The Pharmacists' Role in the Patient-Centered Medical Home (PCMH)

A white paper created by the Health Policy Committee of the Pennsylvania Pharmacists Association (PPA)

The following are contributors to the writing of this paper (in alphabetical order):
Hildegarde Berdine, PharmD, BCPS,CDE Associate Professor of Pharmacy Practice, Duquesne University, Mylan School of Pharmacy;
Tanya Dougherty, PharmD, BCPS, Clinical Pharmacy Coordinator, Penn Presbyterian Medical Center;
Jonathan Ference, PharmD, BCPS, Associate Professor, Wilkes University School of Pharmacy and Nursing;
Kelly Karpa, PhD, RPh, Director, Medical Pharmacology Instruction, Penn State University College of Medicine;
Jacqueline Klootwyk, PharmD, BCPS, Assistant Professor, Thomas Jefferson University School of Pharmacy;
Melinda Kozminski, PharmD, BCACP, Clinical Pharmacist, Gateway Health Plan;
Nicholas Leon, PharmD, BCPS, BCACP, Thomas Jefferson University School of Pharmacy;
Maria Osborne, PharmD, Clinical Pharmacist-Family Practice, UPMC St. Margaret;
Adam C. Welch, PharmD, MBA, BCACP, Associate Professor, Wilkes University School of Pharmacy and Nursing; and
Vincent J. Willey, PharmD, Associate Professor and Vice Chair, Department of Pharmacy Practice and Pharmacy Administration, Philadelphia College of Pharmacy, University of the Sciences.

Others participating in the editorial process and paper review include: Andrew Peterson, PharmD, PhD, Dean, Mayes College of Healthcare Business and Policy, University of the Sciences; Lauren A. Stanchak, 2012 PharmD Candidate; PPA Intern; University of Pittsburgh School of Pharmacy; and Allen G. Whisler, 2012 PharmD Candidate, PPA Intern, Philadelphia College of Pharmacy.

The Pharmacists' Role in the Patient-Centered Medical Home (PCMH)

A white paper created by the Health Policy Committee of the Pennsylvania Pharmacists Association (PPA)

Table of Contents

Executive Summary

One of the purposes of the Patient-Centered Medical Home (PCMH), as defined by the American Academy of Family Physicians, is to provide patients with access to comprehensive and integrated healthcare, focusing on quality and safety through ongoing relationships with medical professionals. Medication-related problems are a threat to the quality and safety of healthcare. Retail prescription drug expenditures make up about 10% of overall healthcare spending and for every dollar spent on drug use, approximately 80 cents is spent on medication-related problems. Non-adherence to medications is associated with 125,000 deaths per year, 10% of all hospital admissions and an estimated $100 billion in direct and indirect costs. The need for healthcare providers to work together to reduce this unnecessary healthcare spending must be made a priority.

The purpose of this white paper is to outline the role that Pennsylvania pharmacists can play in conjunction with physicians, other healthcare providers, patients, and stakeholders to improve safety and quality in the healthcare system. Expanding pharmacists' roles in the patient-centered medical home can extend to accountable care organizations (ACOs) and other team-based initiatives aimed at improving patient care.

Pharmacists Beyond Dispensing

The Medicare Prescription Drug Improvement and Modernization Act (MMA), enacted in 2003, brought national attention to a concept of pharmaceutical care that has been embraced by pharmacists for decades. One of the cornerstones of pharmaceutical care is medication therapy management (MTM). This level of care goes well beyond the dispensing role that is often recognized as the scope of practice for pharmacists. MTM is recognized by the American Medical Association with designated Current Procedure Terminology (CPT) codes. Medication therapy management, as defined by consensus of many national pharmacy organizations, involves a pharmacist and a patient reviewing an entire medication regimen for appropriate indication, efficacy, safety, and adherence. This comprehensive medication review is the foundation of MTM and it leads to the development of a medication action plan and a personal medication record for the patient. Medication therapy management also involves appropriate interventions or referrals by pharmacists, and documentation, communication, and follow-up with the appropriate members of the healthcare team. Appropriate utilization of MTM has been shown to reduce unnecessary healthcare spending. In Pennsylvania, it is estimated that over 600,000 medication reviews are needed annually in the Medicare population. Pharmacists providing MTM as part of a healthcare team is consistent with the concepts outlined in a patient-centered medical home.

Current Roles of the Pharmacist in the Medical Home

The National Committee for Quality Assurance (NCQA) identifies six standards to assess if a medical practice is functioning as a PCMH. The six standards are: enhanced access and continuity, ability to identify and manage populations, plan and manage care, provide self-care and community support, track and coordinate care, as well as measure and improve performance. Pharmacists are positioned to support all of these standards to varying extents.

The Pennsylvania Pharmacy Practice Act was amended in 2010 to include language on pharmacists and physicians entering into collaborative practice agreements. The regulations are pending at the

time of publication of this white paper. This amendment reflects a positive move towards enhancing pharmacists' full involvement within the medical home.

Pharmacists are well qualified to provide patient education regarding appropriate medication use. Many pharmacists in Pennsylvania are providing medication therapy management that indirectly supports the PCMH assuming transparent and goal-oriented communication between patients, pharmacists, and physicians. In addition, a research study conducted at the University of Pittsburgh School of Pharmacy is currently examining the economic and clinical outcomes of having a pharmacist embedded within physician practices. In this model, the pharmacist identifies opportunities for MTM from daily physicians' schedules and conducts post-hospital discharge medication reconciliation. Overall, it was determined that when pharmacists focused exclusively on medication related issues, the pharmacists entrenched within physician practices became a valuable resource for drug information and appropriate medication use.

Pharmacists may be embedded in a medical practice on a full or part-time basis consulting with referred patients in the office. They can also play a role in successful transitions of care in various settings. Pharmacists will also be able to use collaborative agreements with physicians to deliver clinical pharmacy services on an outpatient level to optimize medication use and improve health outcomes. Practice models have been shown across the country to decrease overall medical spending, improve clinical indicators, and result in heightened patient satisfaction. One such model in Asheville, North Carolina, in 1996, placed patients with diabetes in the care of pharmacists. Through education, goal setting, and adherence strategies, patients achieved improved diabetes outcomes as evidenced by a decrease in A1C (a lab value that reflects diabetes control), a decrease in medical spending by $1200 per patient per year, and a decline in sick days over a five year follow-up period. The program has since expanded to other disease states and it reinforces the concept that appropriate medication use can avoid unnecessary healthcare spending.

Appropriate compensation for the pharmacists' contributions to the PCMH and improved patient outcomes must be further evaluated by all stakeholders. Financial incentives need to be appropriately aligned and the Pennsylvania Pharmacists Association is open to discussion on sustainable methods for recognizing quality care.

Conclusion

The role of the pharmacist goes beyond dispensing medications. Pharmacists have been involved with direct patient care for decades. Pharmacists are uniquely trained to identify and resolve drug related problems. Through the evaluation of appropriate indication, efficacy, safety, and adherence, medication use can be optimized and unnecessary healthcare spending can be avoided. These concepts are best utilized in collaboration with physicians and other healthcare providers.

Pharmacists are eager to work with physicians and patients, in a modified compensation model, as part of a patient-centered medical home. Pharmacists can work alongside physicians and assist in the comprehensive care of a patient. The Pennsylvania Pharmacists Association invites many stakeholders including: the Pennsylvania Academy of Family Physicians, the Pennsylvania Medical Society, the Pennsylvania Osteopathic Medical Society, payers, and legislators to have further discussion on the value that pharmacists can bring to the patient-centered medical home.

The Pharmacists' Role in the Patient-Centered Medical Home

A white paper created by the Health Policy Committee of the Pennsylvania Pharmacists Association (PPA)

Section I: Introduction

The Pennsylvania Pharmacists Association's (PPA) Patient-Centered Medical Home Workgroup was created as a sub-group of the PPA's Health Policy Committee for the sole purpose of delivering information, policy, and promotion about pharmacists' roles in the medical home model. This white paper was created to share with pharmacists and other professional healthcare providers, legislators, policymakers, patients, and payers of healthcare. Herein, PPA provides information, answers questions, and raises awareness about integrating pharmacists into the Patient-Centered Medical Home (PCMH) model of healthcare.

