



The Office of the National Coordinator for
Health Information Technology

Change Management in EHR Implementation

Primer



The following resource can be used in support of the [EHR Implementation Lifecycle](#). It is recommended by “boots-on-the-ground” professionals for use by others who have made the commitment to implement or upgrade to certified electronic health record (EHR) systems.

EHR Implementation Lifecycle



Description and Instructions

This primer is intended to aid providers and health information technology (health IT) implementers with change management for EHR implementation. Change management is the basic foundation underlying all phases of the EHR Implementation Lifecycle and helps achieve EHR Meaningful Use and practice transformation. The EHR Implementation Lifecycle shows the phases a practice goes through in a successful implementation.

Change management strategies and principles must be integrated into all phases of the implementation process. This change management primer synthesizes the strategies and principles proposed by John Kotter, one of the leading experts in planning organizational change using a structured change management approach.

This resource includes the following sections:

- Section 1 introduces the basic change management principles and explains why managing any change effectively is important to the success of EHR implementation and other practice transformation initiatives.
- Section 2 provides more detail on implementing Kotter’s principles in practice settings that are focused on managing specific organizational changes commonly seen in practices today. The discussion focuses on ways to help practice leaders optimize the use of health IT to move their practice to a desired Future State.
- Section 3 provides a summary of critical success factors and the management interventions that must occur to achieve success with change initiatives and some “must do” steps to effectively manage change.
- Section 4 provides additional resources related to change management.



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1 What Is Change Management and Why Is It Important?

1.1 Introduction

Change management is “the application of the set of tools, processes, skills, and principles for managing the people side of change to achieve the required outcomes of a change project or initiative.”

[The Change Management Learning Center](#)

Change in health care is moving at a rapid pace as practices strive to implement regulatory and policy requirements, such as ICD10; understand new models of care such as patient-centered medical homes (PCMHs); and continue their own quality improvement efforts. Many practices are doing all of this while implementing a certified electronic health record technology (CEHRT) to achieve Meaningful Use. This change is happening at a time when providers are still seeing patients and trying to maintain a healthy work–life balance.

These are clearly stressful times for providers and their staff, and adapting to change has become a way of life for their practices. Fortunately, change management is a well-developed field with significant evidence and leading practices on how to successfully navigate the change process. One of the leading thinkers in planning organizational change and providing practical strategies for navigating change is John Kotter.

Kotter believes that any change has both emotional and situational components, and he has proposed a multistep change model. The model is organized into three phases to help leaders manage the challenges that are inherent in any change initiative (Campbell, 2008). Exhibit 1 illustrates how Kotter’s three-phased approach can be used when planning a change from the current way of doing business and caring for patients to the vision you have for your future practice, one that optimizes the use of technology to provide safe, high-quality, and efficient patient care services while meeting regulatory requirements.

Exhibit 1: Kotter's Three-Phased Approach to Managing Change





As illustrated, Kotter's Change Management Model points to the need to think of the change process as a journey for the entire organization. The journey will be smoother if everyone understands:

- Why they need to leave the Current State.
- Why the Future State is better for their patients and the practice.
- What changes in workflows will be necessary.
- What technologies and new skills will be required.
- How staff will learn those new skills and gain knowledge of how the technology fits into their everyday work life.

The following section is a brief overview of the three phases of Kotter's Change Management Model and the management focus required during each phase.

1.1.1 Phase 1: Creating a Climate for Change

In this phase, practice leaders must create a climate for change by accomplishing the following:

- Establishing a sense of urgency:
 - What could be improved from our Current State?
 - What is better about the Future State?
 - Why do we have to change now?
- Building a guiding coalition:
 - Who are the natural leaders (champions) for this change initiative?
 - What team building is needed to form a cohesive team?
- Creating a vision for the Future State:
 - What will life be like in the Future State for our patients?
 - For our staff?
 - For me?

Urgency in some practices may be driven by the desire to modernize the practice using CEHRT. Other practices may be driven to more comprehensive care delivery models such as alternative payment models (APMs) or participation in a local accountable care organization. Whatever the reason prompting the change, the practice leaders **must** help **all** staff understand why the change needs to occur.

At this point in the planning, it is important to identify the key staff who will help lead the initiative. Kotter calls this coalition the "guiding team." So, which practice staff should be a member of your guiding team? As the practice leader, you should choose staff who:

- Fully understand the goals and vision for the Future State and are eager to help the practice reach those goals.
- Are able to interpret the why, the how, and the urgency, and then communicate that clearly to all practice staff.
- Are knowledgeable of practice operations, workflow, and processes.
- Are "people oriented" and recognize the individual strengths of each team member and how each can be useful in all phases of the change implementation.



The knowledge base, coupled with the necessary people management skills, will help the guiding team establish credibility among their peers. These skills will be needed throughout all the phases to address both the emotional and situational challenges that will occur throughout the change process.

Creating a clear vision for what the Future State should look like for the practice is one of the most critical steps in this phase. Even when the Current State is inefficient or problematic, staff is comfortable with the known and is fearful of the unknown. The clarity of the vision will provide much-needed emotional support as the practice goes through the next two stages of changing their process and updating their skills to make the Future State a reality.

Think of the Future State as a destination postcard and your change management plan as a road map. The journey is much easier when we routinely remind ourselves what the destination looks like and have a map for how to get there.

1.1.2 Phase 2: Engaging and Enabling the Organization

In this phase, the practice leader and guiding team need to design implementation strategies that will engage all levels of the organization in the change process. Specifically, the practice leaders need to achieve the following:

- **Communicate the Future State.** Think of innovative ways, such as, the use of vendor demonstrations, videos, role-playing, or simulated Question/Answer (Q/A) communication techniques that match the practice culture. Alternatively, have your staff visit practices that have had successful CEHRT implementations.
- **Empower others to take action toward accomplishing the Future State.** Ensure that staff have a clear understanding of the authority you are giving them. One of the most effective means of empowering staff is to include them in the vendor selection process, particularly if the practice is considering a change in vendors. Another effective means of empowering staff is to delegate leadership roles for training scheduling and workflow redesign.
- **Plan for and create short-term wins.** Recognize high levels of achievement and promote good ideas. Clearly, the “go-live” event is a big win for the practice as well as successfully attesting to Meaningful Use. Other wins include attaining practice goals for patient quality improvements.

Setting up communication channels and establishing communication strategies are critical during this phase. Staff may feel threatened by the change and want to know how the change will affect their jobs both today and in the future. The guiding team should turn these concerns into opportunities for pilot teams to investigate how to overcome perceived and real obstacles.

