# MEANINGFUL CONNECTIONS

*A resource guide for using health IT to support the patient centered medical home*

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Patient-Centered Primary Care COLLABORATIVE

www.pcpcc.net

# Dear Colleagues:

The Patient-Centered Primary Care Collaborative (PCPCC) is an open forum where health care stakeholders freely communicate and work together to improve the future of the American medical system. Over 400 PCPCC members believe that the patient centered medical home (PCMH) model holds the promise to improve the health of patients and the viability of the health care delivery system.

In order to accomplish this goal, the PCPCC is structured to maximize the human resources and knowledge base of our dedicated membership. The PCPCC work is organized under four Collaborative Centers, each with goals, objectives and functions. The Centers fit together like pieces of a puzzle; the tasks and functions they perform support one another to illustrate a full picture of the PCPCC and its work.

This report was developed by the PCPCC Center for eHealth Information Adoption and Exchange (CeHIA), whose mission is to "evaluate use and application of information technology to support and enable the development and broad adoption of information in private practice and among community practitioners." As a first step in fulfilling this mission, CeHIA is exploring current uses of health IT in the field as a means to develop case studies and identify best practices. The goal is to build a resource center that can be used by all stakeholders as a reference and guide as they pursue health IT exchange to support the PCMH.

The work of the CeHIA supports ongoing projects and tasks of the other PCPCC Centers. Resources identified and made widely available through the CeHIA will inform aspects of the work of the Center for Multi-Stakeholder Demonstration Projects and the Center to Promote Public Payer Implementation as they support PCMH pilot projects across the country and share lessons learned from established demonstration projects. CeHIA resources will also assist the Center for Health Benefit Redesign and Implementation as it works to engage and educate employers about the PCMH.

Now is an important time in health care. Health IT promises to significantly improve quality, safety, efficiency and access, but can only do so if effectively implemented. Initiatives such as these—which more clearly pinpoint how health IT can support new models of care delivery—are critical in the months ahead, as significant investments are being made across the nation. Whole patient care—considering the mental and physical aspects of health—can be advanced by effective use of health IT.

As the PCPCC moves forward, the work of each Center informs activities relating to another. We encourage you to review the PCPCC-endorsed "Guidelines for PCMH Demonstration Projects," which offer an overview of how health IT fits within the context of upcoming demonstration projects (Appendix A).

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# INTRODUCTION

The U.S. health care system is continuing to face many challenges, including rising health care costs, an increasing number of uninsured, and issues related to quality and safety—driving policy makers and health care leaders to call for actions on health care reform. To address these challenges, several strategies have emerged, including those related to new models of care delivery, payment reform, and the use of health information technology.

One model that is gaining significant momentum is that of the patient centered medical home (PCMH). Efforts related to the PCMH have largely been based on a set of Joint Principles developed by four primary care professional societies: the American Academy of Family Physicians, the American Academy of Pediatrics, the American College of Physicians, and the American Osteopathic Association. The Joint Principles have since been endorsed by 18 additional physician organizations. The principles include an ongoing relationship with a personal physician, physician-directed medical practice, a whole-person orientation, coordination and integration of care, quality and safety, enhanced access to care, and payment that recognizes added value to patients who have a patient centered medical home.[1] These principles are championed by the Patient-Centered Primary Care Collaborative (PCPCC), a coalition of large employers, primary care societies, health plans, employers/purchasers, patients' groups, academic institutions and others, all united in support of the PCMH model as a comprehensive solution.

One of the key elements of the PCMH is that information technology (IT) is utilized appropriately and in a meaningful way to support optimal patient care, performance measurement, patient education, and enhanced communication.[2] Health IT can play a significant role in providing a foundation for many key elements of the PCMH. Specifically, health IT can provide critical information about the patient to the entire care coordination team across all stages of care, support physician-patient communication, enable more timely and accurate performance measurement and improvement, and improve accessibility of the physician practice to the patient.

While much has been written about how to implement the PCMH, and a certification program has been launched, best practices have yet to emerge. Very little has been written to provide guidance on how health IT can be effectively implemented to support key elements of the PCMH.

Health IT has increasingly been recognized by public and private sector leaders alike as a key mechanism for supporting improvements in health care quality, safety, efficiency

[1] Joint Principles of the Patient-Centered Medical Home, http://www.acponline.org/running_practice/pcmh/demonstrations/jointprinc_05_17.pdf. Accessed on January 31, 2009.

[2] Ibid.

and access. Such recognition translated into President George W. Bush's executive order in 2004 calling for every American to have an electronic health record by 2014. This recognition was re-asserted by Barack Obama during his presidential campaign, with a promise to invest billions of dollars in health IT to support improvements in health and health care. This campaign promise has now become reality, with Congress' recent passage of the American Recovery and Reinvestment Act, which will result in roughly $19 billion of investment in a health IT infrastructure for the United States.

This act—passed on February 13, 2009, and signed by President Obama on February 17, 2009—provides needed funding for standards and policy related to health IT, technical assistance for health IT adoption, expansion of medical informatics education programs, and health IT-related planning and implementation grants. It also includes support for loan programs for states and other entities. The largest component of the package will provide incentives to physician practices, hospitals and other qualified providers through Medicare and Medicaid to support effective adoption of electronic health records.

With these enormous investments in health IT, there is a significant opportunity to build an information platform that will support the key elements of the PCMH and to enable the improvements in quality, safety, effectiveness and access that PCMH is designed to deliver.

This publication, produced by Health2 Resources for the PCPCC and the Center for eHealth Information Adoption and Exchange (CeHIA), is designed to provide capabilities, functionalities and case examples for how health IT can be implemented to support the PCMH. This publication is not designed to be a comprehensive "how-to" guide, but is instead a guidance document that can educate policymakers, as well as those who support the delivery, payment and improvement of care. It is also designed to guide the development and implementation of health IT in the United States.

Because health IT plays an integral role in the PCMH model, the CeHIA is embarking on the task to create an online Resource Center that will provide information for integration of health IT into PCMH pilot projects and physician practice transformation, as well as future information for value-based purchasing of health IT products and services.

The Resource Center began with the launch of a survey, conducted for PCPCC in February 2009. While development is a work in progress, the CeHIA envisions that information available will include:

- Best practices/case examples of using health IT and exchange to support the PCMH;
- Results of other surveys and research;
- Public policy, federal and state legislative language and executive orders;
- Catalog of pilot or operational projects using standard format; and
- Reference guide of health IT vendors and consultants.

The PCPCC, through the CeHIA, is taking on this challenge by working with leaders and experts across every sector of health care to develop a set of policies, strategies and best practices to support effective adoption of health IT. This will in turn support the PCMH. This guide is the first step of a long-term effort, as elements of this publication will continue to evolve and be updated on the Center Web site, based on continued research and experiences in the field.

Please join us in this effort as we move ahead.

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# OVERVIEW

Over the past year, two important working groups[3] from the PCPCC CeHIA have been hard at work gaining consensus on a set of health IT capabilities and functionalities that are informed by the Joint Principles and that recognize the central role of the primary care provider in overseeing continuous and coordinated care. While health IT is a valuable tool to enable PCMH, it is only one component of what must be a larger transformation in health care delivery. This Resource Guide offers a crosswalk between those capabilities and functionalities. It also introduces important consumer, family and caregiver functions that should be in place. Finally, we include a section that offers "boots on the ground" experience from case examples in the field.

This Resource Guide will expand dialogue to bring a better understanding of "meaningful use" of health IT in the context of the PCMH. Recognizing the broad spectrum of health IT capabilities, the Resource Guide identifies a beginning set of guidelines for health IT that focus on what it should achieve in the context of the PCMH:

- Health data and information must be accessible to primary care medical home practices, physicians, and patients;
- Standards, protocols and rules for health data exchange on the network should be fully open and supportive of data portability and interoperability;
- Information technology should support the enhanced practice efficiency and quality of care that is required by the PCMH model; and
- Confidentiality of data should be imperative.

There are also important patient considerations. We have included in this Resource Guide a chapter that discusses the value of engaging the patient as an active participant, and consumer principles to guide this activity. As one medical practitioner currently using health IT in the field noted, "People, people, people–build the PCMH around the needs of the patients, then bring the technology in. Gadgets and gizmos don't automatically save lives and reduce costs."

The second part of this Resource Guide highlights representative responses from a non-scientific survey conducted in February 2009 of members of the PCPCC, key partners and primary care physician groups. The survey invited participants to share their experiences in using health IT and to identify case examples to educate, inform and advance the meaningful and effective use of health IT. In this Resource Guide we present just a sample of responses, including lessons learned from those who are already using health IT in the field. The case studies reveal valuable insight on the ground; as one respondent noted, "HIT is the tool, not the answer. Using HIT without rethinking patient flow, (and) workflow, is a waste."

> "HIT is the tool, not the answer. Using HIT without rethinking patient flow, (and) workflow, is a waste."
>
> —H2R/PCPCC SURVEY RESPONDENT

As you review the case examples, you'll discover:

- Systems in place for provider-to-provider interaction are better established at this time than patient connectivity;
- Physicians are using health IT to support a wide range of capabilities: e-prescribing, in-office messaging, EHRs, disease registries, reminder systems and more;
- Health IT is enabling better care coordination and a true team approach;
- Health IT is enabling better quality reporting and bringing measurable results: greatly improved vaccination rates, diabetes A1c testing and prevention screenings;
- Implementation is expensive and time consuming, but can lead to smoother workflow, fewer patient phone calls, greater satisfaction for both providers and patients, higher quality care and better adherence to best practices; and
- True quality improvement can only come with immediate access to information.

This Resource Guide is designed to spur a productive conversation as capabilities, functionalities and meaningful use of health IT for the PCMH are explored further.

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[3] The Capabilities and the Functionalities working groups.

# EMPOWERING HEALTH IT TO SUPPORT THE CONNECTED MEDICAL HOME

The basic premise of the medical home concept is continuous, uninterrupted care that is managed and coordinated by a personal provider with the right tools that will lead to better health outcomes.

