Contract No.: HHSM-500-2005-00025I
MPR Reference No.: 6425-008

MATHEMATICA
Policy Research, Inc.

Design of the CMS Medical Home Demonstration

DRAFT

October 3, 2008

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ACKNOWLEDGMENTS

Several people at the Centers for Medicare & Medicaid Services (CMS) helped to make this report possible. James Coan, Sidney Trieger, Mary Kapp, Claudia Lamm, Linda Magno, and Bertha Williams provided valuable guidance and feedback. The authors also received valuable comments from the multi-organization project team: Randall Brown at MPR, Paul Ginsburg at the Center for Studying Health Systems Change, and Gregory Pawlson at the National Committee for Quality Assurance.

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CHAPTER I

INTRODUCTION

This report presents the design of the Centers for Medicare & Medicaid Services' (CMS) Medical Home Demonstration. In December 2006, Section 204 of the Tax Relief and Health Care Act of 2006 (TRHCA) mandated that CMS establish a medical home demonstration project to provide "targeted, accessible, continuous and coordinated, family-centered care to high-need populations." In addition, Section 133(a)(2) of the Medicare Improvements for Patients and Providers Act of 2008, which went into effect on July 15, 2008, makes available an additional $100 million from the Federal Supplementary Medical Insurance Trust Fund to carry out the demonstration. The primary purpose of the Medical Home Demonstration is to determine whether Medicare medical homes reduce costs to Medicare by avoiding unnecessary care, coordinating and rationalizing care, and avoiding preventable hospitalizations and readmissions. The demonstration also will determine whether medical homes improve the quality of health care by avoiding inconsistent treatments and medications, increasing the amount of preventive care, and improving patient adherence.

The medical home model, whose principles have recently been refined by the American Association of Family Physicians (AAFP), American Academy of Pediatricians (AAP), American College of Physicians (ACP), and American Osteopathic Association (AOA) (2007), are expected to achieve these goals largely through integration and coordination of health care by primary care physicians. Integrated health care is expected to enhance patient adherence to recommended treatment and avoid (1) hospitalizations, unnecessary office visits, tests, and procedures; (2) use of expensive technology or biologicals when less expensive tests or treatments are equally effective; and (3) patient safety risks inherent in inconsistent treatment decisions. Eighty-six percent of beneficiaries of fee-for-service (FFS) Medicare have one or more chronic conditions (Peikes et al. 2008), and many of these individuals suffer from five or more chronic conditions (Anderson 2005). Most FFS Medicare beneficiaries with chronic conditions receive care from several physicians—often 10 or more in a given year. The fragmentation of care for Medicare beneficiaries (MedPAC 2006; Pham et al. 2007; Starfield et al. 1976) and its relationship to rapidly rising health care costs (Parchman et al. 2005; Kripalani et al. 2007) are well documented.

This report summarizes the design of the CMS Medical Home Demonstration, hereafter referred to as the demonstration. Chapter II covers the basics of the demonstration design—how medical homes are defined, which physicians and patients are eligible to participate in the demonstration, and how practices will be paid for providing medical home services. Chapter III covers the operational procedures of the demonstration—the demonstration timeline, site selection, recruitment and enrollment procedures, assignment of beneficiaries to practices, how transitions such as patients who move out of the demonstration site or practices who drop out of the demonstration during the demonstration will be handled, and finally how the demonstration will be evaluated.

CHAPTER II

BASIC FEATURES OF THE MEDICAL HOME DEMONSTRATION

A. WHAT IS A MEDICAL HOME?

Practices that include both medical doctors (MDs) and doctors of osteopathy (DOs) become medical homes by demonstrating they have the capabilities to provide medical home services. Medical home services fall into six domains: continuity of care, clinical information systems, delivery system design, decision support, patient/family engagement, and care coordination. Table 1 provides an overview of medical home capabilities and a summary of the evidence base suggesting each capability can improve care.

Practices can qualify for the demonstration by demonstrating that they have the capability to provide either of 2 tiers of medical home services. The decision to establish tiers recognizes that (1) there is wide variation among physician practices in their capabilities to provide medical home services and (2) for most practices, developing all the capabilities listed in Table 1 requires a substantial investment of time and resources.

Table 2 presents the detailed definitions of each tier in a 2-tier approach.

- Tier 1 – Practices will be required to have all 17 of the listed capabilities.

- Tier 2 – Practices will be required to have all 19 of the listed essential capabilities, plus any 3 of the listed optional capabilities.

Table 1. Medical Home Capabilities, with Rationale and Evidence Base

Model Components	Proposed Capabilities of Medical Home for CMS Demonstration	Rationale/ Evidence Base
Continuity	Obtains mutual agreement between physician and patient on role of medical home Uses scheduling process to promote continuity with clinician	Mutual recognition by the patient and physician of the medical home relationship, including patient lists, is highly valued by patients, is associated with greater patient and physician satisfaction, and is associated in international studies with improved health outcomes for patients at lower costs (Freeman and Richards 1990; Baker and Streatfield 1995; Baker et al. 1996; Starfield 1998; Macinko et al. 2003). Continuous care between physician and patient has improved patient satisfaction, enhanced practice understanding of patient needs, improved medication compliance, improved use of recommended preventive services and behavioral management (Dietrich and Marton 1982; Hanninen et al. 2001; Sturmberg 2000; Shear et al. 1983; O'Malley et al. 2002; Starfield 1998).
Clinical Information Systems	Uses data to identify and track medical home patients Uses electronic prescribing tools to reduce medication errors, promote use of generics, and assist in medication management	Clinical information systems include health information technology to help ensure continuity of information across visits and between practices (Starfield 1998; IOM 2001). Use of patient registries is associated with improved HbA1c levels in people with diabetes and with improved care processes for other chronic diseases, but they are currently under-used (Stroebel et al. 2002; East et al. 2003; Schmittdiel et al. 2005). Electronic prescribing and decision support also may reduce costs (McMullin et al. 2005).
Delivery System Design	Implements processes to promote access and communication Measures implementation of processes Organizes and trains staff in roles for care management (including staff feedback) Organizes clinical data for individual patients (problem lists, medication lists, risk factors, structured progress notes) Provides pre-visit planning and after-visit follow-up for medical home patients Uses health assessment tools to characterize patient needs and risks Uses integrated care plan to plan and guide patient care Measures performance on clinical quality and patient experiences	The medical home is accessible to beneficiaries for first contact care of new problems as well as management of ongoing chronic conditions (Forrest and Starfield 1998; Starfield 1998; IOM 1996). Clinical process redesign is reflected in how practices schedule visits; it also is reflected in how practices assign and prepare staff to take on new roles in interacting with patients (Wagner et al. 1996a, 1996b; Calkins et al. 1999; IOM 2001). A team approach is key to effective and efficient functioning of medical homes (Grumbach 2001; IOM 2001). Team work was an essential component of high-performing office practices (Edgman-Levitan 2007; Grumbach and Bodenheimer 2004). Training capabilities should be applicable to large practices that can create more specialized roles for staff and small practices where an individual may need to perform multiple roles (Grumbach 2001). When the patient comes in, the practice should be prepared for the visit with: problem lists, medication lists; and structured information on risk factors (Starfield 1998; Feifer et al. 2001; Bodenheimer et al. 2002).