The Patient-Centered Medical Home

The medical home concept was first introduced by the American Academy of Pediatrics in 1967.[1] In 2004, the American Academy of Family Physicians called for the establishment of a "personal medical home" with the intent that patients would have access to comprehensive and integrated care, through ongoing relationships with medical professionals.[2] The PCMH has been defined as an approach to providing comprehensive primary care that fosters collaboration and partnerships between clinicians and patients. Key components of the medical home model include: a patient having a relationship with a personal physician; physician directed, comprehensive care; coordinated/integrated care; quality and safety; enhanced access to care; and a payment structure that is consistent with the ability to provide this type of care.[3]

Primary Care in the United States: 2012

Our healthcare system faces a number of problems including escalating costs, no relationship between cost and quality, a dysfunctional payment system, poor access to care and erosion of primary care. The medical home model has been advocated by both policy makers and health care professionals as part of the solution to these problems.

Medication-related problems are a significant contributing factor in the rising cost of healthcare, with approximately $200 billion worth of expenditures attributed to drug-related problems in 2000.[4] In 2009, retail prescription drug expenditures accounted for approximately $250 billion while healthcare expenditures were $2.5 trillion ($8000 per person).[5] Based on these two statistics, for every dollar and a quarter spent on prescription drugs another dollar is spent on medication-related problems. As stated by Martin, et al., "Although the recession [Dec 2007 –Jun 2009] contributed greatly to slower health spending growth, the burden of financing health spending increased for households, businesses, and governments as the resources available to pay for that care declined."[5]

Physicians are faced with inadequate time and support to meet the challenges of patient care and the increasingly defined standards of quality in practice.[6,7,8] An unfortunate side effect of this reality is that primary care has become an endangered form of practice in the United States, as medical

graduates increasingly select specialties over primary care.[9] Team-based care has been proposed as the most viable solution to save our primary healthcare system, and this includes extending the roles of non-physician clinicians such as nurse practitioners (NPs) and physician assistants (PAs).[7] However, according to Bodenheimer and Pham, even after "adding primary care physicians, NPs, and PAs together, the ratio of primary care practitioners to the population is expected to fall nine percent from 2005 to 2020."[9] Thus, even though healthcare professionals such as NPs and PAs have been, and will continue to be incorporated into the primary care team to varying degrees, there will still be a shortage of primary care practitioners. Pharmacists are a vital component of the primary care workforce and should be included in the medical home to help fill this void and curtail the number of medication-related problems.

Gaps in Care

The use of medications to treat disease has grown exponentially in the past few decades, yet there are significant gaps in appropriate medication utilization. As a country, we spend almost as much money on problems caused by medications as we do on the medications themselves. It has been shown that the more medications a person takes, the greater likelihood of suffering from an adverse event.[10, 11] Older adults, aged greater than 65 years, typically take more medications than other age groups. Yet despite this population accounting for only 12% of the US population, senior citizens experience 36% of all adverse drug reactions.[12] In addition, it is estimated that 25% to 30% of medication related problems in older adults are *preventable*. Moreover, studies have shown that less than 50% of patients remain adherent with their medications after 12 months.[13, 14] Non-adherence is associated with approximately 125,000 deaths per year, 10% of all hospital admissions, twice that of all nursing home admissions, and an estimated $100 billion in direct and indirect costs.[15, 16]

Need for the Patient Centered Medical Home in Pennsylvania

Geographically, Pennsylvania is 307 miles from east to west and 169 miles from north to south[17] with a total of sixty-seven counties.[18] In terms of total population, Pennsylvania ranks sixth in the nation with an estimated 12.4 million people (2009).[18] Of the approximately 9.8 million adults in Pennsylvania, roughly 1.9 million are age 65 or older.[19] More than 60% of Pennsylvanians suffer from a chronic condition. Based on recent statistics, the percentage of chronic disease among Pennsylvania adults includes diabetes at 8.8%, asthma at 9.3%, hypertension at 28%, and high cholesterol at 40%. Cigarette smoking is also prevalent, reported by 21.3% of adults. Additionally, children are also affected by chronic disease; 282,400 children have been diagnosed with asthma.[20, 21] Pennsylvania has been ranked 35th in the nation for poor mental health days based upon states with the fewest days per month limited by mental difficulties to states with the most days affected.[22]

In 2010, the Pennsylvania Healthcare Cost Containment Council (PHC4) report described the financial impact of chronic care conditions in Pennsylvania:

- 80% of all healthcare costs and hospitalizations, 76% of all physician visits and 91% of all filled prescriptions in Pennsylvania are a result of chronic conditions;
- The four most costly conditions are diabetes, asthma, chronic obstructive pulmonary disease (COPD), and heart failure;
- Hospitalization rates for diabetes, asthma, COPD, and heart failure were worse than national rates in 2007; a majority of these could have been avoided and prevented according to the Agency for Healthcare Research and Quality (AHRQ) if there was better access to high-quality outpatient care;

- ≥ 25% of individual patients admitted for diabetes, asthma, COPD or heart failure were readmitted to the hospital for the same condition within one year;
- By 2023, the annual economic impact of chronic disease in Pennsylvania due to lost productivity and treatments is expected to cost $170.2 billion.[20]

According to Joe Martin, PHC4's Executive Director, "Chronic conditions are a key driver of health care costs…The opportunity for positive change lies in the fact that most hospitalizations for these four conditions [diabetes, asthma, COPD, and heart failure] could have been avoided with lifestyle changes, earlier intervention, and ongoing disease management."[23]

As stated by the Pennsylvania Health Access Network, "Around 800,000 adult Pennsylvanians below age 65 (approximately 11%) do not have any health insurance and are not eligible for government-funded insurance. They have no approved pathway to medical care and so access it via emergency rooms, which they utilize when medical problems are acute. If they suffer from a chronic disease, their treatment is not managed by a medical professional who sees them on a regular basis. They often do not fill their prescriptions or, if they do, they do not take prescription drugs in the recommended dosages."[24]

Pharmacists Beyond Dispensing: Patient Care

Hepler and Strand described the clinical responsibilities of a pharmacist with the term "pharmaceutical care" in 1990.[25] Over the past 20 years; pharmacists have been embracing this concept and developing pharmaceutical care practices across the US. Studies have shown that when pharmacists are involved in direct patient care, outcomes improve.[26] More recently, the Medicare Prescription Drug Improvement and Modernization Act (MMA) was enacted in 2003. Not only did this legislation add a prescription benefit to the federal Medicare benefit, but it also included Medication Therapy Management (MTM) as a benefit designed for a subset of the Medicare population. The intent behind MTM was to improve medication understanding and adherence by educating members as well as to detect and prevent adverse drug reactions. Eleven national pharmacy associations came to a consensus definition of MTM in 2004.[27] Simply stated, MTM involves a pharmacist evaluating a patient's entire medication regimen for appropriate indications, efficacy, safety, and adherence, a process known as a *comprehensive medication review* (CMR). When necessary the pharmacist provides recommendations to the patient in the form of a *medication action plan* (MAP), along with an updated *personal medication record* (PMR) which summarizes the medications (dose and regimen) that the patient should be taking. Importantly, the entire encounter is then documented and communicated to the patient's primary care physician and the pharmacist arranges a follow up appointment with the patient at a designated time interval.

The MMA recognized that MTM programs should be developed in collaboration with pharmacists and physicians. In a 2006 survey of Medicare Part D plans, almost 97% of plan administrators indicated that a pharmacist would be included among the personnel used to provide MTM services, indicating that pharmacists are recognized as medication experts.[28] Likewise, the Institute of Medicine (IOM) recognized that with the increasing complexity of medications, having access to a pharmacist at all times is essential.[29]

To facilitate efficient delivery of MTM, in June 2010 Pennsylvania became one of the last states in the nation to enact legislation allowing pharmacists to enter into *collaborative drug therapy management*

(CDTM) agreements with licensed physicians in outpatient settings. Although the rules and regulations have yet to be released, there are fundamental elements of CDTM that enable pharmacists to provide much needed medication-use infrastructure in a PCMH such that CDTM agreements can complement physician-directed medical practice and improve access to care, care coordination, quality of care, and patient safety.

Pharmacist provided CDTM can only exist by way of an agreement/protocol with a licensed physician who practices in Pennsylvania; other medical professionals such as nurse practitioners, physician assistants, etc., cannot enter into CDTM agreements with a pharmacist. The pharmacist would be able to provide drug therapy management only as agreed upon and described in a written collaborative agreement between both parties. The Pennsylvania Pharmacy Act contains further information on this and the enabling regulations are currently in the approval process.[30]

In addition to facilitating MTM services, CDTM agreements might also be used to provide disease management encompassing medication and disease focused education; optimize medication therapy through agent selection and dose titration; monitor medication therapy through assessing adverse drug events, order appropriate laboratory measurements to monitor therapy, or counsel on lifestyle changes revolving around diet and physical activity. Pharmacists also have the ability to triage patients as needed and stipulated in the CDTM agreement.