A key lesson from the field: Listen to your staff—they are the experts in the operational nuances in your practice setting. They may know what is causing the most problems for the practice and have ideas for fixing the problems. Leverage the staff’s knowledge, expertise, and experience, and foster their ideas for how the change can be best implemented. Enable their participation in the design, implementation, and evaluation of the progress of the initiative. When things go wrong, empower staff to find solutions and acknowledge the individual’s contributions to workable solutions. Encourage other staff to do the same. The practice leader can also keep a pulse on what is working well and what is not—they can reinforce and reward the former and work with the staff to find solutions for the latter.

1.1.3 Phase 3: Implementing and Sustaining the Changes

The last phase focuses on the need for continued monitoring and intervention by the guiding team. The bottom line: do not stop—do not give up. The goal is to ensure that the change endures. In this phase, the guiding team:

- Continues to focus on problem areas, promotes solutions, and helps change individual behavior to achieve organizational goals.



- Prepares to train, retrains, and provides technical assistance to rapidly address problems.
- Celebrates the successes as often as they can. People like to know when they are winning. Individual behavioral changes will eventually result in a change in the organization's culture that aligns with the Future State.

While Kotter's model is not a linear, step-by-step approach to change management, it is an iterative model. Thus, accomplishing one step can be helpful in accomplishing another step.

As with all management initiatives, the most important element is planning. The person responsible for planning, implementing, and evaluating change within an organization must recognize why individuals and organizations resist change and plan for the change, taking into consideration how the change will impact people, processes, and technology.

1.2 How Will Change Impact People, Processes, and Technology?

A successful implementation of CEHRT, or new models of care, can be used as a catalyst to promote practice transformation and to achieve the organizational culture changes needed to attain and sustain the practice's vision for their Future State. Planning for changes in how people work, the processes they use, and how technology can be used to help them work more efficiently and effectively is the key to achieving the vision for a new Future State. For a change initiative to be successful, systems and processes must align with technological changes. Health IT, for example, does not simply automate existing paper processes; it is a tool used to integrate systems and processes to transform practices. Clinicians should be careful when reviewing existing workflows for consideration in the new system. Often, the replication of paper-based workflows in an electronic system leads to inefficient processes. Workflow investigations and redesign are often necessary to leverage Health IT for gains in efficiency (please see *Workflow Process Redesign* document for further reference within the topic *Electronic Health Records* in this Playbook). An effective change strategy can be used to communicate the benefits of the changes in how people work and the processes they use and how this will help the organization achieve the desired Future State.

1.2.1 Changing How People Work

Achieving EHR Meaningful Use or implementing new models of care will change how people in the organization do their work. Managing the people dimension of organizational change is critical to achieving success for any change initiative because changing how people work together can alter organizational culture (Leape & Berwick, 2005). Research and reviews of failed change initiatives show that failure occurred because the initiatives did not deal with changes in how people and organizations work; the EHR technologies themselves did not lead to failure (Kaplan & Harris-Salamone, 2009). Based on these documented lessons learned, practice leaders must consider several people-related factors when facilitating change for their staff:

- **Change creates uncertainty.** Even when the Current State is not ideal, change can upset the equilibrium of both individuals and organizations.
- **People are afraid of loss.** Fear of loss can include job loss, loss of social position in the group, and/or loss of self-esteem related to fear of being unable to use the technology or adequately care for patients using the technology.
- **Team pressure to resist change is powerful.** Staff members may feel that tensions associated with change and the social price for cooperating with the change are too great to accept the change.
- **Staff may believe that proposed change is not in their best interest and/or that of the practice.** If staff believe the change harms them or the practice, they will resist it, especially if they have had or even heard about negative experiences with other organizational changes or health IT implementations.



One remedy for overcoming these people issues is to keep staff at all levels involved in the planning, implementation, and evaluation of all change initiatives.

1.2.2 Changing Processes

Just as people may have to change their work requirements to accommodate attaining EHR Meaningful Use or successfully implementing new models of care, changes to existing clinical and business processes and practices, the rules governing the practice, and organizational structures and work relationships in the practice must be assessed and changed as needed. Key points to consider are:

- **All staff** in the practice must be involved in assessing policies, procedures, and workflows.
- Staff members should be the ones to implement changes in these areas as a result of the assessment because they are the experts on what is not working in the Current State and can make recommendations for using the technology to move the practice to the desired outcome and Future State.
- Practice leaders should be prepared to pilot process changes and make adjustments as needed. Again, rely on your staff for the best solutions.
- Innovative solutions should be rewarded and continuous quality improvement should be encouraged to make the changes even better.

1.2.3 Changing the Technology¹

Whether you are implementing a new EHR or replacing an existing EHR to help your practice achieve Meaningful Use or implementing new models of care, both internal and external forces serve as catalysts for achieving success. Internal forces include the desire to achieve the Future State, such as providing better care for patients or improving the efficiency and effectiveness of the organization. External forces could include regulatory or policy changes, funding changes, or changes in the competitive landscape of a particular practice. Depending on the organization, technology can be used to address both the internal and external forces that impact practices. Just remember that changes in the technology platform involve technological changes throughout the organization and will result in the need to change policies, procedures, and processes, and in the need to retrain employees.

In summary, practice leaders, who are often champions of the change, must communicate that they understand the practice environment and needs, the new technology and how it will impact both patients and the practice, and, more important, how change and transformation will impact each staff member's day-to-day job. The points and principles of the change can then be tailored so that transforming the practice through technology and associated updates in clinical and business processes is a positive experience.

This first section of the primer has presented a conceptual framework for managing change, highlighting the importance of why using a structured change management approach can impact the success of any change initiative. Section 2 addresses the specific steps for implementing, evaluating the effectiveness of, and structuring a Change Management Plan tailored for: (1) implementing a new EHR, (2) helping providers move to Meaningful Use, (3) replacing or upgrading an existing EHR, and (4) implementing new models of care, such as APMs. Section 3 provides tips and strategies for management, evaluation, and oversight of critical success factors and lessons learned related to what works and what does not.

¹ Additional information on the Kotter Change Management Model and the model principles and steps may be found at <http://www.kotterinternational.com/our-principles/changesteps/changesteps>. More information about the stages of health IT-enabled transformation of medical organizations (Practice Transformation) can be found on HealthIT.gov, <http://www.healthit.gov/providers-professionals/ehr-implementation-steps>.



2 What Steps Do I Need to Take to Get Started?

Kotter's change management principles can be used to guide the planning and action steps that will facilitate your change initiatives. The following are four health IT-enabled change initiatives that may be relevant for practices:

- **Paper to EHR:** With the advancement of Meaningful Use and the increased adoption of EHR use, many practices are no longer making the initial transition from paper to EHR; however, they may be implementing other health IT-enabled change initiatives that will improve care.
- **Meaningful Use:** When practices move to achieve Meaningful Use, enhanced patient engagement becomes a focus for many.
- **System Replacement:** For early adopters of EHRs, many practices may be replacing legacy systems to better position themselves for new payment models or other innovative approaches to improved patient care and more efficient practice operations.
- **APMs:** New models of care have been endorsed with the passage of the Medicare Access and CHIP Reauthorization Act, specifically APMs.