In 2007, the American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians, and American Osteopathic Association released the Joint Principles of the Patient Centered Medical Home. In this document they state the characteristics of the PCMH:

- Ongoing relationship with personal physician
- Physician-directed medical practice
- Whole person orientation
- Quality and safety
- Enhanced access to care
- Added value
- Coordinated care across the health system

While these characteristics, in theory, may be achieved without the use of health information technology (health IT), it is also true that their realization is more likely to occur if health IT is successfully deployed and used in a meaningful way. Health IT can be an empowering facilitator to the establishment of a medical home, a fact supported by experience.

What is not obvious are the best ways in which health IT should be deployed to reach the objectives of the medical home desired by patients, providers, and payers. Nor is it clear that "one size fits all" when trying to match health IT products and services with the desired characteristics, and how to do so in a manner that is affordable and sustainable across a variety of practice types, large and small.

Rather than attempt to list products or suppliers of health IT, e.g. electronic medical records (EMRs) as single "solutions" to the problem of transforming practices into medical homes, a wiser approach may be to describe the *capabilities* that health IT ought to provide or enhance if a medical practice is to become a successful medical home. This approach has the advantage of being vendor-neutral, allowing for innovation, variation and choice in reaching the goal of the agreed-upon medical home principles and characteristics.

The list below is not intended to be complete or exclusive. Over time it may expand or be modified according to the evolution of both the concept of the medical home and the technologies themselves. This flexibility is necessary in a time of constant change. However, what follows is a reasonable description of the health IT that will empower medical practices to become medical homes in the near future.

| Capabilities to Support the Connected Medical Home |
| --- |
| Ability to collect, store, manage and exchange relevant personal health information |
| Ability of providers, patients and other members of a person's health team to communicate among themselves and in the process of care delivery |
| Ability to collect, store, measure and report on the processes and outcomes of individual and population performance and quality of care |
| Ability of providers and their practices to engage in decision support for evidence-based treatments and tests |
| Ability of consumers and patients to be informed and literate about their health and medical conditions and appropriately self-manage with monitoring and coaching from providers |

The health IT functions that support the PCMH follow. Empowering health IT to support the medical home is accomplished using computer hardware, software, and related technology that provide or enhance:

**1) The capability for electronic exchange of relevant personal health data and information,** such that this information is accessible at the times and places where clinical decisions will be or are likely to be made, and such that this accessibility improves the patients' continuity of care experience between and among various settings of care and different episodes of care. Accessibility of personal health information and continuity of the care experience are linked benefits of health IT that confer the capability of computerized data storage and transmission of the relevant information to the point of care.

Examples include EMRs, personal health records (PHRs) and e-Prescribing software products and services. Population registries are also examples of health IT that can provide or improve this capability.

**2) The capability of the provider, patients and other members of a person's health care team to communicate** with each other and amongst themselves in the processes of care delivery and care management, such that a team approach that assures coordination, quality and safety of care is encouraged and made possible, and that access to care is increasingly available to patients both online and in person.

Health IT allows patients to communicate with providers asynchronously. It offers the opportunity for providers to offer more self-management tools through Web portals to patients who are Web-savvy and comfortable with using the Internet.

Examples include EMRs, interactive Web portals and online communications platforms that are designed to provide communications such as secure email, online scheduling, access to PHRs and home monitoring systems.

**3) The capability of providers and their practices to collect, measure and report on the processes and outcomes of individual and population performance and quality of care,** and that can be used to inform providers, patients and payers through reports and graphic displays on the success of efforts to make quality improvements in attaining evidence-based levels of care, especially for chronic conditions and diseases.

Health IT can help make all health care professionals and organizations more accountable stewards for quality, safety and cost results, and for the engineering required for continuous improvement. But maximizing this potential capability requires the design of data aggregation into health IT products from the start, and a national commitment to aggregate, analyze and report the data collected. Interoperability of various EMRs is absolutely critical to the ability to cost-effectively collect, manage and report outcomes data.

Examples include EMRs, patient and population registry applications or services, outcomes databases with reporting services, and participation in data aggregation and reporting programs established for quality improvement or pay-for-performance by health plans and others.

**4) The capability of providers and their practices to engage in decision support for evidence-based treatments and tests,** and to do this at or close to the point of care, as well as in a manner that is understandable and directly useful to patients and consumers through outreach reminders and alerts, education and online tools and methods.

Health IT should help patients, clinicians, managers and purchasers make the best possible clinical and administrative decisions. This includes identifying risks and following the best path to lowering them whenever possible. Health IT should help people stay healthy and avoid illness through active clinical decision support, and make sure that the system recognizes value. Which patients, according to past data, have acute or chronic conditions that need care? Which, do the data show, are the most effective (or high value) doctors, hospital services, treatments and interventions—so that the market can work to drive efficiency? Given a particular set of signs or symptoms, lab test results, or genetic test, what is the best *next* step in care?

Examples include EMRs equipped with alerts and reminders, patient registry applications and services, PHRs that provide decision support tools, and other online services that accept and process personal health data for the purpose of evidence-based guidance for health risk assessment and stratification, testing, treatment and health maintenance.

**5) The capability of consumers and patients to be informed and increasingly literate about their health and their medical conditions,** and to appropriately self-manage with monitoring and coaching from providers. Health IT that successfully provides or improves this capability will remove barriers and impediments to data, information, and tools that can contribute to a person meeting his or her wellness or health promotion goals, and will put in place bridges that close the gaps in collaboration and coordination between the medical home provider and patients.

Examples include PHRs and Web services, including some that are linked to EMRs and registry applications, that facilitate and direct patient education, information gathering, and make use of personal health data for actionable efforts to improve health and treat diseases and conditions. For the right patients, instituting the use of monitoring and messaging technologies with proper integration to providers will result in improved population management, take some of the burden off of primary care physicians and keep costs in check.

## Benefits of the Connected Patient Centered Medical Home

By focusing on the capabilities of health IT to connect providers, patients and other members of the health care team, we arrive at the concept of the *connected medical home*. The connected medical home supports participatory medicine, reduces costs, makes care more convenient, and closes the "collaboration gap" between doctors and their patients in much the same way that online banking and online airline reservation systems have done. The connected medical home would engender more parity of patients with providers, a truly team approach supported by patient portals, social networking, community health data exchanges, shared clinical data collection and intelligent online tools from Health 2.0. This will allow for *meaningful use* of health information technology to support the patient centered medical home.

## Potential of Connected Medical Home to Add Value to the Community

Health IT supports the "added value" concept that is a key characteristic of the patient centered medical home. Health care today has simply become unaffordable, and any major change must address the issue of cost in tandem with patient safety and enhanced quality. As a new model to replace a broken system, the patient centered medical home should not only offer high-quality, patient-centered care, but has also save real dollars in health care costs.

Pilot programs like the Community Care of North Carolina project have already demonstrated that coordinated, patient-centered care can contribute real value and reduce costs. This Medicaid program has documented savings of $3.5 million over three years for asthma management, and its diabetes care initiative saved $2.1 million over the same period. The cost savings arise from care coordination that eliminates wasteful duplication of services, tests and procedures, and avoids costly exacerbations of chronic illness.

Health IT supports all the interrelated capabilities of the PCMH. Real-time electronic communication offers providers the opportunity to collaborate and coordinate care across geography and time; all members of a care team can literally be on the same electronic page at once. The secure flow of information is essential to continuity of care and vital to problem solving, as well as supporting prevention activities and medication safety.

To optimize the full arc of health IT's potential value in the medical home model, data mechanisms must be in place so physicians can better understand and become responsible for management of resources consumed on behalf of patients who are being managed. Price data must be married to utilization data as well as quality and performance measurements. By tracking outcomes of primary care-sensitive conditions with associated price factors, and by applying statistically proven case mix factors, health IT supports but is not sufficient to enable the PCMH.

In order to demonstrate meaningful use of health IT resources to both private and public payers, it is important that the PCMH shows improved cost per member, per month savings, as well as improved health and better outcomes for members served through the medical home. Ongoing measurement of value as a characteristic of the PCMH model will ensure continuation of the model long-term and continued support for health IT.

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**Special thanks to the PCPCC CeHIA Capabilities Working Group[4] for the development of this work.**

OTHER RESOURCES

PCPCC-endorsed "Guidelines for PCMH Demonstration Projects": Appendix A

Health Information Technology–
Consumer Principles, March 2006: Appendix B

InformationSTAT consumer research and stakeholder education campaign: Appendix C

[4] See PCPCC CeHIA Capabilities Working Group Acknowledgement, Inside Cover.

