

# The Role of New Models of Care in Improving Health and Reducing Costs

## A Review of the Evidence

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## I. Introduction

As the US population ages and the number of people living with chronic conditions continues to increase, the challenges of providing high-quality care while controlling health care costs within the current health care system are daunting. Fundamental changes in the delivery of health care are necessary. Several new models of care have the potential to improve quality of care, provide comprehensive care for chronic conditions, and decrease costs. Policymakers have recognized the potential of these models, and therefore several new models of care are featured prominently in the Affordable Care Act (ACA).

Effective implementation of these models requires a thorough understanding of these models and their effects on costs, utilization, quality of care, and health outcomes. We present several of these models in this paper, and describe the barriers to broader implementation of these new models of care. Finally, we conclude by noting how PPACA will support implementation of successful new models of care.

## II. New Models of Care

To provide better quality care—especially for chronic conditions—and decrease costs and utilization, medical professionals have designed and implemented several new models of care, including the Chronic Care Model, Patient Centered Medical Home Model, the bundled payment model, and models designed to care for elderly patients. Other models, such as accountable care organizations and care platforms, are also being considered. In the following section, we describe each model and review evidence related to its effects on patient outcomes and health care costs.

### Chronic Care Model

*Overview.* Developed by the MacColl Institute for Healthcare Innovation, the goal of the Chronic Care Model (CCM) is to ensure coordinated, effective management of care for chronically ill patients. The CCM is composed of six elements: “community resources, the health care system surrounding the provider organization, patient self-management, decision support, delivery system redesign, and clinical information systems.”<sup>1</sup> Effective implementation of the CCM requires creating a health care delivery system focused on quality improvement, team-based care, and regular, planned contacts with chronically ill patients; utilizing decision support tools and clinical information systems to assist in the delivery of evidence-based care; helping patients take a more active role in managing their own conditions; and working with the community to improve population health.<sup>2</sup> In particular, effective deployment of the CCM requires the effective use of a broader range of health professionals and the redefinition of established provider roles and responsibilities.

*Effects on health care costs.* Coleman and colleagues’ 2009 review of CCM studies found limited evidence to suggest that implementing the CCM may reduce health care spending.<sup>3</sup> The review cites one study concluding improved hemoglobin A1c control in diabetic patients resulted in annual decreases of approximately \$700 to \$1,000 in health care expenditures.<sup>4</sup> The review also notes another study that assessed the effects of “office systems”—including disease registries, health information technology systems, or patient education—and quality improvement strategies on the costs of care for patients with diabetes or congestive heart failure. This study found that across the 84 clinics in the study’s sample, team meetings to discuss patient health issues and the use of registries to identify high-risk-patients were associated with decreased health care costs over a three-year period.<sup>5</sup>

On the other hand, the Medicare Coordinated Care Demonstration Project, a large scale experiment in case management for chronically ill Medicare beneficiaries, failed to lower beneficiaries' Medicare expenditures.<sup>6</sup> Although it is unclear to what extent each organization in the demonstration program employed CCM elements in designing their care management interventions, the participating organizations utilized nurses to provide education and coordinate care for chronically ill Medicare beneficiaries. Only two organizations succeeded in reducing beneficiaries' expenditures and hospitalizations. According to Peikes and colleagues, these organizations' interventions may have been successful because they more carefully targeted program enrollees, educated patients on medication adherence, and worked closely with physician practices and hospitals.<sup>6</sup>

*Effects on health outcomes and quality.* In their review of recent studies of CCM interventions, Coleman and colleagues find that practices that apply the CCM "generally improve the quality of care and the outcomes for patients with multiple chronic conditions."<sup>3</sup> Tsai and colleagues conducted a meta-analysis of 112 studies to determine the effects of CCM implementation on quality of care processes and health outcomes for patients with asthma, congestive heart failure, depression, or diabetes.<sup>7</sup> The meta-analysis' results suggest that adoption of at least one CCM element improved both health outcomes and care processes. Similarly, Minkman and colleagues reviewed the results of 21 studies of the CCM and found that 15 reported statistically significant improvements in both process and outcomes measures for patients with asthma, cardiovascular disease, diabetes, and depression.<sup>8</sup>

Tsai and colleagues speculate that delivery system redesign, a CCM component that includes team care and care coordination, and patient self-management support had the most impact on health outcomes. Although implementing only one element of the CCM may improve health outcomes, Bodenheimer's review of the effectiveness of each CCM component suggest that these components may be more likely to improve clinical outcomes when they are implemented together.<sup>1</sup>