Each of these change initiatives can be viewed as a desired Future State of a practice. Health IT can be used as a key driver within each of these change initiatives. The following sections detail specific action steps, based on Kotter's change management principles, which will aid practices in these change initiatives.

2.1 Paper to EHR

Selecting an EHR vendor for the practice is an integral piece of the EHR lifecycle and requires a significant investment of dollars, resources, and time. Experience has shown some practices spend at least a year investigating vendors. The importance of this phase cannot be understated. Matching the appropriate vendor to the practice and its needs can ease the transition during practice transformation. The relationship between a vendor and a practice can be long-lasting, and aspects of the relationship can influence the practice for years to come. Leaders can use the following action steps to promote change in the practice setting:

2.1.1 Action Steps for Phase 1: Creating a Climate for Change

- **Create a Future State (vision).** Communicate the Future State, priorities, and goals of the EHR implementation. Hold meetings, develop documentation, and communicate in various ways so stakeholders understand the Future State. Soliciting and using input from interdisciplinary sources can be a cultural change for many small practices (that traditionally have not sought interdisciplinary input in their decision-making). Such input can come from patients, physicians, nurses, other clinical staff, nonclinical staff, health system affiliates, and other affiliated practices.
- **Identify a champion.** Identify and cultivate a champion or multiple champions to lead the guiding team. The champion(s) should be staff who is/are supportive of the change and can keep the implementation process moving forward. A practice can have a single champion, such as a physician or nurse leader, or a group of champions, including representatives from different user roles (e.g., administrative staff, clinical staff). Champions are essential in the success of EHR implementation.
- **Establish a project plan.** Vendors often provide project plans that will cover the EHR implementation and training components of the project. However, the vendor-supplied project plans usually need to be adapted to include all aspects of the project and the unique needs of a practice. The practice must ensure that the vendor plan meets its needs or is modified to accommodate them.



2.1.2 Action Steps for Phase 2: Engaging and Enabling the Organization

- Engage practice staff in all facets of system selection and practice redesign/transformation.** Engaging users throughout the system selection and implementation process ensures that staff has ownership in the process. Involve practice staff in the creation of the EHR functional and technical requirements so they can compare the practice’s clinical and business requirements with the specifications of the EHR. Help users understand how the system capabilities will contribute to the transformation of the practice to achieve the Future State.
- Conduct trainings.** Include ample time for training and implementation with staff. A transition period (with some problems) may occur; if problems persist, reeducation might be needed. If reeducation does not work, however, the change may need to be reevaluated.
- Evaluate usability.** A usable system reduces error and user fatigue, has the necessary functionality for the practice, and promotes efficiency. A system that has poor usability requires greater training time, can hinder productivity, may require extensive customization, and can contribute to user error and fatigue (HIMSS EHR Usability Task Force, 2009).

A staff member from the Multnomah County, OR, Health Department stated, “You cannot simply abandon a clinic after the first day. They need a lot of support and training.”

2.1.3 Action Steps for Phase 3: Implementing and Sustaining the Changes

- Update system based on feedback.** By engaging staff in all phases of implementation, practice leaders can translate staff feedback into system updates. By making small changes to the system to facilitate better workflows, practice leaders may help alleviate some of the burden on staff.
- Reward staff.** The people who have been instrumental in the EHR implementation should be recognized and honored. Practice leaders need to reassure people about the changes that have been accomplished. Celebrations bring people together in a relaxed and informal setting to acknowledge the success.

Terry et al. (2006) captured a number of ongoing shifts in EHR functionality and requirements to alleviate unexpected burdens on physicians. Originally, staff were required to complete all fields in the EHR. After a review to determine which fields were useful for clinical care and required for quality reporting, the number of fields requiring completion was reduced significantly.

Exhibit 2 shows a summary of Kotter’s action steps and relevant actions for this scenario.



Exhibit 2: Overview of the Three Phases of Kotter’s Change Management Principles and Related Actions for Paper to EHR

Phase 1 – Creating a Climate for Change	
Kotter’s Principles	Paper to EHR
Creating a vision for the Future State: <ul style="list-style-type: none"> • What will life be like in the Future State for our patients? • For our staff? • For me? 	Create a Future State (vision): <ul style="list-style-type: none"> • Communicate the Future State, priorities, and goals of the EHR implementation.
Building a guiding coalition: <ul style="list-style-type: none"> • Who are the natural leaders (champions) for this change initiative? • What team building is needed to form a cohesive team? 	Identify champions: <ul style="list-style-type: none"> • Select staff who are supportive of the change and can keep the implementation process moving forward.
Establishing a sense of urgency: <ul style="list-style-type: none"> • What is wrong with our Current State? • What is better about the Future State? • Why do we have to change NOW? 	Establish a project plan: <ul style="list-style-type: none"> • Ensure that vendor plan meets needs or it is modified to accommodate them.
Phase 2 – Engaging and Enabling the Organization	
Kotter’s Principles	Paper to EHR
Empower others to take action toward accomplishing the Future State <ul style="list-style-type: none"> • Ensure that staff has a clear understanding of their authority. 	Engage practice staff in all aspects of system selection and practice redesign/transformation: <ul style="list-style-type: none"> • Engaging users throughout the system selection and implementation process ensures that staff has ownership in the process. Evaluate usability: <ul style="list-style-type: none"> • A usable system reduces error and user fatigue, has the necessary functionality for the practice, and promotes efficiency.
Communicate the Future State: <ul style="list-style-type: none"> • Vendor demonstrations, videos. • Role-playing. • Simulated Question/Answer (Q/A) communication. • Staff visits to practices that have had successful CEHRT implementations. 	Conduct trainings: <ul style="list-style-type: none"> • Include ample time for training and implementation with staff.
Plan for and create short-term wins: <ul style="list-style-type: none"> • Recognize high levels of achievement. • Promote good ideas. 	Establish realistic expectations: <ul style="list-style-type: none"> • Develop a realistic timeline.
Phase 3 – Implementing and Sustaining the Changes	
Kotter’s Principles	Paper to EHR
Continue to focus on problem areas, promote solutions, and continue to help change individual behavior to achieve organizational goals.	Update system based on feedback: <ul style="list-style-type: none"> • By making small changes to the system to facilitate better workflows, practice leaders may help alleviate some of the burden on staff.
Celebrate the successes as often as you can.	Reward staff: <ul style="list-style-type: none"> • Recognize and honor staff who have contributed to success
Prepare to train, retrain, provide technical assistance to rapidly address problems.	Provide ongoing training and support for staff on updates and workflow efficiency: <ul style="list-style-type: none"> • Based on feedback from practice staff, hold trainings on topics that may impact workflow and efficiency. • Ensure that staff is aware of system updates.