TABLE 1 *(continued)*

Model Components	Proposed Capabilities of Medical Home for CMS Demonstration	Rationale/ Evidence Base
Delivery System Design *(continued)*	Reports to physicians on performance Uses data to set goals and take action to improve performance	There is good evidence that feedback to physicians about their performance can lead to improvements in quality. Measurement should be accompanied by analysis and should identify opportunities for improvement (Casalino et al. 2003; Bodenheimer et al. 2002). Extent of a practice's activities in quality measurement, reporting, and improvement is correlated with performance on process and outcomes of care for diabetes (Solberg 2007).
Decision Support	Adopts evidence-based clinical practice guidelines on preventive and chronic care Uses searchable electronic data to generate lists of patients and remind patients and clinicians of services needed Implements system to generate reminders (paper-based or electronic) about preventive services at the point of care Implements system to generate reminders (paper based or electronic) about chronic care needs at the point of care	Clinical decision support systems such as clinical reminders and decision support tools have been shown to improve quality of care (Kawamoto 2005). Systematic processes could be put in place that involve prompts via paper or electronic tools, rather than relying on the personal physicians' memory to document and act on key pieces of clinical information (IOM 2001).
Patient/Family Engagement	Documents patient self-management plan (including end-of-life planning, home monitoring) Provides patient education and support Encourages family involvement	The medical home can play a critical role in fostering patient self-management, which is crucial to effective chronic disease management (Wagner 1996a, 1996b). Providing educational resources and ongoing assistance to patients is key to patients' ability to care for themselves and to get the care they need (Calkins 1999). Family involvement is a key part of engaging patients in care, since many older adults have family caregivers (Starfield 1998; IOM 1996).
Coordination	Tracks tests and provides follow-up Tracks referrals including referral plan and patient report on self referrals Coordinates care and follow-up for patients who receive care in inpatient and outpatient facilities Uses medication reconciliation to avoid interactions or duplications	The coordination function is the glue that holds all other pieces of the medical home together and also permits them to be optimized (Starfield 1998; AHRQ 2007). Coordination of care in FFS Medicare is needed because up to 70% of visits to specialists are self-referred (Shea et al. 1999). A multifaceted intervention including various members of the outpatient health care practice team (and the patient) is crucial to enhancing medication reconciliation and results in a significant decrease in prescription medication errors (Varkey 2007).

Table 2. Definition of the Medical Home Tiers

TIER 1 All 17 of the Following Requirements (17 Core)
Continuity
1) The practice discusses with patients and presents written information on the role of the medical home that addresses up to 8 areas.
2) The practice establishes written standards on scheduling each patient with a personal clinician for continuity of care and the practice collects data to show that it meets its standards on continuity.
Clinical Information Systems
3) The practice uses an electronic data system that includes searchable data such as patient demographics, visit dates and diagnoses (up to 12 specific factors), and the practice uses an electronic or paper-based system to identify clinically important conditions or risk factors among its patient population.
Delivery System Redesign
4) The practice establishes written standards to support patient access, including policies for scheduling visits and responding to telephone calls and electronic communication (up to 9 specific factors).
5) The practice collects data to demonstrate that it meets standards related to appointment scheduling and response times for telephone and electronic communication (up to 5 specific factors).
6) The practice defines roles for physician and non-physician staff and trains staff, with non-physician staff, involved in reminding patients of appointments, executing standing orders and educating patients/families.
7) The practice uses electronic or paper-based tools including medication lists and other tools such as problem lists, or structured templates for notes or preventive services to organize and document clinical information in the medical record.
8) The practice conducts a comprehensive health assessment for all new patients to understand their risks and needs including past medical history, risk factors and preferences for advance care planning (up to 5 specific factors).
9) For three clinically important conditions, the physician and non-physician staff conduct care management using an integrated care plan to set goals, assess progress and address barriers (5 specific factors).
10) For three clinically important conditions, the physician and non-physician staff conduct care management planning ahead of the visit to make sure that information is available and the staff is prepared as well as following up after the visit to make sure that the treatment plan (including medications, tests, referrals) is implemented.
11) The practice identifies appropriate evidence-based guidelines that are used as the basis of care for clinically important conditions.
Patient/Family Engagement
12)The practice supports patient/family self-management through activities such as systematically assessing patient/family-specific communication barriers and preferences, providing self-monitoring tools or personal health record, and providing a written care plan.
13) The practice supports patient/family self-management through providing educational resources, and providing/connecting families to self-management resources.
14) The practice encourages family involvement in all aspects of patient self-management.
Coordination
15) The practice systematically tracks tests and follows up using steps such as making sure that results are available to the clinician, flagging abnormal test results, and following up with patients/families on all abnormal test results (up to 4 specific factors).
16) The practice coordinates referrals designated as critical through steps such as providing the patient and referring physician with the reason for the consultation and pertinent clinical findings, tracking the status of the referral, obtaining a report back from the practitioner, and asking patients about self-referrals and obtaining reports from the practitioner(s).
17) The practice reviews all medications a patient is taking including prescriptions, over the counter medications and herbal therapies/supplements.

