IMPLEMENTATION GUIDE

ORGANIZED, EVIDENCE-BASED CARE:

Planning Care for Individual Patients and Whole Populations

May 2013

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Also available
Organized, Evidence-Based Care Supplement: Behavioral Health Integration

Organized, Evidence-Based Care Supplement: Improving Care for Complex Patients: The Role of the RN Care Manager

Introduction

Delivering Organized, Evidence-Based Care (OEBC) is at the core of Patient-Centered Medical Home (PCMH) clinical transformation efforts. OEBC ensures that care is based on scientific evidence and is planned and delivered so that the team optimizes the health of their entire panel of patients instead of only the patients who visit the practice. To accomplish this, a PCMH designs each patient encounter so that the patient's most important needs for preventive or illness related services are met. The practice also uses information systems to anticipate the care needs of entire patient panels, with special attention paid to those who require ongoing interactions, such as patients with chronic illness.

Care must be organized, accurate and effective, so that patients get the care they need, when and how they want it.

This Implementation Guide begins by introducing the Chronic Care Model (CCM), used by thousands of primary care practices of all sizes and types to improve care for patients with ongoing health needs, and examines the connections between the CCM and the PCMH Model of Care. The Guide then focuses on aspects critical to the delivery of well-organized and evidence-based care that have not been included in other PCMH Change Concepts: planned care, decision support, and care management. Providing care management services for high-risk patients is included in this Implementation Guide because recent evidence suggests it must be an integral component of organized PCMH care.

Message to Readers

The Organized, Evidence-Based Care Supplement, Behavioral Health Integration, provides guidance and tools a primary care practice can use to develop a vision for integrated care, create a customized implementation plan reflective of its goals and resources, and build strong integrated care teams.

The Organized, Evidence-Based Care Supplement, Improving Care for Complex Patients: The Role of the RN Care Manager, provides practical recommendations about providing care management services to high-risk patients.

Practices beginning the PCMH transformation journey often have questions about where and how to begin. We recommend that practices start with a self-assessment to understand their current level of "medical homeness" and identify opportunities for improvement. The SNMHI's self-assessment, the Patient-Centered Medical Home Assessment (PCMH-A) is an interactive, self-scoring instrument that can be downloaded, completed, saved, and shared.

Readers are also encouraged to download additional Safety Net Medical Home Initiative Organized, Evidence-Based Care materials:

- Organized, Evidence-Based Care Executive Summary
- Additional Resources.

The Change Concepts for Practice Transformation: A Framework for PCMH

"Change concepts" are general ideas used to stimulate specific, actionable steps that lead to improvement. The Safety Net Medical Home Initiative established a framework for PCMH transformation to help guide practices through the transformation process. This framework includes eight Change Concepts in four stages:

- Laying the Foundation: Engaged Leadership and Quality Improvement Strategy.
- Building Relationships: Empanelment and Continuous and Team-Based Healing Relationships.
- Changing Care Delivery: Organized, Evidence-Based Care and Patient-Centered Interactions.
- Reducing Barriers to Care: Enhanced Access and Care Coordination.

The Change Concepts for Practice Transformation have been tested by the 65 practices that participated in the Safety Net Medical Home Initiative and used by other programs and practices nationwide. They were derived from reviews of the literature and also from discussions with patients and leaders in primary care and quality improvement. They are supported by a comprehensive library of training materials that provide detailed descriptions and real examples of transformation strategies. These resources are free and publicly available.

Key Changes for Organized, Evidence-Based Care

The eight Change Concepts represent the framework for PCMH transformation. Each change concept includes multiple "key changes." These provide a practice undertaking PCMH transformation more specific ideas for improvement. Each practice must decide how to implements these key changes in light of their organizational structure and context. The key changes for Organized, Evidence-Based Care are:

- Use planned care according to patient need.
- Identify high risk patients and ensure they are receiving appropriate care and case management services.
- Use point-of-care reminders based on clinical guidelines.
- Enable planned interactions with patients by making up-to-date information available to providers and the care team at the time of the visit.

The Chronic Care Model as a Guide to System Change

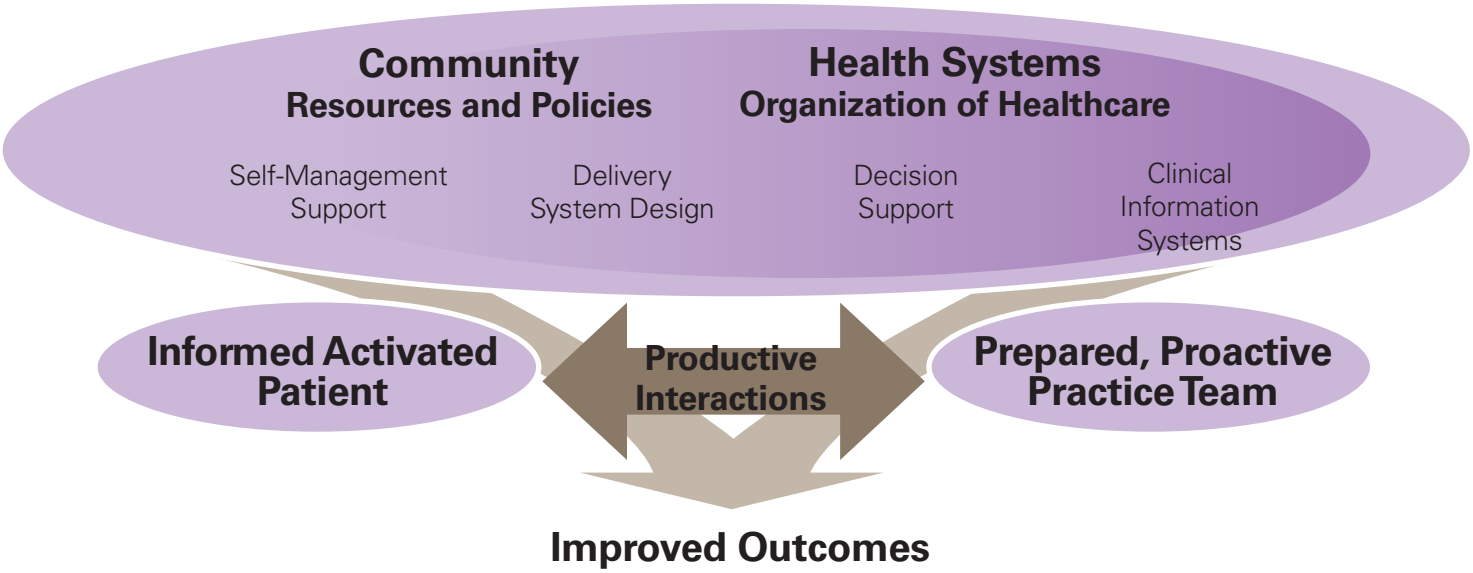
Developed at Group Health Cooperative in the mid-1990s, the Chronic Care Model (CCM) lays out the essential features of a healthcare system designed to care for chronically ill individuals and populations. The CCM emphasizes the central role of patients as full partners in their care and serves as a visual guide to the system supports required to ensure productive patient-care team interactions and optimal outcomes.

