

1 The Advanced Medical Home:  
2 A Patient-Centered, Physician-Guided Model of Health Care

3  
4 Policy Monograph  
5 of the  
6 American College of Physicians  
7 January 22, 2006  
8  
9

10 **Executive Summary**

11 This policy monograph highlights some of the major problems with the health care system in the  
12 United States today and proposes a fundamental change in the way that principal – or primary  
13 care – is delivered and financed. It recommends voluntary certification and recognition of  
14 primary care and specialty medical practices that: provide patient-centered care based on the  
15 principles of the Chronic Care Model; use evidence-based guidelines; apply appropriate health  
16 information technology; and demonstrate the use of “best practices” to consistently and reliably  
17 meet the needs of patients while being accountable for the quality and value of care provided.  
18 The American College of Physicians introduces the term “Advanced Medical Home” to  
19 distinguish these practices and calls for consideration and testing of this model of care. The  
20 issues identified and positions offered in this monograph address major concerns about the status  
21 of the U.S. health care system. The monograph contains the following four policy positions:  
22

23 **Position 1. ACP calls for a comprehensive public policy initiative that would**  
24 **fundamentally change the way that primary care and principal care (whether provided by**  
25 **primary care or specialty care physicians) are delivered to patients by linking patients to a**  
26 **personal physician in a practice that qualifies as an advanced medical home.**  
27

28 **Position 2. Fundamental changes should be made in third party financing, reimbursement,**  
29 **coding and coverage policies to support practices that qualify as advanced medical homes.**  
30

31 **Position 3: Fundamental changes should be made in workforce and training policies to**  
32 **assure an adequate supply of physicians who are trained to deliver care consistent with the**  
33 **advanced medical home model, including internists and family physicians.**  
34

35 **Position 4: Further research on the “Advanced Medical Home” model and a revised**  
36 **reimbursement system to support practices structured according to this model should be**  
37 **conducted and should include national pilot testing.**



1 Our system of private health insurance and governmental programs emphasizes episodic  
2 treatment for acute care. Care management, proactive or planned care, active cross-discipline  
3 management, and even some preventive care are often uncovered services or are poorly  
4 reimbursed. Yet, 45 percent of the U.S. population has a chronic medical condition and about  
5 half of these, 60 million people, have multiple chronic conditions.<sup>21</sup> For the Medicare program,  
6 83 percent of beneficiaries have one or more chronic conditions and 23 percent have five or more  
7 chronic conditions.<sup>22</sup> Within ten years (2015) an estimated 150 million Americans will have at  
8 least one chronic condition.<sup>23</sup> The organization of health care as well as payment and  
9 reimbursement policies needs to change to accommodate this shift from acute to chronic care.  
10 But, who will care for the chronically ill and elderly patients, if current trends continue and there  
11 are not enough primary care physicians?  
12

13 In this paper, ACP proposes consideration of an “Advanced Medical Home” model that offers  
14 the potential to improve U.S. health care by focusing on strengthening and supporting the  
15 patient-physician relationship. This model entails a central resource (the Advanced Medical  
16 Home) with a competent team that includes a physician specialist in complex, chronic care  
17 management and coordination and active involvement by informed patients. The ACP position  
18 paper, “Patient-Centered, Physician-Guided Care for the Chronically Ill” introduced this concept  
19 for patients with chronic disease.<sup>24</sup> This monograph builds upon the positions expressed in that  
20 paper and expands the scope to address the needs of patients as they navigate the health care  
21 system. A framework for redesigning the reimbursement system to support the recommendations  
22 is described and will be developed further in a paper to be released in mid-2006. Macro-level  
23 policy reforms (financing, coverage, reimbursement, physician education and training, and  
24 workforce distribution) will be needed to support this model, but the first step is to define the  
25 principles that deserve support. Development of the macro-level changes that are required to  
26 implement and sustain the model will follow.  
27

28 **Position 1. ACP calls for a comprehensive public policy initiative that would**  
29 **fundamentally change the way that primary care and principal care (whether provided by**  
30 **primary care or specialty care physicians) are delivered to patients by linking patients to a**  
31 **personal physician in a practice that qualifies as an advanced medical home.**  
32

### 33 **The Advanced Medical Home Model** 34

35 The medical home concept has been previously described as early as 1967 by the American  
36 Academy of Pediatrics’ Council on Pediatric Practice and the effectiveness of the model in  
37 caring for children with special needs has been demonstrated.<sup>25,26</sup> The American Academy of  
38 Family Physicians described the medical home in its Future of Family Medicine project.<sup>27</sup> The  
39 “Advanced Medical Home” builds on these concepts, which are based on a vision of health care  
40 from the perspective of a patient and his/her family – and describes the model in the context of  
41 redesigning the reimbursement system to support the evolution of care according to these  
42 principles.  
43

44 The advanced medical home acknowledges that the best quality of care is provided not in  
45 episodic, illness-oriented, complaint-based care—but through patient-centered, physician-guided,  
46 cost-efficient, longitudinal care that encompasses and values both the art and science of

1 medicine. Attributes of the advanced medical home include promotion of continuous healing  
2 relationships through delivery of care in a variety of care settings according to the needs of the  
3 patient and skills of the medical provider. Physicians are once again partners in coordinating and  
4 facilitating care to help patients navigate the complex and often confusing health care system by  
5 providing guidance, insight and advice in language that is informative and specific to patients’  
6 needs.