TABLE 2 *(continued)*

TIER 2 All 19 of the Following Requirements
Continuity
1) The practice discusses with patients and presents written information on the role of the medical home that addresses up to 8 areas.
2) The practice establishes written standards on scheduling each patient with a personal clinician for continuity of care and the practice collects data to show that it meets its standards on continuity.
Clinical Information Systems
3) The practice uses an electronic data system that includes searchable data such as patient demographics, visit dates and diagnoses (up to 12 specific factors), and the practice uses an electronic or paper-based system to identify clinically important conditions or risk factors among its patient population, and the practice has an electronic health record, certified by the Certification Commission on Health Information Technology (C-CHIT), that captures searchable data on clinical information such as blood pressure, lab results or status of preventive services (up to 9 specific areas).
Delivery System Redesign
4) The practice establishes written standards to support patient access, including policies for scheduling visits and responding to telephone calls and electronic communication (up to 9 specific factors).
5) The practice collects data to demonstrate that it meets standards related to appointment scheduling and response times for telephone and electronic communication (up to 5 specific factors).
6) The practice defines roles for physician and non-physician staff and trains staff, with non-physician staff, involved in reminding patients of appointments, executing standing orders and educating patients/families.
7) The practice uses electronic or paper-based tools including medication lists and other tools such as problem lists, or structured templates for notes or preventive services to organize and document clinical information in the medical record.
8) The practice conducts a comprehensive health assessment for all new patients to understand their risks and needs including past medical history, risk factors and preferences for advance care planning (up to 5 specific factors).
9) For three clinically important conditions, the physician and non-physician staff conduct care management using an integrated care plan to set goals, assess progress and address barriers (5 specific factors).
10) For three clinically important conditions, the physician and non-physician staff conduct care management planning ahead of the visit to make sure that information is available and the staff is prepared as well as following up after the visit to make sure that the treatment plan (including medications, tests, referrals) is implemented.
11) The practice identifies appropriate evidence-based guidelines that are used as the basis of care for clinically important conditions.
Patient/Family Engagement
12) The practice supports patient/family self-management through activities such as systematically assessing patient/family-specific communication barriers and preferences, providing self-monitoring tools or personal health record, and providing a written care plan.
13) The practice supports patient/family self-management through providing educational resources, and providing/connecting families to self-management resources.
14) The practice encourages family involvement in all aspects of patient self-management.
Coordination
15) The practice systematically tracks tests and follows up using steps such as making sure that results are available to the clinician, flagging abnormal test results, and following up with patients/families on all abnormal test results (up to 4 specific factors).
16) The practice coordinates referrals designated as critical through steps such as providing the patient and referring physician with the reason for the consultation and pertinent clinical findings, tracking the status of the referral, obtaining a report back from the practitioner, and asking patients about self-referrals and obtaining reports from the practitioner(s).
17) The practice reviews all medications a patient is taking including prescriptions, over the counter medications and herbal therapies/supplements.
18) The practice on its own or in conjunction with an external organization has a systematic approach for identifying and coordinating care for patients who receive care in inpatient or outpatient facilities or patients who are transitioning to other care (up to 6 specific factors).
19) The practices reviews post-hospitalization medication lists and reconciles with other medications.

TABLE 2 *(continued)*

TIER 2 *(continued)*
Three of the Nine Additional Requirements
Continuity
None
Clinical Information Systems
20) The practice uses an electronic system to write prescriptions which can print or send prescriptions electronically, clinicians in the practice write prescriptions using electronic prescription reference information at the point of care, which includes safety alerts that may be generic or specific to the patient (up to 8 specific factors), and clinicians engage in cost-efficient prescribing by using a prescription writer that has general automatic alerts for generic or is connected to a payer-specific formulary.
21) The practice provides patients/families with access to an interactive Web site that allows electronic communication.
22) The practice provides for patient access to personal health information such as test results or prescription refills or to see elements of their medical record and import elements of their medical record into a personal health record.
Delivery System Redesign
23) The practice measures or receives data on performance such as clinical process, clinical outcomes, service data or patient safety issues, and the practice collects data on patient experience with care, addressing up to 3 areas.
24) The practice reports performance data to physicians.
25) The practice uses performance data to set goals and take action where identified to improve performance.
26) The practice uses electronic information to generate lists of patients and take action to remind patients or clinicians proactively of services needed, such as patients needing clinician review or action or reminders for preventive care, specific tests or follow-up visits (up to 5 specific factors).
27) The practice uses a paper-based or electronic system for reminders at the point of care based on guidelines for preventive services such as screening tests, immunizations, risk assessments and counseling.
28) The practice uses a paper-based or electronic system for reminders at the point of care based on guidelines for chronic care needs.
Patient/Family Engagement
None
Coordination
None

B. WHICH PHYSICIAN PRACTICES ARE ELIGIBLE?

To be eligible for the demonstration, a practice must have the capability of providing medical home services for at least the lower tier level. In addition, section 204 of TRHCA requires the participating physicians in the practices (1) to be board certified and (2) to provide first contact and continuous care for individuals under his or her care. General internists and family physicians clearly meet the second requirement, and some specialists and subspecialists may also qualify. Physicians in general medicine, general practice, family practice, and geriatricians are eligible for the demonstration. Radiology, pathology, anesthesiology, dermatology, ophthalmology, emergency room practices, chiropractors, psychiatry, and surgery are not eligible specialties. Other specialties and subspecialties may be eligible.

A practice is defined to be one or more physicians with individual National Provider Identifier (NPI) numbers sharing a tax identification number (TIN). A physician must have 150 or more fee-for-service Medicare beneficiaries in his or her patient panel to be eligible. Federally Qualified Health Centers (FQHCs) are eligible for the demonstration, as are small, medium, and large-sized practices.

C. WHICH MEDICARE BENEFICIARIES ARE ELIGIBLE?

After qualified practices enroll in the demonstration, practices will enroll qualified Medicare beneficiaries, and will send that enrollment information to the Implementation Contractor. The TRHCA indicates that the medical home demonstration is focused on MDs and DOs providing ambulatory care in FFS Medicare, and further requires that Medicare beneficiaries have one or more chronic conditions to be eligible for the demonstration.

Appendix A (Table A.1) shows the list of eligible conditions, which is adapted from Hwang et al. (2001). For the original list, Hwang et al. defined a person as having a chronic condition if a panel of five internists agreed that "the condition had lasted or was expected to last twelve or more months and resulted in functional limitations and/or the need for ongoing medical care" (p. 268). CMS removed from this list a few conditions deemed to be less relevant to the demonstration. Medicare patients will be considered eligible if they have received treatment (two or more ambulatory claims, or one inpatient claim) for one or more of these diagnoses or conditions within the previous year. Mathematica Policy Research's analysis of Medicare claims data indicates that nearly 86 percent of Medicare beneficiaries have claims for one or more of these conditions (Peikes et al. 2008).

CMS has determined that a beneficiary is qualified if he or she has one or more of the eligible chronic diagnoses or conditions and all of the following insurance coverage and residential requirements are true:

- Medicare is the beneficiary's primary health insurer.
- The beneficiary participates in both Parts A and B of Medicare.

- The beneficiary has one or more of the chronic conditions listed in Appendix A. The beneficiary is counted as having a chronic condition if there were at least two ambulatory claims, or one inpatient claim, that contained an ICD-9 code related to one of the conditions listed in Appendix A in the previous year.