The six CCM elements are important individually, but also interact with and augment one another.

Today the CCM is a widely adopted approach to system improvement nationally and globally, and evidence has grown supporting the importance of multi-component models like the CCM to improve care delivery and patient outcomes.[1] Thousands of practices have used the CCM to guide clinical improvement efforts since 1999. One of the most ambitious programs to spread the CCM was the Bureau for Primary Health Care's Health Disparities Collaboratives (HDC), which involved hundreds of community health centers.

A great deal of information is available on both the CCM's evidence base and specific tools and strategies developed by national and global health systems to transform reactive healthcare delivery systems. For more information about the CCM, start with the website for the ACT Center, which includes slideshows and scholarly articles detailing the CCM and videos in which providers describe their journey incorporating the Model.

Figure 1: The Chronic Care Model



Developed by The MacColl Center ® ACP-ASIM Journals and Book

Model Element	Goal
Health care organization	Create a culture, organization and mechanisms that promote safe, high quality care.
Self-management support	Empower and prepare patients to manage their health and health care.
Delivery system design	Ensure the delivery of effective, efficient clinical care and self-management support.
Decision support	Promote clinical care that is consistent with scientific evidence and patient preferences.
Clinical information system	Organize patient and population data to facilitate efficient and effective care.
Community	Mobilize community resources to meet needs of patients

The six CCM elements are important individually, but also interact with and augment one another.

The CCM and the Patient-Centered Medical Home Model of Care

The PCMH Model of Care as described by the *Joint Principles* statement of the major primary care professional societies, was based on two pre-existing models—the Chronic Care Model (CCM) and the Pediatric Medical Home Model, as well as an understanding of the importance of primary care as the proper place for comprehensive care, longitudinal relationships with patients, and attention to follow-up. Thus, the features of the Chronic Care Model are all present in the PCMH Model of Care.[2, 3] In addition, the PCMH Model of Care addresses some fundamental elements of high-quality primary care areas that the CCM does not, especially accessibility, continuity and care coordination. The links between the two models are readily apparent in the following elements of the PCMH:

- Engaged Leadership and a robust Quality Improvement Strategy are necessary for practices to make organized, evidence-based care a reality.
- Empanelment links each patient to a provider and care team which assumes responsibility for a defined panel of patients.
- Continuous and Team-Based Healing Relationships emphasize the critical role of the practice team and continuity in care delivery.
- Patient-Centered Interactions help ensure that care is consistent with patient needs and preferences, and supports self-management.

Many elements of the CCM such as team care, population management, and self-management support are discussed in other Implementation Guides, so in this Guide we will concentrate on three areas critical to the delivery of organized, evidence-based care.

Case Study: EHR Backstop to Full Implementation

Central City Concern, Old Town Clinic, Portland, Oregon (2013)

Located in downtown Portland, Oregon, Central City Concern's Old Town Clinic is a Federally-Qualified Health Center (FQHC) dedicated to serving those affected by homelessness, poverty, and addictions; about 40% of whom are uninsured.

The clinic went live with the EHR, Centricity, in May of 2011. Prior to EHR implementation, the clinic was able to work with an external laboratory service to import all lab results into an internally developed Access patient database. Medical assistants captured vitals electronically after each visit. From this information, the clinic developed a health assessment form that summarizes a patient's most recent lab work, vitals at last clinic visit and results focused on prevention. The summary form was attached to the chart, giving the care team a quick snapshot of the patient's health from the last visit and most recent lab results. Care teams discussed this summary in daily huddles.

Krista Collins, Lead Quality Improvement Specialist at the clinic, explains how the clinic was able to address a care need before EHR implementation. "While we didn't have an EHR, we did have a patient database containing lab reports," she says. "We knew that providers needed a quick, conclusive look at the patient's last visit, and it takes an immense amount of time to look through a paper chart sometimes."

Collins said they came up with the idea of looking up the different string codes associated with the lab reports, and had the IT department create a health summary based on the imported codes. "Other clinics that use imported labs could create their own form because every lab result has a unique identifier," says Collins.