7  
8 In the advanced medical home model, patients will have a personal physician working with a  
9 team of healthcare professionals in a practice that is organized according to the principles of the  
10 advanced medical home. For most patients the personal physician would most appropriately be a  
11 primary care physician, but it could be a specialist or sub-specialist for patients requiring on-  
12 going care for certain conditions (e.g., severe asthma, complex diabetes, complicated  
13 cardiovascular disease, rheumatologic disorders, and malignancies). Primary care physicians are  
14 defined as physicians who are trained to provide first contact, continuous, and comprehensive  
15 care.<sup>28</sup> Principal care, that is, the predominant source of care for a patient based on his/her  
16 needs, can be provided by a primary care physician or medical specialist. In most cases, primary  
17 care physicians, with their office care team, are ideally suited to provide principal care and be a  
18 patient’s care coordinator – a personal physician, in the advanced medical home model.  
19 However, a medical specialist with his/her office care team can fulfill the role of personal  
20 physician as defined in this paper if he/she so chooses. Rather than being a “gatekeeper” who  
21 restricts patient access to services, a personal physician leverages the key attributes of the  
22 advanced medical home to coordinate, and facilitate the care of patients and is directly  
23 accountable to each patient. Personal physicians advocate for and provide guidance to patients  
24 and their families as they negotiate the complex health care system.

### 25 26 **Key Attributes of the Advanced Medical Home**

27 Practices and physicians that adopt the advanced medical home structure, a) use evidence-based  
28 medicine and clinical decision support tools to guide decision-making at the point-of-care based  
29 on patient-specific factors; b) organize the delivery of that care according to the Chronic Care  
30 Model (CCM), but leverage the core functions of the CCM to provide enhanced care for all  
31 patients with or without a chronic condition; c) create an integrated, coherent plan for ongoing  
32 medical care in partnership with patients and their families; d) provide enhanced and convenient  
33 access to care not only through face-to-face visits, but via telephone, email and other modes of  
34 communication; e) identify and measure key quality indicators to demonstrate continuous  
35 improvement in health status indicators for individuals and populations treated; f) adopt and  
36 implement technology to promote safety, security, information exchange and portals for patient  
37 access to their health information; and g) participate in programs that provide feedback and  
38 guidance on the overall performance of the practice and its physicians.

39  
40 Drs. Ed Wagner, Michael von Korff and colleagues at Group Health Cooperative initially  
41 described the Chronic Care Model (CCM).<sup>29</sup> The American College of Physicians believes that  
42 the CCM can be equally applied across all clinical situations and offers a valuable framework for  
43 the redesign of the care delivery system. Therefore, this monograph will subsequently refer to  
44 the CCM as simply the “Care Model” to emphasize that the elements of the model can apply to  
45 all patients, not just those with a chronic illness. The Care Model (CM) emphasizes that  
46 improved functional and clinical outcomes are the product of an informed, activated patient and

1 a prepared, proactive practice team. A full description of the components of the CCM is  
2 included as an appendix to the “Patient-Centered, Physician-Guided Care for the Chronically Ill”  
3 paper from October 2004.<sup>30</sup>  
4

5 In brief, the key practice-based components of the CM include encouraging patients to engage in  
6 the management of their own health (self-management) and providing them with resources and  
7 skills to obtain appropriate health care services; designing the delivery system to assure the  
8 provision of effective, efficient clinical care; embedding clinical decision support tools into daily  
9 practice; and using information technology to support patient education, patient care planning,  
10 coordination of care, and monitoring of performance. The system-level attributes of the CM  
11 include the use of community resources, partnerships, and policies to support the health care  
12 system, and organization of health care to create a culture of safe and high-quality care. These  
13 elements of the CM are central to the distinct advantages of a health care delivery system that  
14 supports the economic viability of practices structured to be a patient’s advanced medical home.  
15

16 **Health care provided through a medical home is distinctly different from disease**  
17 **management programs.** Typical disease management programs utilize “case managers”  
18 provided by the patient’s health plan or a contracted disease management company.<sup>31</sup> The best  
19 programs attempt to include the treating physician and his/her team, but the emphasis is usually  
20 on the relationship between the patient and the case manager with periodic input requested from  
21 the patient’s physician. In the advanced medical home model, the care and coordination of that  
22 care continually resides with the patient’s personal physician and his/her health care team. The  
23 patient and physician decide on specific health care objectives and then choose the best way to  
24 achieve these objectives. Advanced medical home practices will provide a range of options for  
25 their patients to support their personal health goals (e.g., health education, nutrition services,  
26 disease management) either directly or through established relationships with external providers  
27 of these services such as disease management companies. The patient, with support from the  
28 physician and other members of the health care team, which may include nurses, social workers,  
29 care managers, dietitians, pharmacists, physical and occupational therapists, and other allied  
30 health care professionals, then becomes engaged in his/her health care, and the health care  
31 system better serves the needs of each individual patient.  
32

33 [Please see the Appendix for three scenarios illustrating how patient care might be provided in  
34 physician practices using the advanced medical home model.]  
35  
36

37 **Position 2. Fundamental changes should be made in third party financing, reimbursement,**  
38 **coding and coverage policies to support practices that qualify as advanced medical homes.**  
39

#### 40 **A Reimbursement System to Support the Advanced Medical Home**

41 The American College of Physicians believes that the advanced medical home model offers an  
42 opportunity to demonstrate the value of coordinated, patient-centered, physician-directed care  
43 that is enabled by health information technology and accountable for achieving measurable  
44 improvements in the quality of care provided. However, the current reimbursement system does  
45 not provide the financial support for practices and physicians to adopt, implement, and maintain  
46 the infrastructure and processes necessary for this model of care, except in integrated group

1 practices which are largely funded through prepayments. The scenarios in the Appendix  
2 illustrate modes of care delivery that would not be reimbursed under the current reimbursement  
3 system. Therefore, a revised reimbursement model is absolutely essential for the advanced  
4 medical home to be adopted widely.