Estimating the Need for Medication Therapy Management (MTM) in Pennsylvania

Since Medicare Part D took effect in 2006, pharmacists have attempted to determine best practices for delivering MTM to community-based patients. The Lewin Group report, commissioned by the American Pharmacists Association (APhA) to examine existing models of MTM services, is the best tool we have at this time for estimating need for the Medicare population aged 65 years or greater. The Lewin Group estimates that 29.3% of this population qualifies for a basic medication therapy review (MTR) while 3% qualifies for a more comprehensive medication review (CMR).[31] When these estimates are applied to the Pennsylvania population, the number of medication reviews needed is as follows:

- Basic: (1.9 million age 65+)(29.3%) = 556,700 persons
- Comprehensive/Follow-up: (1.9 million age 65+)(3%) = 57,000 persons
- Total number of medication reviews needed: 613,700 persons

Those under 65 years of age are also affected by chronic disease and many others could also benefit from pharmacist-provided MTM.

Despite MTM being established five years ago, the specifics of the ideal program have yet to be determined. When pharmacists are part of the patient care team, patient care is improved.[32-34] Including the pharmacist in the patient centered medical home has been suggested as a means to improve patient outcomes, improve patient safety, and more fully care for the whole patient. Moreover, MTM has been cited as an essential role of the pharmacist within the medical home model.[35]

Section II: Current Roles of the Pharmacist in the Medical Home

Recently the Patient Centered Primary Care Collaborative (PCPCC) suggested that pharmacists be included on the medical team in the PCMH. The PCPCC is a national coalition of employers, consumer groups, health plans, patient quality organizations, clinicians, hospitals, and others who have joined together to advance the concept of the PCMH. The goal of the collaborative is to improve the health of patients and the viability of the healthcare delivery system. The PCPCC Medication Management Task Force stated that the ability to maximize the appropriate use of medications to prevent and control disease is critical to the success of the PCMH and the organization advocates for comprehensive medication management services in the PCMH.[35] When pharmacists practice at the "top of their license" they are able to provide services through collaboration with patients/families and other practitioners as described in **Table 1** below.

Table 1. Current Roles for Pharmacists in the PCMH

Clinical Pharmacy Service	Description
Collaborative Drug Therapy Management[39]	Disease management via a protocol allowed by the physician whereby a pharmacist is enabled to monitor and modify pharmacotherapy as well as provide lifestyle counseling for chronic illness.
Medication Therapy Management [25, 27] (has been referred to as "comprehensive medication management" by PCPCC)	a. Comprehensive Medication Review: assess patient's medication related needs b. Identify, resolve and monitor medication related problems c. Create a personal medication record (PMR) d. Develop care plans with individual goals and interventions/referrals e. Design an Action Plan with medication recommendations and a self care plan for the patient (MAP) f. Schedule a follow up appointment g. Document and share findings with the primary care physician
Preventive care	Administer immunizations and assist with the annual Medicare wellness visits.
Medication reconciliation	For high-risk patients (congestive heart failure, myocardial infarction, COPD, pneumonia, advanced age, patients with known adherence issues, low health literacy, etc.) as well as those in transitional states of care. Communicating findings to all practitioners involved in care.
Monitor population registries for potential intervention	Assist the medical team in qualifying for financial incentives by meeting and exceeding performance measures (HEDIS, etc.)
Assist with accreditation of the practice as a patient centered medical home	Potential administrative role

Similar to a Joint Commission evaluation for accreditation, the National Committee for Quality Assurance (NCQA) accreditation of medical practices involves grading six different PCMH domains and providing justification for the grades through approved policies, guidelines, medication record forms or flow sheets, reports, or evaluations. If NCQA designation is granted, the practice receives level one, two, or three designation, which is active for three years, with a designation of three associated with the highest reimbursement rates.[3]

The six standards assessing if a medical practice is functioning as a medical home are: enhanced access and continuity, ability to identify and manage patient populations, plan and manage care, provide self-care and community support, track and coordinate care, and measure and improve performance. Pharmacists have the ability to be involved in all of these standards and are the *best* suited health care professionals to impact specific measures (**Table 2** below).

Table 2: Potential Pharmacist Involvement in PCMH According to NCQA PCMH Standards [3]		
Clinical Pharmacy Service	**Meets NCQA PCMH Standards**	**Meets NCQA "Must Pass" Element**
Collaborative Drug Therapy Management	PCMH 1: Enhanced Access PCMH 2: Identify and Manage Patient Populations PCMH 3: Plan and Manage Care PCMH 4: Provide Self-Care Support/ Community Resources PCMH 5: Track/ Coordinate Care PCMH 6: Measure/ Improve Performance	PCMH 1, Element A: Access During Office Hours PCMH 2, Element D: Use Data for Population Management PCMH 3, Element C: Care Management PCMH 4, Element A: Support Self-Care Process PCMH 5, Element B: Track Referrals and Follow-Up PCMH 6, Element C: Implement Continuous Quality Improvement
Medication Therapy Management	PCMH 1: Enhance Access and Continuity PCMH 2: Identify and Manage Patient Populations PCMH 3: Plan and Manage Care PCMH 4: Provide Self-Care Support and Community Resources PCMH 5: Track and Coordinate Care PCMH 6: Measure and Improve Performance	PCMH 1, Element A: Access During Office Hours PCMH 2, Element D: Use Data for Population Management PCMH 3, Element C: Care Management PCMH 4, Element A: Support Self-Care Process PCMH 5, Element B: Track Referrals and Follow-Up PCMH 6, Element C: Implement Continuous Quality Improvement
Preventive care	PCMH 1: Enhance Access and Continuity PCMH 2: Identify and Manage Patient Populations PCMH 3: Plan and Manage Care PCMH 4: Provide Self-Care and Community Support	PCMH 1, Element A: Access During Office Hours PCMH 2, Element D: Use Data for Population Management PCMH 3, Element C: Care Management PCMH 4, Element A: Support Self-Care Process
Medication reconciliation	PCMH 1: Enhance Access and Continuity PCMH 3: Plan and Manage Care	PCMH 1, Element A: Access During Office Hours PCMH 3, Element C: Care Management
Monitor population registries for potential intervention	PCMH 2: Identify and Manage Patient Populations PCMH 6: Measure and Improve Performance	PCMH 2, Element D: Use Data for Population Management PCMH 6, Element C: Implement Continuous Quality Improvement
Assist with accreditation of the practice as a patient centered medical home.	PCMH 2: Identify and Manage Patient Populations PCMH 5: Track and Coordinate Care PCMH 6: Measure and Improve Performance	PCMH 2, Element D: Use Data for Population Management PCMH 5, Element B: Track Referrals and Follow-Up PCMH 6, Element C: Implement Continuous Quality Improvement

Section III: Qualifications

Many primary care physicians, other healthcare professionals, and the public are unaware of pharmacists' extensive education and training to prepare for direct patient care roles.[36] In 1997, the Accreditation Council for Pharmacy Education (ACPE)[37] approved the standards for conversion of all pharmacy schools to a professional program conferring the doctor of pharmacy degree. To that end, today's pharmacy education is dedicated to preparing students to practice or deliver care in collaborative health care teams with the ability to ensure and document optimal medication therapy outcomes. The professional portion of the degree program consists of a minimum of four academic years or the equivalent number of hours or credits.[38]

The graduate is able to design, implement, monitor, evaluate, and adjust pharmacotherapeutic plans that are patient-specific and evidence based. Implementation of the curriculum occurs through rigorous didactic and active learning instruction to make certain that the pharmacy practitioner is knowledgeable and competent in core subjects such as physiology, pathophysiology, molecular biology, biochemistry, pharmacology, professional communication, pharmacotherapy, and primary literature evaluation. Approximately 30% of the curriculum occurs through supervised practice experiences that must include direct interaction with diverse patient populations in a variety of clinical practice settings providing direct patient care. Here students refine and enhance physical assessment skills, pharmacotherapy management skills, and develop the ability to document in the patient record. Assessment of students is carried out through psychometrically sound, comprehensive knowledge and performance-based formative and summative methods.[38] Furthermore, in the state of Pennsylvania, student pharmacists must complete at least 1500 hours of approved internship hours prior to sitting for state licensure. A maximum of 750 hours (of the 1,500 hours) can be derived from sponsored or approved experiential education provided by the school of pharmacy.[39]

Sensing the need for a member of the healthcare team who focuses on pharmacotherapy, an ever-increasing number of pharmacists are choosing to complete post-graduate training to accelerate their growth beyond entry-level professional competence in patient-centered care. After completion of a doctor of pharmacy program and professional licensure, a pharmacist pursuing post-graduate training will apply to a post-graduate residency program. General practice or community post graduate year one (PGY-1) and specialty post graduate year two (PGY-2) residency programs are accredited by the American Society of Health-System Pharmacists (ASHP).