- The beneficiary is not in any of the excluded groups, as verified using Medicare administrative data:

  - Enrolled in a Medicare Advantage plan.
  - Receiving Medicare Hospice benefits.
  - Resides in a long-term custodial nursing home.
  - Receives end stage renal disease (ESRD) benefits.
  - Participates in another Medicare demonstration. (This exclusion ensures that the evaluation will measure the impact of this demonstration alone.)

D. HOW ARE PARTICIPATING PRACTICES REIMBURSED?

As required by TRHCA, CMS asked the Relative Value Scale Update Committee (RUC) of the American Medical Association (AMA) to determine the work relative value units required to provide medical home services. In February 2008, the RUC established a Medical Home Workgroup, which met 12 times between February and May 2008. The workgroup developed descriptors of medical home services, designed to avoid any overlap between medical home services and existing evaluation and management (E&M) services, for which practices have an existing CPT code. The workgroup also estimated the amount of physician time, direct practice expenses, and professional liability insurance required to provide medical home services. Based on this analysis, the workgroup and the RUC recommended a work relative value unit (RVU) per patient per month of 0.25 for Tier 1 medical home services, 0.30 for Tier 2, and 0.35 for Tier 3. CMS chose to include the top two tiers of medical homes in the demonstration; for this demonstration, Tiers 2 and 3 that were used by the RUC will be called Tiers 1 and 2.

CMS used the Medicare physician fee schedule for fiscal year 2009 to convert these work RVUs into per patient per month fees of $40.20 for Tier 1 and $51.44 for Tier 2. The Medicare Improvements for Patients and Providers Act of 2008 increased the conversion factor 0.5 percent, so CMS increased the payments by 0.5 percent to $40.40 for Tier 1 and $51.70 for Tier 2 (subject to review by the Office of Management and Budget [OMB]). These rates, which we refer to as base rates, will not change during the demonstration. These fees will be paid in addition to any Medicare-covered services provided and regardless of whether the beneficiary was seen by the physician in any given month.

CMS will also adjust these base rates for the disease burden, indicated by the hierarchical condition categories (HCC) score, of each patient. Such risk adjustment recognizes that the need for and cost of providing medical home services increases with greater disease burden of patients. The HCC score indicates disease burden and predicted future costs to Medicare. Nationwide, 25 percent of beneficiaries have an HCC score greater

than or equal to 1.6, and are expected to have Medicare costs that are at least 60 percent higher than average. The risk-adjusted rates for each tier are computed such that their weighted mean equals the base rate for the tier, with the weights being 75 percent and 25 percent (Table 3).

Table 3. Medicare Medical Home Demonstration Per Patient Per Month Payment Rates, Overall and by Patient HCC Score

Medical Home Tier	Per Member Per Month Payments	Patients with HCC Score <1.6	Patients with HCC Score ≥1.6
Tier 1	$40.40	$27.12	$80.25
Tier 2	$51.70	$35.48	$100.35

If the medical home demonstration generates more than 2 percent savings to Medicare, CMS will share a large portion of the savings with participating providers. Savings are defined to be the difference between the Medicare Part A and Part B costs associated with the intervention group of the demonstration and the Medicare costs associated with the comparison group. Medicare costs associated with the intervention group include both Medicare claims expenditures of participating beneficiaries plus the medical home care management payments to participating providers. CMS will estimate a single savings figure for the entire demonstration once at the end of the demonstration. Eighty percent of the savings that exceed 2 percent of the comparison group costs will be shared with participating providers in the intervention group. CMS will share the savings with participating providers only if the estimated gross Medicare savings (from changes in Part A and B expenditures minus care management fees) exceeds 2 percent of the comparison group costs.

While the TRHCA does not require that the demonstration be budget neutral, and Section 133(a)(2) of the Medicare Improvements for Patients and Providers Act of 2008, which went into effect on July 15, 2008, makes available an additional $100 million from the Federal Supplementary Medical Insurance Trust Fund to carry out the demonstration, the share-in-savings component of compensation implies that the demonstration must be budget neutral. The demonstration will be budget neutral if the fees paid to participating practices do not exceed the savings in Parts A and B costs attributable to the demonstration.[1] It is possible OMB may request changes to the fees that were based on the RUC's estimates.

While quality of care indicators will be used to evaluate the impacts of the demonstration, practice reimbursement will not depend on quality of care indicators.

[1] Medical home services are expected to prevent some hospitalizations, avoid redundant tests and imaging, and improve the health status of enrolled beneficiaries. These factors are hypothesized to reduce Medicare Part A and Part B expenditures over the demonstration period.

CHAPTER III

DEMONSTRATION PROCEDURES

A. WHAT IS THE DEMONSTRATION TIMELINE?

The demonstration is expected begin in January 2010 (Table 4). During 2009, CMS plans to select sites, recruit practices, and determine which practice applicants are qualified to function as a medical home. Upon practice qualification through December 2011, participating practices will enroll eligible patients in the demonstration. Practices will begin operating as a medical home, and CMS will begin to make medical home payments, in January 2010. The demonstration will end in December 2012, with the evaluation of the demonstration continuing for another year.

Table 4. Medical Home Demonstration Timeline

	Step	Date
1	OMB approves the demonstration (assumed)	November 2008
2	CMS announces the demonstration sites	December 2008
3	CMS outreach to and recruitment of eligible practices begins	January 2009
4	Applications accepted	January to March 2009
5	Practices notified to apply for qualification; implementation contractor evaluates applicants' qualifications	April to November 2009
6	Technical assistance first available	April 2009
7	CMS notifies applicants about whether they are qualified	May to December 2009
8	Qualified practices enroll eligible patients	Upon qualification through December 2011
9	Practices begin medical home service delivery; CMS begins medical home payments	January 2010

	Step	Date
10	CMS ends medical home payments; demonstration ends	December 2012
11	CMS completes the evaluation of the demonstration	December 2013

B. How Will Demonstration Sites Be Selected?

The TRHCA requires that the medical home demonstration operate in up to eight states, and that sites include urban, rural, and medically underserved areas. A site will be no smaller than a county, and no larger than an entire state. Areas containing an active CMS-sponsored demonstration will be excluded from consideration.

CMS will select sites by urban/rural and underserved/adequately-served to ensure compliance with the TRHCA. CMS may select one of more sites in which private insurers are also testing medical home initiatives and using compatible research and program designs. Building a multi-payer initiative in some sites would make recruiting and practice transformation easier because it would provide larger payments to participating practices.