# HEALTH IT FUNCTIONAL PRIORITIES TO SUPPORT THE PATIENT CENTERED MEDICAL HOME

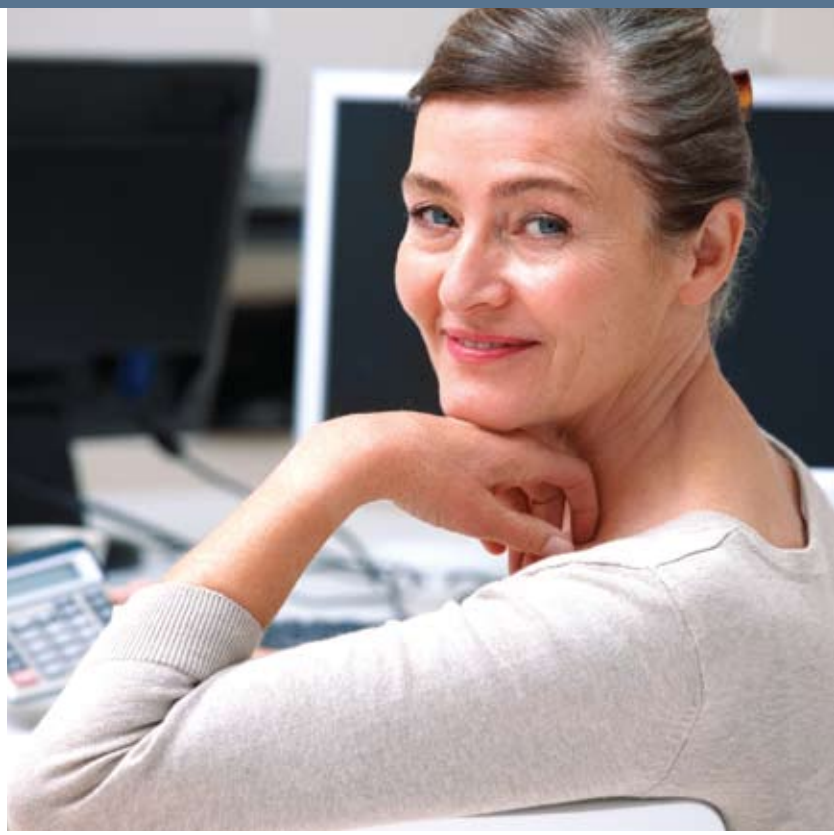
A key function of the PCMH drives its technology requirements. This is the process of care coordination—especially coordination of the care of patients with chronic diseases. In the current, fragmented health care delivery system, each of a patient's providers may be unaware of other providers that are treating the patient. Testing and therapies are often duplicated, resulting in unnecessary costs and risks to the health of the patient. Lack of coordination can also result in failure to follow up on the delivery of ordered services, again adding risk to the patient's health. In some cases, multiple providers receive copies of reports of services performed, such as laboratory tests, but this can cause confusion among providers over who is primarily responsible for addressing the results.

When care coordination is done properly, care is coordinated and/or integrated across all elements of the health care system (e.g., subspecialty care, hospitals, home health agencies, nursing homes) and the patient's community (e.g., family, public and private community-based services). Care is facilitated by registries, information technology and health information exchange, all to assure that patients get care when and where they need and want it, and in a culturally and linguistically appropriate manner.

Successful coordination of a patient's health care cannot be accomplished without IT support for the key workflow steps involved. The patient's medical home will need the capability to track all of the patient's providers and all of their care activities. The medical home will also have to serve as a communications hub among all of the patient's providers, ensuring that each is aware of relevant actions by others. Finally, each provider of care to the patient will need the capability of automatically informing the medical home of actions involving the patient.

Care coordination principally involves collaboration among care providers. This distinguishes these activities from other common care workflows:

- **Transfer of care**—responsibility shifts
- **Referral**—temporary transfer
- **Consultation**—one-time or limited time
- **Collaboration**—ongoing co-management



The interoperability requirements of patient care workflow can be considered as support for a conversation between two or more clinicians, as well as the patient, at each step.

The charts that follow are an attempt to identify the information technology functions that are required to support the information management needs of a medical home. Also listed are the information technology functionalities that patients and families will need if they are to participate fully in the coordination of their care. Many of the functions described extend beyond the capabilities of current EHR systems. In fact, many of these functions might best be delivered through technology applications that are external to an EHR system. Many could be delivered as services over the Internet. This list attempts to be technology neutral and product neutral in identifying needed functions. The hope is that it will spark discussion and debate over how these functions could be delivered effectively and efficiently to small medical home practices and to all patients and caregivers.

## IT support for clinicians involved in the patient centered medical home

In the previous section *"Empowering Health IT to Support the Connected Medical Home,"* David Kibbe et al. outlined the key capabilities needed to realize successful deployment and meaningful use of health IT in the medical home. To expand this further, users should consider some key functionalities. Below is a list of "Ten Characteristics of Patient Centered Health IT Support for Clinicians." The tables that follow outline how the capabilities and functionalities link and why it is important to consider each of these.

1. Ability to collect standardized, accurate and essential data elements
2. Ability to incorporate data from outside systems
3. Ability to support care coordination
4. Ability to facilitate medication reconciliation
5. Ability to capture and respond to population health needs (registry/community view)
6. Ability to link to community resources
7. Ability to collect, store, measure and report on individual and population process, outcomes and quality
8. Ability to engage care team in decision support at the point of care
9. Ability for providers to engage in risk stratification
10. Ability to support patient self-management, and to enhance patient access and communication.

***Contributed by Thomson Kuhn, Sr. System Architect, American College of Physicians***

**Special thanks to the PCPCC CeHIA Functionality Working Group[5] for the development of this work.**

[5] See PCPCC CeHIA Functionalities Working Group Acknowledgments, Inside Cover.

| A. Capability to collect, store, manage and exchange relevant personal health information. | |
|---|---|
| **GENERAL FUNCTIONALITY:** Collects Standardized, Accurate and Essential Data Elements. | **GENERAL FUNCTIONALITY:** Incorporates Data from Outside Systems—Particularly Pharmacies, Inpatient Stays, Laboratories and Imaging Centers. |
| **WHY:** Enables data to be analyzed and shared in a consistent manner. | **WHY:** Facilitates effective coordination of care across clinicians; external data must be standardized and machine-interoperable if it is to be incorporated into quality measures and decision support. |
| **SPECIFIC FUNCTIONALITY:**<br>• Basic demographic data.<br>• Language preference.<br>• Self-identified race/ethnicity.<br>• Patient/family preferred method of communication.<br>• Dates of previous visits.<br>• Current and past diagnoses.<br>• Status of age-appropriate preventive services.<br>• Basic clinical data (height, weight, BMI).<br>• Presence of advance directives.<br>• Lab/pathology/imaging reports.<br>• Documentation of patient's understanding of problems and plans of care. | **SPECIFIC FUNCTIONALITY:**<br>• Ensure that the results of all laboratory tests and imaging procedures ordered or done by the practice are received and reviewed by the ordering (or covering) clinician.<br>• Notify patients of all abnormal results.<br>• Notify patients of all normal results.<br>• Find and identify patients receiving care in other facilities.<br>• Send appropriate clinical information to support patient care when a patient is being treated at another facility or by a different clinician.<br>• Review information received from other facilities to identify what follow-up support a patient needs.<br>• Incorporate external records into the practice chart.<br>• Order laboratory tests online.<br>• Order imaging tests online.<br>• Retrieve laboratory tests online.<br>• Retrieve imaging tests online.<br>• Track pending laboratory tests.<br>• Track pending imaging requests.<br>• Indicate the source of all data, especially when the source is not the patient or parent. |

## B. Capability of providers, patients and other members of a person's health care team to communicate with each other and amongst themselves in the processes of care delivery and care management.

| | |
|---|---|
| **GENERAL FUNCTIONALITY:** Offers Support for Care Coordination. | **GENERAL FUNCTIONALITY:** Facilitates Medication Reconciliation, Especially Between Prescribed Medications and Pharmacy Records. |
| **WHY:** Continual collection and management of encounter reports and test results from all of the providers who are delivering care to a patient. Enables all caregivers to collaborate in the care of the patient. | **WHY:** Improves monitoring of medication adherence, helps avoid adverse drug-drug interactions, and increases prescribing efficiency. |
| **SPECIFIC FUNCTIONALITY:**<br>• Use and maintain a problem list for every patient.<br>• Maintain medication lists with information about both long-term and short-term prescription medications.<br>• Maintain a list of over-the-counter medications, supplements and/or other alternative therapies.<br>• Use flow sheets to prompt age-appropriate screening and tests associated with particular conditions or risk factors.<br>• Track urgent or critical referrals for consultation until a report is received by the practice.<br>• Track all referrals for consultation until practice report received.<br>• Coordinate visits to other clinicians and/or for tests to minimize trips for patients.<br>• Help patients without health insurance coverage find care.<br>• Write and maintain individualized care plans and treatment goals with input from the patient.<br>• Contact patients (and/or families) soon after discharge from a facility.<br>• Coordinate post-discharge care with other entities (specialists, home health, disease management organizations, etc.).<br>• Communicate, plan care, and assign and track responsibilities with care managers or other professionals involved with management of patient.<br>• Document communication among care team members.<br>• Provide a written case summary and transition plan for patients transferring care to another clinician and/or facility.<br>• Provide help for patients in need of a primary care physician or subspecialist.<br>• Document links between problems and care providers.<br>• Document patient's medication experience.<br>• Document medication allergies and adverse reactions, medication history (including immunizations), and active drug therapy problem list.<br>• Document treatment plans for patient and practitioner. | **SPECIFIC FUNCTIONALITY:**<br>• Provide drug-to-allergy warnings.<br>• Provide drug-to-drug interaction warnings.<br>• Provide dosing information and warnings when recommended doses are not followed.<br>• Provide warnings when duplicate drug prescriptions are written or when two drugs from the same class are prescribed.<br>• Identify drugs to be avoided in the elderly.<br>• Identify, resolve and prevent drug therapy problems of appropriateness, effectiveness, safety and adherence. |

## B. Capability of providers, patients, and other members of a person's health care team to communicate with each other and amongst themselves in the processes of care delivery and care management. *(continued)*

**GENERAL FUNCTIONALITY:** Offers Registry Reporting/ Community View.

**WHY:** Enables tracking of patients who require better care management; allows physician, practice, or institution to systematically monitor and improve care of chronic conditions; facilitates anticipatory care and patient recall.

**SPECIFIC FUNCTIONALITY:**

- Identify the most frequent diagnoses seen.
- Identify at least three of the most clinically important conditions seen.
- Identify the most important risk factors in the population served.
- Identify patients who need preventive care (screening) and facilitate prompting them to schedule appointments.
- Identify patients on particular medications who need monitoring or evaluation and facilitate sending reminders.
- Identify patients in need of immunizations and facilitate sending reminders.
- Identify patients who need pre-visit laboratory tests or other procedures and send reminders.
- Identify patient with chronic conditions who have not received necessary follow-up and facilitate prompting them to schedule appointments.
- Identify patients who might benefit from additional care coordination/care management services and facilitate contacting them about these options.
- Provide capability to identify and contact patients on a particular medication.
- Provide capability to identify and contact patients in need of preventive care services.
- Provide capability to identify and contact patients in need of follow-up visits or tests.
- Provide capability to identify and contact patients who may benefit from care management support.

