The Patient-Centered Medical Home: Moving to a New Level of Performance Through Automation
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The patient-centered medical home (PCMH), an approach designed to rebuild primary care and improve care coordination, has become a major focus of healthcare reform.

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The Challenge: The patient-centered medical home (PCMH), an approach designed to rebuild primary care and improve care coordination, has become a major focus of healthcare reform.

Thousands of physicians are already participating in medical home pilot projects across the country. What this burgeoning movement needs now to grow quickly and to transform U.S. healthcare are information technology tools that can automate the routine tasks of population health management. There is no time like the present for practices to begin using these tools, considering the government incentives for EHR adoption, private pay for performance programs, and the medical home certification requirements that stress health IT.

The PCMH Concept

Developed by primary-care medical societies, the PCMH concept has been embraced by major corporations and national consumer organizations. Thirty-one states are engaged in PCMH demonstration projects, and the Centers for Medicare and Medicaid Services (CMS) has three different pilots in the works, including a multi-payer demonstration project in six states. To date, there have been more than 100 medical home demonstrations. Some practices designated as medical homes have produced savings of 15-20 percent in comparison with similar physician practices.

Yet the obstacles to a nationwide expansion of the PCMH remain daunting. These include physician resistance to a fundamental shift in their work habits and duties; the lack of required infrastructure in most practices; inadequate care coordination payments; the difficulty of gaining cooperation from specialists and hospitals; the high cost and the challenge of implementing electronic health records; and the difficulty of adjusting to continual change to achieve practice transformation.

2. Ibid.
The HITECH portion of the American Recovery and Reinvestment Act (ARRA) offers $44,000-$64,000 per provider for showing “meaningful use” of a qualified EHR.\(^7\)

Moreover, the criteria for “meaningful use” fit very well with the requirements for achieving PCMH recognition from the National Committee on Quality Assurance (NCQA).\(^8\)

Another hopeful sign is government support for “accountable care organizations,” which are groups of doctors and hospitals that take responsibility for the cost and quality of care (see Phytel’s white paper on ACOs).\(^9\)

Under the Patient Protection and Affordable Care Act (PPACA), Medicare is required to create a shared-savings program for ACOs.\(^9\)

Healthcare providers across the country are gearing up for the advent of the Medicare shared-savings program in 2012, and some are also working with private insurers on ACO pilots.

Supporters of ACOs and advocates of medical homes believe that the two initiatives are related, and some maintain that medical homes will be the building blocks of ACOs.\(^10\)

That’s because primary care will drive ACOs and because the practices that join these organizations must be capable of coordinating care across the spectrum of care settings. If medical homes form the core of ACOs, it’s believed, they will be able to obtain the cooperation of other providers because their financial incentives will be aligned. Such is not the case in today’s fee-for-service system, where providers’ incentive is to deliver the maximum amount of care. In ACOs, on the other hand, the dual aim is to improve population health and keep costs down.\(^12\)

The hardest part of the transition to the PCMH model is moving from a workflow based on fee-for-service sick care to a workflow that’s oriented to keeping patients well. This requires a transformation in the processes of medical practices and the roles of physicians and staff members. It also necessitates the use of information technology to keep track of each patient’s condition and the services that they need. To be feasible, a new primary-care model like the PCMH must support doctors in such a way that the extra practice responsibilities don’t increase their workload.\(^13\)

The delegation of clinical work to care teams and care managers is essential, and so is the automation of population health management. EHRs can accomplish some of this automation. But they fall short in the areas of tracking, monitoring and reaching out to patients who need preventive or chronic care.\(^14\)

So additional health IT tools will be needed to achieve the goals of the PCMH.

**Challenges for primary care**

Within the past decade, it has become clear that primary care is in dire straits. The number of medical school graduates entering the primary care fields today has dropped by half, compared to 15 years ago. And from 2006 to 2008, the number of Medicare patients who had difficulty finding a primary care physician increased by 17 percent.\(^15\)

At the same time, primary care doctors find themselves increasingly burdened and unable to spend enough time with their patients.