C. How Will Physician Practices Be Recruited?

CMS recognizes that recruiting practices to participate in the demonstration will be critically important to the success of the demonstration. Successful recruitment will have the following dimensions:

1. Reaching out to stakeholder organizations.

2. Providing information on the benefits to practices of participating in the demonstration.

3. Providing technical information on the application and qualification process.

The benefits of the demonstration from the perspective of the provider include the per-beneficiary-per-month payment, share in savings, recognition as a medical home (described below), and the professional satisfaction of providing enhanced medical care. The RUC ensured that the monthly payment equals the typical provider's expenses for the physician's labor, practice expenses (including staff labor, medical supplies, and medical equipment), and insurance premiums. Adding the share in savings to the monthly fee implies that total provider financial compensation may exceed his or her costs.

1. Reaching Out to Stakeholder Organizations

CMS will work with key stakeholder organizations to promote participation in the demonstration. CMS will reach out to physician societies for the purpose of providing transparency to the demonstration and to request stakeholder support for the following functions:

1. Communicating the benefits associated with participating in the demonstration to practices in the demonstration sites.

2. Providing limited technical assistance to practices as they develop the capabilities for providing medical home services. (The Lipitz Center for Integrated Health Care, Johns Hopkins School of Public Health, will provide technical assistance.)

3. Answering practice questions and concerns.

CMS will reach out to stakeholders in several ways. It will host an open door forum in October 2008, in which it will present a summary of the demonstration design and respond to questions from physicians, physician societies, and other stakeholders. It also will post a summary of the demonstration design on www.cms.hhs.gov.

2. Providing Information About the Demonstration

The next recruiting step is to communicate information on the demonstration to practices within demonstration sites. Table 5 lists the types of information that would be provided by the implementation contractor. Financial benefits will be communicated to

Table 5. Recruiting Information to Practices in Demonstration Sites

Type of Information	Description	Timing	Medium/Method
Announcement of opening applications for the demonstration	Announce that practices in demonstration sites can apply to participate. Distribute application packets.	January to March 2009	CMS Medicare listservs. Practice societies notifying members in demonstration sites. Application packet and list of sites on www.cms.hhs.gov. Mailed hardcopy materials to all practices in the demonstration sites.
Expected time required	Estimates of the time required to complete the application and PPC-PCMH-CMS, and the time required to provide the needed documentation.	January to March 2009	Same
Qualification benefits	Explanation of how CMS will qualify participating practices on PPC-PCMH-CMS. Explanation of how participating practices will be recognized by stakeholder societies.	January to March 2009	Same

providers using illustrative calculations for various types of practices and for each tier. This information would be disseminated though a variety of channels immediately after announcement of the demonstration sites and before the start of the demonstration. Communication channels may include CMS Medicare listservs, stakeholder societies notifying their members in the demonstration sites, the demonstration webpage on www.cms.hhs.gov, and a mailing to all practices in the demonstration sites.

3. Providing Technical Information

To enable practices to qualify as medical homes, the implementation contractor may distribute detailed technical information to applying practices (Table 6). The first type of information is the technical requirements for qualifying for each tier. This information will include an expansion of the information contained in Table 2, the National Committee for Quality Assurance's (NCQA's) Physician Practice Connections - Patient Centered Medical Home, CMS Version (PPC-PCMH-CMS) instrument, and a technical explanation of how the PPC-PCMH-CMS will be scored. This last type of information is needed because the PPC-PCMH-CMS allows practices some flexibility in how they meet the requirements for each tier. Practices will need to understand the scoring algorithm shown in Appendix D to determine whether they qualify for a tier.

The second type of technical information covers how to complete the PPC-PCMH-CMS and, more importantly, how to prepare the documentation required to verify the data in the completed PPC-PCMH-CMS.

The third type of information is technical assistance on how to develop the capability to function as a medical home, and will be provided by external organizations. To participate in the demonstration, practices will have from the time they submit their application through November 2009 to meet all requirements of the desired tier. This limited time for developing medical home capabilities implies that many applicants will have most of the capabilities in place at the time of application. However, CMS anticipates that some applicants will not have all the capabilities in place at that time, and that those practices will develop the needed capabilities between April and November 2009. The primary source for obtaining medical home capabilities is the Lipitz Center for Integrated Health Care, Johns Hopkins School of Public Health, funded by a grant from the John A. Hartford Foundation. The Lipitz Center has partnered with the AAFP, ACP, TransforMed, the Medical Group Management Association (MGMA), and the Institute for Johns Hopkins Nursing to provide technical assistance to applicant practices to improve their medical home capabilities. The second source is AAFP and ACP, especially for applicants that do not plan to qualify for the top tier.

Table 6. Technical Information for Practices

Function	Description	Timing	Medium/Method
Provided by the Implementation Contractor			
Enable practices to determine which tier they qualify for before they apply.	Technical information on the requirements for each tier. The PPC-PCMH-CMS. Technical information on how the PPC-PCMH-CMS will be scored.	January to November 2009	CMS Medicare listservs. Physician societies notifying members in demonstration sites. www.cms.hhs.gov. Mailed hardcopy materials to all practices in the demonstration sites.
Enable applicants to complete the PPC-PCMH-CMS and to provide the necessary documentation.	Technical instructions for how to complete the PPC-PCMH-CMS and the types of documentation that will verify practice qualifications.	April to November 2009	Mailing to each practice that submits an application.
Provided by External Organizations			
Enable applicants to meet all the requirements for the tier they wish to qualify for.	For those applicants who meet many but not all requirements for the desired tier, technical assistance (TA) on how to develop the missing capabilities.	April 2009 to June 2011	Source 1: Lipitz Center for Integrated Health Care, Johns Hopkins School of Public Health Source 2: AAFP and ACP

4. Follow-up Information for Participating Practices

The implementation contractor may continue to provide information to participating practices after the demonstration begins (Table 7). The implementation contractor will provide guidance on how the practice should enroll qualified patients. The contractor may provide sample protocols for determining which patients are qualified and for communicating the benefits of the demonstration to patients. The contractor may provide sample agreements to use when enrolling qualified patients. These materials will be posted on the demonstration web site, and will be mailed to each participating practice.

Unanticipated issues emerge when any new program or demonstration is implemented. The contractor may communicate such issues through a webinar or conference call with participating practices in each site.

The Lipitz Center of the Bloomberg School of Public Health at the Johns Hopkins University will provide information to enable practices participating in Tier 1 to develop additional medical home capabilities that will qualify the practice for Tier 2, the top medical home tier. Key physician societies and the implementation contractor may also provide this information.