**GENERAL FUNCTIONALITY:** Offers Linking to Community Resources.

**WHY:** Helps clinicians identify community resources that can support patients, including disease management programs offered by health plans, nutrition or exercise programs, substance abuse and mental health services, and support groups.

**SPECIFIC FUNCTIONALITY:**

- Maintain a list of agencies, community-based organizations, or other entities that support patient self-management, and support provision of the relevant resource list to patients when appropriate.

| C. Capability of providers and their practices to collect, store, measure and report on the processes and outcomes of individual and population performance and quality of care. | | |
|---|---|---|
| **GENERAL FUNCTIONALITY:** Offers Automated Quality Measurement. | **GENERAL FUNCTIONALITY:** Offers Improved Interfaces with Public Health Services (including automated reporting of mandatory notifiable communicable disease, and immunization information). | **GENERAL FUNCTIONALITY:** Offers Systematic Outcomes Evaluation. |
| **WHY:** Enables practices to monitor quality improvement activities; allows insurers to compare clinicians and pay for improved preventive services and improved clinical outcomes. | **WHY:** Enhances capacity to respond to public health emergencies, facilitates monitoring of disease trends and population health, and helps identify populations in need of targeted interventions. | **WHY:** Improves post marketing surveillance of adverse drug events, understanding the correlates of health disparities, and predictors of treatment and treatment outcomes. |
| **SPECIFIC FUNCTIONALITY:**<br>• Provide the ability for the practice to measure:<br>– Clinical performance on processes such as vaccination rates and cancer screening.<br>– Clinical outcomes such as hemoglobin A1c data for patients with diabetes mellitus.<br>– Wait or turnaround times for lab results, phone calls and other service-related activities.<br>– Medication errors and other safety issues.<br>• Provide the ability for the practice to use and report on nationally recognized clinical performance measures.<br>• Provide the ability for the practice to measure patient attitudes regarding:<br>– Ability to schedule appointments.<br>– Ability to contact the office via phone or email (if available).<br>– The quality of information received from the clinician providing care.<br>– The confidence they have in their clinician and practice.<br>– The level of satisfaction with their experience at the practice.<br>• Provide the ability for the practice to measure and report data collected on quality and work processes:<br>– Across the practice.<br>– By individual clinician.<br>• Provide the ability for the practice to set and track goals and expectations of performance.<br>• Connect indication for medication (reason for use) to specific drug product to dose, duration and actual outcomes for each medical condition.<br>• Record and evaluate actual outcomes from drug therapy.<br>• Provide post marketing surveillance on appropriateness, effectiveness, safety and adherence variables.<br>• Record drug therapy problems specific to drug product, medical condition and patient parameters. | **SPECIFIC FUNCTIONALITY:**<br>• Automatically document the delivery of immunizations. | |

| D. Capability of providers and their practices to engage in decision support for evidence-based treatments and tests. | |
|---|---|
| **GENERAL FUNCTIONALITY:** Offers Clinical Decision Support at the Point of Care. | **GENERAL FUNCTIONALITY:** Offers Risk Stratification. |
| **WHY:** Combines patient data and evidence-based clinical best practices to provide decision-making assistance for priority preventive care issues. | **WHY:** Enables use of demographic and clinical information to identify at-risk patients; assists in disease management referrals, interpreting quality measurement data, and targeting anticipatory care. |
| **SPECIFIC FUNCTIONALITY:**<br>• Support use of nationally recognized clinical guidelines for clinically important conditions.<br>• Incorporate the guidance of clinical guidelines into flowsheets, standing orders, training and other everyday processes to facilitate adherence to the clinical guidelines.<br>• Incorporate decision support for medication selection and dose calculation.<br>• Incorporate decision support for immunization.<br>• Document reason when recommendation is not followed. | **SPECIFIC FUNCTIONALITY:**<br>• Support conduct of a comprehensive health and risk assessment for all new patients.<br>• Identify patients who should receive age-appropriate screening tests and/or counseling.<br>• Identify patients who should receive immunizations.<br>• Identify patients who should receive age-appropriate risk assessments. |

## E. Capability of consumers and patients to be informed and increasingly literate about their health and their medical conditions, and to appropriately self-manage with monitoring and coaching from providers.

**GENERAL FUNCTIONALITY:** Allows Enhanced Access via Email, PHR, Web Portal.

**WHY:** A fundamental aspect of patient-centered care is that the care does not begin or end in the doctor's office. As care activities become more patient-centered, they move from the time and place of the face-to-face encounter to Internet-facilitated activities that can occur whenever it is convenient for patients and care providers.

**SPECIFIC FUNCTIONALITY:**

- Track each patient's language preference.
- Track whether a patient has difficulty with hearing, vision or other barriers to communication.
- Generate a written care plan for patients when indicated.
- Support scheduling each patient with a personal clinician except when the clinician is unavailable.
- Support scheduling a same-day appointment if clinically indicated.
- Support an "open access" or "advanced access" scheduling model.
- Support scheduling of group visits for some populations of patients.
- Support scheduling team meetings.
- Support workflows to remind patients about appointments and/or collect information from patients prior to a visit.
- Support use of standing orders for staff to administer routine care such as vaccinations, preventive services or laboratory tests for specific conditions.
- Support delivery of clinical advice during hours when the practice is not open.
- Support provision of a personal health record to patients.
- Support review of a patient's stand-alone personal health record.
- Provide a personal health record linked to the practice electronic health record.
- Support use of email to communicate with patients about administrative issues.
- Support use of email to provide clinical care appropriate for non face-to-face visits (i.e., Web visits).
- Provide a Web site that enables patients to initiate requests for appointments, referrals, etc.
- Provide a Web site that enables patients to see elements of their records.

**GENERAL FUNCTIONALITY:** Offers Support for Patient Self-Management.

**WHY:** Helps patients and clinicians work together to improve disease self-management; incorporates assessment of patient self efficacy and health literacy; provides easily understood graphs, charts, and handouts; improves patient communication through emailed engagements or mailed reminders, secure messaging, or Web portals. Helps patient understand and improve the doctor-patient relationship. This would include EMR/PHR interfaces and patient portals.

**SPECIFIC FUNCTIONALITY:**

- Provide self-management support for important conditions in the patient's preferred language or mode of learning.
- Provide self-management tools or a personal health record for patients to use in support of their own care.
- Compare patient progress towards treatment and self-management goals with expectations.
- Facilitate review of self-monitoring results and use of them to adjust the treatment plan.
- Facilitate assessment of barriers when patients do not move towards their treatment goals (e.g., medication adherence, costs of care, lack of family support).
- Document the delivery of patient information.

| F. Health IT support for patients, caregivers and family. | | |
|---|---|---|
| **GENERAL FUNCTIONALITY:** Allows Consumers to Manage Health Information. | **GENERAL FUNCTIONALITY:** Offers Consumers Self-Management Tools. | **GENERAL FUNCTIONALITY:** Coordinates Communications. |
| **WHY:** As care delivery becomes dispersed across increasingly varied settings, it is important for patients to take responsibility for their health care information. Patients need tools that make it easy for them to ensure that all of their care providers have access to important information provided by others. | **WHY:** The health of patients, especially those with chronic conditions, is more a result of their behavior than any actions from their care providers. Patients need tools that help to inform and motivate them to follow their providers' instructions, and to track their activities in pursuit of their goals. | **WHY:** Technology-enabled communications are beneficial for patients and care providers. For patients, these tools are more efficient and less intimidating than telephone menus and voicemail. For providers, these tools allow better categorization, routing and management of all patient communications. |
| **SPECIFIC FUNCTIONALITY:**<br>• Collect information from external sources, such as health care providers, laboratories and pharmacies.<br>• Enter personal health information.<br>• Identify source of all data.<br>• Share health information as desired with care providers. | **SPECIFIC FUNCTIONALITY:**<br>• Exchange care plans with providers.<br>• Track and report activities and measurements.<br>• Locate and access education and management tools. | **SPECIFIC FUNCTIONALITY:**<br>• Ask questions of care providers.<br>• Request medication renewals.<br>• Request appointments. |

# ENGAGING THE PATIENT WITH HEALTH IT

While health IT holds the promise of improved clinical excellence, it also holds the potential to greatly improve patient-provider communication, patient access to valuable personalized information, and patient collaboration with the clinician in chronic condition self-management. Unfortunately, the current trends in clinical practice and the realities of a financial focus in health IT applications tend to relegate patient-centered applications to the bottom rung of the implementation process. But much is to be learned from practices that are successfully using patient-centered health IT to engage patients, as well as efforts to raise overall awareness of the urgent need for community electronic health information exchange.

The following is a summary of a research report authored by Joshua Seidman, PhD, and Ted Eytan, MD, MPH, and published by the California HealthCare Foundation (CHCF). *"Helping Patients Plug In: Lessons in the Adoption of Online Consumer Tools"*[6] is designed to offer insight into the current application of health IT in a variety of practice settings, some of which offer a patient-centered approach to care. For a deeper look into consumer attitudes and opinions about the use of EHRs, and to find tools to effectively communicate the benefits of health IT to consumers, please see Appendix C for the "InformationSTAT Toolkit."

## The Patient-Centered Health IT Initiative

In 2008, the California HealthCare Foundation, with support from the United Hospital Fund, Kaiser Permanente and the Group Health Community Foundation, initiated research to better understand the evolving role of patient-centered information technology in clinical care. The authors examined five different types of medical practice settings; interviewed physicians, patients, and others; and reviewed the relevant literature. The project sought to assess:

- The technological innovations in place to facilitate more patient-centered care;
- How patients and clinicians used health IT at different stages of implementation;

- How they communicated about improving patients' health;
- Opportunities for improving clinician-patient communication and the engagement of patients and families in all aspects of care; and
- Access to patient-centered health IT (PCHIT) tools by safety-net populations and opportunities for providers to use such tools to coordinate care for these populations.