### Patient-Centered Medical Home

*Overview.* The Patient-Centered Medical Home (PCMH) is a comprehensive care model intended to increase primary care access and improve care coordination.<sup>9</sup> Rosenthal identified five principles that define a PCMH.<sup>10</sup> First, each patient in a medical home has a personal medical provider (usually a physician) who provides "continuous and comprehensive care."<sup>10</sup> Second, the personal or primary medical provider is the leader of a team of caregivers for the patient, including physician specialists, midlevel providers, nurses, social workers, care managers, dietitians, pharmacists, physical and occupational therapists, family and community. Third, the personal physician provides comprehensive care, which includes preventive care, acute care, chronic care, and end-of-life care. Fourth, the primary provider coordinates patient care to avoid confusion or overuse. Fifth, quality improvement is supported through evidence-based practices, information technology, patient-centered medical decision making, enhanced access to care, such as extending hours and methods of communication, and increased accountability. The PCMH model should be supported by physician payment reforms, since PCMH practices provide care coordination services that are currently poorly reimbursed in the current fee-for-service system.<sup>9</sup>

*Effect on health care costs and utilization.* Available evaluations of the effect of PCMH on health care costs are limited. Although several pilot demonstration projects of PCMH are underway, either no results or limited preliminary results are available. In addition, many studies evaluate programs that contain only a few components of the PCMH model, such as continuity of care or electronic medical records.<sup>11</sup> These studies are also limited due to the inconsistency amongst implemented PCMH models

(i.e., implemented PCMH vary considerably based on organization, region, state). However, here we present available results, whether final or preliminary.

Roby and colleagues studied a safety net-based system of care that assigned uninsured, low-income residents of Orange County in California to a PCMH which provided case management, team-based treatment approaches, and increased access to primary and specialty care. These authors found that those who were assigned to a medical home for longer periods of time were less likely to have one or more emergency room (ER) visits as compared to those without a steady medical home.<sup>12</sup>

Homer and colleagues reviewed articles about PCMH and children with complex behavioral, emotional, developmental, or physical chronic conditions.<sup>13</sup> These authors found that adjusted hospital inpatient charges for children with special needs decreased from \$28.1 million in 1989 at the time of implementation to \$14.6 million in 1995.<sup>13</sup> In a study of forty-three pediatric primary care practices in 5 states, Cooley and colleagues found that strong primary care medical homes were less likely to hospitalize children with chronic conditions and that chronic condition management or coordination reduced hospitalizations and emergency department visits.<sup>14</sup> Additional research in 2004 focusing both on children with special health care needs and the general pediatric population found no significant cost savings associated with PCMH.<sup>11</sup>

Community Care of North Carolina (CCNC), a PCMH program for Medicaid recipients in North Carolina, has also demonstrated effects on health care costs and utilization. CCNC uses care coordination and case management, evidence-based guidelines, performance reporting, and patient tracking to promote quality of care and cost savings. In the 2006 fiscal year, estimated cost savings for CCNC as compared to the state's previous primary care case management (PCCM) program were \$150-\$170 million. In addition, a University of North Carolina study found that, as compared to the PCCM program, CCNC resulted in \$3.3 million in savings for people with asthma and \$2.1 million in savings for people with diabetes between 2002 and 2006. As compared to patients in the PCCM program, inpatient hospitalizations and emergency room visits were reduced for asthma patients in CCNC, and diabetes patients in CCNC experienced fewer hospitalizations.<sup>15</sup>

Preliminary results from PCMH pilot projects in diverse settings and patient populations indicate cost savings with decreased inpatient hospital and ED utilization (see Appendix). At a minimum, these cost savings offset the cost of increased care coordination.<sup>16</sup> More thorough results of these pilots should be available within the next few years.

*Effects on health outcomes and quality.* Evidence of improved quality of care or improved health outcomes of PCMHs is also limited, partly due to many of the same reasons mentioned earlier.

Rosenthal concludes that "the peer-reviewed literature documents improved quality, reduced errors and increased satisfaction when patients identify with a primary care medical home."<sup>10</sup> This conclusion is based on evaluations of individual components of the PCMH, such as the team-based approach or evidence-based medical decision-making.

Jaen and colleagues studied patient outcomes of a PCMH national demonstration project after 26 months.<sup>17</sup> 36 family practices implemented components of PCMH, and after two years these practices demonstrated small improvements in the quality of chronic care and preventive care and in health care access. Implementation of PCMH components did not affect patient experiences.<sup>17</sup>

The Commonwealth Fund 2006 Quality Survey found that adults who have medical homes have improved access to care and improved rates of preventive screenings.<sup>18</sup> In addition, this survey found that medical homes reduce disparities in access to care, as 74% of adults with a medical home are able to get the care they need and only 52% of adults with a regular provider not associated with a medical home received the care they need. 38% of adults without a regular medical provider get the care they need. Specifically, medical homes increase access to care for minorities and reduce disparities in access to care.<sup>18</sup>