Table 7. Follow-Up Information for Participating Practices

Function	Description	Timing	Medium/Method
Enable participating practices to enroll patients.	Information for participating practices on demonstration agreements with qualified patients.	Upon qualification through December 2011	Sample agreements posted on the demonstration web page in downloadable form and mailed in hardcopy to participating practices.
Update participating practices on demonstration issues.	Information from CMS on demonstration implementation issues; feedback from participating practices on implementation issues.	November of each year 2009 to 2012	For each site, annual interactive webinar or interactive conference call with participating practices.
Enable participating Tier 1 practices to upgrade to the higher tier, Tier 2.	Technical assistance on how to develop additional medical home capabilities and qualify for Tier 2.	April 2009 to June 2011	Source 1: Lipitz Center for Integrated Health Care, Johns Hopkins School of Public Health Source 2: AAFP and ACP
Respond to practice questions.	Answers to quick clarification questions from participating practices.	November 2009 to December 2012	Help desk and toll-free phone number. FAQs on the demonstration web site.

Finally, the implementation contractor may continue to answer quick, clarifying questions from participating practices throughout the demonstration. This may be done by posting FAQs on the demonstration web site, and operating a help desk and a toll-free phone line for practice questions.

D. How Will Physician Practices Apply and Become Enrolled?

The application and qualification process will have the following chronological steps:

- ***Application***. The unit that applies will be the practice. The practice will complete a simple application containing the name, address, and TIN of the practice; name, specialty, and NPI of each physician joining in the application; and the tier for which the practice expects to qualify. Not all physicians in a practice will be required to join the application, and some practices may have physicians who are not eligible to join. Practices also may be asked to fill out a brief survey for the evaluation.

- ***CMS will announce which practices proceed to the qualification stage***. CMS may have more qualified applicants than it needs for the demonstration and, if so, the implementation contractor may select a sample of qualified applicants to participate.

- ***Self-certification of capabilities***. Practices that are invited to proceed to the qualification stage will self-certify that they have all the capabilities required for a particular tier by completing the PPC-PCMH-CMS (Appendix B). The PPC-PCMH-CMS is described in more detail below.

- ***Documentation of capabilities***. Practices will provide documentation of their medical home capabilities (see section G). The purpose of this documentation is to verify the practice in fact has the medical home capabilities reported on the PPC-PCMH-CMS.

- ***Qualification and enrollment.*** CMS's implementation contractor will review the application, the completed PPC-PCMH-CMS instrument, and the documentation of medical home capabilities to determine whether the applicant is qualified to participate. CMS may allow some applicants who prove to be unqualified to revise and resubmit their application. The implementation contractor will notify the selected, qualified applicants that they are participating in the demonstration, and will enroll the practice and participating physicians in CMS's demonstration database.

E. HOW WILL BENEFICIARIES BECOME ENROLLED?

The participating physician will be responsible for enrolling his or her eligible patients. To enroll a patient, the physician will explain to the patient what a medical home is and its benefits. The physician will then explain both the physician's and the patient's responsibilities under the medical home. Once the patient understands this, both the physician and the patient will sign an agreement that indicates each is committed to perform these medical home responsibilities. At this point, the practice can inform the implementation contractor about the patient's enrollment. Once the beneficiary is enrolled, CMS will begin medical home payments to the practice for the patient. Physicians may enroll new patients through the end of the second year of the demonstration, i.e., from practice qualification through December 2011.

F. HOW WILL PATIENT AND PHYSICIAN TRANSITIONS DURING THE DEMONSTRATION BE HANDLED?

1. Beneficiary Transitions

In any demonstration lasting three years, some beneficiaries may decide they no longer wish to participate in the demonstration, move away from the demonstration site, or change their physician. Further, enrollees may develop end-stage renal disease (ESRD), begin hospice care, enter long-term nursing homes, or die during the demonstration. The demonstration will handle these transitions in the following way:

- ***Move away from the demonstration site.*** The CMS implementation contractor will monitor changes in beneficiaries' addresses.

- ***Drop out of the demonstration.*** Beneficiaries who are not leaving the demonstration site but want to drop out of the demonstration will notify their medical home practice. The practice will notify the implementation contractor. CMS will pay the practice through the month in which the beneficiary withdrew.

- ***Change practice.*** If the patient's new practice is enrolled in the demonstration, the enrolled beneficiary will sign a new medical home designation form with that practice. CMS will pay the original practice through the first month the new form was signed, and will begin paying the new practice in the following month. If the new practice is not enrolled in the demonstration, the beneficiary will drop out of the operational demonstration, however they will continue to be in the evaluation sample.

- ***Enter the ESRD program.*** Payments will stop when the beneficiary enters the ESRD program.

- ***Receive home health care.*** Payments will continue to the practice while the beneficiary is receiving home health care.

- ***Enter nursing home.*** Payments will continue unless the personal physician makes assignment to a nursing home physician.

- ***Begin hospice care.*** CMS will continue to pay the practice for patients who obtain hospice care.

- ***Die***. Upon receiving notice of death from vital records or the practice, CMS will pay the practice through the month in which the beneficiary died.

2. Practice Transitions

During the course of the demonstration, some practices may drop out of the demonstration. CMS will pay for enrolled beneficiaries through the last month the practice is enrolled.

If, during the demonstration period, an enrolled practice improves its medical home capabilities enough to qualify for a higher tier, the practice can revise and resubmit the PPC-PCMH-CMS and the associated documentation during the last 90 days of the first and second years of the demonstration. The implementation contractor will determine whether the practice meets the requirements for the higher tier and, if so, CMS will begin paying the practice at the higher rate.

G. How Will Practice Qualifications Be Measured, Verified, and Monitored?

CMS will measure medical home capabilities using the NCQA's PPC-PCMH-CMS (Appendix B). The CMS version is a revision of NCQA's PPC-PCMH designed to reflect

the specific goals of the Medical Home Demonstration. A crosswalk between the sections of the PPC-PCMH-CMS and the definition of medical homes in Table 2 is presented as Appendix C. Practices wishing to apply for the demonstration will use the PPC-PCMH-CMS in two steps. First, they will fill it out as if it were a survey questionnaire. Second, they will assemble the necessary documentation of the medical home capabilities reported on the completed instrument (Table 8). The applicant will submit the completed instrument and the associated documentation to the CMS implementation contractor. The implementation contractor will review the completed instruments and the associated documentation to determine the tier for which the applicant qualifies.