5  
6 A revised reimbursement system would acknowledge the value of both providing and receiving  
7 coordinated care in a system that incorporates the elements of the Care Model (CM) organized  
8 according to the advanced medical home model. Further, such a system would align incentives  
9 so physicians and patients would choose medical practices that deliver care according to these  
10 concepts. Physicians would elect to redesign their practices because the model is supported by  
11 enhanced reimbursement for system-based care in the advanced medical home, rather than the  
12 volume-based, episodic, fee-for-service system currently in place. Patients would select an  
13 advanced medical home based on service attributes such as the patient-centeredness of a practice,  
14 improved access, and coordinated care – as well as value attributes as demonstrated by publicly  
15 available reports on quality and cost.

16  
17 The revised reimbursement system would start with the identification of physicians and practices  
18 that can demonstrate consistent application of the key attributes described for the advanced  
19 medical home, as well as accomplishment of training in the principles of the CM and systems-  
20 based care. The American College of Physicians envisions a voluntary process to qualify  
21 practices for this designation prior to becoming eligible for the revised reimbursement model.  
22 As part of this practice qualification process, physicians in the practice would need to complete a  
23 self-paced educational module on the care model and systems-based care provision such as the  
24 Practice Improvement Modules of the American Board of Internal Medicine or comparable  
25 educational programs.

26  
27 Further research and policy development will be necessary to determine a reasonable process for  
28 certifying practices that meet criteria as an advanced medical home (see position 4). Once  
29 qualified, a practice would become eligible for reimbursement that is based on the provision of  
30 care according to the advanced medical home concept. An analysis of potential reimbursement  
31 mechanisms will be the subject of a subsequent ACP monograph. However, the key elements of  
32 a revised reimbursement system should include compensation for: a) the coordination of care  
33 both within a given practice and between consultants, ancillary providers and community  
34 resources; b) adoption and use of health information technology for quality improvement; c)  
35 provision of enhanced communication access such as secure email and telephone consultation; d)  
36 remote monitoring of clinical data using technology; and e) pay-for-reporting/pay-for-  
37 performance. Examples of other features of a revised reimbursement model to consider include:  
38 a) providing enhanced coverage for beneficiaries and reducing co-insurance for patients who  
39 select an advanced medical home for their principal care; and b) reducing administrative burdens  
40 for physicians and practices (e.g., modification of documentation requirements for coding,  
41 elimination of need for advanced beneficiary notices).

42  
43 A reimbursement model that supports the development of the advanced medical home would  
44 provide some of the financial benefits of the retainer or boutique model of care. However,  
45 access to these benefits would be more widely available, not just to those patients who could  
46 afford to pay an additional annual fee. If done correctly, by incorporating the elements of a

1 revised reimbursement model cited above, qualified practices would benefit from reduced  
2 practice hassles and improved revenue – while building systems of care to meet the challenges of  
3 an aging population. This model of reimbursement to support practice redesign would provide  
4 an alternative for physicians who might otherwise become part of the niche market of concierge  
5 primary care<sup>32</sup> – an important consideration given the anticipated shortfall in physicians able to  
6 meet the growing needs of the US population. Further, since this reimbursement system would  
7 recognize and compensate primary care physician practices for the quality of care delivered  
8 while reducing the typical administrative hassles, it may also help reverse the trends cited below  
9 that document a significant decline in medical students choosing primary care specialties.

10  
11 **Position 3: Fundamental changes should be made in workforce and training policies to**  
12 **assure an adequate supply of physicians who are trained to deliver care consistent with the**  
13 **advanced medical home model, including internists and family physicians.**

### 14 15 **The Crucial Role of Primary Care Physicians**

16 Primary care physicians play an essential role in the advanced medical home model. While  
17 specialists may choose to provide care according to this model, in the vast majority of cases a  
18 primary care physician will serve as the patient’s personal physician and will generally be the  
19 one who coordinates comprehensive and continuous care.

20 Internists are especially well prepared to evaluate and manage all aspects of illness – biomedical  
21 and psychosocial – in the whole patient, and thus are uniquely qualified to be the personal  
22 physician for patients in qualified advanced medical home practices. Internists are expert  
23 diagnosticians who can treat and manage chronically ill patients with one or multiple complex  
24 and interactive illnesses. Internists also are experts in evidence-based disease prevention, early  
25 detection of disease, medication management, and health promotion. They serve as consultants  
26 when patients have difficult, undifferentiated problems and may also have special areas of  
27 expertise.<sup>33</sup> With some additional training, they will be well equipped to assemble and guide care  
28 teams in an advanced medical home practice in the community, where they will prescribe  
29 necessary services and serve as the patient’s guide and advocate in a complex health care  
30 environment. The advanced medical home model would utilize the internist’s skill as a  
31 coordinator of services patients need from multiple other diagnostic and therapeutic specialties.  
32 Practices following the advanced medical home model would value the internist’s familiarity  
33 with the science of clinical epidemiology and evidence-based medicine. Such a practice would  
34 also value the internist’s thoughtful, cost-effective practice style for evaluation and management.  
35 A physician practice that qualifies as an advanced medical home would also be able to utilize the  
36 internist’s skills as a clinical information manager who can take full advantage of health  
37 information technology.

38  
39 As more practices adopt the medical home model, the value of internists and other primary care  
40 physicians may be enhanced. However, there may not be enough of these physicians to meet the  
41 growing needs of the US population. The need for physicians to care for patients with chronic  
42 and complex illnesses will increase substantially as the U.S. population ages. Within only five  
43 years, the first of a wave of 76 million baby boomers will begin to be eligible for Medicare. The  
44 population age 85 and over, which is most likely to require chronic care services for multiple

1 conditions, will increase 50 percent from 2000 to 2010. It will more than double by 2030, and  
2 more than quadruple by 2050.<sup>34</sup>

3  
4 For the nation to have a sufficient supply of primary care physicians to meet future needs for  
5 preventive care, the diagnosis and management of undifferentiated symptoms, and skill in  
6 designing unique plans for patients with multi-system problems, strong public financial support  
7 will be needed for primary care training and for innovative programs to increase the appeal of  
8 careers in primary care. Widespread adoption of the advanced medical home model will further  
9 enhance the need for training in primary care.