While acknowledging limitations to their review, Homer et al. concluded that there was moderate evidence suggesting PCMHs resulted in improved health outcomes for children with complex medical needs. Specifically, PCMHs led to “better health status, timeliness of care, family centeredness, and improved family functioning”<sup>13</sup> for special needs children with complex health needs and their families.<sup>13</sup>

CCNC has demonstrated significant improvements in quality of care and health outcomes. Since the beginning of CCNC, chart audits have documented a 21% increase in asthma staging and a 112% increase in the number of asthma patients receiving the influenza vaccine.<sup>19</sup> In addition, by 2007, CCNC diabetic patients “were exceeding National Committee for Quality Assurance benchmarks in most areas.”<sup>19</sup>

Preliminary results from PCMH pilot projects mentioned above demonstrate preliminary findings of improved health outcomes, patient experiences, quality of care, and access to care (see Appendix).<sup>16</sup> More data will be available within the next few years.

### Models of Care for the Elderly

Geriatric populations bear a greater burden of chronic disease than do younger populations. Several models have been developed for improved geriatric outpatient care. Boulton and Wieland recently published a systematic review of controlled trials of such models and identified the Guided Care, Geriatric Resources for Assessment and Care of Elders (GRACE), and the Program for All-Inclusive Care PACE. The overarching themes of each of these models are individual comprehensive health assessment, evidence-based care planning and implementation, coordination with other providers, and patient and caregiver engagement in self-care. These themes have been identified as being associated with high-quality, cost-effective health care for older patients with multiple chronic medical conditions.<sup>20</sup> Another new model for the geriatric population is the Transitional Care Model, and we describe and evaluate these four models below.

#### **Guided Care**

*Overview.* The Guided Care model incorporates disease management, self-management, case management, lifestyle modification, transitional care, caregiver education and support, and geriatric evaluation and management. A registered nurse works with two to five primary care physicians to manage between fifty and sixty elderly patients with chronic conditions. The nurse conducts an in-home assessment in order to develop two evidence-based management plans—a Care Guide for the medical providers and an Action Plan for the patient and caregivers. Following the development of these plans, the nurse closely monitors the patient’s conditions, encourages self-management, and provides education to both the patient and caregivers. The nurse is also responsible for coordinating care, ensuring smooth transitions across different sites of care (e.g. the hospital, a nursing home), and providing information about other community resources.<sup>21</sup>

*Effects on costs and health care utilization.* Preliminary cost and health utilization results from a cluster-randomized trial suggest that, Guided Care patients spent 24% fewer days in the hospital and 37% fewer days in a skilled nursing facility. Guided Care patients also experienced 15% fewer ED visits, and attended 9% more specialist visits.<sup>22</sup> Based on these differences in utilization, Leff et al. estimate an annual net costs savings of \$75,000 or \$1,364 per patient.<sup>22</sup>

*Effects on health outcomes and quality.* No data is available on the Guided Care model's effects on health outcomes, but a small pilot study designed to evaluate the quality of the primary care experience for Guided Care patients found that Guided Care may improve the quality of patient-physician communication.<sup>23</sup>

In the small cluster-randomized controlled trial mentioned above, Boyd and colleagues found that, after eighteen months of the intervention, patients receiving Guided Care were more likely to rate the quality of their chronic care higher as compared to patients receiving usual care.<sup>24</sup> In addition, early results from this trial suggested that physicians were more likely to be satisfied with their interactions with Guided Care patients as compared to usual care patients.<sup>25</sup> After one year of the intervention, physicians remained more satisfied with their interactions with Guided Care patients and with their clinical knowledge about Guided Care patients.<sup>26</sup>

This trial also provides information about caregiver strain and depression. Wolff and colleagues found that, while Guided Care caregivers generally reported a higher quality of care for their loved ones (as compared to usual care caregivers), there were no significant differences in strain, depression, or productivity between Guided Care caregivers and usual care caregivers.<sup>27</sup>

### **Transitional Care Model**

*Overview.* The goal of the Transitional Care model is to improve transitions across care settings, prevent re-hospitalizations, and reduce the rate of decline in health status for high-risk older adults with chronic conditions. The model is not intended to be utilized for continuous case management.<sup>28</sup> In the model, a Transitional Care Nurse (TCN) is given primary responsibility for patient management. The TCN leads a team of physicians, nurses, social workers, discharge planners, pharmacists, patients and caregivers in providing comprehensive, coordinated in-hospital planning and home follow-up care.<sup>28</sup> As the primary coordinator, the TCN works with the patient and caregivers while in the hospital to create an evidenced-based plan of discharge care. For 2 months after hospital discharge, the TCN regularly visits the home and is available (via phone) 7 days a week. In addition, the TCN accompanies the patient to the first follow-up visits.<sup>29</sup> In this model, the TCN plays a crucial role in empowering patients and caregivers to self-manage conditions and medication at home.<sup>30</sup>

*Effect on costs and health utilization.* While this specific model has not been evaluated, comprehensive discharge planning and care transitions interventions have been studied.