Table 8. Examples of Documentation Needed to Verify Reports of Medical Home Capabilities

Capability	Types of Documentation	Effort
Delivery System Design: • Implements processes to promote access and communication • Measures implementation of processes	• Documented process: written office procedures that govern scheduling, including time frames for different types of appointments or a screen shot of electronic office scheduling systems that includes specified fields and instructions. • Report: report that demonstrates the practice has analyzed scheduling data to determine if actual scheduling is meeting desired time frames.	If procedures do not exist, the practice will need to create them; time for scanning or attaching them to data collection tool is minimal.
Delivery System Design: • Organizes clinical data for individual patients (problem lists, risk factors, structured progress notes)	Report or file review: • Report: electronic report that indicates the percentage of patients seen in a specified period of time for whom the required data were organized. • File review: if paper, a chart abstraction worksheet (Excel spreadsheet) that indicates review of a specified sample of 35 patients. For each patient, the review should indicate the presence or absence of tools for organizing clinical data (for example, a medication or problem list). The tools must be filled with required data (a blank medication list does not count).	Report or file review: • Report: Time will depend on whether the practice has a paper or electronic system for organizing the required data. An electronic system may need additional programming; the practice may need to create a paper tool; creating a system for organizing the data could take several hours; time to attach report is minimal. Report requires analyzing use over a specified period of time. • File review: Practices that use a paper system need to review 35 charts and enter information in an Excel spreadsheet; this could take 4-8 hours
Clinical Information Systems: • Uses data to identify and track medical home patients	• Documented process: screen shot of electronic system for capturing specified types of clinical data for individual patients. • Report: electronic report that indicates the percentage of patients seen in a specified period of time for whom the data fields were completed.	Time will depend on whether the practice has the required data fields or needs to obtain a system or program a current system; time to attach report is minimal.

The implementation contractor may verify the medical home capabilities reported by participating practices by auditing a sample of such practices. CMS may also use claims data to monitor that participating practices are treating the patients they have enrolled in the demonstration. Once a practice is enrolled, CMS will not require the practice to complete the PPC-PCMH-CMS again during the three years of the demonstration, unless a Tier 1 practice seeks to move to Tier 2.

The evaluation contractor will monitor the quality and cost performance of participating practices using Medicare Part A and Part B claims data throughout the demonstration period. This monitoring will be for CMS's use, and will not affect the medical home payments to participating practices.

H. How Will the Demonstration Be Evaluated?

The TRHCA requires that CMS conduct a rigorous evaluation of the medical home demonstration. CMS has engaged a contractor to conduct an independent evaluation of the demonstration. The evaluation will examine the impact of the medical homes on Medicare cost, quality of care, coordination of care, patient experience of care, practice experiences, and practice revenues. The evaluation contractor will estimate impacts of the demonstration as a whole, and will not estimate a separate impact for each tier. The evaluation also will include descriptions of how well the demonstration and intervention are implemented. CMS's goal for the demonstration evaluation is to compare beneficiaries in practices functioning as medical homes and receiving medical home payments to similar beneficiaries in practices that do not receive medical home payments.

After CMS selects demonstration sites, the implementation contractor will recruit practices. CMS may select a comparison group of beneficiaries from within the demonstration sites or from external comparison sites from which to select comparison practices.

The evaluation will begin when the demonstration begins, will involve collecting data from participating practices and patients, and will involve the analysis of Medicare claims data from both intervention practices and comparison practices. The evaluation will continue for one year after the demonstration ends. The final evaluation design will be developed by the independent evaluation contractor.

REFERENCES

Agency for Healthcare Research and Quality. "Closing the Quality Gap: Care Coordination." *Technical Review 9*, June 2007.

American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians, and the American Osteopathic Association. "Joint Principles of the Patient-Centered Medical Home." Available at www.medicalhomeinfo.org/Joint%20Statement.pdf. March 2007.

American Academy of Pediatrics. "Policy Statement: The Medical Home." *Pediatrics,* vol. 110, no. 1, 2002, pp. 184–186.

American College of Physicians. "The Advanced Medical Home: A Patient-Centered, Physician-Guided Model of Care." Available at www.hhs.gov/healthit/ahic/materials/meeting03/cc/ACP_Initiative.pdf. 2006.

Anderson, G. F. "Medicare and Chronic Conditions." *New England Journal of Medicine*, vol. 353, no. 3, July 2005, pp. 305–399.

Baker, D.W., R.M. Parker, M.V. Williams, K. Pitkin, N.S. Parikh, W. Coates, and M. Imara. "The Health Care Experience of Patients with Low Literacy." *Archives of Family Medicine*, vol. 5, no. 6, June 1996, pp. 329–334.

Baker, R., and J. Streatfield. "What Type of General Practice Do Patients Prefer? Exploration of Practice Characteristics Influencing Patient Satisfaction." The British Journal of General Practice, vol. 45, no. 401, 1995, pp. 654–659.

Bodenheimer, T., E.H. Wagner, and K. Grumbach. "Improving Primary Care for Patients with Chronic Illness." *Journal of the American Medical Association*, vol. 288, no. 14, 2002, pp. 1775–1779.

Bodenheimer, T., E.H. Wagner, and K. Grumbach. "Improving Primary Care for Patients with Chronic Illness: the Chronic Care Model, Part 2." *Journal of the American Medical Association,* vol. 288, no. 15, 2002, pp. 1909–1914.

Calkins, E., C. Boult, E.H. Wagner, and J. Pacala. *New Ways to Care for Older People: Building Systems Based on Evidence*. New York, NY: Springer Publishing Company, 1998.

Casalino, Lawrence, Robin R. Gillies, Stephen M. Shortell, Julie A. Schmittdiel, Thomas Bodenheimer, James C. Robinson, Thomas Rundall, Nancy Oswald, Helen Schauffler, and Margaret C. Wang. "External Incentives, Information Technology, and Organized Processes to Improve Health Care Quality for Patients with Chronic Diseases." *Journal of the American Medical Association*, vol. 289, no. 4, January 2003, pp. 434–441.

Dietrich, A.J., and K.I. Marton. "Does Continuous Care from a Physician Make a Difference?" The Journal of Family Practice, vol. 15, no. 5, 1982, pp. 929–937.

Donaldson, M.S., K.D. Yordy, and K.N. Lohr (eds.). *Primary Care: America's Health in a New Era*. Washington, DC: National Academies Press, 1996.

East, J., P. Krishnamurthy, B. Freed, and G. Nosovitski. "Impact of a Diabetes Electronic Management System on Patient Care in a Community Clinic." *American Journal of Medical Quality*, vol. 18, no. 4, July–August 2003, pp. 150–154.

Edgman-Levitan, S. "High-Performing Patient-Centered Primary Care Practices: Results from 12 Case Studies." Presentation at the International Society for Quality Assurance in Health Care's Annual Meeting, Boston, MA, October 1, 2007.

