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Sandra N. Berryman, Sheri P. Palmer, James E. Kohl, and Jon S. Parham

The medical home offers a patient-centered model of care. The foundation of a medical home is the organized and continuous interprofessional care of patients.

Health care expenditures in the United States, the highest in all industrialized countries (Rampell, 2009), surpassed $2.2 trillion in 2007; this amount was more than three times the $714 billion spent in 1990, and more than 16% of the gross domestic product. As a result of this exponential growth, government, employers, and consumers increasingly struggle to manage health care costs. Medical costs caused 62% of all personal bankruptcies filed in the United States in 2007. Surprisingly, 75% of those filers had medical insurance at the start of their illness, and 60% had private coverage (Himmelstein, Thorne, Warren, & Woodhandler, 2009).

The roots of wasteful health care spending include mismanagement of chronic diseases, the growth of an aging population, overuse of prescription drugs, and general lack of coordination of patients' health care services. Spending on unnecessary care, such as overuse of antibiotics and laboratory tests, accounts for as much as 37% of wasted dollars. Primary care has been defined as comprehensive, first-contact, acute, chronic, and preventive care across the life span, and care coordination delivered by a team led by the patient's provider (Lee, Bodenheimer, Goroll, Starfield, & Treadway, 2008; Starfield, Shi, & Macinko, 2005). Failure of medical providers to coordinate patient care and submission of fraudulent claims are responsible for nearly 50% of wasted dollars. Some experts claim up to 40% of health care is unnecessary, and point to the need to streamline the current system for more cost-effective service delivery (Fox, 2010). One health care model that may lead to improvement is the medical home.

History

The medical home originated in the early 1960s among pediatric caregivers, and continuous health care by one caregiver became common among pediatric patients (Malouin & Turner, 2009). However, adults did not have a similar model, and medical groups began to seek better ways to manage adult care. The American College of Physicians, American Academy of Pediatrics, and American Osteopathic Association endorsed the idea as a desirable method for total patient care (Carrier, Gourevitch, & Shah, 2009). By 2005, groups ranging from major health plans to Fortune 500 companies had endorsed the medical home (Rittenhouse, Casalino, Gillies, Shortell, & Lau, 2008). Many of these groups worked with providers to form the Patient-Centered Primary Care Collaborative. The National Committee for Quality Assurance (NCQA) had a major role in this collaborative, establishing basic tenets for the medical home (Carrier et al., 2009). These included the following (Rittenhouse & Shortell, 2009):

1. A relationship between the patient and his or her medical provider
2. A provider who takes charge of total patient care, including arrangements for specialty care
3. Open access to health care
4. Ongoing care managed by the same provider to assure coordination and collaboration
5. Quality and safety as key aspects of the system
6. Transparent and fair payment

According to a description by the Commonwealth Fund, patients who receive care through a medical home have the same medical provider, have access to the medical provider by telephone, and have open access to care at any time of the day. In addition, office visits are well organized and on schedule (Carrier et al., 2009).

The American Academy of Family Physicians along with the Centers for Medicare & Medicaid Services

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(CMS) launched a 2-year trial of medical home care named "The National Demonstration Project." Thirty-six family practice sites were chosen to participate within eight states, with almost half of the medical home practices being trialed in Michigan. The sites were selected to represent a large diversity of clientele and organizational structure (Carrier et al., 2009; Nutting et al., 2009; Rittenhouse & Shortell, 2009). According to Gray (2011), there are not enough primary care providers and needs intensify in underserved areas. The Michigan Primary Care Transformation (MiPCT) began in 2011 and was the largest patient-centered medical home (PCMH) in the nation (Harcus, 2011).

