satisfaction have important implications for recruitment and retention of rural clinicians. In addition, the regular interaction between primary care and specialist providers afforded through the teleECHO clinics presents a unique opportunity for both primary care clinicians and specialists to learn from one another about different approaches to care, potentially reinforcing mutual respect among specialties and the creation of a workforce better equipped to work in multidisciplinary teams.

# Innovations at the Interface of Primary and Specialty Care



## Project ECHO at the University of New Mexico Health Sciences Center

### Additional Information

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# ABOUT THE PROJECT

# Innovations at the Interface of Primary and Specialty Care



## About the Project

This project, conducted between 2012 and 2014, aimed to document innovations developed at health systems across the country to improve coordination between primary and specialty care. Through a brief literature review and interviews with key informants, AAMC staff identified 15 health systems and clinics across the United States using innovations designed to close the gap between primary and specialty care. Twelve of these sites participated in phone interviews with AAMC staff, and the sites highlighted in this report were among six that hosted AAMC researchers for in-person visits. They represent effective clinical innovations that can be applied in academic medical settings.

Site visits lasted one to two days. At each site, AAMC researchers conducted interviews with a mix of physicians and other staff and gathered internal as well as published data documenting the outcomes of selected innovations. This report aims to highlight innovations that may serve as models for academic medical centers seeking to improve the value and efficiency of care through better coordination between primary care and specialty providers.

The report includes information shared by individuals at each site through phone interviews, in-person visits, and published literature. When available, descriptive quantitative and qualitative outcomes from self-evaluations conducted by the institutions were included. Comprehensive, independent explorations of program outcomes were beyond the scope of this project.

The AAMC's human subjects research protection program and affiliated independent review board (the American Institutes for Research, Washington, D.C.) approved the collection and use of information from these sites, and representatives from the sites themselves approved the information contained in this report. Information about innovations was accurate at the time of the site visits; some initiatives may have been expanded or discontinued in the time since the visit.



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