Current clinic workflow using the EHR is similar. The day before a patient's appointment, the Panel Manager or another member of the health care team (e.g., health assistant, medical assistant) generates a huddle prep document within the EHR. This document is the EHR version of the internally developed patient database. The pre-populated document extracts key information from the patient's chart and displays it in a conclusive snapshot. The panel manager reviews this data and then charts "action items" (e.g., patient needs) on a "prep notes" tab. On the day of the appointment, the care team reviews action items for each patient during the morning huddle. After the care team reviews the document, the document is "signed and sealed" and stays in the patient's chart. "This provides excellent documentation in regards to two medical home certifications that we are currently pursuing – NCQA and PCPCH, Oregon's PCMH recognition program," Collins says. "Both recognition programs emphasis pre-visit prep, and both ask us to go above and beyond just having a process in place by documenting that the process actually occurred within the patient's chart."

Each huddle prep document "lives" within the patient's chart and can be extracted and tracked for each care team. Collins says, "Currently we track the percent of visits with completed huddle prep as an 'in process' measure and have incorporated this data into our team data packets that are distributed monthly and displayed visually within each team room."

However, Collins cautions, "one downside is that generating a document within the EHR for each patient takes a lot of time for our care teams, who are already very busy. The dedication demonstrated by our panel managers and other care team members regarding this process is very laudable and plays a crucial role in its success."

Amy Hardy, Nurse Manger, explains that the clinic will begin using Care Manager, a new software ad-on, in January 2013. This will make possible population-based disease management and risk stratification for better tracking of this vulnerable population group.

Collins says, "If I had to summarize the key take-away points, I think that our clinic's creation and continual evolution of our huddle prep tool before EHR implementation clearly demonstrates that all clinics—at all different 'stages' of PCMH development—can create such a tool."

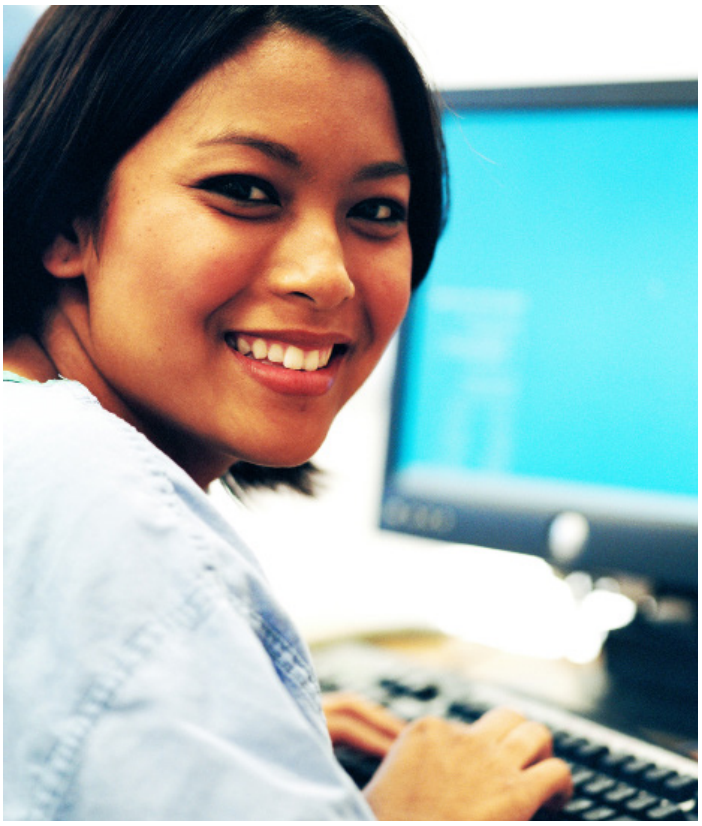
Three Key Areas to Improve Care

Planned Care

Two of the specific changes under the Organized, Evidence-Based Care Change Concept are meant to ensure that the practice knows what services patients need, and that encounters are organized to deliver those services:

- Use planned care according to patient need.
- Enable planned interactions with patients by making up-to-date information available to providers and the care team during the visit.

Planned care is simply care deliberately designed to ensure that patient needs are met.



What are planned care and planned interactions?

Medical care is often reactive (e.g., a patient calls or comes in with new symptoms or an injury). Furthermore patients receive recommended services only half the time,[4] largely because predictable services must be delivered amid rushed reactive encounters where the focus is on the new symptom or injury. However, preventive care and much of chronic illness care can be anticipated and planned for. Patients need assessments at regular intervals, preventive interventions on schedule, and recurring support for self-management and adjustment of medications to reach clinical targets. Patient outcomes correlate with a practice's success at meeting these needs. Planned care is simply care deliberately designed to ensure that patient needs are met. Planned care creates an agenda for an encounter, including needed services.

Although we are unaware of definitive trials testing planned care, quality improvement experience suggests that planning and organizing visits are major contributors to performance improvement. Planned preventive or chronic illness care can be delivered either in visits initiated by the patient coming in or through practice-initiated chronic illness or preventive visits. In either case, the steps in planned care are the same.

1. Identify key clinical tasks associated with evidence-based care (e.g., performing a diabetic foot exam, administering a PHQ-9, giving a flu shot).
2. Decide who on the team should perform the task. (See the Continuous and Team-Based Healing Relationships Implementation Guide.)
3. Review patient data prior to the visit to identify needed services.
4. Structure the visit so that the relevant members of the team can deliver all needed services. Standing orders facilitate the process.