The project team focused on clinical settings where health IT is replacing paper-based systems, rather than those with mature health IT or none at all, and on health care providers with a diverse clientele. This approach revealed hurdles faced by those who are considering, or in the process of implementing, information technologies.

## Key Concepts

PCHIT engages patients in their care by giving them access to electronic tools, including health records at physician offices, personal health records on the Web, online appointment scheduling, and doctor-patient email. However, there is a significant disparity between what patients want to do online and what they are able or allowed to do.

[6] The complete report is referenced in the Resource Guide, and found online at http://www.chcf.org/topics/view.cfm?itemID=133659.

**Consumer Access to Electronic Tools**

| Tool | Would Like to Access | Already Access | Would Pay Extra to Access |
|---|---|---|---|
| Online medical records and test results | 78% | 6% | 26% |
| Online appointment scheduling | 72% | 10% | 18% |
| Email to doctor | 76% | 9% | 23% |

SOURCE: DELOITTE. 2008 SURVEY OF HEALTH CARE CONSUMERS.[7]

As the table above illustrates, about three-quarters of consumers are interested in electronically viewing their medical records and lab results, scheduling appointments, and exchanging email with other physicians. Yet few have such access, even though a sizable number would be willing to pay extra for it.

Some large integrated delivery systems, multispecialty group practices, and community health centers have adopted PCHIT, many EHRs now include patient portals, and commercial PHRs are proliferating. But PCHIT is far from widespread.[8]

> Any technology that facilitates communications and helps consumers organize health information, act upon it, and weigh the implications of their decisions qualifies as PCHIT.

Any technology that facilitates communications and helps consumers organize health information, act upon it, and weigh the implications of their decisions qualifies as PCHIT. Along with EHRs, PHRs, online appointment scheduling, and secure doctor-patient email the term encompasses electronic access to lab results, decision support tools, prescription refills, and other applications.

To be truly patient-centered, an application must link a person's health data to content that puts the data in context for that individual and answers the question, "What does it mean in my case?"

PCHIT helps consumers take control of their health and be key partners in health-related decisions. It also improves the quality and cost-effectiveness of health care. For example, research suggests that patients immediately forget 40 percent to 80 percent of everything a doctor tells them in the exam room.[9] EHRs can generate an electronic summary of a doctor visit to be printed and taken home—a powerful tool because it wraps the clinician's notes around health content targeted to the individual.

## Technological Innovations to Facilitate More Patient-Centered Care

Expensive technologies such as EHRs and PHRs are not a prerequisite for other, more economical patient-centered tools. At the Whitman-Walker Clinic in Washington, D.C., which has implemented an EHR system, pharmacists use Web tools such as MedactionPlan.com to prepare medication regimens for print-out or electronic transmission to patients. In addition, MedactionPlan.com enables consumers to create medication lists for themselves and family members, and to receive medication reminders.

Patients who receive care at Queens Health Network in New York City can deliver personal health information to other providers by swiping their smart card through an inexpensive card reader. The readers, which plug into any personal computer, are located in emergency rooms in the city.

## Patients and Clinicians Use Health IT at Different Stages

Kaiser Permanente, which serves about one-fifth of all Californians, and other integrated delivery systems like

[7] "Many consumers want major changes in health care design, delivery." Deloitte: 2008 http://www.deloitte.com/dtt/article/0,1002,cid=192717,00.html.

[8] According to the National Alliance for Health Information Technology, PHRs are "an electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be drawn from multiple sources while being managed, shared, and controlled by the individual."

[9] Kessels, R.P.C. "Patients' memory for medical information." *Journal of the Royal Society of Medicine* 2003;96(5); 219-222.

it, are in many ways a PCHIT benchmark. They have the highest EHR and PHR penetration in health care. About 20 percent of enrollees at Kaiser, or more than 2 million members, use its PHR.

Within the last six years, the number of adult enrollees at Seattle-based Group Health Cooperative who have taken advantage of access to a PHR through the MyGroupHealth Web site has grown to 36 percent.[10]

The U.S. Department of Veterans Affairs actively promotes my HealtheVet, a portal for benefits, services and access to some health records. In the future, veterans will be able to view their appointment schedule, copayment balances, portions of their EHR and more. Although patient adoption has not reached the levels seen at Kaiser and Group Health Cooperative, the VA system is innovative because of its potentially high transparency. Pilot sites allow patients full access to their entire medical record through MyHealtheVet, including physicians' progress notes.

The VA has not integrated patient-centered tools into its health care system as thoroughly as Kaiser and Group Health Cooperative have. Physicians do not interact with MyHealtheVet in their clinical work, and, outside the pilot sites, My HealtheVet still offers much less access to EHRs and fewer direct links to health content explaining a person's personal data.

## How Patients and Clinicians Communicate about Improving Patients' Health

A PHR portal at Harvard Vanguard Medical Associates, a private group based in Boston, is MyHealth Online. Similarly, at Partners HealthCare in Boston, clinic managers work with medical staff to encourage the use of Patient Gateway—a secure electronic link that patients can use to communicate with their doctor about appointments, medications, and more—by posting announcements in prominent places about new services and by promoting access opportunities.

However, some Partners physicians communicate with patients by email outside of Patient Gateway, and clinicians there and at Harvard Vanguard did not consistently explain to patients the benefits of using these specially-designed patient portals. In addition, accountability for patient engagement varies: Partners assigns responsibility for the success of its PHR to a "physician leader," while there is no such accountability at Harvard Vanguard.

> ...a mobile phone may be the most effective vehicle for certain populations to receive health information...

At both Partners and Harvard Vanguard, health IT competes with multiple clinical initiatives for priority status. This may hinder a coordinated approach to fostering PHR adoption and use of the patient portals. Moreover, their payers do not make a significant effort to promote the tools, and the two practices expressed uncertainty about the best way to do that in the absence of a PHR implementation "toolkit"—a repository of knowledge about everything from identity authentication procedures to strategies for promoting adoption of PCHIT by patients and staff.

## Opportunities for Improving Clinician-Patient Communication and Engaging Patients and Families

Nationwide, 93 percent of physician practices have fewer than six doctors, and 96 percent have fewer than 10. Less than 10 percent of practices in this population have fully implemented EHRs, although up to 25 percent have partially implemented them.[11]

Small practices cope with several pressures when they implement EHRs. One is showing a return on investment over the long term. A second is justifying the upheaval caused by transitioning from paper to electronic records. A third is the competition from local group model practices, where health IT adoption tends to be higher and there is more financial, technical and legal support.

Small practices are pooling resources to overcome these challenges. Ideal Medical Home, a confederation of health care organizations and individuals, promotes patient-centered, financially viable information technologies in physician practices. At IdealMedicalPractices.org, members share new technologies—including patient-assessment and feedback tools—and best practices. The goal is to improve clinical operations at minimal cost.

## Access to PCHIT Tools by Safety-Net Populations

Clinicians and administrators often raise the issue of disparate access to the Internet among safety-net populations

[10] Halamka, J.D., Mandl, K.D., and Tang, P.C. "Early experiences with personal health records." *Journal of the American Medical Informatics Association* 2008;15(1): 1-7.

[11] *Health Information in the United States: The Information Base for Progress.* Massachusetts General Hospital and Robert Wood Johnson Foundation: October 2006 (http://www.rwjf.org/files/publications/other/EHRReport0609.pdf).

and how that might affect PCHIT use. Although income and other demographic factors do have an impact, data suggest that many people—even those with lower incomes—now have access to the Internet.

**Internet Access Among Demographic Groups**

| Demographic | Percent Who Have Access |
|---|---|
| Household earns less than $40,000 | 61% |
| Household earns more than $40,000 | 91% |
| No high school degree | 41% |
| High school graduates | 69% |
| College graduates | 93% |
| Caucasians | 78% |
| African Americans | 68% |
| English-speaking Latinos | 75% |

SOURCE: DELOITTE. 2008 SURVEY OF HEALTH CARE CONSUMERS.[12]

National surveys suggest that the number of community health centers (which typically serve safety-net populations) and physician practices with fully or partially implemented EHRs is about equal.[13] (There are no comparable data regarding PHRs.) While one might expect that extremely limited resources would restrict the ability of community health centers to innovate in terms of health IT, observations of the safety-net providers in this report revealed that many are as technologically savvy as their non-safety-net counterparts. Some even have state-of-the-art EHRs. One way they can finance health IT improvements is through a limited number of grants, depending on the region.[14]

Providers and some patients at these locations—including those that offer multilingual care—generally welcomed the idea of patient access to EHRs. Data from a recent survey demonstrate that interest in email access, online appointment scheduling, and electronic access to medical records and test results is equally high among insured and uninsured people.[15]

It is important to think about PCHIT in the larger context, beyond Internet use, because there are new technologies that do not involve a computer on the patient's end. For example, a mobile phone may be the most effective vehicle for certain populations to receive health information, be it in the form of an automated, multilingual phone call, a text message such as a medication reminder, or a more sophisticated combination of audio, graphics and video.[16]

## Health IT as it Supports the Patient Centered Medical Home Model

Health IT capabilities focused on patients offer an ideal entrance ramp for consumers to connect to the PCMH. Much discussion to date has focused on PHRs and interactive Web portals, but less elaborate and costly electronic tools that broaden patient access to providers, such as secure email and online scheduling, are also important considerations. As the CHCF study notes, creative use of common consumer technologies, such as cell phones or smart cards, should be a first-line consideration for patient-centered information delivery systems. As populations across the socioeconomic spectrum have indicated a strong interest in IT-supported patient-centered capabilities, this perceived barrier to meaningful use of health IT in the larger PCMH context should no longer be a roadblock to wider adoption of consumer-focused tools.

**OTHER RESOURCES**

Health Information Technology—Consumer Principles, March 2006: Appendix B

InformationSTAT consumer research and stakeholder education campaign: Appendix C

[12] "Many consumers want major changes in health care design, delivery." Deloitte: 2008 (www.deloitte.com/dtt/article/0,1002,cid%253D192717,00.html.)