ASHP is recognized by the Centers for Medicare and Medicaid Services (CMS) as the residency accreditation body for the profession of pharmacy. Thus, ASHP-accredited residency programs are included as a "provider," by Medicare, in the calculation of and reimbursement for a hospital's cost for providing services to Medicare beneficiaries.[40] Currently there are over 60 accredited pharmacy residency programs in the state of Pennsylvania and each of the seven schools of pharmacy has at least one program affiliated with it or with its medical center.[36] Similar to medical residency programs, PGY-1 pharmacy residents gain direct patient-care practice experiences under the supervision of model clinical pharmacists. While most PGY-1 pharmacy residency programs are conducted within health-systems, there are a growing number of PGY-1 programs that are community based. Community PGY-1 residencies combine patient-centered clinical experiences with medication process management, community outreach, and health promotion and disease

prevention.[41] After completion of a PGY-1, the pharmacist who chooses to concentrate in a specific area of practice may choose to complete a second-year residency program (PGY-2) thus building upon the competencies established during the PGY-1 experience.

After post-graduate training, or with the proper documented experience, pharmacists are then eligible for a variety of credentials and certificate programs enabling them to demonstrate adherence to a proven, standardized approach when providing patient care (**Table 3** below).

Table 3: Earned Specialty Designations or Credentials [42-46]

Governing Body	Designation	Credential	Renewal requirements
Board of Pharmacy Specialties (BPS)	Board Certified Pharmacotherapy Specialist	BCPS	Every 7 years through examination or BPS approved CE
	Board Certified Ambulatory Care Pharmacist	BCACP	
	Board Certified Nutrition Support Pharmacist	BCNSP	
	Board Certified Oncology Pharmacist	BCOP	
	Board Certified Psychiatry Pharmacist	BCPP	
	Board Certified Nuclear Pharmacist	BCNP	
The Commission for Certification in Geriatric Pharmacy (CCGP)	Certified Geriatric Pharmacist	CGP	Every 5 years through examination or approved professional Development Program
National Certification Board for Anticoagulation Providers	Certified Anticoagulation Provider	CACP	Every 5 years through examination
National Certification Board for Diabetes Educators	Certified Diabetes Educator	CDE	Every 5 years through examination or accumulation of 75 approved continuing education hours plus a minimum of 1000 hours of professional practice experience during the five-year certification cycle.
American Association of Diabetes Educators	Board Certified Advanced Diabetes Management	BC-ADM	Every 5 years with accumulation of 150 continuing education hours and 1000 practice hours
National Asthma Educator Certification Board	Asthma Educator	AE-C	Every 7 years through examination
Association for the Treatment of Tobacco Use and Dependence	Certified Tobacco Treatment Specialist	C-TTS	Eighteen (18) hours of continuing education on tobacco dependence treatment every two (2) years
The Accreditation Council of Clinical Lipidology (ACCL)	Clinical Lipid Specialist	CLS	Retake the exam prior to expiration of the last certification AND demonstrate 100 hours of continuing education completed in the 5 years prior to expiration of certification
American Pharmacist Association (APhA)	Certificate programs in immunizations, diabetes management, medication therapy management, etc.	None	None

Considering the extent to which many pharmacists are trained (greater than 8 years in many cases; 2 to 4 years of undergraduate education, 4 years of professional school, 1 to 2 years of post-graduate training), and taking into account pharmacy specific credentialing and certificate opportunities, Bachelor of Science (BS) and Doctor of Pharmacy (PharmD) degree licensed pharmacists are competent to manage medication regimens with physician supervision.

Section IV: Current Pharmacist Involvement in the PCMH Model in Pennsylvania

Pharmacists, as the medication experts, are increasingly being included on teams within the PCMH. There is often insufficient physician time for medication assessment during medical visits and widely available published literature shows the beneficial patient-related and healthcare related outcomes with pharmacist provider integrated care.[1, 4-6, 8, 9, 32-34]

Pennsylvania Chronic Care Initiative

The Pennsylvania Chronic Care Initiative began as a call for healthcare reform by Governor Edward Rendell in 2003 based on data indicating that Pennsylvania ranked 36th as the state with the most avoidable hospitalizations. The Pennsylvania Chronic Care Management, Reimbursement, and Cost Reduction Commission was created in 2007. The Commission calls for healthcare delivery resembling both the chronic care and patient centered medical home models. Goals of the program promote a new reimbursement structure based on measurable improvement in quality of care and reduction in costs related to chronic illness. Regional chronic care learning collaboratives were developed to support these goals. The Pennsylvania Primary Care Coalition supporting this practice change consists of the PA Academy of Family Physicians, PA Chapter of the American Academy of Pediatrics, and the PA Chapter of the American College of Physicians. Insurance companies paying for this initiative include Aetna, Independence Blue Cross, Health Partners, Keystone Mercy, and Americhoice. The model is taught through the Improvement Performance in Practice (IPIP) program.[47] According to the IPIP mission statement, goals of the program are to:

- Accelerate quality improvement among primary care practices;
- Support primary care physicians and their care teams to provide consistently high quality care that improves patient health;
- Motivate collaboration at the state, regional, and practice levels;
- Improve physician and team satisfaction;
- Improve the financial sustainability of primary care physician practices.

Practices involved with IPIP are required to submit performance measures for all patients with diabetes to compare the percentages including those with an A1C greater than 9%, most recent BP less than 130mmHg/80mmHg, most recent LDL less than 100 mg/dL, and percent of patients having a recent eye exam. Currently there are seven learning collaboratives in six regions of the state that include 783 practitioners, 173 practices, and 1.1 million patients. It is the largest initiative of this type in the country. Unfortunately, however, to our knowledge, pharmacists are not active in this collaborative, despite pharmacists being the ideal practitioners to support the collaborative efforts by focusing on medication safety and medication-related health outcome measures.

Pharmacist Integration into the PCMH in Pennsylvania

Pharmacist involvement in the PCMH has been described in states throughout the country. In Pennsylvania, most pharmacist involvement in aspects pertaining to the PCMH is centered on providing MTM services in community settings or disease state management in clinic-based offices. These services indirectly support the PCMH model so long as communication between the patient, primary care physician, and pharmacist is ongoing, goal-oriented, and transparent. Reimbursement for these services is site specific and requires knowledge of office billing procedures, local health insurance reimbursement policies, and creativity.

Examples of pharmacy involvement in PCMH models include placement of ambulatory care pharmacy faculty from Schools of Pharmacy into PCMH clinics, pharmacist-initiated pain management services within a PCMH clinic in the Lehigh Valley area, a health system hired pharmacist that provides clinical services in a family medicine residency clinic, and Geisinger Health System efforts utilizing pharmacists in anticoagulation management, medication adherence, and MTM for Medicare members. Pennsylvania has the potential to be at the forefront of this relatively new pharmacy practice model. Below, we describe several examples of pharmacists practicing in the PCMH in the Commonwealth.