2.2 Achieving to Meaningful Use—Patient Engagement

Transitioning to Meaningful Use requires providers to make changes on several aspects related to utilization of their EHRs. Providers are required to use CEHRT that meets the 2014 certification requirements, through either upgrades or replacement of noncompliant systems. In addition, providers are required to provide patients with the ability to view online, download, and transmit their health information. This objective aims to empower patients and their families to take a more active role in their health care. Additionally, Meaningful Use includes measures for using secure messaging to communicate with patients and use of patient reminders for preventive care such as through patient portals. These changes will require practices to modify workflows and to utilize EHR functionalities that may not have been used previously.

2.2.1 Action Steps for Phase 1: Creating a Climate for Change

- **Form good communication and feedback mechanisms.** Practice leaders need to engage and enable the organization to create a climate for change, which requires communication. Depending on the practice's strategy, feedback mechanisms can provide valuable best practices and lessons learned from earlier adopters for subsequent implementations. Good communication channels and strategies may also include communicating with other practices that have implemented patient portals and/or reminders to obtain best practices. When focusing on patient engagement, it is also essential to establish a feedback channel with the end user, the patient. This feedback channel will ensure that the patients' needs are being met.
- **Assess EHR functionality and data needs.** To enable practice staff to meet the patient engagement measures, the EHR must include functionality that facilitates patient engagement. Practice leaders must consider what additional functionalities will be needed in the EHR. Leaders will work with the EHR vendor to determine if the patient portal needs fine tuning before debuting it to patients. For example, leaders may want to customize the portal with specific logos and links to aid in usability.

If the patient portal or patient reminders features are not feasible, EHR vendors may be able to provide workarounds such as custom reports of patients in need of preventive care. When reviewing the EHR capacity for patients to view, download, and transmit data, leaders may consider the following functionality needs:

- Patient portal access.
- System security measures for patients to access data.
- Secure messaging capabilities.
- Additional storage capacity.

2.2.2 Action Steps for Phase 2: Engaging and Enabling the Organization

- **Inform patients of changes.** It is important to inform patients about new technologies and their implications. A fairly low-cost solution is to develop a one-page handout or post signs/posters in the office to explain more about what will happen, when changes will happen, potential inconveniences, and planned benefits for the patients. Think about the implementation as an opportunity to engage patients in discussions about their health and the opportunities they may have to improve the quality of their health by receiving coordinated care. Informing patients of the change will also provide a great opportunity to assess patients' preferred method of communication.

Lorenzi et al. (2009) note that patients, especially those who visit more frequently, know when changes occur.



- **Evaluate usability of patient portals.** A usable system has necessary functionality for the practice, and promotes efficiency. To ensure the patient engagement tools are not cumbersome to the end users—the patients—practices should plan to perform usability testing. A select group of staff members and/or patients may complete this testing.

A system that has poor usability requires greater training time, can hinder productivity, may require extensive customization, and can contribute to user error and fatigue (HIMSS EHR Usability Task Force, 2009).

2.2.3 Action Steps for Phase 3: Implementing and Sustaining the Changes

- **Update patient engagement tools based on feedback.** After implementing patient engagement initiatives, it is essential for practices to incorporate feedback from patients into the tools, such as, cosmetic changes to the portal, communication preferences of reminders, and usability. By updating the tools based upon patient feedback, you may encourage more patient use.

Exhibit 3 shows a summary of Kotter’s action steps and relevant actions for this scenario.



Exhibit 3: Overview of the Three Phases of Kotter’s Change Management Model and Related Actions for Meaningful Use

Phase 1 – Creating a Climate for Change	
Kotter’s Principles	MU1 to MU2
Creating a vision for the Future State: <ul style="list-style-type: none"> • What will life be like in the Future State for our patients? • For our staff? • For me? 	Assess EHR functionality and data needs: <ul style="list-style-type: none"> • Consider what additional functionalities will be needed in the EHR. • Form good communication and feedback mechanisms. • Feedback mechanisms can provide valuable best practices and lessons learned from earlier adopters for subsequent implementations.
Building a guiding coalition: <ul style="list-style-type: none"> • Who are the natural leaders (champions) for this change initiative? • What team building is needed to form a cohesive team? 	Identify champions: <ul style="list-style-type: none"> • Select staff who are supportive of the change and can keep the implementation process moving forward.
Establishing a sense of urgency: <ul style="list-style-type: none"> • What is wrong with our Current State? • What is better about the Future State? • Why do we have to change NOW? 	Establish realistic expectations: <ul style="list-style-type: none"> • Review potential barriers to reach MU. • Manage expectations and fears.
Phase 2 – Engaging and Enabling the Organization	
Kotter’s Principles	MU
Empower others to take action toward accomplishing the Future State: <ul style="list-style-type: none"> • Ensure that staff have a clear understanding of their authority. 	Evaluate usability of patient portals. Coordinate with EHR vendor to determine how to incorporate patient engagement tools: <ul style="list-style-type: none"> • To meet MU patient engagement measures, the EHR must include this functionality.
Communicate the Future State: <ul style="list-style-type: none"> • Vendor demonstrations, videos. • Role-playing. • Simulated Question/Answer (Q/A) communication. • Staff visits to practices that have had successful CEHRT implementations. 	Inform patients of changes: <ul style="list-style-type: none"> • Informing patients about the new model of care and what it will mean for them is important.
Plan for and create short-term wins: <ul style="list-style-type: none"> • Recognize high levels of achievement. • Promote good ideas. 	Establish realistic expectations: <ul style="list-style-type: none"> • Develop a realistic timeline.
Phase 3 – Implementing and Sustaining the Changes	
Kotter’s Principles	MU
Continue to focus on problem areas, promote solutions, and continue to help change individual behavior to achieve organizational goals.	Update patient engagement tools based on feedback: <ul style="list-style-type: none"> • Incorporate feedback received from patients into the tools: <ul style="list-style-type: none"> ○ Cosmetic changes to the portal. ○ Communication preferences of reminders. ○ Usability.
Celebrate the successes as often.	
Prepare to train, retrain, provide technical assistance to rapidly workflow address problems.	Provide ongoing training and support for staff on updates and efficiency: <ul style="list-style-type: none"> • Based on feedback from practice staff, hold trainings on topics that may impact workflow and efficiency. • Ensure that staff are aware of system updates.



2.3 Replacing an Existing EHR

When replacing an existing EHR system, sometimes referred to by the health IT industry as “Rip and Replace,” your organization should perform an evaluation to accurately identify the root cause of the dissatisfaction with the existing platform. Practice leaders may want to replace EHR systems for several reasons, including lack of EHR certification, lack of functionality, or a poor vendor relationship. To continue the focus on achieving the Future State, leaders must provide knowledge of the new EHR system’s functionality and connect those capabilities to the roles and responsibilities of the practice staff.