### 10 11 **An Impending Crisis in Primary Care**

12 There is growing evidence that shortages are developing for primary care physicians in the  
13 United States, particularly among general internists, geriatricians, family physicians and for  
14 certain subspecialists in internal medicine. Previous expectations of an excess supply of  
15 physicians have not materialized. Current projections indicate that the future supply of  
16 physicians will be inadequate to meet the health care needs of the aging U.S. population,  
17 especially as “Baby Boomers” are beginning to reach retirement age in 2011 when they will be at  
18 increased risk for needing health care services. One recent study projects a shortage of 200,000  
19 physicians by 2020.<sup>35</sup>

20  
21 The American College of Physicians is particularly concerned about emerging shortages in  
22 internal medicine and its subspecialties. Over the past several years, numerous studies have  
23 found that shortages are occurring in internal medicine.<sup>36 37 38</sup> Additionally, several internal  
24 medicine subspecialty societies—including the American College of Cardiology, the Committee  
25 on Manpower for Pulmonary and Critical Care Societies, and the American Geriatrics Society—  
26 have asserted that they are in or on the cusp of a workforce shortage.<sup>39 40 41</sup>

27 Yet, interest of medical students in careers in the primary care specialties of internal medicine,  
28 family medicine, pediatrics and obstetrics/gynecology has been declining.<sup>42</sup> The trend away  
29 from primary care has been well documented by the annual residency training match sponsored  
30 by the National Resident Matching Program (NRMP). The number of U.S. medical school  
31 graduates who choose to enter generalist residency training has decreased from 50 percent in  
32 1998 to less than 40 percent in 2004. The decline has been greatest in family medicine training  
33 programs, which has declined 41 percent. Internal medicine and pediatrics declined by 9 percent  
34 and 8 percent respectively. It should be recognized that these data include physicians who began  
35 residency training in internal medicine and pediatrics but will go on to sub-specialize.  
36 Consequently, the number of physicians who enter practice in primary care will be much lower.  
37 There also are a relatively small number of residency programs that provide a specific training  
38 track for primary care, but the number of trainees in these programs has also declined: primary  
39 care track internal medicine residents declined 46% from 347 in 1999 to 188 in 2004, and  
40 primary care pediatrics declined 24%, from 63 in 1999 to only 48 in 2005.<sup>43</sup>

41 A recently-published study of the career plans of internal medicine residents documents the steep  
42 decline in the willingness of physicians to enter training for primary care. In 2003, only 19% of  
43 first year internal medicine residents planned to pursue careers in general medicine. Among third

1 year internal medicine residents, only 27% planned to practice general internal medicine  
2 compared to 54% in 1998.<sup>44</sup>

### 3 4 **The Advanced Medical Home Model: Implications for Physician Education, Training, and** 5 **Practice**

6 The long pipeline of medical education and training and the retirement and career changes of  
7 older physicians require that the nation have a constant influx of new students embarking on  
8 medical careers as well as training and continuing medical education for those already in  
9 practice. The demand for primary care physicians of all types will continue to increase as the  
10 population ages and its health care needs increase, and as the demand for acute, chronic and long-  
11 term care increases. To better prepare physicians for practice in settings using the advanced  
12 medical home model, changes in training will be needed in undergraduate and graduate medical  
13 education as well as in continuing medical education. Funding also will be needed to develop  
14 training settings that use principles of the model.

15  
16 The workforce needs of the advanced medical home model have yet to be determined. If in  
17 response to adoption of the model, physicians reduce their practice panels in order to provide  
18 more time for each patient, there will be an even greater need to increase the supply of primary  
19 care physicians. On the other hand, adoption of the model could result in positive changes in  
20 physician career satisfaction that could result in more physicians entering and remaining in  
21 primary care careers.

22  
23 In either case, medical education and training will need to change to better prepare young  
24 physicians for practice under the advanced medical home model. In a recent position paper of  
25 principles and goals for re-designing training in Internal Medicine, ACP identified some of the  
26 kinds of changes that will be needed in medical school training:

27  
28 Training, particularly in the ambulatory setting, must occur in well-functioning practice  
29 environments that demonstrate a patient-centered, service-oriented approach. The fourth  
30 year is a time when students should receive “translational education” that allows them to  
31 translate the knowledge they have learned into effective and high quality care of patients.  
32 This involves an understanding of the shortcomings of current healthcare delivery, the  
33 need for effective and efficient systems of delivery of care, and the value of a team-based  
34 approach. Students should understand the principles of best models of care, and should  
35 have an opportunity to see how such models are effectively utilized.<sup>45</sup>

36  
37 To improve the attractiveness of careers in primary care, medical education and training will  
38 need to provide students, residents, and practicing physicians with the key skills necessary for  
39 successful and satisfying practices in the 21st century. These include an understanding of the  
40 importance of a multidisciplinary team-based approach in both in inpatient and outpatient care,  
41 learning how to assemble and work with non-physician members of the health care team,  
42 innovative practice management concepts, and an adequate framework for understanding and  
43 adapting to evolving health care policy issues. Training for the advanced medical home model  
44 will need to prepare residents and practicing physicians to function as integral members of a  
45 health care team that may include nurses, social workers, care managers, dietitians, physical and  
46 occupational therapists, and other allied health care professionals.