University of Pennsylvania Department of Family Medicine and Community Health

At the University of Pennsylvania Department of Family Medicine and Community Health, a pharmacist has been partially grant funded to assist in acquiring National Committee for Quality Assurance (NCQA) designation and achieving goals set by the clinic around the PCMH model. During the NCQA evaluation process, the pharmacist developed clinic policies, evaluated reports and reviewed current practices pertaining to medication prescribing and therapeutic monitoring. In addition, the pharmacist developed several patient disease-based registries and shared the registries with providers. Examples of these initiatives are described below:

- Pharmacist Developed Clinic Policies:
    - Anticoagulation
    - Communication when a medication is recalled from the market
    - Transitions in Care (practices around patient discharge and follow-up after discharge from the hospital, skilled nursing facility, or rehabilitation)
- Pharmacist Generated Reports and Associated Practice Changes:
    - Appropriate medication selection based on age, weight, allergies, adverse effects, monitoring, drug interactions, lab interactions, food interactions, and generic availability.
    - Appropriate warfarin follow-up, dose changes, use of vitamin K, and emergency room visits or hospitalizations
- Pharmacist Developed Shared Patient Registries:
    - Type 2 Diabetes
    - Cardiovascular high risk population
    - Anticoagulation

Since the clinic received NCQA designation in March 2011, the pharmacists' role has continued to evolve. A pharmacist-physician directed diabetes group-visit program has expanded and a new cardiovascular risk reduction group-visit program is in development. Additionally, the shared patient registries enable pharmacists to identify the top fifty high risk patients with type II diabetes, based on A1C levels. Using the registry, the pharmacist and physician consult with these patients to comprehensively evaluate medications. These initiatives also enable outcomes to be evaluated in the family medicine clinic including clinical disease state benchmarks, hospitalizations, and emergency room visits.

University of Pittsburgh School of Pharmacy, UPMC Health Plan, UPMC St. Margaret Collaborative

The SCRIPT (Successful Collaborative Relationships to Improve Patient Care) project is a medical home research study being conducted in the Pittsburgh area. It is a collaborative effort between

UPMC Health Plan, UPMC St. Margaret, and the University of Pittsburgh School of Pharmacy that examines the cost utility and clinical outcomes of a pharmacist located within a physician private practice. Two clinical pharmacists' primary responsibilities include direct patient care, practice management, and serving as drug-related resources for two family medicine physician practices each (there are a total of 4 practices). The pharmacists proactively identify patients on the physicians' daily schedules who may benefit from Medication Therapy Management sessions. Often within these visits, the pharmacists find patients who are in need of more specialized follow up (e.g. diabetes management, anticoagulation management, or medication adherence). The pharmacists also conduct post-hospital discharge and post-emergency room discharge medication reconciliation appointments, either by phone or in-office. Their work reflects the medical home model, particularly patient-centered care with routine patient feedback to physicians and patient engagement in care and decision making.

In a qualitative analysis of the value of the pharmacists in the PCMH, which included interviews with physicians, staff, and patients, physicians and staff felt that pharmacists were valuable resources for drug related information. Some physicians expressed fear for what would happen if the pharmacists left the practices. Initially, concerns were articulated with regard to how best to integrate the pharmacists into the practices without disrupting workflow. However, in the end this was not an issue. Instead, the practices recognized that pharmacists were flexible and self-directed in their approach to seeing patients. The pharmacists always focused on medication related issues. By keeping this focus, the physicians and staff learned quickly how to utilize the pharmacists. Overall, the qualitative outcomes were overwhelmingly positive, demonstrating that not only was integrating pharmacists into physician practices possible, but it was also relatively easy to do and well accepted.[48]

Penn State University College of Medicine

With support from the Health Resources and Services Administration (HRSA), of the U. S. Department of Health and Human Services, important aspects of medication management and drug utilization are now being taught to 3rd and 4th year medical students at Penn State College of Medicine (PSUCOM) by a pharmacist in the context of a novel Patient Centered Medical Home (PCMH) longitudinal curriculum. In the PCMH curriculum, students learn from patient care teams that include a pharmacist. Importantly, this curriculum fills an educational void that was previously identified by the American Association of Medical Colleges in 2008, when medical schools were challenged to incorporate additional pharmacology education into the clinical years of medical school. Because of the extensive education and experience that pharmacists have with regard to medication management, pharmacists are ideally suited to help medical schools fill this educational void .[2]

In addition to providing support to students in managing their panels of patients, the pharmacist educator at PSUCOM has designed PCMH curricular materials that focus on medication reconciliation and medication safety. These materials include a series of 20 different medication reconciliation objective structured clinical exams (OSCEs), a series of medication safety workshops, as well as a medication reconciliation classroom exercise that uses standardized patient actors. Since drug misadventures account for more than $177 billion dollars annually and adverse drug reactions are cited as the 5th leading cause of death,[10-12, 29] pharmacists are an integral component of the PCMH curricula in areas pertaining to medication utilization.

By the end of the pharmacist-taught medication reconciliation component of the PCMH longitudinal curriculum, medical students are better equipped to identify and correct drug-related adverse effects, evaluate medication appropriateness for individual patients, identify and correct therapeutic duplication or omission, develop plans for therapeutic monitoring, and educate patients regarding the pertinent features of their medications. The pharmacist tracks the outcomes of the student-led medication reconciliation activities and documents the impact that these activities have on improving patient care in the context of the students' PCMH curricular experience. The student also gains an understanding of the variety of medication management activities that pharmacists conduct. The practicing physician of the future would then be confident in making referrals to pharmacists for comprehensive medication management.

Duquesne University Mylan School of Pharmacy

A pharmacist faculty member from Duquesne University Mylan School of Pharmacy developed a medication management clinic in a primary care practice located in the city of Pittsburgh. Physicians of the practice are also faculty for physician assistant students. The site accommodates pharmacy students in an advanced pharmacy practice experiential (APPE) ambulatory care rotation, as well as pharmacy ambulatory care residents and academic/research fellows. Patients referred to the pharmacist by the physicians for medication management are those who:

- Take four or more chronic medications, are non-adherent to medication and healthy lifestyle regimens, or require weight management;
- Have diabetes requiring glucose meter training, insulin injection education, or diabetes self-management skills;
- Are recently discharged from the hospital and have a need for medication reconciliation;
- Have uncontrolled hypertension, chronic heart disease (coronary heart disease and/or heart failure), chronic pain, hyperlipidemia, diabetes, metabolic syndrome, pre-diabetes, osteoporosis, obesity, nicotine addiction;
- Present with adverse events due to drug-related problems;
- Require immunizations
- Are unable to afford their prescription medications.

As a result of pharmacist interventions and team collaboration at this teaching site, statistically significant improvements in lipid parameters, glycosylated hemoglobin (A1C), and body mass index (BMI) have been achieved for referred patients. Payments for pharmacist consultation, especially for diabetes self-management, have been successfully received from third party payers.[49]

Geisinger Health System

Geisinger Health System is a fully integrated health care delivery system caring for approximately 2.5 million people in the state of Pennsylvania. The system employs more than 100 pharmacists who work within hospital and clinic pharmacies and within the health plan. One example of an integrated clinical activity performed by pharmacists is anticoagulation management upon hospital discharge to prevent re-hospitalization and inappropriate therapy. Ongoing management is then provided. Other pharmacists monitor medication adherence by reminding patients of needed refills, identifying drug errors, and managing drug dosing. MTM is provided to the Medicare membership either by Geisinger pharmacists or through external pharmacy networks. The measures of performance to ensure that pharmaceutical treatments are used wisely and efficiently include patient outcomes, patient safety, and cost-effectiveness.[50]

Section V: Current Pharmacist Involvement in the PCMH Model throughout the United States

Pharmacists practice in diverse settings such as the community, ambulatory care clinics, rural communities, long term care facilities, home care, health systems, emergency departments, and in transitional care. This means that pharmacists can help provide the needed infrastructure to assure medications are helping, not hurting, and that the right medication is used for the right patient at the right dose. Pharmacists play important roles in optimizing therapeutic outcomes but are often underutilized in the community, even though they are trained as medication experts.[36] Pharmacists can be embedded in a medical practice on a full or part time basis consulting with referred patients directly in the office or they can practice from community pharmacies using contracts and collaborative agreements. A few examples of pharmacists delivering clinical pharmacy services in the community through different types of collaborations are highlighted below.