Foundation Elements of PCMH

The PCMH model was developed as a response to national health care reform following March 2010 passage of the Patient Protection and Affordable Care Act. PCMH includes patient-centered primary care with new models of interdisciplinary team practice, payment reform, increased utilization of information technologies, and increased patient access and involvement resulting in better satisfaction, quality care, and cost savings (Korda & Eldridge, 2011a; Wise, Alexander, Green, Cohen, & Koster, 2011). While a number of elements are used to describe PCMH in the literature, the predominate ones include access to care, quality assurance, team-based care, electronic medical records, information technologies, and payment incentives for value based care; each poses unique challenges (Korda & Eldridge, 2011b; Scholle, Saunders, Tirodkar, Torda, & Pawlson, 2011).

A major challenge to the provision of primary care is the frequent choice by medical school graduates not to specialize in primary care (Harcus, 2011). This ongoing choice of non-primary care specialties worsens the mismatch of patients to health care workforce in a system with an expanded reliance on primary care, an increase in primary care functions, and burnout among practicing physicians who are being asked to deliver more services in less time (Wise et al., 2011). At the same time, nurse practitioners (NPs) who also can deliver primary care have met with some resistance in organized medicine and face inconsistent scope of practice regulations among states. In 2012, 18 states allowed NPs to function independently as primary care providers, while 32 states required various levels of physician involvement (Cassidy, 2012). Health care reform indicates NPs are poised as never before in history to step into the role of primary providers nationwide. In 2010, the Health Resources and Services Administration granted $15 million to support and study 10 nurse-managed clinics for 3 years. Another $30 million were designated to train 600 NPs, with another $200 million allotted for a training demonstration project emphasizing more advanced-practice nurses (Cassidy, 2012). Nursing education focuses on teaching coordination of care, quality assessment, and collaboration with other providers, and is well equipped to evolve into a lead role within PCMH implementation (Korda & Eldridge, 2011b).

Patient-centered care includes active engagement of patients in shared decision making. This represents a marked cultural change for medical providers, who traditionally relate to patients as passive recipients of their care. Laurant and co-authors (2009) concluded patient health outcomes directed by primary care nurses and physicians created higher patient satisfaction when the patient was at the center of the health care system.

PCMH models of practice incorporate evidence-based processes of care, including population-based care management facilitated by patient registries, performance measurement and improvement, point-of-care decision support, and information technology (Rosenthal, 2008). National data showed insufficient infrastructure exists to support widespread implementation of the medical home model (CMS, 2010). In Massachusetts, medical home capabilities were greater in large practices and in those with wide network affiliations (Friedberg, Safran, Coltin, Dresser, & Schneider, 2009). Newer literature suggests larger organizations achieve higher levels of recognition (Scholle et al., 2011), which means they had better success rates of implementation of the PCMH criteria. Recognition criteria included access and communication, patient tracking, care management, patient self-management, electronic prescribing, test tracking, referral tracking, performance measures, and advanced electronic communications (Scholle et al., 2011).

The definition of PCMH and elements to include vary depending on the size and type of practice. A key component PCMHs share is electronic clinical information technology. If introduced correctly, interoperable electronic health records (those freely permitting data exchange between systems) can facilitate coordination, increase efficiency, and potentially improve health outcomes. Integration of health information technology is an area of "intense interest…and topped the list of issues highlighted by staff" (Bates & Bitton, 2010, p. 616). Change fatigue was mentioned regarding information technology implementation (Bitton et al., 2012; Wise et al., 2011). Medical assistants were added to the practices in Massachusetts PCMH pilots to streamline providers' time by reviewing problems lists, medications, immunization, laboratory results, and vital signs. Use of electronic medical records (EMR) did improve efficiency and decrease time spent documenting in the 18-month qualitative study. A huge challenge to the PCMH practices was moving from fee-for-service to capitated platform of practice (Bitton et al., 2012). The Obama Administration has invested $19 billion to stimulate the implementation of clinical information technology. Challenges include payment and internal practice support, new staffing models, and learning collaborative and clinical information technology (Liebhaber & Grossman, 2007).