In 1994, Naylor and colleagues evaluated comprehensive discharge planning in the elderly and found that comprehensive discharge planning with a nurse specialist and home follow-up for 2 weeks resulted in fewer admissions, fewer days hospitalized, lower readmission charges, and lower charges for health care services after discharge in the 6 weeks after discharge.<sup>31</sup>

In 2004, Naylor and colleagues studied a transitional care intervention in older adults with heart failure. An advanced practice nurse provided intensive discharge planning and three months of home

follow-up for discharged patients. This intervention increased the length of time between discharge and readmission or death, decreased the overall number of hospitalizations and resulted in cost savings.<sup>32</sup>

Coleman and colleagues also studied a transitional care intervention in patients with complex health needs.<sup>33</sup> A “transition coach” was responsible for guiding patients and coordinating care between providers. Patients were encouraged to be part of the health care team and take an active role in their care. The intervention patients had lower re-hospitalization rates 90 days after discharge and had lower hospitalization costs at 180 days after discharge.

*Effect on health outcomes and quality.* No data is available for additional health outcomes or quality of care.

### **Geriatric Assessment and Care of Elders (GRACE)**

*Overview.* GRACE is a home-based care management in collaboration with the traditional primary care model and serves to improve referral for geriatric conditions, including falls risk, urinary incontinence, depression, and hearing loss.<sup>20</sup>

*Effect on cost and utilization.* The per patient cost is about \$105 per month, which is relatively cheap compared to the cost of skilled nursing care.<sup>34</sup> However, this is not covered by Medicare, so the funding must come from elsewhere. The effect on net cost savings and decreasing inpatient utilization is small.<sup>34</sup>

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*Effect on health outcomes.* Although cost savings are not astounding, the results from a study with two years of follow-up demonstrate gains in mental functioning and may be enough to justify this model.<sup>34</sup> There may be a way to extend this model to the general primary care setting, where nurses would work closely with patients to ensure adequate education about medical conditions and medications.

### **Program For All-Inclusive Care for the Elderly Model**

*Overview.* The Program for All-Inclusive Care for the Elderly (PACE) is an adult day-health program for frail elders who would otherwise require institutional care.<sup>35</sup> Both health care and recreational activities are delivered at PACE sites, which provide transportation services to those who need it. PACE sites feature a diverse mix of providers, including recreational and occupational therapists, nurses, social workers, nutritionists, and physical therapists. Each site also employs one physician who cares for the PACE participants. Because PACE participants receive all health care from the same facility, there is better coordination of care; however, each site is also responsible for coordinating all outside health care encounters, including specialist appointments and hospitalizations. Some sites also provide dentistry, optometry, podiatry, and audiology services, which traditional Medicare does not cover except in special diagnostic categories.<sup>36</sup>

*Effects on cost and utilization.* PACE programs operate by collecting per-patient-per-month fees, which are mostly covered by Medicare and/or Medicaid, and using those payments to provide participants with all necessary medical care, including specialist appointments, hospitalizations, and short-term skilled nursing facilities for rehabilitation.<sup>35</sup> In fact, the capitated payment system allows PACE sites to offer services that are not traditionally covered under Medicare.

The average PACE participant is older than eighty, has eight or more acute and chronic medical problems, and needs help with three or more activities of daily living such as bathing, toileting, dressing,

feeding, or walking.<sup>37</sup> Since the average cost of skilled nursing facilities is \$6,000 or more per month, it is more cost-effective to keep older, frail people in their homes as long as possible. However, it is worth noting that this may not be cost-effective model for a healthier population who does not require the intervention intensity of a program such as PACE.

*Effects on health outcomes.* A recent article by Wieland and colleagues looked at five-year survival among elderly in South Carolina who were enrolled in PACE, residing in nursing facilities, or enrolled in other home- and community-based waiver programs.<sup>38</sup> Those enrolled in PACE were older, more cognitively impaired, and had dependency for intermediate activities of daily living, but they had the best five-year survival (median 4.2 years compared to 3.5 years for those in waiver programs and 2.3 years for nursing home residents).<sup>38</sup> Accounting for the higher risk among PACE participants, the observed advantage is significant.