2.3.1 Action Steps for Phase 1: Creating a Climate for Change

- **Assess Current State.** Assess current workflows and resources to enable decision-makers to determine what processes must be significantly redesigned. This information can also identify potential barriers that may have contributed to a previous failed implementation. Specifically, assess the Current State in three key areas:
 - Workflow
 - Data migration
 - Training needs

Take the information learned from this assessment and incorporate it into the selection process of the new system and the new project implementation plan.

- **Establish realistic expectations.** Several studies and sources identify the importance of managing staff expectations (Crow et al., 2007, Terry et al., 2008, Lorenzi et al., 2009). Take the time to review potential barriers and reasons for dissatisfaction with the legacy system. Staff should prepare and expect to manage expectations and fears. To continue the focus on achieving the Future State, leaders must provide knowledge of the new IT system functionality and connect those capabilities to the roles and responsibilities of the practice staff. Interim goals and objectives must be constantly assessed and, if needed, expectations for meeting those goals and objectives should be updated. Leaders may need one-on-one meetings with users and champions, and champions may need more one-on-one interactions with all staff to ensure that the staff understands the current status. Keep the goals realistic, measurable, and achievable.

2.3.2 Action Steps for Phase 2: Engaging and Enabling the Organization

- **Develop migration plan.** The practice should also ask: What is the plan for migrating the information currently kept in in the legacy system? Groups and individuals who are reluctant to buy into the transformation may be more supportive if a migration plan is part of the planning process.
- **Evaluate usability.** A usable system reduces error and user fatigue, has the necessary functionality for the practice, and promotes efficiency. This step is especially important when replacing an old system. Allow staff members from different departments and job levels to perform usability testing on the new system.

2.3.3 Action Steps for Phase 2: Implementing and Sustaining the Changes

- **Continually seek input from stakeholders about improving the organization.** Ensure that staff feel empowered to give suggestions and maintain an interdisciplinary implementation team. Staff input is a powerful resource and can be used to make updates to your EHR systems and workflows. Let them help with solutions to potential problems.
- **Expect obstacles.** Based on your experiences (good and bad) with the legacy systems, apply the lessons learned when considering the impact on people, processes, and the technology. Try to anticipate the potential pitfalls and include potential solutions in your plan.



- **Do not be afraid to make adjustments.** As needed, practice leaders should make necessary corrections and communicate the changes to everyone. New approaches may also need to be developed to enhance quality improvement.

Exhibit 4 shows a summary of Kotter's action steps and relevant actions for this scenario.



Exhibit 4: Overview of the Three Phases of Kotter’s Change Management Model and Related Actions for Upgrade/Rip and Replace

Phase 1 – Creating a Climate for Change	
Kotter’s Principles	Upgrade/Rip and Replace
Creating a vision for the Future State: <ul style="list-style-type: none"> • What will life be like in the Future State for our patients? • For our staff? • For me? 	Assess Current State: <ul style="list-style-type: none"> • Assess current workflows and resources to enable decision makers to determine what processes must be significantly redesigned.
Building a guiding coalition: <ul style="list-style-type: none"> • Who are the natural leaders (champions) for this change initiative? • What team building is needed to form a cohesive team? 	Identify champions: <ul style="list-style-type: none"> • Select staff who are supportive of the change and can keep the implementation process moving forward.
Establishing a sense of urgency: <ul style="list-style-type: none"> • What is wrong with our Current State? • What is better about the Future State? • Why do we have to change NOW? 	Establish realistic expectations: <ul style="list-style-type: none"> • Review potential barriers and reasons for dissatisfaction with the legacy system. • Manage expectations and fears.
Phase 2 – Engaging and Enabling the Organization	
Kotter’s Principles	Upgrade/Rip and Replace
Empower others to take action toward accomplishing the Future State: <ul style="list-style-type: none"> • Ensure that staff have a clear understanding of their role in the EHR selection. 	Establish communication channels between the coalition and practice staff: <ul style="list-style-type: none"> • Encourage staff to provide feedback for the new system.
Communicate the Future State: <ul style="list-style-type: none"> • Vendor demonstrations, videos. • Role-playing. • Simulated question/answer (Q/A) communication. • Staff visits to practices that have had successful CEHRT implementations. 	Evaluate usability: <ul style="list-style-type: none"> • Allow key staff members to sit in on vendor demos to compare with existing system.
Plan for and create short-term wins: <ul style="list-style-type: none"> • Recognize high levels of achievement. • Promote good ideas. 	Develop migration plan: <ul style="list-style-type: none"> • What is the plan for migrating the information currently kept in the legacy system?
Phase 3 – Implementing and Sustaining the Changes	
Kotter’s Principles	Upgrade/Rip and Replace
Continue to focus on problem areas, promote solutions, and continue to help change individual behavior to achieve organizational goals.	Continually seek input from stakeholders about improving the organization: <ul style="list-style-type: none"> • Ensure that staff feel empowered to give suggestions. • Maintain an interdisciplinary implementation team. Do not be afraid to make adjustments: <ul style="list-style-type: none"> • Make necessary corrections and communicate them to everyone.
Celebrate the successes as often as you can.	Reward staff: <ul style="list-style-type: none"> • Recognize and honor staff who have contributed to success.
Prepare to train, retrain, and provide technical assistance to rapidly address problems.	Provide ongoing training and support for staff on updates and workflow efficiency: <ul style="list-style-type: none"> • Based on feedback from practice staff, hold trainings on topics that may impact workflow and efficiency. • Ensure that staff are aware of system updates.



2.4 New Models of Care: Patient-Centered Medical Home (PCMH) and Alternative Payment Models (APMs)

PCMH is a model of care that seeks to strengthen the foundation of the health care system by transforming care delivery of primary care practitioners. The PCMH model places the patient at the center of the health care system by expanding access and improving options for patient-provider communication. Innovative approaches for managing patients with complex needs include patient registries for high-risk patients, referral tracking systems, and electronic visits. Some of these innovative approaches also coincide with the Meaningful Use objectives of generating patient lists based on specific conditions and using clinical information to target patients for reminders and follow-up. Health IT can facilitate the implementation of PCMH by enabling providers to better coordinate care for patients, including those with complex needs (see Exhibit 5).

APMs provide a 5-percent bonus payment to participating providers through 2024. This payment model focuses on redesigning the way physicians provide care in an effort to improve quality to patients and control spending. Emphasis is placed on meeting quality measures.

In order to implement these innovative approaches, practice staff must embrace change. The following key change management actions can be applied to implementing the PCMH model of care and APMs.