The crisis in primary care has gotten the attention of employers, who know that...
primary care physicians are central to a high-performing healthcare system. Some big companies, including IBM, Dow Chemical, and Whirlpool, along with labor unions, health plans, primary-care medical societies, and consumer groups, have formed the Patient-Centered Primary Care Collaborative (PCPCC) to promote the renewal of primary care.\textsuperscript{18} The focus of their efforts is the patient-centered medical home.

The federal government is also investigating the PCMH concept. The recently enacted healthcare reform legislation includes provisions to fund an expansion of the primary care workforce and to conduct medical home demonstration projects.\textsuperscript{17} Meanwhile, the Veterans Affairs Administration and the Department of Defense are also looking at instituting the PCMH concept in clinics that serve their constituents.\textsuperscript{18-19}

Many state governments, too, are promoting medical homes. An often-cited example is the North Carolina Medicaid program, which pays primary care doctors extra for care coordination and has saved hundreds of millions of dollars as a result. More than thirty states have followed North Carolina’s lead in implementing advanced primary care models for their Medicaid and CHIP programs.\textsuperscript{20}

\textbf{Defining the medical home}

There are many definitions of the patient-centered medical home. One of the best comes from David Nash, MD, dean of the Jefferson School of Population Health at Jefferson University in Philadelphia:

“The patient-centered medical home (PCMH) is essentially delivery of holistic primary care based on ongoing, stable relationships between patients and their personal physicians. It is characterized by physician-directed integrated care teams, coordinated care, improved quality through the use of disease registries and health information technology, and enhanced access to care.”\textsuperscript{21}

\begin{itemize}
\item \textsuperscript{16} Grundy, Hagan, et al., op. cit.
\item \textsuperscript{17} Ibid.
\item \textsuperscript{18} Health Affairs policy brief, op. cit.
\item Grundy, Hagan, et al., op. cit.
\item Ibid.
\item \textsuperscript{20} Ibid.
\end{itemize}
A March 2007 joint statement by primary-care societies representing pediatricians, family physicians, and internists calls the PCMH “an approach to providing comprehensive primary care for children, youth and adults.” The chief components of the PCMH include:

- A personal physician who is the first contact for his or her patients and who provides continuous and comprehensive care
- A physician-led care team that takes collective responsibility for care
- A “whole person” orientation, meaning that the personal physician will provide for all of a patient’s health needs and arrange referrals to other health professionals as needed
- Care coordination across all care settings, facilitated by information technology and health information exchange
- An emphasis on delivering high-quality, safe care in partnership with patients and their families
- Enhanced access to care through open scheduling, expanded hours, and improved communication among physicians, staff, and patients via secure e-mail and other modes
- Additional reimbursement to reflect the value of the PCMH’s activities and the costs of setting up the necessary infrastructure.

The NCQA has further defined the PCMH by establishing a set of criteria that practices must meet to become NCQA-certified medical homes. These criteria have become increasingly important because most PCMH demonstration projects use them as a measurement tool, and some health plans require NCQA certification for incentive payments to practices.

23. Landon, Gill, et al., op. cit.
NCQA emphasizes health IT

The medical home certification process grew out of another NCQA program that recognizes physicians for effectively using information technology and managing population health, and the PCMH certification criteria also focus on health IT. The NCQA standards measure access and communication, patient tracking and registry functions, care management, patient self-management support, electronic prescribing, test tracking, referral tracking, performance reporting and improvement, and advanced electronic communications.26

Under the current requirements, there are 10 must-pass criteria within these nine standards. For level 1 certification, a practice must pass five of these 10 with a performance of at least 50 percent and a score of 25 points. For level 2, they must pass all 10 with a performance of at least 50 percent and a score of 50 points. And for level 3, they must do the same and tally 75 points.27