An observational study of PACE site characteristics and patient functional outcomes at twelve months revealed associations between better functional outcomes and the following factors: the medical director being a trained geriatrician; the medical director spending time in direct care of patients, and spending time at the site, in general; more highly effective teams; aides of similar cultural or ethnic background as the participants; capitated payments (at the time of the study, some PACE sites did not operate with capitated payment); and larger and more established PACE programs.<sup>39</sup> Better self-assessed health outcomes were also associated with larger, more established programs and increased diversity of staff and services.<sup>39</sup> Mortality was lower in sites with higher ratios of professionals to non-professionals, perhaps suggesting a greater medical emphasis on survival, and in those with a higher concentration of services provided to most or all participants.<sup>39</sup>

## Looking to the Future: Accountable Care Organizations and Care Platforms

### **Accountable Care Organizations**

There is little accountability in the current system for creating unnecessary capacity (e.g., building multiple outpatient MRI centers in a relatively small geographic area), practicing expensive medicine (e.g., ordering imaging and laboratory tests that are expected to be low-yield in altering the management decisions for a given patient), or providing lower quality care (e.g., not discussing a patient's high blood pressure readings on multiple consecutive visits). Bundled payments and pay-for-performance models do little to promote accountability for cost, quality or capacity.<sup>40</sup> ACOs, designed to counter this problem, are defined as networks providers who are collectively accountable for improving the quality of health care services and reducing costs for a defined patient population.<sup>41</sup> Nearly any delivery system could become an ACO, including integrated delivery systems such as Kaiser Permanente and Geisinger Health System, multispecialty group practices like Cleveland or Mayo Clinics, physician-hospital organizations, independent practice associations, or "virtual physician organizations," which are made up of small independent practices, often in rural areas. CCNC is an example of a virtual physician organization.

Bringing necessary infrastructure, resources, and leadership to smaller private practices will be a critical function of ACOs in ensuring improvements in quality of health services and reductions in costs. The hallmark of the ACO model is a shared savings payment approach, in which ACOs that meet quality-improvement and cost-reduction benchmarks receive from payers a share of the health care cost savings they generate.<sup>41</sup> ACOs can take on varying degrees of financial risk for meeting health care spending and quality benchmarks. Those that opt to put a larger share of their potential reimbursement at risk are eligible for larger shared savings. Physicians in an ACO can be continued to be paid according

to a fee-for-service model, even if the ACO network as a whole incurs gains or losses from meeting budget and performance targets. In order to meet the spending and quality benchmarks required to obtain shared savings, ACOs will have to lead systematic efforts to improve quality and reduce costs across the organization, whether by better utilizing mid-level providers, using point-of-care reminders and best-practices standards, improving care coordination, or implementing a wide variety of other delivery reforms.

### **Care Platforms**

Reform on provider roles in patient care is central to many new models of care. Currently, the discussion focuses on who will provide services and not what diagnostic and therapeutic services should be provided for certain conditions. Bohmer and Lawrence suggest that reforming care delivery requires first determining what services a patient needs before figuring out who will provide those services.<sup>42</sup> They propose the idea of Care Platforms as building blocks for health care delivery. “Families” of medical conditions or interventions are the primary basis for these platforms: chronic stable disease management; acute, life-threatening illness care; other acute care; prevention and health screening; palliative care; rehabilitation; and pregnancy and childbirth.

The authors cite Duke’s congestive heart failure clinic as an example of chronic stable disease management, in which the physician is involved in the initial patient visit but a mid-level practitioner manages stable patients, educating them about their medications, coaching self-care, doing phone outreach, and seeing patients in the office. Duke incorporates nutritionists and dieticians to teach culturally appropriate eating, with special attention given to foods that worsen heart failure or interfere with medications. Finally, lay community members teach patients how to shop for healthy and affordable food. In an acute heart failure exacerbation, the physician becomes more involved in patient care, acting as a primary care manager.

Applying this sort of structured business model to medical diagnoses and interventions may be more useful than merely shifting who does what work. As the population ages, staffing shortages grow, and scientific advances emerge, this may be an equally good alternative approach to providing high-quality cost-effective care.

### **III. Barriers to the implementation of new models of care**

Barriers to the broader implementation of new models of care may be categorized as either system-level or practice-level. System-level barriers—the health care context in which physician practices operate—include the lack of financial incentives for providing comprehensive, coordinated care; public confusion about new models of care; shortages of primary care physicians and other providers needed to implement these models; scope of practice laws; misplaced optimism about the ability of new models of care to drastically reduce health care costs in the short run; and difficulties in measuring practices’ success in implementing and utilizing new models of care. Practice-level barriers to diffusion of new models of care include an insufficient infrastructure for supporting primary care and physicians’ opinions of these models.

#### System-level barriers

*Financial incentives.* The predominance of the fee-for-service reimbursement system presents major obstacle to the implementation of new models of care. Primary care providers’ care coordination activities are often minimally reimbursed or not reimbursed at all.<sup>3</sup> Furthermore, savings resulting from

improved patient care management are likely to accrue to payers, rather than to physician practices, even though practices often must make significant financial investments to implement new care models.