Another challenge for PCMHs is the need for payment reform. The payment structure of the medical

home is intended to provide compensation for care coordination, care management, and medical consultation outside the traditional face-to-face visit. The medical home also allows financial recognition of case-mix differences, adoption and use of clinical information technology for quality improvement, reduced hospitalizations, and achievement of quality targets. Case-mix adjustment is particularly important because practices functioning as patient-centered medical homes may attract patients with complex chronic illnesses and multiple co-morbid conditions, and these practices should be compensated appropriately for managing such health problems (Korda & Eldridge, 2011a). Although paying medical providers for their services both within and beyond the office visit is essential, the size and nature of the incentives that will drive total practice transformation are not known. Providers need to be incentivized to make the system changes that reduce hospitalization and improve quality outcomes. Implementation of more wellness public health programs in workplace and community would help PCMH development (McLellan et al., 2012).

The NCQA (2009) has provided leadership in developing standard measurement criteria, and has developed a voluntary program for primary care medical home recognition. However, initial NCQA standards have been criticized for overemphasizing information technology infrastructure and inadequately crediting practices for delivering on other aspects of the model, such as developing continuous relationships and improving the patient experience (Nutting et al., 2009). According to a 15-year descriptive study of National Institutes of Health-funded PCMH projects, the greatest obstacle for "well-educated health care providers who want to do well" (Crabtree et al., 2011, p. S33) was time for reflection in meetings where PCMH team members think about what they are doing. This was supported by interviews with providers who declared their motivation grew from improving rational, high-quality care rather than from financial bonuses (Bitton et al., 2012).

Public perception of the medical home has evoked comments such as the following: "Sounds like a nursing home," and "First you go to the medical home, and then you go to the funeral home" (Ross, Igus, & Gomez, 2009, p. 11). After a few years of pilot programs, a review of the literature concerning patient outcome assessment of the PCMH identified 61 articles investigating whether PCMHs work. Preliminary results are mixed. Reid and colleagues (2009) found patient satisfaction was higher in 22 of these models of medical homes than other care delivery systems. Other findings supported patient satisfaction and positive association with the PCMH. Reviewers also noted an increase in service utilization with a decrease use of inappropriate services (Alexander & Bae, 2012). Another study found small improvements in condition-specific quality of care but not patient experience (Jaen et al., 2010). In addition, primary care remains stigmatized by the gatekeeper image of the managed care era, and health care providers would be described better as personal health care providers or navigators.

Cost savings from implementation of the medical home model will require clinicians and practices to develop new business models and new staffing structures, incorporate new tools and technologies, and engage in new ways of working with health plans, consumers, and patients while continuing the daily work of providing patient care. Savings under the medical home model will come in decreased redundancies, decreased medical errors, decreased emergency department visits and hospitalizations/rehospitalizations for recently discharged patients, and prevention of costly complications. According to an 18-month qualitative study done in Massachusetts, a PCMH can decrease medication errors for approximately 1 in 10 patients (Bitton et al., 2012). PCMH offers a team-based approach to deliver health care with improved coordination and information sharing to promote higher-quality outcomes at a lower cost (McLellan et al., 2012).

Challenges to Implementation

Cost savings from implementation of the medical home model will require clinicians and practices to develop new business models and new staffing structures; incorporate new tools and technologies; and engage in new ways of working with health plans, consumers, and patients while continuing the daily work of providing patient care. First, many health care providers work in relatively small practices. Because a medical home involves linking a constellation of coordinated, patient-centered services to a diverse patient population, practices will encounter geographical, logistical, technical, philosophical, and economic challenges, especially small and/or rural practices. Although larger practices may have some advantage over small ones in transformation, most practices would be stressed and even overwhelmed to attempt a practice transformation due to various internal (e.g., resistance to change by autonomous providers and staff) and external (e.g., low patient health literacy) barriers. Practices may be eager to transform into a PCMH, but lack the initiative, knowledge, and resources to embark on such a journey (Arar et al., 2011).