1  
2 **Position 4: Further research on the “Advanced Medical Home” model and a revised**  
3 **reimbursement system to support practices structured according to this model should be**  
4 **conducted and should include national pilot testing.**  
5

6 The Center for Medicaid and Medicare Services (CMS) should, in 2007, conduct a national pilot  
7 program in various primary care settings to determine the feasibility, cost effectiveness and  
8 impact on patient care of the advanced medical home. This effort should specifically address the  
9 advanced medical home model, but would complement ongoing and planned CMS pilot  
10 programs such as the Medicare Physician Group Practice Project, the Medicare Care  
11 Management Performance Demonstration (MMA Section 649), and Medicare Health Support  
12 Pilot (MMA Section 721) and Medicare Health Quality Demonstration Program (MMA Section  
13 646). The Advanced Medical Home Demonstration Program should help determine appropriate  
14 criteria for qualifying a medical practice as an advanced medical home. The pilot should also  
15 identify and test various payment options to support practices that qualify as advanced medical  
16 homes. Metrics for evaluation of the pilot should include patient satisfaction, physician and staff  
17 satisfaction, clinical process and outcome measures, payment costs as well as cost offsets, and  
18 the potential economic impact on physicians who adopt the advanced medical home structure.  
19

20 Modeling and testing of the advanced medical home should also consider its potential impact and  
21 ramifications on patient access to health care, health care costs, physician supply and specialty  
22 mix, physician practice costs and practice patterns, health insurance coverage, and medical  
23 education and training.  
24

25 **Conclusion**

26 Donald Berwick described four levels of the American health care system: the experience of  
27 patients (Level A); the functioning of small units of care delivery (“microsystems”) (Level B);  
28 the functioning of the organizations that house or support microsystems (Level C) and the  
29 environment of policy, payment, regulation, etc. (Level D) which influences Levels B and C.<sup>46</sup>  
30 This monograph highlights the significant issues our health care system is currently facing, and  
31 will continue to experience, in Level D. Policies, payments and the regulations that codify these  
32 processes are ill suited to the challenges outlined. The current dysfunctional physician payment  
33 system fosters an environment that is leading to declining access, accelerating costs and  
34 mediocre quality—trends that are clearly contrary to the needs and desires of patients,  
35 physicians, and society. The current method of physician payment rewards quantity rather than  
36 quality and undervalues primary and preventive care. The current system cannot support the  
37 patient-centered care envisioned by the advanced medical care model.  
38

39 The American College of Physicians believes that the advanced medical home model, applied in  
40 the context of a revised reimbursement system addresses all four (4) of Berwick’s levels.

- 41 • It will revitalize the patient-physician relationship and place the patient and his/her family  
42 at the center of care;
- 43 • It will stimulate practice-level innovation to provide enhanced quality, effectiveness,  
44 safety, efficiency and value because practices will be able to invest in systems-based care  
45 and measurement of that care;

- 1 • It will enhance coordination of care across all domains of the healthcare system  
2 (hospitals, home health agencies, nursing homes, consultants and other components of  
3 our complex healthcare network); and
- 4 • It will recognize that care provided by a personal physician, operating in accord with the  
5 advanced medical home model is a highly valuable service.
- 6 • It will lead to the macro system changes required to support this enriched healthcare  
7 model (financing, coverage, reimbursement, physician education and training, and  
8 workforce distribution).

1 APPENDIX

2  
3 The following scenarios illustrate how three different medical practices might implement the  
4 Advanced Medical Home model. The scenarios were designed to highlight the key attributes of  
5 the model recognizing that the current reimbursement system limits many practices from  
6 investing in the systems and technology described.

7  
8 **Scenario #1: Dr. X and Ms. Jones**

9 Practice setting: Dr. X is a solo practitioner in an established practice supported by a full-time  
10 administrative assistant and a full-time clinical assistant. The practice uses a fairly typical  
11 practice management system, but does not have an electronic medical record. However, Dr. X  
12 and her team implemented a free registry program she obtained from the state Quality  
13 Improvement Organization (QIO). The registry is a simple database that Dr. X and her team use  
14 to keep track of a limited number of patient-specific clinical indicators. While the database is  
15 capable of tracking many parameters, Dr. X uses it just to enter data pertaining to the  
16 performance measures endorsed by the Ambulatory Care Quality Alliance (AQA) for diabetes  
17 mellitus, congestive heart failure and coronary artery disease. The registry also allows Dr. X to  
18 create clinical rules for preventative health care. Dr. X uses an internet-based e-prescribing  
19 program associated with a national laboratory vendor for a monthly fee. On-line lab ordering  
20 and retrieval are free.

21  
22 Clinical Care: Each month, Dr. X's assistant runs a query built into the registry to generate a list  
23 of patients who are due for a condition-specific intervention. This month, the assistant notes that  
24 among the patients who need to be seen is Ms. Jones, a 67-year-old diabetic, who is due for a  
25 visit and needs her hemoglobin A1c checked. Dr. X's assistant notes that the registry also has  
26 prompted her that Ms. Jones is due for her tetanus vaccine, mammogram and a lipid profile. The  
27 assistant enters the laboratory orders on-line and contacts the patient to discuss the need for these  
28 laboratory tests, the mammography and tetanus vaccine. Once she sets up an appointment with  
29 Dr. X, the assistant schedules the laboratory tests for anytime the week prior to the appointment  
30 as well as a mammography appointment for later on the same day as the appointment with Dr. X.  
31 On the day of Ms. Jones' appointment, the clinical assistant makes sure that the laboratory  
32 results from the week prior are in the chart. Ms. Jones arrives for the appointment. Because Dr.  
33 X has an established standing order for routine vaccinations, the clinical assistant is able to  
34 provide Ms. Jones with the tetanus vaccine while Dr. X finishes up with the previous patient.  
35 The assistant also asks Ms. Jones to update her self-management goal checklist and to self-  
36 address a fold-over result notification card. As the assistant leaves the room, she takes Ms. Jones'  
37 home glucose monitoring log to enter results into the registry database, and reminds Ms. Jones to  
38 remove her shoes and stockings so that Dr. X can do a diabetic foot exam. The assistant enters  
39 representative glucose values from the log into the registry and checks off that a tetanus  
40 vaccination was provided. Later she will take the self-addressed fold-over card and place it in a  
41 weekly file to prompt her that there are outstanding test results pending.