Advocates of the patient-centered medical home model have expressed support for a hybrid payment model in which practices receive both fee-for-service compensation and a capitated payment to support care coordination activities.<sup>43</sup> Landon notes that it is unclear how providers will respond to this incentive, especially since that response will depend on the size of the payments. Providers may be unlikely to adopt new models of care if payments are too low to support the organizational reforms that practices may need to undergo to provide coordinated, comprehensive care.<sup>43</sup> Furthermore, no matter how payments to providers are structured, these payments may need to be adjusted for the demographic characteristics and severity of illnesses of the providers' patients. If such risk adjustment is inadequate, providers or facilities that treat vulnerable patients may be adversely affected. Worse, practices may discharge patients with complex health conditions from their practices in order to avoid delivering unprofitable care.

Finally, Landon adds that per-patient-per-month fees require the assignment of patients to particular primary care physicians, even though those physicians do not act as "gatekeepers" that regulate patients' interactions with the health care system.<sup>43</sup>

*Provider shortages.* In addition to providing little incentive to coordinate care, the fee-for-service payment system encourages medical students to specialize in fields other than primary care, which is relatively poorly reimbursed. The resulting shortage of primary care providers may serve as a barrier to the implementation of primary care-focused care models, such as the patient-centered medical home. Bodenheimer and colleagues note that there may not even be sufficient numbers of nurse practitioners and physician assistants to offset declining numbers of primary care physicians and effectively manage the ever-increasing population of chronically ill patients.<sup>44</sup> Other worrisome workforce trends include projected pharmacist shortages and a declining percentage of registered nurses working in community settings.<sup>44</sup>

The effective implementation of team-based care models will require a primary care workforce that includes a variety of provider types, like nurses and pharmacists. In particular, there is evidence to suggest that the use of nurse case managers may reduce utilization of health care services among patients with multiple chronic illnesses.<sup>44</sup>

*Scope of practice laws.* Scope of practice laws, which regulate providers' roles in patient care, may be another barrier to the increased use of innovative models of care. After all, many of these models require non-physician providers to assume new patient care responsibilities. If these providers are unable to take on these expanded roles, full implementation of certain care models may be challenging.

*Public perception.* The public's lack of understanding or awareness of new models of care may also impede the broader implementation of care delivery reforms. For example, Rittenhouse and Shortell note that the term "medical home" might prompt comparisons to "nursing homes."<sup>45</sup> The authors also suggest that consumers may have difficulty distinguishing patient-centered medical home model from the primary care physician gatekeeper model used by health maintenance organizations. Therefore, public education will be required to ensure that patients understand that the medical home is not intended to limited patients' access to care.<sup>45</sup> Patients, accustomed to receiving even routine care

from physicians, may also be reluctant to have their health care managed by multidisciplinary teams that include non-physician providers.

*Unwarranted optimism about short-term cost savings.* Rittenhouse and Shortell caution against expecting near-immediate cost savings after the implementation of a PCMH model.<sup>45</sup> The implementation of PCMH model—or any other new model of care, for that matter—requires physicians to change the way they provide care and therefore may temporarily generate inefficiencies that negatively affect health care costs or quality.<sup>45</sup> For example, Nutting and colleagues note that overall patient satisfaction across 35 practices decreased when the practices implemented a medical home model.<sup>46</sup> Therefore, “sufficient time [must] elapse” before researchers evaluate the cost-effectiveness of a new model.<sup>45</sup> Otherwise, a care model may be unfairly judged to be insufficiently cost-effective and therefore unnecessarily dismissed by policymakers and providers.

*Measurement.* Finally, the challenge of measuring a practice’s ability to carry out new patient-centered team-based care processes may hinder the implementation of new models of care. This issue has been explored in the context of the PCMH model. While multiple tools exist for assessing a practice’s medical home capabilities, none of these tools are ideal.<sup>43</sup> For instance, it has been suggested that the National Committee for Quality Assurance’s Physician Practice Connections-Patient Centered Medical Home practice assessment tool concentrates too much on practices’ health information technology infrastructure as opposed to the nature of the physician-patient interactions within the practice.<sup>45</sup> The successful development of tools to evaluate new models of care could increase the adoption rate of these care models by giving practices clear targets for which to strive.