[13] According to the 2005 National Ambulatory Care Survey, 11.2 percent of physician practices had a fully implemented EHR system. The 2006 Survey of Health Center Use of Electronic Health Information found that 8.6 percent of community health centers did.

[14] Duke, E.M. "Remarks to the National Association of Community Health Centers." Health Resources and Services Administration, U.S. Department of Health and Human Services: August 27, 2007 (http://newsroom.hrsa.gov/speeches/2007/NACHCaugust.htm).

[15] "Many consumers want major changes in health care design, delivery." Deloitte: 2008 http://www.deloitte.com/dtt/article/0,1002,cid=192717,00.html).

[16] A variety of information delivery strategies are profiled in Seidman, J., and Barish, D. Health Information Technology: Innovative Applications for Medicaid. Center on Children and Families, Georgetown University Health Policy Institute: December 2007.

# CASE EXAMPLES

In February 2009, the CeHIA and Health2Resources conducted a survey of physician practices and other stakeholders regarding their use of health information technology and exchange in support of the patient centered medical home (PCMH). From the 116 respondents who completed the survey, selected examples are presented on the following pages. Several themes emerge.

- Simple health IT solutions and work-arounds can provide much-needed functionalities in support of the PCMH in the absence of fully-implemented ambulatory EMRs. These functionalities are internal to the physician practice.
- A fundamental goal is maximizing patient registry accuracy and completeness.
- There is a pressing need for improving patient access portals.
- Anecdotal reports suggest that patients welcome the opportunity to interact with their medical home through electronic tools, that practice efficiency is thereby enhanced, and that patient satisfaction increases.
- Robust, integrated health IT solutions are of immediate benefit for tracking the quality of health care delivery, adhering to evidence-based practice guidelines and managing chronic disease conditions.
- Implementation of PCMH functions, with health IT support, increases the ability of medical staff to work one-with-another: Thus the "Connected Medical Home."
- Adoption of health IT in a meaningful way is difficult, but not impossible. Change management techniques and leadership are essential, and the end result can be worth the effort.
- That being said, health IT is a tool, and is not in and of itself the answer. Changes throughout the practice, in workflow and how medical staff work together are essential.
- Health IT support of medical care becomes a way of life.

We welcome your perusal of these case examples. There are many lessons learned. Moreover, these participants provide their contact information, and so in turn become a resource to support community and local transformation efforts. We expect that this will be a highly dynamic process and that the CeHIA will add more case examples over the coming months.

## TYPE OF ORGANIZATION: Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Certified

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. Having the PCMH listed prominently in key places throughout the Electronic Health Record at UNC Healthcare.
2. Using telephone messages for virtual consults and coordination of care.
3. Webcis' email portal allows secure email to and from patients.
4. Weekly downloads of data from our central information system into our departmental chronic disease registry.

**How do you use electronic health data to improve patient engagement in their own care?**

1. This is currently lacking; we desperately need a patient portal.
2. We have plans for patients to enter their own medical histories online.
3. We have plans for patients to have access to their lab and radiology data and to be able to access via the Web.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Phone messages are answered more quickly, which has directly improved patient satisfaction.
2. Referral tracking is much improved.
3. Our registry has directly led to targeted outreach of patients who need services.
4. The registry has helped us lower admissions for CHF patients.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Clinicians are keeping the med lists up to date now that we require that for nurses to refill meds by standing order.
2. Patients are emailing us, which offloads the phones and leads to more direct communication.
3. Lab result letters go out more quickly (we still are using letters until the patient portal is developed).
4. Having discharge summaries, labs, results of studies, op notes, etc. at time of hospital followup improves coordination of care.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. We hope to develop a "virtual case conference" to allow multi-disciplinary teams of clinicians to coordinate care for complicated patients.
2. We desperately need to get the patient more engaged–you can print out a summary of goals/suggestions/changes from each clinic visit now, but it's cumbersome.
3. We need to develop more process control points and data that can be extracted from the central information system—for example, what percentage of phone messages were finalized or forwarded within 24 hours.
4. Better linkages between the central information system and our registry—I have no illusions of the central information system actually incorporating a registry function—I think two integrated systems would work.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. A registry function is much more important than an EHR.
2. In the short term, an EHR may make things worse.
3. Right now there are multiple EHRs around the country that don't communicate—we resort to printing and mailing or printing and faxing, which is incredibly wasteful.

## TYPE OF ORGANIZATION: Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Certified

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. Searchable data for care, monitoring quality, and reporting across the practice and by individual physicians.
2. Increased adherence to evidence-based guidelines.
3. Access to patient information from outside the office.
4. Improved patient communication.

**How do you use electronic health data to improve patient engagement in their own care?**

1. Patients with chronic conditions are given a Health Progress Report at each visit (with test results and comparisons to goals).
2. Patients without documented goals are easily identified and goals are set and reviewed regularly.
3. Electronically produced visit summary is given to each patient at the conclusion of the visit.
4. Implementation of portal will allow patients to communicate and access information (near future).

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Staff is operating as a team—planned visits help assure preventive care is followed up and appropriate tests are ordered.
2. Integrated on-site testing (ECG, spirometry, retinal photographs, etc.) has increased adherence to guidelines and standards.
3. Availability of bidirectional lab results has helped physicians and greatly improved data collection and reporting.
4. Improved communication between physicians, on-site health coach, dietitian and patients has resulted in improved satisfaction for all.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Quality reporting is now timely and accurate.
2. Quality reporting in general and reporting on individual physician performance is changing physician behavior.
3. It is anticipated that the use of ePrescribing (just started) will provide good information on adherence to medication.
4. Self-management support has helped patients—still anecdotal evidence but it is growing.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. Streamlining work flow.
2. Stratifying patients by risk categories.
3. Implementing new programs, i.e., ePrescribing, use of patient portal.
4. Looking for ways to communicate with other providers and health care facilities in the community.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. The associated costs are high!
2. Having timely information is crucial for improvement.
3. Change is hard, but not impossible.
4. Always room for improvement.

## TYPE OF ORGANIZATION: Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Plan to be certified

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. Most of the NCQA recognition points have some IT component and thus, HIT is critical to nearly all principles of the PMCH.
2. E-visits.
3. Registry.
4. E-prescribing.

**How do you use electronic health data to improve patient engagement in their own care?**

1. Extensive e-care.
2. E-newsletter to encourage self-management and patient engagement.
3. Registry that feeds to emails to serve as patient reminders.
4. Visibility of data to the patient.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. We believe extensive, but we have not performed official studies to validate these points.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. Improvement and our HIT infrastructure are completely intertwined.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. It is expensive.
2. It requires a great deal of time.
3. You can reach PCMH requirements without really using or fully implementing the technology—for example, lots of people say they do e-care when the reality is that they do very rare e-visits with a few patients.
4. The technology available today is not the technology that we really need.

## TYPE OF ORGANIZATION: Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Plan to be certified

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. In-office messaging.
2. Electronic record available to everyone with templates for completeness.
3. E-prescribing.
4. Communication with our patients and affiliates.

**How do you use electronic health data to improve patient engagement in their own care?**

1. They can access their records electronically.
2. Messaging.
3. They can access in other offices, as a traveler to other parts of the country, etc.
4. Information for self-care.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Marked improvement in thoroughly caring for chronic disease states.
2. Patients have become leading partners in their own care.
3. Patients have used their access to records for better care.
4. Prescriptions are more accurate.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Improved self-care like diet and exercise.
2. Better lab results on chronic disease states.
3. Better understanding among everyone with questions asked and answered.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. Communicating with insurers and their chronic disease managers.
2. We are trying to standardize and simplify our in-office processes.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. Care is now a group endeavor with the patient leading the care.
2. Safety and completeness and accuracy are important and require electronic help.
3. The patients live with the care 24/7 and need to do it their way.

**TYPE OF ORGANIZATION:** Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

1. In-house integrated electronic medical record system
2. In-house, stand-alone HIT&E components

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Plan to be certified

**How do you use electronic health data to improve patient engagement in their own care?**

1. We review problem lists, medications and preventive services with patient.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Improved rates of preventive services.
2. Improved diabetes indicators by systematically following and improving related processes.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Improved HgbA1c.
2. Higher percentage of patients with HgbA1c's twice a year.
3. Higher percentage of patients with urine microalbumin testing.

## **TYPE OF ORGANIZATION:** Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Plan to be certified

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. PQRI reporting and physician report cards.
2. Referral and test tracking.

**How do you use electronic health data to improve patient engagement in their own care?**

1. Health maintenance follow up for screening studies.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Improved A1c levels on diabetics.
2. Increased compliance with evidence-based guidelines.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. Changing physician behavior is a process.
2. Physicians want to deliver the highest quality care.

## TYPE OF ORGANIZATION: Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Plan to be certified

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. Patient Registry.
2. Necessary visits scheduled and appointments kept.
3. Cost ratio or profit margin in a medical home versus not.

**How do you use electronic health data to improve patient engagement in their own care?**

1. Same as above.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Increased patient satisfaction through before and after surveys.
2. Better care over all, less ER visits, less hospitalizations.
3. Better planning time-wise for each visit.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. See above.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. Just to continue improving.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. The patient may have one opinion of how you care for them, and it may not match your opinion.
2. To become certified, and therefore be paid for what you do, is expensive and in the long run the ROI may not be worth it!!!

## TYPE OF ORGANIZATION: Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Plan to be certified

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. Use of EHR with reminders, health maintenance and disease management features; improved care.
2. Patients are more involved in their own care—they know what they need and why.
3. Patients have access to us online at any time—E-visits, communication, and viewing chart.
4. Use of registry has allowed outreach to patients needing tests, follow-up to improve care.