At the time of this writing, NCQA had not yet released its new PCMH certification criteria for 2011. The list of requirements will be available Jan. 1, 2011, and the certification survey will be released April 1. By the end of the year, all practices that wish to be recognized as medical homes—including those that have 2008 certification—must complete the survey.28

What is known at this point is that the NCQA’s 2011 criteria will focus even more than the current requirements do on automation tools for population health management. Medical homes will have to demonstrate the ability to:

- Identify and manage patient populations using searchable data
- Provide electronic access to care, information and self-management tools for patients
- Plan and manage care
- Generate reminders for needed services and prescriptions
- Use electronic systems to track tests and referrals
- Monitor practice performance across the population and by provider

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Challenges and Solutions: a patient-centered medical home must build a number of core competencies.

To do population health management, a patient-centered medical home must build a number of core competencies. The care team in the practice must ensure that patients receive the preventive and chronic care recommended in evidence-based guidelines; that patients’ conditions are tracked in a systematic way; that the practice reaches out to noncompliant patients and those who don’t regularly see their doctor; that the practice provides patient education and self-management coaching; and that steps are taken to address poor health behaviors. of the American College of Physicians and five other specialty societies.

29. AHRQ, “Practice-Based Population Health,” op. cit.
In the AAFP’s TransforMED pilot, which ran from 2006 to 2008, the three dozen participating practices—some of them quite small—managed to achieve a number of PCMH goals. However, a report on their effort pointed out that the pace of change is exhausting for practices and that they must have an “adaptive reserve” to keep going down the path of self-transformation. In addition, the report underlined the difficulty that doctors may have in assuming new roles vis-à-vis their staff.31

Experts have made several suggestions about how smaller practices might be able to turn themselves into medical homes.32 One possibility is to use the kind of “practice transformation” consultants that were available to half of the practices in the TransforMED pilot. The government could also create regional extension centers, akin to agricultural extension centers, to help doctors over the hump. And both North Carolina and Vermont have successfully used community resource centers to supply shared care coordination services that small practices could not afford on their own.33

### How much will it cost?

Most PCMH demonstrations sponsored by health plans use a mixed or hybrid payment model to reimburse physicians for the extra work and expense of providing a medical home.34 They pay physicians fee-for-service for the clinical work they do, plus a fixed care coordination payment for each patient and some kind of quality incentive.35

There’s no agreement, though, on how high the care coordination fee should be. For example, the North Carolina Medicaid program paid primary-care doctors a coordination fee of $2.50 per patient per month.36 In contrast, in a multi-payer pilot in Pennsylvania, the state required payments of $4 per patient per month to practices that had attained level 3 NCQA certification as medical homes.37 Some estimates of appropriate care coordination fees are much higher.38

PCMH proponents believe that medical homes will pay for themselves by reducing ER visits and hospitalizations. There is data showing that that may be the case, including the reported savings of Geisinger Healthcare, Group Health Cooperative,39 and some of the groups that participated in Medicare’s Physician Group Practice demonstration of the shared-savings approach.40 But it’s unclear whether and how quickly the average medical home could produce similar savings.

What is clear is that the cost of creating and maintaining a medical home could be much lower if practices were highly automated. This approach requires the intelligent use of health information technology. By linking together some currently available health IT tools, physician groups can automate much of the work that might otherwise be too costly and difficult for them to do. Moreover, automating the manual processes of care coordination and care management makes it possible to scale the medical home to practices of every size.