Exhibit 5: Care Coordination and Health IT²



2.4.1 Action Steps for Phase 1: Creating a Climate for Change

- **Build a strong project team.** During the planning process, practice decision-makers should identify a champion and a strong coalition (an implementation team) to begin creating the project and implementation plan. The coalition should be a multidisciplinary team, composed of a strong project leader, key staff, and external support. Even in a small practice, a physician champion can be instrumental in getting the other physicians in the practice to use health IT to facilitate practice transformation and in developing relationships between physicians and the rest of the staff.

Experience has shown that one key success factor in communicating with physicians is identifying and utilizing a physician champion.

² <http://www.aafp.org/online/en/home/membership/initiatives/pcmh.html>



- **Assess internal resources (Current State).** An assessment of your practice's internal resources is essential on the path to PCMH recognition. Internal resources to evaluate may include technology, processes, and staff. Does your practice have the human capital to take on this change initiative while continuing to care for patients? If not, investment in external services may be beneficial. The National Committee for Quality Assurance has outlined standards for practices to achieve Levels 1–3 of PCMH recognition (Reiner, Sacks & Neal, 2009).³
- **Establish realistic expectations.** Practice leaders should prepare and expect to manage expectations and fears. Developing a realistic timeline is imperative because staff will need protected time to meet and implement the PCMH. After assessing internal resources, if practice leaders feel that Level 3 PCMH recognition is not feasible, they can attempt to achieve Level 1 or Level 2 PCMH recognition (Reiner, Sacks & Neal, 2009). Keep the goals realistic, measurable, and achievable.

Relevant health IT for PCMH recognition includes practice management systems, e-prescribing functionality, patient registries, and health information exchange (Reiner, Sacks & Neal, 2009).

Several studies and sources identify the importance of managing expectations (Crow et al., 2007, Terry et al., 2008, Lorenzi et al., 2009).

2.4.2 Action Steps for Phase 2: Engaging and Enabling the Organization

- **Inform patients of changes.** It is important to inform patients about the new model of care and what it will mean for them. Think about the implementation as an opportunity to engage patients in discussions about their health, and the opportunities they may have to improve the quality of their health by receiving coordinated care. A fairly low-cost solution would be to develop a one-page handout or post signs/posters in the office to explain more about what will happen, when, and potential inconveniences and planned benefits for the patients.

2.4.3 Action Steps for Phase 3: Implementing and Sustaining the Changes

- **Update PCMH and APM workflows and systems based on feedback.** After practices implement the PCMH and APM, it is essential to incorporate feedback you receive from providers and patients into the workflows and systems.
- **Reward staff.** Obtaining PCMH and APM recognition is not an easy task. The people who have been instrumental in the transformation process should be recognized and honored. Practice leaders need to reassure people about the changes that have been accomplished. Celebrations bring people together in a relaxed and informal setting to acknowledge the success.

Exhibit 6 shows a summary of Kotter's action steps and relevant actions for this scenario.

³ http://www.ncqa.org/Portals/0/Programs/Recognition/PCMH_2011_Overview_5.2.pdf



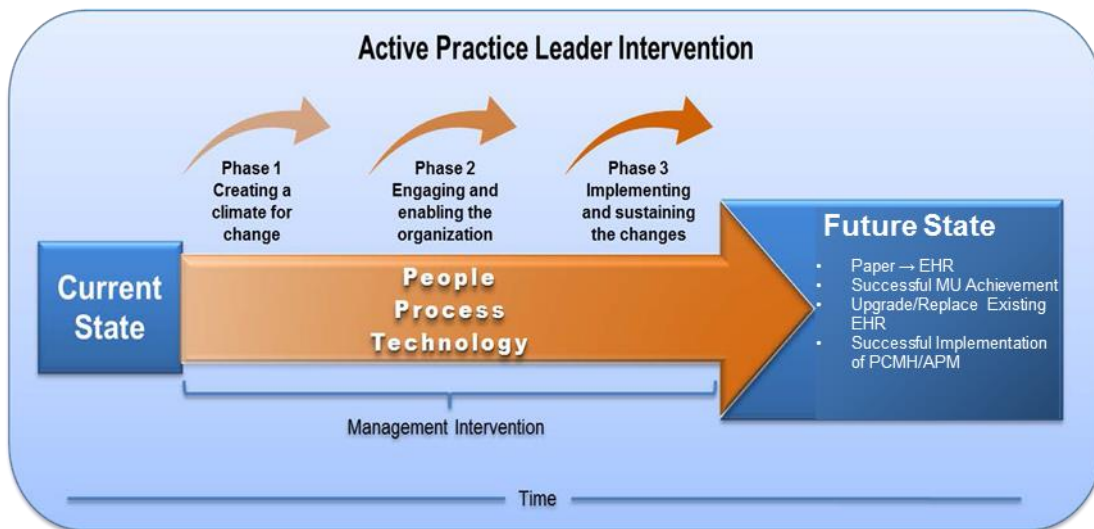
Exhibit 6: Overview of the Three Phases of Kotter’s Change Management Model and Related Actions for PCMH and APM Recognition

Phase 1 – Creating a Climate for Change	
Kotter’s Principles	PCMH AND APMS
Creating a vision for the Future State: <ul style="list-style-type: none"> • What will life be like in the Future State for our with PCMH and/or APM elements. • For our staff? • For me? 	Assess internal resources (Current State): <ul style="list-style-type: none"> • Assess practice’s internal resources to compare them patients?
Building a guiding coalition: <ul style="list-style-type: none"> • Who are the natural leaders (champions) for this change initiative? • What team building is needed to form a cohesive team? 	Build a strong project team: <ul style="list-style-type: none"> • Ensure team is multidisciplinary. • Should be composed of a strong project leader, key staff, and external support.
Establishing a sense of urgency: <ul style="list-style-type: none"> • What is wrong with our Current State? • What is better about the Future State? • Why do we have to change NOW? 	Review incentives for attaining PCMH and/or APM recognition: <ul style="list-style-type: none"> • Evaluate how the new model of care will impact quality of care. • Determine if PCMH and/or APM recognition will help your practice gain a competitive advantage.
Phase 2 – Engaging and Enabling the Organization	
Kotter’s Principles	PCMH AND APMS
Empower others to take action toward accomplishing the Future State: <ul style="list-style-type: none"> • Ensure that staff have a clear understanding of their role. 	Encourage staff participation: <ul style="list-style-type: none"> • Hold meetings with staff members of all areas to discuss their role in the new model of care.
Communicate the Future State: <ul style="list-style-type: none"> • Vendor demonstrations, videos. • Role-playing. • Simulated question/answer (Q/A) communication. • Staff visits to practices that have had successful PCMH implementations. 	Inform patients of changes: <ul style="list-style-type: none"> • Post signage in the office to let patients know you are implementing care teams for better coordination of care. • Inform patients of the definition of PCMH.
Plan for and create short-term wins: <ul style="list-style-type: none"> • Recognize high levels of achievement. • Promote good ideas. 	Establish realistic expectations: <ul style="list-style-type: none"> • Develop a realistic timeline. • Aim to achieve the appropriate level of PCMH and/or APM recognition based upon your practice’s capacity.
Phase 3 – Implementing and Sustaining the Changes	
Kotter’s Principles	PCMH AND APMS
Continue to focus on problem areas, promote solutions, and continue to help change individual behavior to achieve organizational goals.	Update PCMH/APM workflows and systems based on feedback: <ul style="list-style-type: none"> • Incorporate feedback you receive from providers and patients into the workflows and systems.
Celebrate the successes as often as you can.	Reward staff: <ul style="list-style-type: none"> • Recognize and honor staff who have contributed to success.
Prepare to train, retrain, and provide technical assistance address problems.	Provide ongoing training and support to staff to rapidly.