**How do you use electronic health data to improve patient engagement in their own care?**

1. Patients see their charts and results online.
2. System is set up for excellent and easily available patient education, both in office and online.
3. Patients communicate with us online.
4. Patients enter their own histories at home online.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Our overall quality of care improved from the 50th percentile to above the 90th in our research group.
2. Patient satisfaction has been documented to improve.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Data show significant improvement in adhering to clinical guidelines.
2. Point-of-care reminders have significantly increased adherence to guidelines.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. We use HIT as part of our overall process to help us improve the quality of care—this continues.
2. We actively look for new ways to use HIT and change processes to improve efficiency and quality.
3. Improve use of E-visits to improve access.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. First question always has to be—what would the patient want? What would be best?
2. HIT is a tool, not the answer. Using HIT without rethinking patient flow, workflow, is a waste.
3. Must have good data to tell where you are and figure out where you need to go, what you need to work on.
4. It would be impossible to improve quality as much as we have without an EHR!!!

## TYPE OF ORGANIZATION: Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Plan to be certified

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. It runs our entire operation.

**How do you use electronic health data to improve patient engagement in their own care?**

1. Continuous quality improvement.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. My practice has served as my "research lab" for over twenty years, in refining the concepts of the PCMH and the HIT needed to function properly.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Just my own experiences within my own practice. However, dealing with a paper world with the non-existence of a NHIN is problematic.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. We are continually refining our own practice.
2. We are working with the AAP for positive change.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. Any EHR must support CQI through the use of episodes of care and outcomes documentation.
2. Any HIT must be a fully integrated solution, managing all the clinical and operational needs of the PCMH.
3. The main goals of EHR are TWO, not ONE: a) improving the management of the current patient; and b) serving as a cumulating evidence base upon which true QI can be done.
4. The basis of HIT should be based on the PCMH and the patient/physician dyad. Including all the claimed "stakeholders" has driven the process in the wrong direction, and is stalling progress.

## TYPE OF ORGANIZATION: Physician primary care practice

**Christoph Diasio** *MD, FAAP*
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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

1. In-house, stand-alone HIT&E components.
2. Best-of-breed document imaging EMR and pediatric PM system.

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Plan to be certified

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. Disease registry.
2. Recall of asthma patients without flu vaccine this season.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Improved vaccination rates.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Improved vaccination rates.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. The HIT must be the means, not the end.
2 . Don't make perfect the enemy of the good—if it is too difficult for the docs to use, they won't!

**TYPE OF ORGANIZATION:** Physician primary care practice

**Yul D. Ejnes,** *MD, FACP*
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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Plan to be certified

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. Improved coordination of care.
2. Improved patient safety through e-prescribing.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Patient satisfaction with e-prescribing.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. Without full interoperability, which we currently lack, the full potential of HIT cannot be achieved.

## TYPE OF ORGANIZATION: Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Plan to be certified

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. Fully implemented EMR.
2. Interface (Labcorp).
3. PPRnet (quality management).
4. Decision support such as Dynamed, Epocrates and the Web.

**How do you use electronic health data to improve patient engagement in their own care?**

1. Reminders (recalls, labs, screenings).
2. Showing trend lines.
3. Tracking health maintenance.
4. We are limited by having a low percentage of patients with computers and email.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Pneumovax in diabetics from 50% to 95%.
2. Colorectal screening in patients > 65 is 81% (up from 67% in 2 years).
3. Near 100% diabetics with LDL drawn, HbgA1c done in last year.
4. Influenza vaccine 65% in seniors.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Actually, I've been using EMR since 1994 and it is a way of life with me.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. We knew the lessons about health information technology before PCMH a concept.

**TYPE OF ORGANIZATION:** Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

1. In-house, stand-alone HIT&E components
2. Off-site, Web-based stand-alone e-prescription software

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Plan to be certified

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. It's possible, but not easy to get a list of patients with certain diagnoses or demographics.
2. It's possible to access medical records off site.
3. E-prescribing.

**How do you use electronic health data to improve patient engagement in their own care?**

1. I email patients their test results.
2. I print educational materials in the exam room.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. E-prescribing is faster and patients like not having to go to the pharmacy to drop off prescription.
2. It's possible to do paperwork outside of the office after hours (good and bad).
3. It was possible for my organization to look up test results off-site so that I was able to get NCQA certification for diabetes.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. We do not have an EMR at present, and cannot afford to spend the needed money to fulfill PCMH requirements.

## TYPE OF ORGANIZATION: Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

1. In-house integrated electronic medical record system.
2. In-house, stand-alone HIT&E components.
3. Off-site, Web-based, stand-alone HIT&E system components.
4. In-house, stand-alone e-prescription software.

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Participate in a pilot

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. Efficiency.
2. Decreased costs of case management.
3. Enhanced patient safety.
4. Sustainable economics.

**How do you use electronic health data to improve patient engagement in their own care?**

1. Patient portal.
2. Web site resources.
3. In-house graphs and calculators to detail trends.
4. Printed care plans that are specific.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Improved metrics gathering and reporting.
2. Integration with nurse educators and coaches.
3. Improved data management and records handling.
4. Elimination of all paper records.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Better documentation.
2. Incorporation of flowsheets for chronic disease management.
3. Improving metrics for chronic disease.
4. Improved compliance with follow up appointments.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. Weekly meetings with process improvement as the focus.
2. Metrics tracking.
3. Positioning for NCQA certification.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. Paper records can be effectively scanned into PDF files and shredded.
2. Using a terminal server environment allows for secure records access worldwide.
3. Financing IT improvements over 3 to 5 years is cost effective.
4. PQRI was worth it.

## TYPE OF ORGANIZATION: Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Participate in a pilot

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. Population data/management takes you beyond the patient-by-patient encounter.
2. Patient data is more accessible, quantifiable and reportable.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Providers are more pleased with office efficiency.
2. Patient care is more efficient with an EMR.
3. Data is more accessible with an EMR.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Providers get more work done in the same amount of time.
2. Patients seeing covering physicians feel comfortable that the covering physician has access to their information.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. Participating in various quality initiatives.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. Improved care requires organization and access to an immense amount of data, something an EMR provides.
2. Providers' professional time is more satisfying with improved efficiency with use of an EMR.

## TYPE OF ORGANIZATION: Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Participate in a pilot

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. EMR is vital to a fully functioning PCMH.
2. We are still in the process of understanding how to exchange medical information.

**How do you use electronic health data to improve patient engagement in their own care?**

1. I email with patients.
2. I get patients their lab back often the same day.
3. E-prescribing prevents much of the paperwork.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. I don't have objective evidence; I just know it's better care.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. We have not established enough metrics yet.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. EMR was hell—the main facilitator has to be a great communicator and very organized.
2. Have to have a positive attitude.

## TYPE OF ORGANIZATION: Physician primary care practice

**James J. Meyer,** *MD, PCMH Pilot Physician Lead*
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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Participate in a pilot

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. Integrating clinical guidelines into point-of-care health care delivery.
2. Improving access and communication with patients and other health care professionals.
3. Providing reports that support outcomes data from the practice.
4. Prescription-writing/checking software integrated in EHR supports an entire component of PCMH.

**How do you use electronic health data to improve patient engagement in their own care?**

1. Using point-of-care reports generated by Clinical Integration Networks of America to review with patient what is needed and why.
2. Using registry functionality and encrypted electronic communication through "Reach My Doctor" (RMD Networks, Inc.).

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. "Working" patient registries to bring patient populations "up-to-date" on recommended medical services/tests.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. NCQA recognition for diabetes management for two of our practice's physicians since EHR adoption.
2. Participation in Bridges to Excellence program.
3. Easily meeting many health insurance companies' criteria for Quality and Efficiency designations.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. Developing practice-wide protocols that can easily be followed/implemented by non-clinical staff with easy physician direction and oversight.
2. Integration of national clinical guidelines into documented patient results with subsequent clinical recommendations from the HIT.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. HIT makes it simpler for a physician-led practice to develop and implement evidence-based clinic-specific protocols that the entire staff follows for each patient as a team.

## TYPE OF ORGANIZATION: FQHC/Safety Net Provider

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

In-house integrated electronic medical record system

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Other

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. Citywide claims database used to track over-utilization of the ED and hospital at the community and patient level.
2. Citywide claims database used to measure project outcomes in lowering unnecessary ED and hospital over-utilization.
3. Using an EHR to track care of individual patients.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Dramatic reduction in ER and hospitalization rates and improvement in collections rate.
2. Improvement in getting patients on long-term disability.
3. Increase in housing rate of homeless patients.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Early data shows that hospital charges changed from $1.2 million per month to $500,000 per month for 35 patients.
2. ED visits dropped by 32%, hospital visits dropped by 56% for 35 patients.
3. Receipts to hospitals dropped by 33% for 35 patients.
4. Collections rate improved by 51% for 35 patients.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. Adjusting project to better target most expensive patients in the city.
2. Breaking down categories of patients to better determine most effective outreach/treatment modality.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. It doesn't take expensive HIT to achieve dramatic outcomes.
2. Focus on creating meaningful clinical integration between hospital and clinics first, then use technology to build tech integration.
3. People, people, people—build the PCMH around the needs of the patients, then bring the technology in. Gadgets and gizmos don't automatically save lives and reduce costs.

**TYPE OF ORGANIZATION:** Physician primary care practice

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**Please indicate the kinds of Health Information Technology and Exchange (HIT&E) systems you now use.**

Off-site, Web-based stand-alone e-prescription software

**Certified as a PCMH providing direct patient care, or are you another kind of organization?**

Other

**In what ways does health information technology and exchange (HIT&E) support your practice or organization in meeting the core principles of the PCMH?**

1. RMD allows us to be alerted for appointments, send labs and communicate securely.
2. RMD has a diabetes registry and we can track patients.
3. Labcorp has a lab tracking feature so we can see if labs have not been done; also, they populate our registry.
4. RXNT informs on drug interactions, etc.

**How do you use electronic health data to improve patient engagement in their own care?**

1. At the ADA Web site, we use PHR, an interactive tool in which patients put their measures, numbers.
2. We print out their flow sheet and give it to them with their trends and numbers.
3. On our Web site, we have a patient "UP TO DATE" search program, and also interactive risk assessment programs for cancer, diabetes and heart disease.
4. Mypyramid.gov is a good interactive Web site that we recommend, too.