Pharmacist Networks

Perhaps the most noteworthy initiatives of community-based pharmacists collaborating with patients, physicians, and employers is the Asheville project. Initiated in 1996 in Asheville, North Carolina, the Asheville project involves pharmacists consulting with patients in neighborhood pharmacies and clinics about diabetes self management. The project uses scheduled visits and allows pharmacists to assess patients clinically, educate patients on home monitoring devices, set goals with patients, discuss adherence strategies, and develop legally sanctioned collaborations with physicians to achieve success in clinical and economic markers. Published outcomes established that pharmacist involvement in diabetes care led to decreased mean A1C (a marker of diabetes control) at all follow up visits. The number of patients achieving optimal A1C at less than 7% also increased with each follow-up visit.[51] Medical costs decreased by $1200 per patient per year, and the number of sick days also declined each year during the 5 year study. While initially targeting only the medical condition of diabetes, the Asheville project has since expanded such that the community-based pharmacist program also now includes patients with asthma, hypertension, and dyslipidemia.[52,53]

Other examples involve partnerships between networks of community-based pharmacists and large insurance payers (including Medicaid in North Carolina).[54] Pharmacists have also partnered with corporate coalitions such as groups affiliated with the National Business Group on Health (NBGH). One network model has been developed in the state of Wisconsin in which the Wisconsin Pharmacy Quality Collaborative (WPQC) partners with payers to reduce health care costs for both payers and patients by improving medication use and safety.[55] The WPQC project began in March 2006 with 106 pharmacists in the network partnering with payers that represent >77,000 lives in the state. An evaluation of this collaboration is currently underway.

Outpatient and Health System Practices

Ambulatory care pharmacists have educated patients for over 25 years in the Veteran Affairs healthcare system. In this setting, appropriately trained pharmacists have institutional privileges to conduct pharmacotherapy management. To date, not one study has documented any adverse effect/outcome on patient safety when compared to a usual care cohort.[56] There are other

ambulatory care clinic practice settings that include outpatient clinics associated with physician practices in academic medical centers and family medicine residency clinics.

Pharmacists have also set precedent for providing much needed healthcare infrastructure in communities located in underserved rural areas. In 1996, Hammond and Dole described a challenge that rural areas often face, which is that some communities are too small to justify a full-time physician while other rural areas may be adequately large such that they are served by only one overworked physician.[57] An appropriately trained pharmacist, practicing in communities with limited physician availability may eliminate the need for patients to travel for care of minor ailments or minor adjustments in medications for chronic diseases.

Pharmacists practicing in long-term care facilities adjust medication regimens through recommendation or collaborative agreements thereby eliminating unnecessary physician visits, delays in refilling prescriptions, or clinical problems. In ambulatory care centers, pharmacists' management of chronic disease states allows an increase in interval between patient visits to physicians. In addition, responsible drug selection by pharmacists can minimize the expense of unnecessary, duplicative, or excessive pharmacotherapy to the health care system.[57, 58]

Transitions of Care

Pharmacists are also instrumental in coordinating transitions of care regarding medication use. With the enactment of the Patient Protection and Affordable Care Act 2010 (PPAC), transitions of care as related to patient safety were highlighted. The Centers for Medicare & Medicaid Services (CMS) identified 30 day hospital readmission rates as a probable marker for quality of care and a target for reduced spending.[59] It has been described that at least one in five patients experiences an injury from medical management within three weeks of hospital discharge, with 66% of these injuries deemed drug related and avoidable.[60] Coleman et al concluded that 14% of patients with medication discrepancies are re-hospitalized within 30 days verses six percent of patients without medication discrepancies.[61] To this end Kripalani and colleagues described that, after hospital discharge, direct communication between a hospital and primary care physician occurs only 3-20% of the time. Correspondingly, the availability of a discharge summary at the first outpatient visit is also low, occurring only 12-34% of the time.[56]

In 2009, a group of physician organization stakeholders that included American College of Physicians, American Geriatric Society, American College of Emergency Physicians, Society of Hospital Medicine, Society of General Internal Medicine, and the Society for Academic Emergency Medicine, developed the *Transitions of Care Consensus Policy Statement*, which sought to develop consensus standards that address the quality gap in transitioning from inpatient to outpatient care. Professional pharmacy organizations have also been strong proponents advocating for an active role in this regard as summarized by ASHP's continuity of care policy statement where they, "strongly encourage pharmacists to assume professional responsibility for ensuring the continuity of pharmaceutical care as patients move from one setting to another."[62,63]

A pharmacist facilitating communication and resolving medication-related issues has an immediate impact on practice. One randomized, controlled trial of a practice model using a pharmacist performing MTM in an emergency room, which could be adapted for pharmacists in the PCMH, yielded an 80% reduction in drug-related readmissions, a 47% reduction in emergency room visits, a

16% overall reduction in all visits to the hospital, and lowered the total cost per patient in the intervention group by $230 even after accounting for the pharmacist's costs.[64]

Service Value

Utilizing pharmacists to conduct medication management results in value exemplified by improvement in patient clinical parameters, prevention of hospitalizations, fewer emergency room visits, and fewer sick days. The reduction in use of unnecessary and inappropriate medications along with other benefits listed previously demonstrate a return on investment (ROI) of as high as 12:1,[65] with an average ROI of 3:1 to 5:1.[66]

Section VI: Barriers and Challenges to Pharmacist Involvement in the Patient Centered Medical Home

Although the PCMH holds promise for pharmacists to expand direct patient care services in the outpatient setting, several challenges and barriers must be overcome before its full promise can be realized. Addressing these barriers and challenges will require pharmacists to work with multiple stakeholders (physicians, other health care providers, patients, healthcare payers, health policy makers, lawmakers) as well as work within our own profession to challenge prior attitudes and assumptions to ultimately institute innovative solutions. The following barriers and challenges to full integration of the pharmacist into the PCMH have been identified:

- Overall evolution of the PCMH
- Physician and patient awareness of pharmacists' capabilities
- Competition with other non-physician health care providers
- Access to required patient health information
- Reimbursement for pharmacists' services
- Provision of complementary services

Overall Evolution of the PCMH

The evolution of the PCMH is still in the early formative stages. Significant questions remain as to how to implement the core principles of the PCMH into various practice models and patient populations. It is likely that a heterogeneous model will develop that best serves specific patients populations and maximizes health care provider workflow, productivity, and satisfaction. Although the number of medical practices that have obtained NCQA PCMH accreditation has greatly increased over the last few years, those practices still represent a small minority of all practices.[67] Further complicating the growth and development of the PCMH is the current fee-for-service payment environment that dominates the marketplace. Although various payment models are currently being evaluated in demonstration projects, widespread reform of primary care payment models is required before pervasive adoption of the PCMH can become a reality.[68] With this backdrop, it is imperative that pharmacists are included in discussions of the PCMH during this formative process. As other non-physician health care providers with a more established presence in the care of patients in primary care settings (e.g., nurse practitioners and physician assistants) actively seek their roles within the PCMH model, pharmacists must demonstrate their value as well as differentiate their skill sets and offerings. It is critical that the pharmacy profession strongly advocate for their role now during this formative period rather than wait until the PCMH concept has more definitively evolved and pharmacists are forced to retro fit their services, play a minor role, or are completely left out.

Physician and Patient Awareness of Pharmacists' Capabilities

Pharmacists are qualified to provide many of the services required for the care of patients with chronic diseases as part of the physician directed team that is core to the PCMH concept. Specifically, pharmacists are uniquely qualified to provide services related to medication therapy. However, physician colleagues may not recognize our capabilities in these areas, especially in the outpatient setting. The latest generation of physicians most likely has been exposed to clinical pharmacy patient care services in the inpatient setting. These collaborations have expanded over the years as pharmacists have become an integral component of the effective and safe delivery of inpatient medication therapy. While pharmacists' presence in the delivery of direct patient care services has expanded in the outpatient setting as well, it is not nearly as entrenched as in the inpatient setting.

Physicians may only be familiar with pharmacists in their traditional medication dispensing roles. Pharmacists must take every opportunity to discuss and demonstrate their direct patient care services in the outpatient setting with their physician colleagues. These discussions should include topics such as the extensive education pharmacists receive on appropriate medication therapy management, pathophysiology and disease state education, post-graduate training programs, as well as the positive outcomes observed when pharmacists provide medication services to patients in outpatient settings.

The location of community pharmacists outside the "walls" of the PCMH should ultimately be a benefit in terms of patient access to care and provision of services to multiple patient populations, but may serve as a barrier to pharmacist inclusion in the PCMH until a broader awareness of pharmacists' capabilities is recognized. Physicians and other health care providers may be uncomfortable referring patients to a community pharmacist for these services until they become more familiar with the content and quality that the pharmacist provides. However, since primary care providers are accustomed to referring their patients to other health care providers on a routine basis, the potential for pharmacists' PCMH services to be provided outside of a medical clinic will ultimately become a strength for the aforementioned reasons.

Patients will also require education to actively seek out these services. Although some patients have had the opportunity to receive direct patient care services from pharmacists in outpatient settings, many others have not encountered pharmacists in these roles. Patients and patient advocacy groups can advocate for inclusion of pharmacists within PCMH models at both local and national levels.