Alliances with professional practice organizations, other interested practices and hospital systems, governmental agencies, and professional colleges can supply part of these resources, additional reimbursement, and change facilitators. For example, TransforMED, a subsidiary of the American Academy of Family Practice, provides products such as "A Solution for Small Practices," an in-depth resource package to assist small practices in becoming a PCMH. Their experience showed practices with more than six providers or practices not self-owned may have more difficulty in the transformation (McGeeney, 2010). Insight for transformation of various practice types may come from large demonstration projects, such as the

MiPCT in cooperation with stakeholder Blue Cross and Blue Shield of Michigan. MiPCT began October 2011 as the largest primary care PCMH demonstration project with about 1,800 providers in 500 Michigan practices. MiPCT and other similar PCMH experiments in seven other states total about 1,200 medical homes (Gray, 2011) and are utilizing a federal CMS Innovation Center grant which should provide guidelines for future PCMH transformations (McGeeney, 2010).

Also, primary care providers and office staffs will need to be educated, coached, and given feedback on their ability to develop new processes and communicate better both internally and with patients, other specialists, hospitals, emergency rooms, and various community resources, through periodic reassessment (Miller & Cohen-Katz, 2010). Time for transformation to a PCMH is dependent on readiness of all participants for change, implementation of an EMR, and development of relationships with community resources, such as home health agencies, durable medical equipment companies, and interpretive services, for example. It involves a rebirth of the practice into a continuous learning, team-based, collaborating entity with the patient at the center of activity, operating around the clock (Markova, Mateo, & Roth, 2012).

In addition, even though 68% of U.S. family physician practices, the highest percentage among office-based specialities, used an EMR in 2011 (Xierali et al., 2013), its implementation is more expensive and time consuming than estimated. Gary Anthony, principal with KMPG (professional services company), in an interview with *InformationWeek Healthcare* said,

> This is the largest, most significant investment that a health delivery organization will go through. EHRs touch and change everything within the organization, and so I think [there's been] a lack of experience and a lack of understanding about the magnitude of the effort. (as cited in Lewis, 2012, para. 3)

The initial monetary cost and stress of implementing an EMR are considerable and may not enhance profit, especially in the early years. Adopting and negotiating the EMR was the primary reason 53% of physicians left private practice for employment in 2000-2012, according to an Accenture Physicians Alignment Survey in 2012 (DelVecchio, 2012). Moreover, the personal stress of implementing an EMR and new quality reporting standards has resulted in higher rates of provider burnout (Krupa, 2012). DelVecchio (2012) indicated:

> A five-physician practice can expect EHR implementation costs of over $160,000 and more than half of that – $85,000 – will be spent on first-year maintenance, as noted in a study of 26 primary care physician offices in Texas. The expected maintenance fees are nearly twice what an eligible provider can receive in incentive payments; however, that shouldn't necessarily discourage providers from EMR adoption. IT supplier CDW [technology product and service company] conducted a study that noted proper use of EMRs could result in an additional $150,000 per physician every year. (para. 4)

However, even early adoption and skilled use of an EMR does not guarantee digital information interface fluidly between different members allied within and with the PCMH. Skilled medical information technologists and informatics-trained health professions will assist in system choice and interfacement among practice and entity sites.

Further, reimbursement options that would enhance the functions of the PCMH, fairly compensate the providers and staff for their cognitive and technical skills, and eliminate wasteful utilization spending are being tested, but no one option has been raised as a best model. A delicate reimbursement balance needs to be attained that will foster innovation in efficiency unique to individual home sites, reward non-provider team community partners for patient improvements, promote independence from government sustenance and undue control by insurers, and yet allow opportunity for patient service interventions such as health literacy. Customization of reimbursement options, such as capitation fee-for-service hybrids, in individual sites based on the unique needs and characteristics of individual practices appear to be necessary (Berenson & Rich, 2010), and monetary distribution plans among home participants will require negotiation.