Feifer, C., S.M. Ornstein, P.J. Nietert, and R.G. Jenkins. "System Supports for Chronic Illness Care and Their Relationship to Clinical Outcomes." *Topics in Health Information Management*, vol. 22, no. 2, November 2001, pp. 65–72.

Forrest, C.B., and B. Starfield. "Entry into Primary Care and Continuity: The Effects of Access." *American Journal of Public Health*, vol. 88, no. 9, September 1998, pp. 1330–1336.

Freeman, G.K., and S.C. Richards. "How Much Personal Care in Four Group Practices?" *British Medical Journal*, vol. 301, no. 6759, November 1990, pp. 1028–1030.

Grumbach, K., and T. Bodenheimer. "Can Health Care Teams Improve Primary Care Practice?" *Journal of the American Medical Association*, vol. 291, no. 10, 2004, pp. 1246–1251.

Hänninen, J., J. Takala, and S. Keinänen-Kiukaanniemi. "Good Continuity of Care May Improve Quality of Life in Type 2 Diabetes." Diabetes Research and Clinical Practice, vol. 51, no. 1, January 2001, pp. 21–27.

Hwang, Wenke, Wendy Weller, Henry Ireys, and Gerard Anderson. "Out-of-Pocket Medical Spending for Care of Chronic Conditions." *Health Affairs*, vol. 20, no. 6, 2001, pp. 267–278.

Institute of Medicine Committee on Health Care in America. "Crossing the Quality Chasm: A New Health System for the 21st Century." Washington, DC: National Academies Press, 2001.

Institute of Medicine. *Primary Care: America's Health in a New Era,* edited by M.S. Donaldson, K.D. Yordy, and K.N. Lohr. Washington, DC: National Academies Press, 1996.

Kawamoto, K., et al. "Improving Clinical Practice Using Clinical Decision Support Systems: A Systematic Review of Trials to Identify Features Critical to Success." *British Medical Journal,* vol. 330, April 2, 2005, p. 765.

Kripalani, S., F. LeFevre, C.O. Phillips, M.V. Williams, P. Basaviah, and D.W. Baker. "Deficits in Communication and Information Transfer Between Hospital-Based and Primary Care Physicians." *Journal of the American Medical Association*, vol. 297, no. 8, 2007, pp. 831–841.

Macinko, J., B. Starfield, and S. Leiyu. "The Contribution of Primary Care Systems to Health Outcomes Within Organization for Economic Cooperation and Development (OECD) Countries, 1970–1998." *Health Services Research*, vol. 38, no. 3, 2003, pp. 831–865.

McMullin, S.T., T.P. Lonergan, and C.S. Rynearson. "Twelve-Month Drug Cost Savings Related to Use of an Electronic Prescribing System with Integrated Decision Support in Primary Care." *Journal of Managed Care Pharmacy,* vol. 11, 2005, pp. 322–324.

Medicare Payment Advisory Commission. "Report to Congress: Increasing the Value of Medicare." Washington, DC: Medicare Payment Advisory Commission, June 2006.

O'Malley, A.S., C.B. Forrest, and J. Mandelblatt. "Adherence of Low-Income Women to Cancer Screening Recommendations: The Roles of Primary Care, Insurance and HMOs." *Journal of General Internal Medicine*, vol. 17, 2002, pp. 144–154.

Parchman, M. L., P. H. Noel, and S. Lee. "Primary Care Attributes, Health Care System Hassles, and Chronic Illness." *Medical Care*, vol. 43, no. 11, November 2005, pp. 1123–1129.

Peikes, Deborah, Licia Gaber, Rachel Shapiro, and Myles Maxfield. "Waiver Cost Estimates for the Medicare Medical Home Demonstration." Washington, DC: Mathematica Policy Research, Inc., August 18, 2008.

Pham, H. H., D. Schrag, A. S. O'Malley, B. Wu, and P. B. Bach. "Care Patterns in Medicare and Their Implications for Pay for Performance." *New England Journal of Medicine*, vol. 356, no. 11, March 2007, pp. 1130–1139.

Schmittdiel, J., T. Bodenheimer, N. A. Solomon, R. R. Gillies, and S. M. Shortell. "Brief Report: The Prevalence and Use of Chronic Disease Registries in Physician Organizations—A National Survey." *Journal of General Internal Medicine*, vol. 20, no. 9, September 2005, pp. 855–858.

Shea, D., B. Stuart, J. Vasey, and S. Nag. "Medicare Physician Referral Patterns." *Health Services Research*, vol. 34, no. 1, April 1999, pp. 331–348.

Shear, C. L., B. T. Gipe, J. K. Mattheis, and M. R. Levy. "Provider Continuity and Quality of Medical Care: A Retrospective Analysis of Prenatal and Perinatal Outcome." Medical Care, vol. 21, 1983, pp. 1204–1210.

Solberg L. et al. "Practice Systems are Associated with High Quality Care for Diabetes." Manuscript under review.

Starfield, B. H., D. W. Simborg, S. D. Horn, and S. A. Yourtee. "Continuity and Coordination in Primary Care: Their Achievement and Utility." *Medical Care*, vol. 14, no. 7, 1976; pp. 625–636.

Starfield, B. *Primary Care: Balancing Health Needs, Services, and Technology*. New York, NY: Oxford University Press, 1998.

Stroebel, Robert J., Sidna M. Scheitel, John S. Fitz, Ruth A. Herman, James M. Naessens, Christopher G. Scott, David A. Zill, and Lisa Muller. "A Randomized Trial of Three Diabetes Registry Implementation Strategies in a Community Internal Medicine Practice." *Joint Commission Journal on Quality Improvement*, vol. 28, no. 8, August 2002, pp. 441–450.

Sturmberg, J. "Continuity of Care: Towards a Definition Based on Experiences of Practising GPs." Family Practice, vol. 17, no. 1, February 2000, pp. 16–20.

Varkey, P. "Educating to Improve Patient Care: Integrating Quality Improvement into a Medical School Curriculum." *American Journal of Medical Quality*, vol. 22, no. 2, 2007, pp. 112–116.

Wagner, E. H., B. T. Austin, and M. Von Korff. "Improving Outcomes in Chronic Illness." *Managed Care Quarterly*, vol. 4, no. 2, 1996a, pp. 12–25.

Wagner, E. H., B. T. Austin, and M. Von Korff. "Organizing Care for Patients with Chronic Illness." *Milbank Quarterly*, vol. 74, no. 4, 1996b, pp. 511–544.

World Health Organization. "Primary Health Care." Geneva, Switzerland: World Health Organization, 1978.