Practice-Initiated Planned Visits

To meet the needs of all members of a patient population, not just those coming through the doors, a practice must reach out to patients needing care (see the Empanelment Implementation Guide). Stand-alone registries or EHRs with registry functionality allow quick review of key data on groups of patients with common characteristics, (e.g., women over 50, diabetics, patients treated for depression). The review identifies individual patients needing more attention such as diabetics with HbA1c >9% that have not been seen in the last 6 months. The practice contacts these patients to set up an appointment that will focus on their condition. Appointments are often longer than the usual 15–20 minute visit, and lab work may be done in advance. Planned visits generally involve multiple members of the practice team whose efforts need to be coordinated. Some practices arrange these visits to allow for involvement of specialized staff such as dieticians or wound care nurses. Since practice-initiated planned visits generally target patients with higher disease severity and/or problematic patterns of clinic utilization, patients need to leave the planned visit with all their needs met and a collaboratively developed plan for future care. A video illustrating a practice-initiated planned diabetes visit is available on the ACT Center website.

Patient-Initiated Planned Visits

If the patient initiates the visit, it is still possible for the care team to develop an agenda for the encounter and deliver planned care, but it is more challenging. The team may be unaware that the patient is coming in until the day of the appointment, important lab results may be unavailable and patients generally have new complaints that need attention. To deal with these challenges practice teams need to compress the processes of identifying patients, reviewing patient data and organizing visits. The mechanism that seems to work best is the practice team huddle.[5] Huddles are brief (usually 10-20 minutes) meetings of staff involved in patient care before clinic sessions. The schedule for that session or day is reviewed for patients with chronic illness or other priority issues, along with summary data on those patients from registries or the EHR. Each patient's needs are identified and tasks are assigned and coordinated. Some teams huddle briefly following a clinic session to plan follow-up. Health Team Works, formerly the Colorado Clinical Guidelines Coalition, has an excellent video demonstration of a huddle. To learn more about huddles, see the Continuous and Team-Based Healing Relationships Implementation Guide.

Detailed information on planned visits is available on the ACT Center website.



Decision Support

Another Organized, Evidence-Based Care key change relates to interventions that increase the likelihood that care adheres to evidence-based guidelines:

- Use point-of-care reminders based on clinical guidelines.

Decision support refers to interventions, most often facilitated through health information technology, that assist healthcare providers in making appropriate clinical decisions. They generally take the form of informational alerts or reminders triggered by an interaction with a patient or with ordering a clinical service for a patient (e.g., computerized order entry). What has this large body of research found? Decision support interventions have been among the most frequently studied interventions to improve the quality of healthcare.[8] Computerized decision support by itself leads to small to modest improvements in process measures. This means that a PCMH cannot rely solely upon the decision support activities of its EHR to ensure that it provides evidence-based care.

Decision support interventions have been among the most frequently studied interventions to improve the quality of healthcare.[8]

The modesty of the effect found in trials should not be interpreted to mean that decision support is not an important element in a comprehensive effort to improve clinical care. Whether computerized or on paper, linked to orders or visits, decision support increases the visibility of evidence-based clinical guidelines and, in some cases, makes guidelines easier to follow. Basing care on an explicit set of evidence-based guidelines is critical for PCMHs because:

- Evidence-based guidelines influence the critical data maintained in registries and patient summaries that determine service needs in planning care. Performance measures that may affect recognition or payment are increasingly evidence-based and may include use of guidelines (See Element 3A of NCQA's 2011 PCMH™ Recognition criteria).
- The use of protocols derived from evidence-based guidelines enables non-providers to play large roles in clinical care (e.g., adjusting medication doses by protocol).
- The availability of explicit guidelines and measurement based on guidelines may reduce provider-to-provider variation.

See Appendix A: Organized, Evidence-Based Care and Health Information Technology for more information.

Care Management

The key change of providing care and case management services for high-risk patients can be found in the Care Coordination Implementation Guide. We discuss its implementation here because it relates so closely to how a care team organizes itself to deliver clinical care.

The care of patients with multiple chronic conditions is an increasingly important part of modern primary care practice. One in five Americans has multiple chronic conditions, including more than 60% of individuals over age 65. In fact, nearly one-fourth of Medicare recipients suffer from five or more chronic conditions.[7,8] With the advent of effective pharmacologic, behavioral, and supportive treatments for many chronic conditions, management has become more complex for patients and providers alike. Mounting evidence, discussed below, suggests that patients with multiple and/or complex conditions benefit from intensive clinical management enabled by the availability of a clinical care manager.

Care management (or case management*) generally refers to clinical, behavioral, supportive, and care coordination services delivered by a nurse or other clinically trained professional (e.g., clinical pharmacist,

*We prefer "care" rather than "case" management because the latter is frequently used to describe the activities of social workers whose patient support activities are not health-related.

respiratory therapist, mental health professional) to patients viewed as being at higher risk of morbidity and mortality. Care managers should be considered members of the primary care team working together with the provider on a collaboratively developed treatment plan. The integration of care management into the PCMH is a product of the generally negative experience with nurse case managers working outside of and often independently from primary care.[9,10]

What kinds of services do care managers provide?

Care management functions fall into five major service categories:

- **Follow-up** – monitoring and assessing patients at regular intervals.
- **Self-management support** – providing information and counseling to help patients set goals and develop action plans to more effectively self-manage their health and illness.
- **Medication management** – performing medication reconciliation, evaluating medication adherence, effectiveness and toxicity, and recommending or making guideline directed changes in regimen.
- **Emotional support** – monitoring the patient's psychosocial state and recommending appropriate mental health or supportive interventions when necessary.
- **Care coordination** – helping to coordinate care when patients need services from other providers, institutions, or agencies.