3 Measuring the Effectiveness of Your Change Management Strategies to Enhance Success

As illustrated in Exhibit 7, practice leadership must keep track of the progress of practice change initiatives and be prepared to rapidly intervene to fix problems throughout all phases of implementing any organizational change.

Exhibit 7: Managing Change Through Active Practice Leader Intervention



Implementing change is hard and it can be stressful for the staff. Let the staff know you understand why there is stress and that you will work with them to alleviate it. These real-time evaluations and rapid fixes by you and your team are the keys to achieving success and long-lasting sustainable change, which ties back to Kotter’s last principle—**making change stick**.

How can you measure effectiveness and determine which management interventions are needed? One strategy is to identify critical success factors and the subsequent evaluation strategies and management interventions to help your practice succeed. From a management perspective, critical success factors are essentially those elements that must be present to assure success in any management activity, including managing change (Boynlon & Zmud, 1984). Critical success factors should be based on the specific change initiative, the organizational culture, your management style, and your typical evaluation of the achievement of project goals and objectives. Exhibit 8 provides examples of critical success factors and management interventions that you can consider when implementing health IT changes in your practice; it also shows a summary of Kotter’s action steps and relevant actions for this scenario.



Exhibit 8: Critical Success Factors and Management Interventions for Managing Change

Critical Success Factors	Management Interventions
Having a Clear Vision of the Future State	<ul style="list-style-type: none"> • Collaborate with practice staff to “get the vision right.” • Create a clear, concise statement about what the Future State looks like. • Ensure that staff understand the value of the Future State versus where the practice is today.
Creating and Disseminating a Plan of Action	<ul style="list-style-type: none"> • Ensure that staff understand the “why” and their role in achieving the “what.” • Tie the “why” to the urgency timelines. • Establish communication mechanisms. • Constantly reinforce the vision to all staff.
Establishing a Knowledgeable Leadership (Guiding) Team	<ul style="list-style-type: none"> • Establish a plan with realistic timelines and milestones. • Create communication strategies to make the plan real for all staff. • Be creative in planning and executing the plan. • Be prepared to change the plan if needed. • Do not overreach – make the plan realistic. • Ensure that the team participates in creating the vision statement. • Choose the team members because of demonstrated leadership skills and credibility among all practice staff.
Defining Communication Strategies	<ul style="list-style-type: none"> • Ensure that all staff fully understand the IT capabilities and functions and the impact the change will have on current practice operations. • Define clear roles for all staff based on job responsibilities, personalities, and skill sets. • Ensure availability of the guiding team (to include off-hours support, as required). • Tailor communication strategies to lessons learned and matched to the practice’s culture. • Consider alternative communication strategies, such as vendor demonstrations, meetings/system demonstrations with actual users in other practices, and the use of videos, role-playing, real-time collaboration, and problem solving.
Establishing and Communicating Where/How Staff Can Get Help	<ul style="list-style-type: none"> • Establish mechanisms to keep the entire staff aware of progress and problem solving. • Identify easy ways for staff to identify problems and potential solutions. • Teach leadership staff how to monitor organizational response to change and interventions for immediate operational issues and the pain associated with change. • Let staff know it is OK to ask for help. Make sure they get the help requested. • Ensure that interventions are practical and meet the needs of users while advancing the success of the initiative. • Monitor change fatigue—be aware of the drain related to any new initiative and the impact on day-to-day operations.
Being Prepared to Train, Retrain, and Provide Technical Assistance	<ul style="list-style-type: none"> • Be prepared to change the plan and timelines based on staff input. • Work with staff and provide technical assistance as required. • Do not be punitive. • Identify training requirements as part of the vendor contract and ensure that the leadership understands the availability and cost of vendor training. • Be prepared to implement other training alternatives (e.g., train-the-trainer, videos, role-playing, and things like Q&A sessions during staff meetings),

Change Management: A Summary of Must Do’s to Be Successful

Implementing an EHR involves more than the application of technology. When successful, it results in the transformation of systems, processes, and workflows of a practice. Throughout this primer, we have presented principles of change management that can help you plan, implement, and evaluate your practice’s change initiatives. The following list summarizes the change management principles that you must implement if you want your change initiative to be successful:



- **Develop a clear vision for what you want the practice to look like in the future:** Clearly state what your practice will look like for patients, you, and your staff after a successful EHR implementation.
- **Ensure that staff understand they own the practice's Future State:** Let staff know that each of them will have a role and will be responsible for achieving success.
- **Establish urgency:** Communicate to staff WHY change is occurring, the implications for NOT changing, and why it needs to happen as quickly as possible.
- **Build a credible guiding team:** Identify practice staff who are credible with their peers and other staff, can engage staff, build and maintain staff commitment, and sustain momentum.
- **Educate all practice staff:** Staff must have full knowledge of the CEHRT and understand how using the technology will affect them, their work, and the entire practice. Accurate, timely information will help you control the rumor mill that is inherent in any change initiative. Remember—education and training will be required throughout your change initiative journey.
- **If you are the practice leader, recognize your role to persuade others to adopt a change initiative:** Practice leaders must communicate and educate other practice staff on the vision for the Future State and how the practice will achieve that vision through the use of technology and other practice transformation strategies.
- **Help practice staff reach a positive decision to adopt and maintain the change:** Promote the use of the guiding team to help staff with day-to-day problems and to provide timely technical assistance. As the practice leader, establish a culture where it is OK for staff to identify problems and concerns while encouraging them to help find practical solutions.
- **Promote confidence and confirmation to sustain the change:** Practice leadership must continue to assess, communicate, and intervene, as needed, to promote continued acceptance of the EHR system and other practice transformation initiatives.
- **Create short-term wins:** Although goals and objectives are generally considered long-term, acknowledging short-term success is necessary to maintain momentum.
- **Create a culture of continuous quality improvement by evaluating, adjusting, and rewarding staff:** Practice leaders must constantly listen to staff, respond to staff needs, evaluate progress, and intervene to help fix things that are not going as planned. This support helps shape both the practice and its evolution toward the Future State.