### Role of Information Technology

Observers agree that information technology, including the EHR, is essential to the medical home’s success. All of the practices in the TransforMED pilot had EHRs; and, as we’ve seen, EHRs are required for NCQA certification. But EHRs lack some of the features required to do practice-based population health. AHRQ cites the inability of most EHRs to generate population-based reports easily; to present alerts and reminders in such a way that providers will use them rather than turning them off; to capture sufficiently detailed data on preventive care; and to interoper ate with

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32. Landon, Gill, et al., op. cit.
33. Ibid.
34. Ibid.
35. Patient Centered Primary Care Collaborative, “Proposed Hybrid Blended Reimbursement Model,” accessed at http://www.pcpcc.net/content/proposed-model.
other clinical information systems. 41

EHR vendors are moving to correct these deficiencies. For example, some applications allow users to adjust the level of alerts to their own needs and tolerance levels. And, while another report points to the difficulty of using the registries imbedded in some EHRs, 42 those are also being improved to help physicians meet the meaningful use criteria.

Nevertheless, practices need a variety of health IT tools beyond EHRs to meet AHRQ’s requirements for PBPH. 43 These include the ability to:

- Identify subpopulations of patients
- Examine detailed characteristics of identified subpopulations
- Create reminders for patients and providers
- Track performance measures
- Make data available in multiple forms

**Automation tools**

A growing number of practices use external, web-based registries to supplement their EHRs. These registries compile lists of subpopulations that need particular kinds of preventive and chronic care, such as annual mammograms for women over 40 or HbA1c tests at particular intervals for diabetic patients. The continuously updated data in the registries comes from EHRs, practice management systems, labs and pharmacies. Evidence-based clinical protocols, which can be customized by physician practices, trigger alerts in the registries. When a registry is linked to an outbound messaging system, patients are notified by automated telephone, e-mail or text messages to contact their physician for an appointment. Some registries can also send actionable data to care teams prior to patient visits. 44

To be an effective tool for population health management, a registry should include all of a practice’s patients. It should also have a sophisticated rules engine that combines disparate types of data with evidence-based guidelines, generating reports that provide many different views of the information. For example, the entire patient population could be filtered by payer, activity center, provider, health condition, and care gaps. The same filters could be applied to patients with a particular condition, such as diabetes, to find out where the practice needed to improve its diabetes care and to prepare actionable reports for care teams on individual patients.

41. AHRQ, “Practice-Based Population Health,” op. cit.
42. Nutting, Miller, et al., op. cit. 43. AHRQ, “Practice-Based Population Health.”
43. AHRQ, “Practice-Based Population Health.”
Other IT tools that will also be important include online health risk assessments, automated education materials and health coaching, automation of actionable data for care teams, automation of care management reports, and biometric home monitoring of patients with serious conditions. The accompanying table shows how information technology can be used to automate population health management.

Health risk assessment (HRA) is fundamental, because it serves as the basis for the interventions to be applied to patient populations. HRA enables practices to sort their patients into three categories: healthy people, people in early stages of chronic diseases, and people with advanced chronic diseases. These groups are always changing. Those who are well today may be sick tomorrow, and those that have an early stage of disease today may have been in a more advanced stage tomorrow. So regular administration of HRAs can help keep medical homes apprised of which patients are likely to need additional care in the future.

To reinforce the lifestyle modification messages delivered in the office visit, medical homes should use tailored communications and interventions to achieve and sustain behavior change. These include online educational materials that may be linked to HRAs, along with automated reminders to patients. Practices can also take advantage of the new mobile technologies, such as smart phones and texting, as well patient web portals that may be attached to EHRs.

Medical homes can also use automation tools to support the efficient functioning of care teams. These include accurate and usable patient data summaries to minimize the need for chart reviews. The summaries, generated by registries, will remind providers of a patient’s care gaps and the need to work with them on modifying health behavior. Care teams can also streamline the visit preparation process by identifying care opportunities and having patients get tests done before visits.

To support the workflow of care managers, medical homes can deploy software that automatically sets priorities for their communications with patients, based on the severity of their condition. Using data from EHRs and registries, this type of application can tell a care manager whether he or she needs to call a patient directly or whether electronic messaging will suffice.