#### Practice-level barriers

*Insufficient infrastructure.* Without the appropriate staff or health information technology capabilities, providers may have difficulty implementing new models of care. In general, physician practices in the U.S.—even larger ones—do not currently have the infrastructure needed to support delivery reforms.<sup>47</sup> For example, only about 30% of primary care physicians reported using an electronic medical record in 2008.<sup>48</sup> However, findings from a 2006-2007 survey of larger practices suggest that hospital- or HMO-owned practices or practices of 141 physicians or more are more generally likely to adopt PCMH elements, such as the use of nurse case managers. Similarly, a 2008 survey of primary care physicians found that physicians in larger practices were more likely than physicians in one or two-person practices to employ the seven care management tools—like group visits, nurse case managers, or patient registries—about which the survey authors asked.<sup>48</sup> Although larger practices are better-equipped to provide comprehensive, coordinated chronic disease care, approximately one-third of physicians practice in one- or two-physician offices.<sup>45</sup>

Small practices may not be able to afford the costs of implementing the infrastructure needed to support effective chronic care, even if these practices are provided with financial incentives to do so.<sup>48</sup> To address this problem, Shortell and Rittenhouse suggest that small practices could be incorporated into networks to share resources.<sup>45</sup> This “networking” approach has been employed in Community Care of North Carolina’s medical home program<sup>48</sup> and Vermont’s Blueprint for Health Medicaid pilot project.

Additionally, start-up costs for implementing new models of care may be prohibitive. An extreme example is the PACE model. The initial outlays average as follows: \$3 million to develop and furnish the center, \$3 million for staffing, \$75,000 per transport van, about \$500,000 for equipment and furniture, and \$100,000 for computers, software, and support.<sup>49</sup> (source: CHCF). Most new facilities

should plan to be “in the red” for the first three years of operation, by which time they should have an adequate participant base.<sup>50</sup>

*Provider beliefs and management skills.* Provider resistance to practice redesign may present another obstacle to the implementation of new models of care. For example, Nutting and colleagues found that the resistance of physicians to implementation of care teams was based on notions about the role of physicians in a practice setting.<sup>46</sup> Physicians may also see themselves too busy to implement reforms to improve chronic disease care.<sup>51</sup> Conversely, providers’ attitudes can also facilitate the implementation of new care models. When Bodenheimer and colleagues interviewed physician leaders at 15 physician organizations, the authors found that strong physician leadership and a workplace culture focused on health care quality were “the two most commonly mentioned facilitators “ of implementation of processes for improving chronic care.<sup>51</sup>

Furthermore, medical school training does not adequately prepare physicians in team leadership, yet many newer care models require physicians to take on managerial responsibilities.<sup>52</sup> This may prove difficult due to both lack of training and lack of desire to be a manager.

#### **IV. Conclusion: Affordable Care Act and New Models of Care**

Several provisions in the ACA may help reduce the barriers to broader implementation of new models of care. The ACA creates a new Center for Medicare and Medicaid Innovation and appropriated \$5 billion for the design, implementation and evaluation of new models of care and \$10 billion to test these models over the next ten years. The goals of such projects are to create provider accountability, to improve care coordination, to slow growth in federal health spending, and to serve as a model for private-payers.<sup>53</sup> In addition, the Secretary is directed to establish additional demonstration projects for Medicare, Medicaid, and other new models not specific to Medicare or Medicaid. These projects include ACOs, patient-centered medical homes, transitional care programs, and programs to support independent living for seniors.<sup>54</sup>

This additional support for broader implementation and evaluation will not only help reduce infrastructure and cost barriers, but will also generate additional evidence for these new models of care. Specifically, information about provider mix, generalizability to different patient populations, and payment reform will be invaluable as the health care system changes how care is delivered.

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**Appendix: PCMH Pilots (Preliminary Results)**