4 Resources

The following resources provide more detailed information about change management, EHRs, and practice transformation.

Anderson, J. G., & Aydin, C. E. (2005) *Evaluating the organizational impact of healthcare information systems*. New York, NY: Springer Science and Business Media.

Ash, J. S., Anderson, J. G., Gorman, P. N., Zielstorff, R. D., Norcross, N., Pettit, J., & Yao, P. (2000). Managing change: Analysis of a hypothetical case. *Journal of the American Medical Informatics Association*, 7(2), 125–134.

Boynlon, A.C. & Zmud, R. W. (1984). An assessment of critical success factors. *Sloan Management Review*, 25(4), 17-27.

Brokel, J. M., & Harrison, M. I. (2009). Redesigning care processes using an electronic health record: A system's experience. The Joint Commission *Journal on Quality and Patient Safety*, 35(2), 82–92. <http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Basics.html>

Campbell, R.J. (2008). Change management in health care. *The Health Care Manager*, 27(1), 23-39.
Crow, C., Gothard, S., Sanchez, D., & LaTour, F. (2007). *HIMSS Davies Award Application*. Retrieved on June 3, 2010 from http://www.himss.org/content/files/davies/2007/amb/FamMedSpecialistsTX_17.pdf.

eHealth Initiative (2003). *Improving the quality, safety and efficiency of healthcare through information and information technology*. Retrieved October 22, 2010, from <http://ehr.medigent.com/assets/collaborate/2004/04/01/eHI%20EmployerPurchaser%20Report%20July03.pdf>.

Felt-Lisk, S., Johnson, L., Fleming, C., Shapiro, R., & Natzke, B. (2009). Toward understanding EHR use in small physician practices. *Health Care Financing Review*, 31(1), 11–22.

HRSA. *HRSA Health IT adoption toolbox*. Retrieved April 3, 2013, from <http://www.hrsa.gov/healthit/toolbox/HealthITAdoptiontoolbox/OrganizationChange/changemanagement.html>.

Kaplan, B. & Harris-Salamone, K. D. (2009). Health IT success and failure: Recommendations from literature and an AMIA workshop. *Journal of the American Medical Informatics Association*, 16(3): p. 291–299.

Kohn, L. T., Corrigan, J. M., & Donaldson, M. S., eds.; Committee on Quality of Health Care in America, Institute of Medicine. (1999). *To err is human: Building a safer health system*. Washington, DC: National Academies Press. Retrieved October 28, 2010, from http://www.nap.edu/openbook.php?record_id=9728.

Kotter, J. P. (1996) *Leading change*. Boston, MA.: Harvard Business School.

Leape, L. L. & Berwick, D. M. (May 2005). Five years after To Err Is Human: what have we learned?. *Journal of the American Medical Association*, 293 (19): 2384–90. doi:10.1001/jama.293.19.2384. PMID 15900009.

Lorenzi, N. M., & Riley, R. T. (2004). *Managing technological change: Organizational aspects of health informatics, 2nd ed*. New York, NY: Springer Science and Business Media.



- Lorenzi, N. M., & Riley, R. T. (2000). Managing change: An overview. *Journal of the American Medical Informatics Association*, 7(2), 116–124.
- Lorenzi, N. M., Kouroubali, A., Detmer, D. E., & Bloomrosen, M. (2009). How to successfully select and implement electronic health records (EHR) in small ambulatory practice settings. *BMC Medical Informatics and Decision Making*, 9, 15.
- Mattingly, R. (1997). *Management of health information: Functions & applications*. Boston: Delmar Publishers.
- Melnik, B. M., & Fineout-Overholt, E. (2004). *Evidence-based practice in nursing and healthcare: A guide to best practice*. New York, NY: Wolters Kluwer Health.
- Miller, R., Sim, I., & Newman, J. (2003). *Electronic medical records: Lessons from small physician practices*. California HealthCare Foundation. Retrieved October 23, 2010, from <http://www.chcf.org/print.cfm?itemID=21521>
- Mitchell, J. M. (2008, July). *IT and the medical home*. Presented at the Mississippi Academy of Family Physicians 2008 Annual Meeting.
- Mostashari, F., Tripathi, M., & Kendall, M. (2009, Mar-Apr). A tale of two large community electronic health record extension projects. *Health Affairs (Millwood)*, 28(2), 345–56.
- Morton, M. E., & Wiedenbeck, S. (2009). A framework for predicting EHR adoption attitudes: A physician survey. *Perspectives in Health Information Management*, 6, 1–19.
- National Research Council (2000). *Networking health: Prescriptions for the Internet*. Washington, DC: National Academy Press. Retrieved October 23, 2010, from <http://www.nap.edu/books/0309068436/html>.
- Parmelli, E., Flodgren, G., Beyer, F., Baillie, N., Schaafsma, M., & Eccles, M. (2011). The effectiveness of strategies to change organizational culture to improve healthcare performance: a systematic review. *Implementation Science*, 6(1), 33.
- Raineri, A. B. (2011). Change management practices: Impact on perceived change results. *Journal of Business Research*, 64(3), 266–272.
- Reiner, C., Sacks, R. & Neal, R. (2009). *Obtaining patient-centered medical home recognition: A how-to manual*. Primary Care Development Corporation.
- Rittenhouse, D. R., & Shortell, S.M. (2009). The patient-centered medical home: Will it stand the test of health reform?. *Journal of American Medical Association*, 301(19), 2038-2040.
- Rogers, E. M. (1995). *Diffusion of innovation, 4th ed*. New York: The Free Press.
- Rogers, E. M. & Shoemaker, F. F. (1971). *Communication of innovation*. New York: The Free Press.
- Terry, A. L., Thorpe, C. F., Giles, G., Brown, J. B., Harris, S. B., Reid, G. J., Thind, A., & Stewart, M. (2008). Implementing electronic health records: Key factors in primary care. *Canadian Family Physician*, 54, 730–736.
- Wager, K., Lee, F., & Glaser, J. (2009). *Health care information systems: A practical approach for health care management*, 2nd ed. Jossey-Bass.



Wang, S. J., Middleton, B., Prosser, L. A., Bardon, C. G., Spurr, C. D., Carchidi, P. J., Kittler, A. F., Goldzer, R. C., Fairchild, D. G., Sussman, A. J., Kuperman, G. J., & Bates, D. W. (2003). A cost-benefit analysis of electronic medical records in primary care. *The American Journal of Medicine*, 114, 397–403.