While most programs have a single "care manager" who delivers most of the services, some can be accomplished by practice team members with less training and lower salaries than nurses or pharmacists. Health coaches can be trained to deliver services typically considered part of care management such as self-management education.[11] Which of these services is most critical? While all five service categories are important, evidence suggests that care managers are most effective when they can help optimize medication management by ensuring that patients are treated in accord with protocols and take their drugs.[12,13]

Care managers should be considered members of the primary care team working together with the provider on a collaboratively developed treatment plan.

Does integrated care management work?

Many studies conducted over the past 15 years indicate that intensive management of patients with single chronic conditions (usually by a nurse with additional training or experience with the condition) improves disease control.[14-16] However, disease specific care management often fails to meet the needs of those with multiple conditions, and is impractical and unaffordable for most PCMHs. This has led many organizations to evaluate the effectiveness of care managers with responsibility for a more heterogeneous population of patients with multiple conditions.

The strongest evidence that a single nurse care manager on the primary care team can be effective with multi-condition patients appeared in the *New England Journal of Medicine* in 2010.[13] This randomized trial showed that an experienced nurse with some limited extra training could effectively improve disease control in patients with depression and diabetes and/or heart disease. Other related nurse care management programs have also shown improved care and reduced costs among geriatric[17] and high-risk Medicare patients.[18,19]

Steps to Implementing Care Management in Practice

1. Decide which segments of the practice population to manage. Care management is time consuming, so care manager case loads cannot be large (50-150 patients at any one time in most programs). Practices need to thoughtfully decide which small percentage of patients would most benefit from involvement of a clinical care manager such as a nurse. Practices also need to decide when to discharge patients from care management programs. A care management program will have very limited reach if patients who have received maximum benefit continue to receive care from the nurse care manager. Care management appears to be most effective with specific care plans to achieve clear targets (e.g., reduce HbA1c to a certain level, ensure that patients understand and are adherent to medications). Purchasers and payers are most interested in patients most likely to incur high costs, chronically-ill patients at risk of hospitalization because of utilization patterns (e.g., high ED use) or severe illness, and use risk prediction methods to identify patients (see below).

2. Decide which of the five service types described above are required for each segment and which staff can fulfill which functions. A practice may decide that a segment of their population would benefit from one or two of the five services listed above, which could be provided by a practice team member less highly trained than a nurse. With a little training, clerical staff can help patients with care coordination (see the Care Coordination Implementation Guide). Medical assistants can monitor and assess patients between office visits as well.

3. Develop or "steal" a data-based case identification strategy and use it. Practices that try to decide which patients need care management on a case-by-case basis waste considerable time and end up with excessive caseloads. Pick a standardized approach and use this strategy to determine caseloads until you find something better. Investigators in the Team Care study[13] looked for patients with either blood pressure above 140/90 mm Hg, LDL cholesterol level above 130 mg per deciliter, or a glycated hemoglobin level of 8.5% or higher and administered the PHQ depression screening tools to find those with significant depression. Many risk prediction models focus on past utilization and disease. Safety net practices would be wise to include other factors influencing morbidity and cost in low-income populations. The Indiana Medicaid Program used a brief patient interview to capture behavioral issues such as non-adherence or fragmented care to help select patients for care management.[19] The Center for Healthcare Strategies website provides a useful guide for Medicaid predictive modeling.

4. Identify and train a clinical care manager. Most care managers in ambulatory practice are nurses. Practices with nurses on staff may want to designate and train one for the care manager role. Practices that do not have an appropriate nurse on staff will have to be creative in trying to access this critical resource. Many payers, including Medicaid in some states, see nurse care management as a critical cost reduction intervention and are making both nurses and funding for care management available. Experience suggests that even the best, most highly trained ambulatory nurses benefit from specific training relative to the care management role. Training programs vary depending on clinical focus. For example, programs that target frail seniors emphasize recognition and management of geriatric syndromes,[20, 21] while programs that focus on chronic disease management concentrate on achieving disease control through drug management and self-management support.

5. Create a support structure for the care manager. While care managers clearly receive clinical support from the patient's primary care provider, regular (e.g., weekly) reviews of the care manager's caseload with a designated physician are an important component of most successful programs. The physician can be a specialist, (e.g., a geriatrician), if the program has a clinical focus, but most programs use a superb generalist physician for this role. Reviews ensure that program goals are met and that care managers are performing safely and well.

Considering the Role of Clinical Information Systems

All of the clinical improvements above rely on trustworthy, actionable information. If the heart of the Chronic Care Model, and the PCMH itself, is the relationship between providers and patients, then information is the life-blood that sustains that relationship. However, information technology is simply a tool, and its worth is only realized when it provides value in guiding the work of the care team.

As practices consider how to improve in the areas of the CCM, it is critical to think about how the personnel in a practice perform specific tasks, such as verifying medication lists at the start of a visit, or monitoring the health of a panel's patients with diabetes. Each of these workflows has multiple steps, and in each step multiple staff have a role. For each of these workflows there is also a corresponding information flow, data that must be current, complete, and accessible. Information is critical, but its collection and use is a means to an end, not an end in itself.

HRSA provides a list of health IT resources here, as well as an extensive set of sample workflows for common clinical processes.

For more information, see Appendix A: Organized, Evidence-Based Care Health Information Technology.

A Toolkit to Assist Practices Deliver Organized, Evidence-Based Care

Fortunately, a resource already exists to help clinical teams with improvements in the areas discussed above, along with many others related to implementation of the CCM and the PCMH. A toolkit commissioned by the Agency for Healthcare Research and Quality titled Integrating Chronic Care and Business Strategies in the Safety Net[22] (11 MB download) was the result of a partnership of Group Health Cooperative's MacColl Center, the RAND Corporation, and the California Safety Net Institute. The toolkit provides a sequence for specific practice changes necessary for CCM implementation. It also integrates business strategies with the clinical changes discussed, so that financial and operational barriers to implementation can be addressed. A companion coaching guide is also available.