**What have your results been in terms of improved care processes, clinical outcomes, or increased patient satisfaction as a result of incorporating health information technology and exchange in your PCMH?**

1. Our measures for diabetes have improved dramatically, and so has our interest and knowledge.
2. Diabetes patients are identified in the computer so when they make an appointment their current flow is appended, and the MA removes their shoes and does a tonometry test if it's time.
3. We recall diabetics at least every 6 months.

**What objective evidence do you have that using health information technology and exchange has achieved positive impacts on patient and clinician behavior?**

1. Our numbers for diabetics getting aspirin, eye exams, regular lab tests, etc. have improved dramatically.
2. Patients are more engaged, too.
3. We restarted initiation of insulin, which we had stopped during the managed care time when we saw way too many patients to do that sort of thing.

**How are you using your findings regarding the use of health information technology and exchange to bring about further improvements?**

1. NCQA certified.
2. Bridges to Excellence.
3. We inform payers.

**Concisely summarize what you consider the "lessons learned" for your organization in the use of health information technology to support the functional requirements of the PCMH.**

1. Registry functionality is the most important part of being able to track and provide good care.
2. Systems to track lab results, referrals and prescriptions efficiently are very helpful in getting the information we seek.
3. We realized that we must find the resources for patient empowerment, because many conditions require self-management.
4. We realize we have very limited resources for diabetics seeking to educate themselves on diet and glucose monitoring in our town.

# APPENDIX A: Guidelines for Patient Centered Medical Home (PCMH) Demonstration Projects

## PCPCC Endorsed—March 2009

The following chart outlines the guidelines for PCMH demonstration projects developed by the American Academy of Family Physicians (AAFP), American Academy of Pediatrics (AAP), American College of Physicians (ACP), and American Osteopathic Association (AOA), which the PCPCC endorsed in March 2009.

These guidelines are designed to help ensure that demonstration projects purporting to test the PCMH model are broadly consistent with the Joint Principles.[17] In addition, the standardization promoted by the acceptance of these guidelines will help facilitate more meaningful interpretation and understanding of the "lessons learned" from the different PCMH demonstration projects.

| | |
|---|---|
| **Collaboration and Leadership** | 1. The project is open to input from all relevant stakeholders. Examples of relevant stakeholders include professional societies, payers, local large employers/purchasers, health care-oriented community groups including patient advocacy groups, and representatives from local/regional quality improvement programs.<br>2. The project ensures that the leaders of local/regional primary care professional organizations are adequately briefed about the project.<br>3. The project identifies an entity that is responsible for convening all participants and coordinating the activities of the project. |
| **Practice Recognition** | 4. The project uses the National Committee for Quality Assurance (NCQA) Physicians Practice Connections (PPC) PCMH tool, or a similar, consensus-based recognition process that includes validation of PCMH practice attributes defined in the "Joint Principles."[18]<br>5. The project includes participation of a range of practice size, and is representative of the area in which the project is taking place.<br>6. The project clearly outlines the responsibilities of all participating parties, including providers, payers, patients/families and other relevant stakeholders. |
| **Practice Support** | 7. The project provides participating practices with sufficient financial and non-financial support to at least cover the costs of the PCMH recognition approval process; additional physician, clinical staff, and administrative staff work associated with the project; and implementation of the practice infrastructure required to provide services consistent with the PCMH care model.<br>8. The project encourages the incorporation of and support for Health Information Technology (HIT) solutions to facilitate: Care Management and Care Coordination by the medical team; Patient and Family Access to educational material and electronic communications; and/or Performance Reporting (including the Patient/Family Experience, Quality Outcomes and Improvement, and Healthcare Resource Utilization).<br>9. The project design maximizes the number of patients in each participating practice covered by the demonstration project. This can be accomplished in multiple ways, including the participation of multiple payers and the use of broad criteria for patient participation (e.g. child, adult, and elderly participants; patients with chronic and non-chronic conditions). |

[17] American Academy of Pediatrics, American Academy of Family Physicians, American College of Physicians, American Osteopathic Association. *Joint Principles of the Patient Centered Medical Home.* March 2007. Accessible at http://www.acponline.org/advocacy/where_we_stand/medical_home/approve_jp.pdf.

[18] Ibid.

| | |
|---|---|
| **Reimbursement Model** | 10. The project's payment model is broadly consistent with the following:<br>• A prospective, bundled component that covers physician and administrative staff work and practice expenses linked to the delivery of services under the PCMH model not covered by the most current Medicare RBRVS system.<br>• A visit-based fee component for services delivered as part of a face-to-face visit and that are already recognized by the most current Medicare RBRVS system.<br>• A performance-based component based on the achievement of defined quality and efficiency goals as reflected on evidence-based quality, cost of care and patient experience measures.<br>• The payment model should recognize differences in the level of PCMH care provided and patient case mix/complexity. |
| **Assessment and Reporting of Results** | 11. The project provides evidence supporting that it is of sufficient duration to reasonably expect the impact of the model to be demonstrated.<br>12. The project contains a commitment to an external evaluation to ensure the integrity and credibility of the project's data and reports.<br>13. The project contains a commitment to transparency of the data set, including the selection, use and reporting of results from clinical metrics, financial measures and the application of proprietary measures of performance.<br>14. The project includes, at a minimum, the following data collection categories:<br>• Descriptive data of the participating patients and practices.<br>• Process and outcome measures of clinical quality with preference for those measures approved by the AQA and the National Quality Forum (NQF).<br>• Measures of resources used, which can include cost of care to the payer and patient, and net effect of the care model on the financial performance of the participating practices.<br>• Measures of patient/family experience of care with a preference for nationally recognized measures.<br>• Measures of the experience and/or satisfaction of participating physicians, practice staff, and payers with the model.<br>15. The project measures the qualitative and quantitative (i.e., resource utilization) effects of the PCMH delivery and payment model on the broader health care community e.g., subspecialty and specialty practices, hospital/emergency room care.<br>16. The project includes a process to broadly and publicly disseminate its results. |

# APPENDIX B: Health Information Technology: Consumer Principles, March 2006

## Health Information Technology—Consumer Principles

Recognizing the need to protect consumers in the use of health information, the following principles were put forward by a coalition of consumer groups in March 2006, and should be considered in the context of the patient centered medical home. The principles are designed to strike a balance between the potential benefits for consumers and concerns about personal privacy, data security, and the potential misuse of consumer information. (For an expanded version of the principles, go to http://www.nclnet.org/health/final%202006%20principles%20PDF.pdf.)

### Principles

1. Individuals should be able to access their personally identifiable health information conveniently and affordably.

2. Individuals should know how their personally identifiable health information may be used and who has access to it.

3. Individuals should have control over whether and how their personally identifiable health information is shared.

4. Systems for electronic health data exchange must protect the integrity, security, privacy and confidentiality of an individual's information.

5. The governance and administration of electronic health information networks should be transparent, and publicly accountable.

Recognizing the potential of electronic patient data to support quality measurement, provider and institutional performance assessment, relative effectiveness and outcomes research, prescription drug monitoring, patient safety, public health, informed decision making by patients and other public interest objectives, systems should be designed to fully leverage that potential, while protecting patient privacy. Implementation of any regional or national electronic health information network should be accompanied by a significant consumer education program so that people understand how the network will operate, what information will and will not be available on the network, the value of the network, its privacy and security protections, how to participate in it, and the rights, benefits and remedies afforded to them. These efforts should include outreach to those without health insurance coverage.

### SIGNERS

***AARP***

***AFL-CIO***

***American Federation of State, County and Municipal Employees***

***American Federation of Teachers***

***Center for Medical Consumers***

***Communications Workers of America***

***Consumers Union***

***Department for Professional Employees, AFL-CIO***

***Childbirth Connection***

***Health Care for All***

***Health Privacy Project***

***International Association of Machinists and Aerospace Workers***

***International Union, United Auto Workers***

***March of Dimes***

***National Coalition for Cancer Survivorship***

***National Consumers League***

***National Partnership for Women & Families (Convener)***

***Service Employees International Union***

***Title II Community AIDS National Network***

***United Steelworkers International Union (USW)***

# APPENDIX C: InformationSTAT Toolkit

Finding publically available tools to raise awareness among consumers, physicians and other stakeholders about the importance of health information technology is not easy. In 2006, through a U.S. Department of Health and Human Services grant to the Foundation for eHealth Initiative, the *InformationSTAT* campaign was created by Health2 Resources. A public Web site, located at www.informationstat.com, offers communication tools to those interested in educating consumers and community stakeholders about the importance of health information exchange (HIE).[19] The Web site provides more than 50 tools, including print-ready ads, radio scripts, billboards and a multi-audience Media/Education Kit. The Web site is a distribution center for access to communications materials and the campaign materials are designed for use at the local, state or regional level.

Many communities are in the early stages of implementing health information exchange. Individual physician practices are moving slowly but deliberately to implement practice-based systems with the capability of sharing medical information electronically among health care providers. Given the importance of engagement of a diverse group of community players, raising awareness among these stakeholders is essential to the continued growth and expansion of these efforts.

This publically available toolkit, as well as the research findings on which the pieces are based (the results of focus group and telephone surveys), will serve as a starting point for future efforts. The materials are available free of charge and may be used by community collaboratives based on the specifications outlined on the Web site.

Campaign tools are divided into the following sections:

**I. Partnership Outreach**

Tools for partnership outreach (physicians, consumers, employers)

**II. Media Outreach**

Tools for press outreach

**III. Ad Campaign**

Print-ready, radio and billboard-ready campaign tools

*The Web site was made possible by Contract HHSP23320054104EE from the U.S. Department of Health and Human Services to the Foundation for eHealth Initiative.*

*The content of the material does not necessarily reflect the views or policies of the Department of Health and Human Services, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. government.*

**www.informationstat.com**

[19] The materials can also be found as part of the eHealth Initiative's Toolkit (http://www.ehealthinitiative.org/toolkit/getOrg/InfoSTAT.mspx)

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