42  
43 Dr. X enters the room after reviewing the laboratory tests attached to the chart, the registry-  
44 generated data sheet indicating the need for Ms. Jones' annual breast exam, Ms. Jones' home  
45 monitoring log, and the graph of the home glucose monitoring results printed out by his assistant.  
46 She hands Ms. Jones her log and congratulates her on how well she is keeping track of her home

1 testing results. Dr. X reviews Ms. Jones' chart and the self-management checklist that they  
2 agreed upon at the last visit. After noting that Ms. Jones' weight has increased (as well as a  
3 slight increase in her hemoglobin A1c and LDL), Dr. X and Ms. Jones briefly discuss nutrition,  
4 exercise and Dr. X asks Ms. Jones if she would like to speak to a Certified Diabetic Educator  
5 (CDE). After some initial hesitation, Ms. Jones agrees to meet with the CDE. Dr. X has  
6 contracted (along with two other community physicians in solo practice) with a local CDE who  
7 visits each of their offices on a rotating basis to provide consultation for patients. Dr. X  
8 completes the rest of her history taking and physical exam including a diabetic foot exam and  
9 breast exam at which time Dr. X also provides Ms. Jones with a refresher course on breast self-  
10 examination. As the visit draws to a close, Dr. X asks Ms. Jones if she has any questions. They  
11 also review her self-management goals and agree to set up a telephone visit every two weeks for  
12 the next 6 weeks so that Dr. X can answer her questions and provide encouragement for Ms.  
13 Jones. The assistant arranges an appointment with the CDE for Ms. Jones and provides her with  
14 a reminder card for her next appointment – a telephone visit in two weeks. Ms. Jones leaves the  
15 office and proceeds to her mammography appointment. When Dr. X receives the normal  
16 mammography report, she initials the result and forwards it to her assistant – who then completes  
17 the result notification card self-addressed by the patient and mails it to the patient.

18

### 19 **Scenario #2: Dr. Y and Mr. Smith**

20 **Practice Setting:** Dr. Y is in a group of three physicians and a nurse practitioner. The practice  
21 uses a practice management that is integrated with electronic medical records. The system  
22 provides access for patients online to request appointments, referrals, and medication refills. The  
23 practice website also includes a link to a Personal Health Record program controlled by each  
24 patient, but customized to receive data from the practice. The practice uses advanced scheduling  
25 (i.e., Open Access) so that patients who call prior to 1pm can be seen on the same day; no  
26 appointments are booked more than two weeks in advance.

27

28 **Clinical Care:** Mr. Smith is a 42-year-old man with long-standing asthma and fairly erratic  
29 medical care because of his busy schedule. Approximately six months ago he had a pretty severe  
30 exacerbation of his asthma that required a visit to the local emergency department for several  
31 hours. Once he was stable, the emergency department physician gave him Dr. Y's office number  
32 and encouraged him to call to establish himself with Dr. Y. Mr. Smith was not too anxious to  
33 see a physician since he typically was able to manage his asthma fairly well on his own, but this  
34 visit to the emergency department was his third one in the past 4 months. Mr. Smith calls Dr.  
35 Y's office expecting to be told that the next available appointment is in two months. He is  
36 surprised when the receptionist asks if he could come in later that day. After Mr. Smith agrees to  
37 come in that day, the receptionist places him on hold briefly until Dr. Y's clinical assistant gets  
38 on the phone to ask Mr. Smith a few questions about his medical history, medication, allergies,  
39 current symptoms and health maintenance. Mr. Smith is encouraged to arrive approximately 15  
40 minutes in advance of his appointment time. When he arrives, the receptionist asks him a few  
41 questions and then directs him to a nearby kiosk to complete, via touch screen, a questionnaire  
42 about his health. He notes that the clinical assistant and the receptionist have already entered the  
43 information he provided previously. Mr. Smith is able to complete the computer-generated  
44 forms in about 5 minutes. Shortly thereafter he is escorted to an examination room.

45

1 The clinical assistant asks him a few additional questions and then does some pulmonary  
2 function tests pre and post-bronchodilator. The assistant asks whether Mr. Smith monitors his  
3 peak flow at home. Mr. Smith indicates that he used to do that but didn't understand what to do  
4 with the information – so he just stopped doing it. The assistant takes the opportunity to coach  
5 Mr. Smith on the proper technique of doing peak flows at home – and how to properly use the  
6 metered dose inhaler. She also provides Mr. Smith with a copy of a generic asthma action plan  
7 to review while he waits for Dr. Y. Dr. Y walks in a few minutes later and already seems quite  
8 familiar with the information Mr. Smith provided on the phone and through interactions with the  
9 receptionist, clinical assistant and computer kiosk. Dr. Y completes his history and physical. Dr.  
10 Y explains what an asthma action plan is and how to use peak flow results to adjust his  
11 medication regimen in order to minimize asthma exacerbations. Dr. Y is able to provide Mr.  
12 Smith customized patient education material generated by the electronic medical records clinical  
13 decision support function. In addition, the clinical decision support module generates an alert for  
14 Dr. Y indicating that a recent study suggested that long-acting beta agonist inhalers might cause  
15 asthma exacerbations in some patients. Dr. Y reviews Mr. Smith's medication again and notes  
16 that approximately 6 months ago, a physician he saw just once prescribed Mr. Smith such an  
17 inhaler. Dr. Y recommends that Mr. Smith discontinue the long-acting beta agonist and  
18 prescribes a medication regimen that includes short-acting bronchodilators and inhaled  
19 corticosteroids with instructions on Mr. Smith's action plan about what to do if his peak flow  
20 drops below a certain number. Dr. Y provides Mr. Smith with information about the practices'  
21 website and personal health record. With Mr. Smith's permission, Dr. Y is able to send key  
22 clinical information to Mr. Smith's personal health record including treatment recommendations,  
23 medications prescribed through the e-prescribing module in the electronic health record, and  
24 health maintenance reminders. Dr. Y also encourages Mr. Smith to email him any non-urgent  
25 questions or concerns. Mr. Smith agrees to send his morning peak flow results via email to Dr.  
26 Y in 3-5 days – but to call if his peak flow drops below a certain value or if his asthma symptoms  
27 get worse despite following the asthma action plan. Dr. Y contemplates enrolling Mr. Smith in a  
28 remote monitoring program whereby his daily peak flow results will be transmitted electronically  
29 to a contracted disease management firm with nurse case managers, but decides to see how Mr.  
30 Smith does before taking that next step. However, Dr. Y does review a self-management  
31 checklist with Mr. Smith that includes the need for Mr. Smith to assess his home environment,  
32 do daily aerobic exercise, and commit to using the asthma action plan guide. Dr. Y asks his  
33 assistant to provide Mr. Smith a reminder card to call his office in approximately 2-3 weeks  
34 before noon for a same day appointment or to call and schedule an appointment up to two weeks  
35 in advance.