Competition with Other Non-physician Health Care Providers

Although the PCMH brings promise of increased funding for quality care provided to patients with chronic diseases, resources will still be limited. These limitations may promote competition among non-physician health care providers for resources and will be one factor that influences the composition of PCMH teams. Pharmacists may be competing with nurse practitioners and physician assistants for a place on PCMH teams. Pharmacists may be at a disadvantage in the beginning of these discussions because these other health care providers are already recognized by third party payers as providers. Although each of these health care disciplines brings important contributions to the PCMH, pharmacists must demonstrate their unique qualifications that differentiate them from other health care providers. By their education, training, and experience, pharmacists are the medication experts in the patient care arena. These attributes provide a unique synergy and complementary skill set with the expertise that primary care providers have in the area of diagnosis. Pharmacists could also be coupled with nurse practitioners or physician assistants in complementary roles as well. Pharmacists should lead the way in developing effective and safe therapy care plans, selecting the most appropriate therapies, monitoring for efficacy, identifying and resolving adverse effects and drug interactions, assessing patient adherence, and reconciling patient medication across transitions of care. In addition to medication expertise, pharmacists are highly qualified to provide other aspects of quality chronic care such as disease state education and management and non-pharmacologic therapies such as therapeutic lifestyle changes. Pharmacists must make sure to proactively, professionally, and persuasively articulate their unique and important contributions to the PCMH team.

Access to Required Patient Health Information

Pharmacists must have access to the complete health record for patients in order to provide high quality care. Although interoperability and communication between health records of various providers is a wide spread problem in our health care system, it is particularly problematic for the outpatient/community-based pharmacist. These pharmacists have very limited access to patient health records, with information as simple as the diagnosis for a specific prescription not readily available. Overall health information technology strategies must address the availability of health record information for community-based pharmacists. A short term strategy enabling pharmacists to gain access to this information is for pharmacists to be embedded in PCMH teams within physicians' offices.

Reimbursement for Services

Pharmacists currently have few mechanisms to bill for provision of direct patient care services. Medication Therapy Management (MTM) Current Procedure Terminology 4 (CPT-4) codes have been established in recent years but compensation for direct patient care services provided by pharmacists remains problematic.[36, 69,70] However, pharmacists' services provided in the PCMH will, in many cases, go beyond what is considered MTM. Pharmacists have also billed in an "incident-to" fashion (99211 level) for some direct patient care services, but this level of reimbursement provides inadequate compensation for the level of service that pharmacists provide in the PCMH.[36] In some settings within physicians' offices, pharmacists have provided services to patients prior to the physician finishing the visit. The visit is then billed out by the physician based on the extent of the review of systems, number of problems addressed, and the overall complexity of the clinical decision making. The physician then shares the revenue generated by those patient visits with the pharmacist using either a salary-based or percent-of-revenue-from-each-visit approach.

Pharmacists must work with payers to be recognized as direct providers of patient care services and obtain appropriate reimbursement levels for the services they provide. This can be accomplished by giving pharmacists authority to bill payers through the full spectrum of existing evaluation and management codes or by creating new codes. Pharmacists may also enter into relationships with PCMHs in which their compensation is derived from the prospective payments paid to the practice for global management of certain chronic disease conditions. Pharmacists should work with other providers in PCMHs to make sure all financial incentives are appropriately aligned.

Provision of Complementary Services

Pharmacists should aspire to function at the highest and broadest level of their training as a member of PCMH teams. As previously stated pharmacists are the medication experts among health care professionals and should play a central role in development of effective and safe medication therapy care plans. However, pharmacists have an important role to play in overall education and treatment of patients. This role extends to appropriate monitoring of therapy, including the provision and evaluation of laboratory testing such as international normalized ratios (INRs) and lipid panels, and clinical testing such as blood pressures, as well as instructing patients about therapeutic lifestyle changes that may include proper nutrition and activity levels. Pharmacy education includes extensive course work and training in disease state management, non-pharmacologic therapies, and motivational interviewing and counseling of patients. Provision of these complementary services, in

combination with the core role as medication experts, will allow pharmacists to provide the most value to PCMHs, patients, and the overall healthcare system.

Section VII: Recommendations for Incorporation of Pharmacists into the Medical Home

There are over 15,000 registered pharmacists in the Commonwealth of Pennsylvania who serve an estimated 12.4 million citizens. Pharmacists advise and counsel Pennsylvanians every day. Pharmacists are among the most trusted and accessible health care professionals in the community. Yet, unfortunately they remain highly underutilized members of the patient centered medical team. It is important that potential stakeholders, (physicians, other health care practitioners, payers, patients, policymakers, and even pharmacists), become more aware of the important impact and evolving opportunity that pharmacists can offer through collaborative efforts which further reduce the burden of chronic disease and improve medication use. Therefore, we offer the following recommendations:

Increase Awareness of Pharmacist Clinical Roles

With the burden of chronic disease in Pennsylvania being so significant and the number of patients needing labor intensive attention and care only projected to increase, developing collaborative solutions to address these needs is crucial. Therefore, pharmacists must raise awareness on the value of their rigorous training in all aspects of drug therapy management and continue to promote their interventions for safe and effective medication use.

Community pharmacists must continue to engage in dialogue with local physicians to assess the need and promote opportunities for clinical pharmacy services. In addressing these needs, community pharmacists can creatively incorporate ideas for medication refills to assist with tracking and improving patient medication adherence. Chain and independent pharmacies have implemented innovative care programs and many pharmacies are now including private consultation areas for providing MTM. The Pennsylvania Pharmacists Association will explore partnerships with the Pennsylvania Medical Society, Pennsylvania Academy of Family Physicians, Pennsylvania Osteopathic Medical Society, and other physician organizations towards development of joint continuing education programming and other activities around topics pertaining to the patient centered medical home. This may assist in fostering new relationships between physicians, other prescribers, and pharmacists.

Incorporate Pharmacists into Medical Teams

The American Academy of Family Physicians called for the establishment of a "personal medical home" in 2004 with the intent that patients would have access to comprehensive, integrated care, through ongoing relationships. The Patient Centered Primary Care Collaborative in 2010 cited that MTM, which includes a comprehensive medication review (CMR), is an essential role for pharmacists within patient-centered medical homes. Pharmacists practice in a variety of environments and contribute to teams and patient health with their own unique set of medication management skills. Pharmacists may be directly embedded in the office practice, or physician groups can contract with community-based pharmacists (chain or independent) for these services.

The PA Chronic Care Management, Reimbursement and Cost Reduction Commission created in 2007 called for healthcare reform via a new reimbursement model aimed at reducing costs associated with chronic illness that are delivered through a PCMH model of care. To our knowledge pharmacists

were not specifically utilized in this initiative, therefore it is recommended that pharmacists be included in participating physician practices in the next phase of any chronic care initiative in this state. Legislators and policy makers should encourage the Pennsylvania Department of Public Welfare, as well as managed care organizations to utilize pharmacists, as other states have done, to improve medication use in the Medicaid and dual eligible populations of the Commonwealth. The same opportunity should also be explored with prescription benefit programs for State Employees and others.

Need for Fully Integrated Patient Health Information

Overall, health information technology strategies must ensure the availability of health record information for community based pharmacists. With access to improved health record information, community pharmacists would have the information necessary to make knowledgeable medication recommendations and to counsel patients more effectively. Existing e-prescribing platforms may be used to expand the level of information that is included with prescriptions, such as a patient's past medical history and his/her most recent laboratory data. Additionally, the exchange of pharmacy data must be considered and included in any proposal that involves the development of health information exchanges as pharmacies provide unique information to health care teams regarding patient medication history (i.e. medications prescribed in the past or by other health care prescribers) and patient adherence to medications. Data from community based pharmacies are valuable for these purposes. Pharmacists should not only be a contributor to these data repositories but should also be allowed access to all information contained therein allowing them to make better patient assessments related to medication use.

Another strategy toward integrating patient health information involves encouraging each patient to develop their own health record through their insurance plan or pharmacy. The personal health record empowers the patient to keep an accurate record of their own medical and medication history. Patients would have the ability to share that health information as they choose.

Align Payment for Improving Health Care Quality and Safety

Pharmacists have a proven track record of improving patient health care quality and safety. Pharmacists facilitate patient safety by identifying and resolving drug therapy problems. Furthermore, pharmacists help healthy patients remain well by preventing hospital admissions that result from medication misadventures. Pharmacists also enhance patient health care quality by improving chronic disease health measures. However, pharmacist involvement in these activities is not widespread in Pennsylvania due to lack of payment and reimbursement for services rendered.