Questions remain concerning who is to be the lead provider and what players should be inside or associated with PCMH. Physician and advanced practice nurse (APN) organizations have each claimed their members are best qualified to be the providers/leaders at the PCMH (Lowes, 2012; Manion, 2012). However, in reality, whoever provides the best in patient care and home leadership function will be the best choice at each site. This question, especially in practice transformation, sometimes may be answered best by using co-leaders (Gallagher et al., 2010). Also, many states do not allow independent practice by qualified nurses and the scope of practice may be state-dependent, which may impair their provider function in a PCMH in some states (American Nurses Association, 2013). What is defined as a clinically qualified nurse practitioner is variable in definition from state to state. Therefore, APN educational standards should be reviewed for clinical depth, and federal legislation mandating consistent regulation should be developed to allow independent practice by fully qualified APNs.

Defining the leadership and practice players for the PCMH will require reorientation of some players, continuing education, and negotiation and innovation, but may lead to higher morale and job satisfaction (Lewis, 2012). Some players will need significant reorientation to work more independently and collaboratively, such as nurses who have never managed usual immunizations independently for a practice. Some have suggested enhancing the PCMH team by the addition of care managers and practice facili-

tators. Practice facilitators are often outside the practice, and are health care or business-trained persons who drive the quality improvement activities and help build a team orientation. Care managers are usually inside the practice, are trained most often as nurses, initiate care plans, and coordinate services to patients (Taylor, Machta, Meyers, Genevro, & Peikes, 2013). Enhancement of medical school and primary care residency education to include consistent clinical exposure to the PCMH in primary care clerkships, case-based clinical preventive medicine, inter-professional education, and enhanced health care service education is needed (Markova et al., 2012).

Evaluation of PCMH outcomes will need to continue with statistical enhancement, extend over several years, and offer generalizability if a full transformation of the health care system is to be attempted. The Patient-Centered Primary Care Collaborative (2009) has released studies involving over a million patients from thousands of PCMH sites that show significant cost savings, increased patient satisfaction, and improved quality of patient care (Grumbach & Grundy, 2010). In contrast, Nocon and co-authors (2012) observed an increase in operating costs of $2.26 per patient per month in 2009 in federally funded health centers nationally that had higher PCMH scores than at centers scoring lower. Such an undertaking as transforming the national health care system begs intense, valid, and generalizable studies to add to the knowledge base.

Conclusion

An interprofessional team with appropriate education and clinical leadership will be necessary to satisfy the triad mandate of the Affordable Care Act and serve the needs of the whole patient in the PCMH. Primary care physicians and APNs, through the PCMH, have an opportunity to introduce a full practice model in alliance with patient service partners inside and in the community (American Academy of Family Practice, 2012; Schram, 2010). Nurses and physicians have the cooperative opportunity to move disease prevention and health promotion from the grant-writing table into patient discussion and care planning in the medical home practice. If the PCMH is to be more than just another attempt to control health care costs, "nurses must become transformational leaders motivating others to perform beyond their customary practice expectations" (Miller, 2012, p. 2). MSN

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Objectives

This continuing nursing educational (CNE) activity is designed for nurses and other health care professionals who are interested in the medical home model. After studying the information presented in this article, the nurse will be able to:

1. Describe the history of the medical home.
2. Discuss the foundational elements of the patient-centered medical home.
3. Outline challenges to implementing the medical home model.

Note: The authors, editor, and education director reported no actual or potential conflict of interest in relation to this continuing nursing education article.

This educational activity has been co-provided by AMSN and Anthony J. Jannetti, Inc.

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This article was reviewed and formatted for contact hour credit by Rosemarie Marmion, MSN, RN-BC, NE-BC, AMSN Education Director. Accreditation status does not imply endorsement by the provider or ANCC of any commercial product.

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