36  
37 During the subsequent week, Dr. Y receives 2-3 emails from Mr. Smith indicating worsening of  
38 his asthma symptoms and a slight decrease in peak flow despite adjustments in medications  
39 according to the asthma action plan reviewed in the office. Dr. Y schedules a telephone  
40 consultation with Mr. Smith to review his medication regimen and to discuss Mr. Smith's  
41 evaluation of his home environment. Based on Mr. Smith's worsening condition and the absence  
42 of an identifiable cause, Dr. Y recommends to Mr. Smith a referral to an Allergist to help  
43 identify potential environmental triggers for the exacerbation of his asthma. Though Mr. Smith  
44 is somewhat reluctant to see another physician, Dr. Y explains that the Allergist sees a number of  
45 his patients and has specially trained asthma educators to help get his asthma under control. The  
46 Allergist will receive an electronic summary of Mr. Smith's records in advance of his visit which

1 will be incorporated into the Allergist’s electronic health record for review. The report of Mr.  
2 Smith’s visit to the Allergist will likewise be sent securely back to Dr. Y for his electronic health  
3 record so that Dr. Y can coordinate the follow-up management of Mr. Smith’s asthma once the  
4 consultation is complete.  
5

6 **Scenario #3:** Dr. Z and Mrs. Murphy

7 **Practice Setting:** Dr. Z is an internist in a multi-specialty practice with several internists,  
8 cardiologists, an endocrinologist, and several other medical subspecialists. The practice, just like  
9 the smaller group described in Scenario #2, uses an electronic medical record (EMR) integrated  
10 with a practice management system. The EMR is used across all specialties in the practice and  
11 also provides secure access to authorized external providers through a health information  
12 exchange portal.  
13

14 **Clinical Care:** Mrs. Murphy is an 85-year-old woman with several chronic medical problems  
15 including Type II diabetes mellitus, congestive heart failure, atrial fibrillation, and based on a  
16 recent assessment by Dr. Z, mild dementia. For these conditions, Mrs. Murphy takes several  
17 medications including oral medication for diabetes, an anticoagulant (warfarin) and digoxin for  
18 her atrial fibrillation, a diuretic (“water pill”) and a beta-blocker for her congestive heart failure,  
19 and an angiotensin converting enzyme inhibitor. While Mrs. Murphy has been generally  
20 compliant with her visits, Dr. Z is somewhat concerned because she missed an appointment with  
21 him today – and as his assistant reviewed the practice management system, she noted that Mrs.  
22 Murphy also missed a telephone follow-up visit with the cardiologist, and a laboratory visit at  
23 which time a test for her anticoagulation status (ordered by a doctor in the practices’ After Hours  
24 Clinic) and a chemistry profile (ordered by the cardiologist) were to be done. Dr. Z reviews the  
25 note from the most recent cardiology visit and becomes even more concerned when he sees that  
26 the cardiologist increased the dose of Mrs. Murphy’s diuretic because of some shortness of  
27 breath, weight gain, and swelling during the last visit. Dr. Z also notes that Mrs. Murphy was  
28 seen in the practice’s After Hours Clinic five days previously with a fever and a cough and was  
29 prescribed an antibiotic. The After Hours physician coordinated the anticoagulation test with the  
30 scheduled visit to Dr. Z since she could see the appointment in the system and was prompted to  
31 consider the test by the EMR’s clinical decision support program which reminded her of the  
32 potential for antibiotics to interact with anticoagulation medication. As Dr. Z contemplates the  
33 best course of action, he receives a secure email from the pharmacist managing Mrs. Murphy’s  
34 anticoagulation indicating some concern because he was aware of her visit to the After Hours  
35 clinic and expected Mrs. Murphy to get her laboratory test earlier that morning.  
36

37 Dr. Z calls Mrs. Murphy – and after several rings she picks up the phone. Mrs. Murphy is clearly  
38 somewhat out of breath but professes to be doing well. She indicates that her cough is better, but  
39 doesn’t recall her appointment today or the scheduled laboratory tests. Dr. Z knows that the  
40 practice management system automatically calls to remind patients one day in advance for every  
41 appointment – including important scheduled laboratory tests such as anticoagulation  
42 monitoring. His assistant confirms by checking the system that Mrs. Murphy was called and  
43 answered the phone yesterday afternoon. Based on his conversation with Mrs. Murphy, Dr. Z  
44 decides that rather than upset her by calling an ambulance or asking her granddaughter, who is  
45 her primary family caregiver, to take her to the Emergency Department, he will ask the home  
46 health agency nurse to make a visit this afternoon. Through a secure email exchange, Dr. Z

1 initiates an urgent referral to the affiliated home health agency to set up a visit for that afternoon  
2 to check on Mrs. Murphy. Within a few minutes, the Home Health Agency confirms that Nurse  
3 A, with whom Dr. Z usually works, is available and will make a point to see Mrs. Murphy within  
4 the next 2-3 hours.