|                                                                                                               | <b>Description</b>                                                                                                                                                                                                                                                                                        | <b>Payment Method</b>                                                                                                                                                                                                                         | <b>Preliminary Results</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Personal Health Navigator<sup>1</sup></b><br><br><b>Geisinger Health System</b><br><br><b>Pennsylvania</b> | <p>A PCMH model pilot (11 primary care practices) with a nurse care coordinator, a personal health navigator, virtual care management support, home-based monitoring, and 24-hour access to primary and specialty care.</p>                                                                               | <p>Practice-Based Payments: a monthly stipend payment with incentive payments divided among providers.<sup>1</sup></p>                                                                                                                        | <p>Over the program’s first year:<br/>                     -20% reduction in inpatient admissions and<br/>                     - 7% decrease in costs.<sup>1</sup><br/>                     After two years:<sup>2</sup><br/>                     -Improvements in the quality of preventive care (74%), coronary artery disease care (22%), and diabetes care (34.5%)<br/>                     -14% reduction in total hospital admissions as compared to non-PCMH patients<br/>                     -Estimated \$3.7 million net savings due to the PCMH implementation</p> |
| <b>Chronic Care Sustainability Initiative</b><br><br><b>Rhode Island</b>                                      | <p>A multi-payer PCMH pilot with a focus on three conditions: diabetes, coronary artery disease and depression.<sup>3</sup></p>                                                                                                                                                                           | <p>Case management fees (\$3 per member per month)</p>                                                                                                                                                                                        | <p>Qualitative results indicate enhanced:<br/>                     -care coordination<br/>                     -patient engagement<br/>                     -use of technology<sup>4</sup><br/>                     Quantitative data indicates:<br/>                     -increased number of diabetic patients with an HbA1C&lt;7<br/>                     -increased number of diabetic patients with an LDL&lt;100<br/>                     -increased rates of depression screening and tobacco cessation counseling<sup>4</sup></p>                                     |
| <b>Integrated Health Services</b><br><br><b>Blueprint for Health</b><br><br><b>Vermont</b>                    | <p>A PCMH model supported by Community Health Teams (nurse coordinators, social workers, nutritionists, public health prevention specialists, and behavioral health counselors) which coordinate care.<sup>5</sup></p>                                                                                    | <p>The per-member-per- month payment is based on the quality of care the practice provides and can range from \$1.20 to \$2.39.</p> <p>The PMPM fees and the insurers (\$350) financially support the Community Health Teams.<sup>5</sup></p> | <p>ED visits and inpatient admissions decreased from 2007-2009 for patients in one health service area (St. Johnsbury).</p> <p>ED visits and inpatient admission rates increased from 2007 to 2009 in another health service area (Burlington).<sup>5</sup></p>                                                                                                                                                                                                                                                                                                               |
| <b>Group Health Cooperative of Puget Sound<sup>2</sup></b><br><br><b>Northwest U.S.</b>                       | <p>Consumer-owned integrated health care system implemented the PCMH at one Seattle clinic. Unique elements include decrease in PCP patient panels, expansion of visit time, and the use of planned telephone visits and virtual visits.</p>                                                              | <p>Per-member-per year cost of \$16</p>                                                                                                                                                                                                       | <p>-29% reduction in ER visits<br/>                     -11% reduction in ambulatory sensitive care admissions<br/>                     -Unpublished data from a 24 month evaluation may show a significant reduction in costs</p>                                                                                                                                                                                                                                                                                                                                            |
| <b>HealthPartners Medical Group BestCare PCMH Model<sup>2</sup></b><br><br><b>Minnesota</b>                   | <p>HealthPartners Medical Group, a group of 700 physicians that is part of a consumer-governed health system, implemented the PCMH model in 2004 with an emphasis on care coordination and chronic disease management through telephone calls, computer use, and face-to-face coaching. There is also</p> |                                                                                                                                                                                                                                               | <p>-129% increase in patients receiving optimal diabetes care and a 48% increase in patients receiving optimal heart disease care<br/>                     -350% reduction in appointment waiting time<br/>                     -39% decrease in ER visits and a 24% decrease in hospital admissions<br/>                     -Overall costs in PCMH clinics were reduced from 100% of the state network average to 92% of the state average in 2008.</p>                                                                                                                     |

|                                                                                                |                                                                                                                                                                                                                                           |  |                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                | a focus on increasing access to primary care through online scheduling, online test results, and “email consults.”                                                                                                                        |  |                                                                                                                                                                                                                                                                                    |
| <b>Genessee Health Plan HealthWorks PCMH Model<sup>2</sup> Flint, Michigan</b>                 | A PCMH model was implemented for a health plan serving 25,000 uninsured adults. A Health Navigator coordinates chronic and preventive care for patients and supports patients with community resources.                                   |  | -137% increase in mammography screening rates and a 36% reduction in smoking<br>-50% decrease in ER visits<br>-15% fewer inpatient hospitalizations<br>-Total hospital days per 1000 enrollees is now 26.6% lower than competitors                                                 |
| <b>Colorado Medicaid and SCHIP<sup>2</sup></b>                                                 | Colorado has implemented a PCMH program for children enrolled in Medicaid and SCHIP programs. The PCMH programs must be accessible 24 hours a day, 7 days a week with convenient scheduling processes and must provide care coordination. |  | -72% of the PCMH children have had well-child visits, compared to 27% of the non-PCMH children<br>-Median annual costs are lower for PCMH children (\$785) compared to non-PCMH children (\$1000); this is thought to be due to decreased ER visits and inpatient hospitalizations |
| <b>Intermountain Healthcare Medical Group Care Management Plan Plus PCMH Model<sup>2</sup></b> | Implementation of PCMH models began in 2001 with a focus on high risk elderly patients. RN care managers and improvement of electronic medical records are the cornerstones of this project.                                              |  | -3.4% absolute reduction in 2 year mortality<br>-10% relative reduction in total inpatient hospitalizations, with greater reductions in patients with complex chronic illnesses<br>-Annual net reduction in total costs of \$640 per patient                                       |

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