Biometric home monitoring, which has been around for more than a decade, is finally starting to get some financial support from health plans. As a result, it may be feasible for medical homes to start using it to keep tabs on their sickest patients with such chronic conditions as heart failure, diabetes, and high-risk pregnancy. Because doctors don’t have time to monitor the continuous stream of data, this would be a natural task for care coordinators.

The benefits of using these health IT tools include the ability to track, monitor and engage patients; to tailor interventions to different segments of the population; to measure performance for quality reporting; to automate care coordination; to ensure that care gaps are filled; and to do all of this without increasing the workload of doctors or staff members.

Practices can also take advantage of the new mobile technologies, such as smart phones and texting.
## Identification Of Automation Opportunities In Manual Care Management Process

<table>
<thead>
<tr>
<th>Care Team Process Step for “At-Risk” Patients</th>
<th>Manual Tasks</th>
<th>Automation Opportunities</th>
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</thead>
<tbody>
<tr>
<td>1. Identify “at-risk” patients</td>
<td>• Review charts of patients scheduled for upcoming office visit</td>
<td>• Utilize algorithms and data mining to identify all patients within provider panel with care gaps, irrespective of visit date or payer</td>
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<td>• Review charts of patients associated with a specific payer contract with “pay-for-performance” incentives</td>
<td>• Stratify and prioritize patients based on risk evaluation algorithms</td>
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<td>2. Document gaps in care</td>
<td>• Review multiple screens and fields within EMR and Patient Management System to identify care gaps and appointment dates</td>
<td>• Create reports across multiple sources of data for entire provider panel population to identify care gaps based on evidence-based algorithms</td>
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<td></td>
<td>• Review paper charts for additional information</td>
<td>• Flag patients with upcoming visits</td>
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<td>3. Communicate gaps in care to treating providers</td>
<td>• Discuss gaps in care with provider as part of visit preparation process</td>
<td>• Automate provider-level reports on patients with care gaps</td>
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<td></td>
<td>• Prepare cover sheet for paper chart</td>
<td>• Automate creation of patient care summaries for use in visit and between visit management</td>
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<td>4. Communicate treatment needs to patients</td>
<td>• Make phone calls to patients, often by nurses as well as other staff, which only reach a limited number of patients</td>
<td>• Utilize automated technologies to generate outreach by phone, email and/or text according to patient preference for all patients in provider panel with preventive and/or chronic care gaps</td>
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<td></td>
<td>• Mail reminder letters for preventive care</td>
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<tr>
<td>5. Assessment of “at-risk” patients</td>
<td>• Conduct assessments during office visits or over the phone using paper or other tool that may or may not integrate with EMR</td>
<td>• Send all patients online health risk assessment tool; results can be used for individual and population management activities</td>
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<tr>
<td></td>
<td>• Generate print-out of patient treatment plan at end of visit; may be handed to patient or mailed</td>
<td>• Offer online health risk assessment part of patient portal</td>
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<td></td>
<td>• Make phone calls to patients for treatment plan follow up</td>
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<tr>
<td>6. Educate patients about treatment plan and care needs</td>
<td>• Offer patient treatment plans and education tools through secure patient portal for ongoing patient support</td>
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<td></td>
<td>• Push reminders and other communications to individual and subpopulations of patients through patient portal as well as phone, email and text</td>
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</table>
**Conclusion**

The patient-centered medical home is a work in progress. Much remains to be learned about the most effective techniques for building and maintaining a PCMH. But two conclusions can already be drawn from the pilots that have already been done: Successful medical homes will have to perform population health management, and they will need a variety of health IT tools to do that and to coordinate care effectively.

Major changes in practice workflow and work roles must accompany the proper use of information technology. In the end, practices must be completely reengineered to provide effective, patient-centered medical homes—and the environment in which they operate must also change to permit seamless care coordination. But all of this change can be less painful and lead to more productive results if practices use the right combination of technologies to do population health management.