Many of the approaches and the specific tools to help not only with the changes described in this Guide, but in other areas of the PCMH such as improving team function or developing performance measurement capabilities. Because of how the toolkit is structured, which sequences the practice changes and places them in an overall context, this section will briefly orient users to the entire toolkit rather than extract specific tools among the more than 60 aids found within. Every user should find content that will assist them in organizing their practices.

The practice changes described in the toolkit are divided into four main phases:

1. Getting started.
2. Assessing data and setting priorities for improvement.
3. Redesigning care and business systems.
4. Continuously improving performance and work to make changes sustainable.

Within each phase there are several "key changes" to understand and implement OEBC. Specific action steps are suggested, and relevant tools are available for each section. The authors recognized that each site may be at a different point in their work, so the toolkit can be easily scanned for materials that will be of the greatest help at that time.

The size of the toolkit is necessitated by the desire to have each of the 60 tools accessible even to practices that may not have continuous access to the internet. Each tool was reviewed or created by the staff of the MacColl Center and represents one of the best examples of a given tool in the public domain. Additional resources are also frequently listed or linked to, although they are not included in the core document due to copyright issues or the necessity for specific technology, such as a DVD player.

As an example of the specific areas covered in this toolkit that will be of use in tackling the Organized, Evidence-Based Care Change Concept, here are the key changes for Phase 3: Redesign Care and Business Systems:

3.1 Organize your care team.
3.2 Clearly define patient panels.
3.3 Create infrastructure to support patients at every visit.
3.4 Plan care.
3.5 Ensure support for self-management.

The Planned Care section alone provides 15 tools and we are confident that everyone who is looking for help in implementing Organized Care, or tackling other portions of the PCMH Change Concepts, will find assistance in this toolkit.

Conclusion

This Implementation Guide examined the benefits of planned and evidence-based care. Access to well-organized primary care measurably improves population health. This positive effect is magnified in areas of high income inequality and reduces differences in self-reported health and mortality.[23] The finding that good care reduces inequality was reinforced by a 2006 Commonwealth Fund survey showing that if indicators for a well-organized and accessible medical home were in place, racial and ethnic disparities in access and quality were reduced or even eliminated.[24]

If the PCMH Model is to make a difference in the lives of all patients it will be because care is better planned, more effective, and results in better outcomes for individuals and populations.

The PCMH, like the Chronic Care Model before it, addresses changes in not only the structure and efficiency of a practice, but also in how every clinical encounter is an opportunity to create a truly productive interaction between a patient and their provider. More than a decade of experience has proven that the work is challenging, but possible.

Case Study: Using A Diabetes Care Template to Treat Diabetics

ISU Family Medicine Residency, Idaho (2011)

ISU Family Medicine Residency in Idaho uses a comprehensive, EHR-based diabetes template to assist care teams with treating chronic diabetes patients, and trains all staff and new residents in the program to use the template.

Using the facility's EHR program, which provided a basic template for diabetes care, the IT department took input from faculty and caregivers to develop a customized format with much more detail. When a nurse opens a patient visit, a diabetes template button on the IT system is highlighted. Clicking on the button shows patient history, and prompts questions about changes in medications and blood sugar levels, foot exams, and eye exams.

A diabetes self education section again prompts doctors to record most recent influenza and immunization dates, and then notifies when those tests are due, providing guidelines on which protocols to follow.



Idaho State University Family Medicine Residency

Kelli Christensen, MD, who is an Assistant Clinical Professor at the residency program, was a resident here before she came on staff. Christensen has seen more efficiency because of the templates. "We're able to cover more issues in a visit in a shorter time," she says. "I've seen better monitoring and education. We may forget to ask about all the vaccines, but this makes it almost impossible to miss. There are also diabetes education pieces built right into the system that are very handy to print and hand out."

Christensen says the diabetes template has helped with quality improvement through documentation of lab tests and allows providers to track their own efficiency much more effectively. "If we see a drop in eye exam rates we can do a quality intervention to try to improve that. It also helps us to track our own performance along with clinic-wide performance, and with P4P it helps us better document our performance. With a click of button we can confirm that we discussed flu shots or eye exams or exercise," Christensen says.

John Holmes, PharmD, is the lead for the SNMHI team at ISU. He says training the new residents each year on using the template has had some surprising challenges. "Our template is so advanced that as far as training, they worry that the template does the thinking for them. However, once they get familiar with it, they really do like the template because it offers so much, decreases error and makes documentation easier."

"It's educational for the provider and also helps with billing. It prompts you to do certain exams like monofilament, so it provides for more appropriate reimbursement," adds Christensen.

"Our templates are nice because they provide a concise overview of the guidelines and pull in patient specific information to help decision making. The more you use it the more you probably will learn," says Holmes.

Additional Resources

Workbooks and Tools

Coaching Guide

In addition to "Integrating Chronic Care and Business Strategies in the Safety Net" described above, a companion coaching guide providing instructions and materials to help teams effectively and efficiently improve clinical quality in ambulatory settings.

Patient-Centered Primary Care Collaborative

Additional assistance in understanding the role of health information technology (HIT) in improving care via the PCMH can be found in the Patient-Centered Primary Care Collaborative's resource guide, "Meaningful Connections" available here.

Literature

Bodenheimer T, Grumbach K. *Improving Primary Care: Strategies and Tools for a Better Practice*. New York, NY: McGraw Hill Medical (Lange); 2007.

Appendix A:
Organized, Evidence-Based Care and Health Information Technology

Jeff Hummel, Peggy Evans, Trudy Bearden, Michelle Glatt
Qualis Health

This addendum is supplemental to the primary Organized, Evidence-Based Care Implementation Guide.