5  
6 Dr. Z returns to seeing patients. About 3 hours later he receives a secure email notification from  
7 Nurse A indicating that she wants to “meet” with Dr. Z urgently. Dr. Z excuses himself from the  
8 patient he is seeing and calls his assistant into the examination room to provide some just-in-time  
9 education to his patient while he meets with Nurse A. After going to his office, Dr. Z clicks on  
10 the video link to Nurse A and simultaneously opens up the progress note already started by  
11 Nurse A. He can see immediately that Mrs. Murphy has a temperature of 101°F, has gained  
12 about four pounds, and has an elevated blood pressure. The whole blood glucose done by Nurse  
13 A is also recorded and is significantly higher than her usual random glucose. Nurse A joins the  
14 video call and shares that Mrs. Murphy is in moderate distress – and pans the video cam to Mrs.  
15 Murphy sitting on the edge of her bed, leaning forward. Nurse A points out that Mrs. Murphy  
16 has some bruising on her arms and lower extremities and raises the potential that Mrs. Murphy  
17 may be over-anticoagulated. Dr. Z can clearly see that the mild shortness of breath he heard over  
18 the phone is either worse than he perceived, or Mrs. Murphy’s condition has deteriorated in the  
19 past few hours. Dr. Z decides that the best and safest way to quickly manage Mrs. Murphy  
20 multiple medical problems is to admit her to the hospital. Nurse A agrees to call the ambulance  
21 transport company and remain with Mrs. Murphy until they arrive. During that time she  
22 completes her assessment and contacts Mrs. Murphy’s granddaughter.

23  
24 Dr. Z documents his assessment and plan in the EMR and then sends a clinical record summary  
25 to the hospital admitting department with his initial admitting orders via secure email. The email  
26 is also sent to the cardiologist and endocrinologist with a copy to the pharmacist to alert them  
27 that Mrs. Murphy is to be admitted and requesting that the cardiologist assist in the management  
28 of what he expects to be complications related to worsening congestive heart failure. Dr. Z is  
29 sent a secure email when Mrs. Murphy arrives at the hospital. Mrs. Murphy is taken to an  
30 assessment area where laboratory tests, an electrocardiogram and a chest x-ray are completed per  
31 Dr. Z’s orders. Shortly thereafter, Dr. Z arrives to see Mrs. Murphy and accompanies her up to  
32 the hospital room.

33  
34 Mrs. Murphy is treated for pneumonia, congestive heart failure and excess anticoagulation. The  
35 morning after her admission, a hospital discharge planner visits her and reviews her clinical  
36 record. The discharge planner notes that Mrs. Murphy lives alone and sees the recent diagnosis  
37 of mild dementia. At the multidisciplinary hospital discharge planning team meeting that  
38 afternoon, Mrs. Murphy’s case is discussed and the planners decide to recommend a new remote  
39 monitoring program to Dr. Z for Mrs. Murphy. At the time of discharge, Mrs. Murphy is  
40 accompanied home by Nurse A. When they arrive at Mrs. Murphy’s apartment, a technician  
41 from the remote monitoring program is already waiting for them. While Nurse A reviews Mrs.  
42 Murphy’s medication and self-management goals, the technician installs a wireless network  
43 hooked up to a secure internet connection. He places a scale in Mrs. Murphy’s bathroom, a  
44 docking station for Mrs. Murphy’s pill bottles, and a home glucose monitor – all connected  
45 wirelessly to the computer. Nurse A explains to Mrs. Murphy that Dr. Z will monitor her  
46 condition through the computer and that Nurse A will be helping Dr. Z. Mrs. Murphy doesn’t

1 understand how it all works, but she agrees to weigh herself in the morning, take her pills when  
2 she hears the reminder from the pill bottle docking station, and check her sugar in the morning.  
3 Mrs. Murphy agrees that her granddaughter will be informed about these new interventions.  
4

5 A couple of days later, both Dr. Z and Nurse A get an automated alert via secure email that Mrs.  
6 Murphy has gained 2 pounds in the past two days. After a quick email exchange, Nurse A calls  
7 Mrs. Murphy and per Dr. Z's order, asks Mrs. Murphy to take an extra diuretic pill now and one  
8 at 6pm tonight. Via the internet, Nurse A is able to re-program the medication reminder system  
9 to prompt Mrs. Murphy to take the correct dose at the correct time. At 6:30pm, Nurse A receives  
10 a notification from Mrs. Murphy's computer that the diuretic pill bottle has not been opened or  
11 moved since noon. Nurse A calls Mrs. Murphy who admits that she has been entertaining a  
12 friend and hadn't taken her pill yet, but promises to do so in the next few minutes.  
13

14 These three scenarios illustrate how patient-centered care could be provided through solo, small  
15 and multi-specialty practices based on the advanced medical care model. In the above examples,  
16 patient-centered care is provided through a combination of face-to-face visits, telephone and e-  
17 mail consultations, and referrals to other health professionals as appropriate. Evidence-based  
18 clinical decision-making is aided by utilization of health information technology, such as PIER  
19 (Physicians' Information and Education Resource), a web-based decision-support tool developed  
20 by ACP that provides physicians with rapid, up-to-date, evidence-based guidance at the point of  
21 care. Electronic medical records, electronic prescribing, and open scheduling further add to the  
22 improvement of patient care and enable care to be provided more efficiently and in a manner that  
23 values the time of patient and physicians. This markedly contrasts with traditional patient care  
24 where patients often must schedule multiple office visits, where preventive and educational  
25 services are not covered by insurance and therefore are not provided, evidence-based care is not  
26 always provided, avoidable errors occur, and where the time of patients and physicians is under-  
27 valued.  
28  
29

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