Organized evidence-based care applies to the full spectrum of clinical medicine including acute episodic care for common conditions (e.g., urinary tract infections), diagnostic workups (e.g., abdominal pain), preventive care (e.g., cancer screening, immunizations), and chronic illness care (e.g., diabetes, asthma). The workflows for each are somewhat different. Information presented to the care team in clinical decision support (CDS) must be set up to make it easier to do the right thing, such as order evidence-based tests, treatments or referrals, and give sound advice. Likewise CDS should make it more difficult for care teams to engage in actions that have been shown to be ineffective or harmful. In the past, providers had to actively seek out the most appropriate evidence-based guideline for a given situation and apply their patient's information to the guideline on an ad hoc basis. This process is both time consuming and subject to variation. Electronic health records (EHRs) can dramatically increase providers' ability to adhere to evidence-based guidelines by using standard protocols because they can quickly apply patient information to an appropriate guideline and suggest specific corresponding interventions.

This section discusses:
- The principles and challenges of using CDS for evidence-based care.
- Types of clinical decision-support interventions (CDSI) that are possible using EHRs.
- Reporting out of the back end of EHRs for the kind of registry functionality required to support evidence-based population management of chronic illness.
- The principles for integrating these HIT tools into workflows in a PCMH to make planned, evidence-based care part of the daily activity of the care team.

Principles of Clinical Decision Support Implementation

- Implementing CDS requires resources and deliberation. Even well designed CDSI may require care teams to modify their workflows. All CDSI efforts should be prioritized to support the organization's quality improvement objectives. If the most important strategic objective is reducing cardiovascular disease risk factors, then essential CDSI to support that goal should probably be developed and implemented before devoting significant resources to CDSI for other conditions (e.g., asthma).
- Some types of CDSI are used to promote consistent entry of information into the EHR while other types of CDSI present information already in the EHR to the care team to assist in decision-making. Information must be entered as structured data in the EHR to be useful in CDSI.
- The Five Rights. The goal of decision support is to make getting needed and understandable information to the care team easier. Good decision support is like a scrub nurse who correctly anticipates the instrument a surgeon will need before she asks for it. To work properly, CDS must do five things right:
    - The right information. Information must be up-to-date, accurate, relevant, and should be based on current medical evidence. CDS for colorectal cancer screening requires the date of the last colonoscopy and an evidence-based modifier indicating the recommended interval until the next screening based on the findings of the last colonoscopy.

  - **The right person**. The right person to receive the information from any CDSI will depend entirely upon the workflow. A PCMH may decide that a medical assistant is the right person to review the immunization status of a child while rooming the patient for an acute care visit. The medical assistant can confirm the plan to immunize the child with the parent before placing an immunization order for the provider to sign.
  - **The right time**. At any given time, providers and care team members are processing large amounts of information to answer questions and solve problems. This complex process requires a high degree of mental activation, and information outside the context in which a provider is operating is often ignored so as not to disrupt a chain of thought or conversation with a patient. This creates a major challenge for any CDSI designed to prompt a provider with information. Often the most workflow-friendly CDSI is one that makes essential information readily available any time a provider needs it, for example being able to right-click on a medication name to immediately see the starting dose and maximum dose.
  - **The right medium**. Passive statements suggesting a best practice are more flexible and often less disruptive than pop-up alerts. A CDS frame within a cardiology referral for chest pain can be used to suggest the ordering provider arrange the evidence-based functional capacity test most appropriate for the patient's age, gender, and symptoms. This way the consulting cardiologist is more likely to establish the diagnosis and initiate an appropriate intervention on the first visit rather than using the first cardiology visit to decide which test to order.
  - **Organized right**. CDSI should make it easy to see important patterns and understand their significance. Rising creatinine or PSA values still within the normal range presented as a graph may make it easier for a provider to identify a disturbing trend.
- CDS is designed to improve clinical decisions and should be regarded as a quality improvement intervention. CDS is one of the most effective tools to consider when answering the question, "What change could we make that might result in an improvement?" To be effective, CDS should be customized to fit into a future workflow.[25] The impact of CDSI should be measured to be sure it is achieving its goal whenever possible, because, like any intervention, it cannot be assumed that a CDSI will automatically work as intended.
- As recommendations are updated, evidence-based care standards will change. CDS must be periodically reviewed and updated as needed.

Types of Clinical Decision Support Intervention

- **Alerts**. Pop-up alerts that force the user to choose between placing an order and pressing an "ignore" button are easy for providers to dismiss. The potential for improving outcomes with alerts is limited unless delivered at exactly the right time with information the user wants. Alerts should always be actionable by clicking on a button within the alert itself rather than having to exit the alert and navigate to the correct screen to address the issue. Pop-up alerts should be reserved for situations like serious drug-allergy, drug-drug or drug-condition interactions. In these situations, alerts will be most effective if they can suggest a list of potential alternatives rather than simply telling the provider to "guess again."
- **Flow sheets**. Flow sheets are useful for presenting dates and values for one or more clinical parameters related to a complex chronic condition (e.g., diabetes, chronic kidney disease). Spreadsheets are useful for identifying trends because values are displayed over time, and are most effective if the parameters requiring attention are highlighted.
- **Graphs**. Graphs are also effective for showing trends over time. Weight and blood pressure graphs help patients understand risk factors and see the effect of diet or exercise on important intermediate outcomes. To be most effective, graphs should support custom annotation to identify when something changed (e.g., the patient started taking a medication or began an exercise program).

- **Dashboards**. Dashboards show current status for a number of related quality parameters (e.g., for preventive care or a chronic condition). Dashboards can be color-coded to show the parameters not at target or to show each care team's status for a single clinical parameter.
- **Order sets**. Order sets are a checklist designed to decrease the chance that the person placing the order will overlook something important. They are useful in situations in which multiple orders are required, such as hospital admissions or transfers, standard workups of common conditions (e.g., obstetric care) and ensuring that billing and diagnostic codes for procedures accompany the associated primary orders.
- **Questionnaires**. Validated questionnaires that are used for diagnosing and managing conditions based on symptom severity (e.g., asthma symptom severity scores, PHQ-9 for depression), serve as decision support because they prompt the user (e.g., any member of the care team) to correctly use a validated tool, and they document clinical parameters as structured data.
- **Charting templates**. Charting templates serve as CDS by prompting users to gather information that might otherwise be easily overlooked. A review-of-systems module within a charting template listing each system prompts the provider to ask questions that are easy to forget. Templates for planned care or group visits for chronic conditions should be designed to reflect evidence-based standards of care.
- **Visit summary**. The after visit summary (AVS), particularly if reviewed by the provider with the patient in the exam room at the end a visit, makes it easy for the provider and patient to see errors in the medication list or portions of the care plan that may have been omitted. This CDSI also serves to reinforce and clarify for patients the agreed-upon care plan.[26]
- **Pre-visit summary**. We have observed an innovation in some health systems that alerts patients to gaps in their own care and lets patients serve as the medium for decision support in their own care when they arrive at the clinic. When a patient asks a provider to order a test or help them manage a risk factor, the message is never an external interruption. Patients can be given a summary of their health record at the front desk that highlights gaps in evidence-based guidelines pertaining to them with a message to ask the care team to make sure appropriate interventions are ordered as part of the visit.
- **Follow-up and care plans**. All material for patients (including follow-up and care plans) should include evidence-based explanations. Devote special attention to ensuring that the materials address factors that influence outcomes over which patients have control including diet, exercise, medication use, high-risk behaviors, behavioral health, and social service needs. Increasingly the EHR can be used to generate "patient-specific" material based on demographic or co-morbidity profile.

Reporting

Reporting tools in the EHR that serve as "registry functionality" are discussed in depth in the Quality Improvement Strategy Part 2 Implementation Guide. Below is a list of the key HIT components useful for providing organized, evidence-based care.

Data. Care teams must guard the accuracy of key data elements.

- **The problem list**. This is the data definition for inclusion in most subpopulations. To run reports, all problem list entries must be structured data.
- **Laboratory data, medications, and other data reflecting guideline adherence**. Laboratory interfaces can usually ensure reliable data for laboratory results. Medication lists, vital signs and documentation of special tests such as foot exams require careful attention to workflow to ensure key information is entered as structured data.
- **Primary Care Provider (PCP) designation.** All reports depend on PCP designation for accurate denominators.
- **Evidence-based guidelines.** This is the logic framework on which reports are based and must be kept up-to-date.

Reports. Two major types of reports are used for population management. For more information on report writing, report validation, and ad hoc reports to support rapid process improvement cycles, see the Quality Improvement Strategy Part 2 Implementation Guide.

- **Outcome reports.** These reports show population outcomes. The denominator includes all patients with a given condition. The numerator includes all patients with the condition meeting a specific criterion for care as defined by an evidence-based guideline (e.g., patients monitored within a specified time interval).
- **Action reports.** These reports show which patients require specific interventions to close gaps in care according to the evidence-based guideline.

Using CDS and reports to deliver planned, evidence-based care.

Care teams in a PCMH use CDS and EHR reports to improve care. CDS is used ensure that every patient coming into the clinic is assessed in the course of his or her visit to address any major gaps in care from an evidence-based perspective. Reports are used for reviewing care for sub-populations as a whole to ensure that patients who have not been in the clinic recently are not overlooked.

- **Huddle.** The team huddle is a short team meeting at the beginning of the day to review each patient on the schedule and, among other things, identify any gaps in evidence-based guidelines for preventive or chronic illness care that need to be addressed during the visit. HIT needed to support the care team huddle is described in the Continuous and Team-Based Healing Relationships Implementation Guide, Appendix A.
- **Population management workflow.** A PCMH must set up standard processes to ensure that patients who do not come in for an appointment but who have care gaps are identified, and that the care team initiates a plan to close those gaps. The practice must decide whether to centralize population management efforts for single conditions across several care teams, or to base a population manager responsible for multiple subpopulations in each care team. Optimal configuration depends on local factors. HIT can be used to support a population manager with several types of registry functionality tools in addition to outcome reports
    - Dashboards are used to identify parameters or places in the delivery system where gaps in evidence-based care are greatest.
    - Action reports are used to identify patients overdue for monitoring or needing additional intervention.

Organized, evidence-based care, particularly when applied to population management of chronic illness, resonates strongly with many providers. The ability of a PCMH to sustain those efforts and scale them to more than a handful of conditions will depend on how successful the organization has been in building a foundation for the work. This includes engaging leadership and building a quality improvement strategy that is engrained in the organization's culture. It rests equally on how successfully the PCMH has been in empanelling its patients so that no ambiguity remains about which providers are accountable for which patients. It also depends on whether the PCMH has successfully created care teams to share with providers the added work of providing organized, evidence-based care and managing the expanded volume of information on which that care depends. Lastly, it depends on how well the HIT has been integrated into standardized workflows to ensure that key information is reliably entered as structured data, and that CDS is wisely deployed and used. This is a tall order, but it is within the skill set of a well-organized PCMH, and it is essential if the vision of the PCMH is to become a reality.

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