Pharmacists working within physician practice sites need to discuss reimbursement options with their local payers. Community chain pharmacies or independent pharmacy purchasing groups should be included within health systems as Accountable Care Organizations (ACO) are formed and developed. We recommend that health systems integrate community-based pharmacists into shared savings programs and advance payment models of care as proposed by the Centers for Medicare and Medicaid Services (CMS).[71] We also recommend that pharmacists and PPA be included in quality improvement organization (QIO) initiatives throughout Pennsylvania.

The Transformation of a Profession

Pharmacists have unique skills which benefit patients, especially those with multiple medications and chronic illnesses. We envision qualified competent pharmacists working successfully in the PCMH model of care in areas relevant to risk assessment, disease prevention, disease management, medication management, and medication adherence. Pharmacists in the Commonwealth and the Pennsylvania Pharmacists Association are ready to work with the Pennsylvania Medical Society, Pennsylvania Academy of Family Physicians, Pennsylvania Department of Health and other state agencies, Pennsylvania legislators, corporations interested in a healthy workforce, business coalitions, health systems, and payers to improve access and quality of medication use for all citizens of Pennsylvania. Pharmacists are ready to step out from behind the counter and develop patient care practices as part of the patient-centered medical home.

Section VIII: Glossary

Medication Therapy Management (MTM): Term adopted by the CMS in 2003 legislation for an additional service required for certain patients receiving Medicare Part D benefits. Medication Therapy Management consists of delivering the service to a specific patient (optimally face to face); assessing a patient's medication related needs to determine if the patient is experiencing drug therapy problems; developing a care plan; and following up to determine actual outcomes the patient experiences from the medication regimen. Medication therapy management is a standardized and systematic process.[35]

- **Medication Therapy Review (MTR):** One of the core elements of services provided by a pharmacist in MTM. MTR is a systematic process of collecting patient-specific information, assessing medication therapies to identify medication-related problems, developing a prioritized list of medication-related problems, and creating a plan to resolve them.[27]

- **Comprehensive Medication Review (CMR):** An **annual** comprehensive medication review that occurs in person and consists of: counseling patients regarding clinical appropriateness, dosing regimen, adherence issues, adverse effects and potential problems between all medications taken (prescription, OTC, and supplements); evaluating safety and effectiveness of the medication regimen; formulating a treatment plan, documenting care, and communicating with other providers.[72]

- **Personal Medication Record (PMR):** One of the core elements of services provided by a pharmacist in MTM. The PMR is a comprehensive record of the patient's medications including prescription, nonprescription medications, herbal products, and other dietary supplements.[27]

- **Medication–Related Action Plan (MAP):** One of the core elements of services provided by a pharmacist in MTM. The MAP is a patient-centric document containing a list of actions for the patient to use in tracking progress for self-management.[27]

Comprehensive Medication Management (CMM): The standard of care that ensures patients' medications (prescription, OTC, and supplements) are individually assessed to determine if each medication is appropriate for the patient, effective for the medical condition, safe given the co-morbidities and other medications being taken, and able to be taken by the patient as intended (adherence).[35]

Collaborative Drug Therapy Management (CDTM): A collaborative practice agreement between one or more physicians and pharmacists wherein qualified pharmacists working within the context of a defined protocol are permitted to assume professional responsibility for performing patient assessments, ordering drug therapy related laboratory tests, administering drugs, and selecting, initiating, monitoring, continuing, and adjusting drug regimens.[58]

Disease State Management (DSM): A set of activities aimed at improving the health and clinical outcomes of patients having a chronic medical illness. The program is team-oriented and multidisciplinary, emphasizing patient education and involvement in self-care techniques. Outpatient drug management is another component of effective disease management programs.[73]

Section IX: References

1. Bates DW. Role of the pharmacist in the medical home. *Am J Health-Syst Pharm*. 2009; 66:1116-1118.
2. Kahn NB. The future of family medicine: A collaborative project of the family medicine community. *Ann Fam Med*. 2004; 2(suppl 1):S3-S32.
3. National Committee for Quality Assurance. Patient-centered medical home. http://www.ncqa.org/tabid/631/default.aspx (accessed 2011 Nov 14).
4. Ernst FR, Grizzle AJ. Drug-related morbidity and mortality: updating the cost-of-illness model. *J Am Pharm Assoc*. 2001; 41(2):192-9.
5. Martin A, Lassman D, Whittle L, et al. Recession contributes to slowest annual rate of increase in health spending in five decades. *Health Aff*. 2011; 30(1):11-22.
6. Bates DW. Role of pharmacists in the medical home. *Am J Health Syst Pharm.* 2009; 66:1116-8.
7. Yarnall KH, Ostbye T, Krause KM, et al. Family physicians as team leaders: "Time" to share the care. *Prev Chronic Dis*. 2009; 6(2):A59.
8. Bodenheimer T. Primary care – will it survive? *N Engl J Med*. 2006; 355(9):861-4.
9. Bodenheimer T, Pham H. Primary care: Current problems and proposed solutions. *Health Aff.* 2010; 29(5):799-805.
10. Field TS, Gurwitz JH, Harrold LR, et al. Risk Factors for adverse events among older adults in the ambulatory setting. *J Am Geriatr Soc.* 2004; 52(8):1349-54.
11. Viktil KK, Blix HS, Moger TA, et al. Polypharmacy as commonly defined is an indicator of limited value in the assessment of drug-related problems. *Br J Clin Pharmacol*. 2007; 63:187–95.
12. Kaufman DW, Kelly JP, Rosenberg L, et al. Recent patterns of medication use in the ambulatory adult population of the United States: the slone survey. *JAMA.* 2002; 287(3): 337-344.
13. Benner JS, Glynn RJ, Mogun H, et al. Long-term persistence in the use of statin therapy in elderly patients. *JAMA.* 2002; 288(4): 455-61.
14. Cramer J, Rosenheck R, Kirk G, et al. Medication compliance feedback and monitoring in a clinical trial: predictors and outcomes. *Value Health.* 2003; 6(5): 566-73.
15. Peterson AM, Takiya L, Finley R. Meta-analysis of trials of interventions to improve medication adherence. *Am J Health Syst Pharm.* 2003; 60(7): 657-65.
16. Haynes RB, McDonald HP, Garg AX. Helping patients follow prescribed treatment: clinical applications. *JAMA.* 2002; 288(22): 2880-3.
17. Advameg. Commonwealth of Pennsylvania. http://www.city-data.com/states/Pennsylvania.html (accessed 2011 Nov 14).
18. Data Place Beta. Data profile for Pennsylvania. http://www.dataplace.org (accessed 2011 Nov 14).
19. U.S. Census Bureau. State and county quick facts: Pennsylvania. http://quickfacts.census.gov/gfd/states/42000.html (accessed 2011 Nov 14).
20. Pennsylvania Health Care Cost Containment Council. Chronic health conditions in Pennsylvania. http://www.phc4.org/reports/chroniccare/10/docs/chroniccare2010report.pdf (accessed 2011 Nov 14).
21. Centers for Disease Control and Prevention. Pennsylvania: Burden of chronic diseases. http://www.cdc.gov/chronicdisease/states/pdf/pennsylvania.pdf (accessed 2011 Nov 14).
22. United Health Foundation. America's health rankings: poor mental health days. http://www.americashealthrankings.org/Measure/2010/List%20All/Poor%20Mental%20Health%20Days.aspx (accessed 2011 Nov 14).
23. Pennsylvania Health Care Cost Containment Council. Chronic health conditions in Pennsylvania- news release. http://www.phc4.org/reports/chroniccare/10/nr061010.htm (accessed 2011 Nov 14).
24. PA Health Access Network. Healthcare in Pennsylvania and the US. http://www.pahealthaccess.org/health-care-pennsylvania-and-us (accessed 2011 Nov 14).
25. Hepler CD, Strand L. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm.* 1990; 47:533-43.
26. Chisholm-Burns MA, Lee JK, Spivey CA, et.al. US pharmacists' effect as team members on patient care: systematic review and meta-analyses. *Med Care*. 2010; 48:923-933.
27. Bluml B. Definition of medication therapy management: development of a profession wide consensus. *J Am Pharm Assoc.* 2005; 45(5):566-572.
28. Gonzalez J, Noga M. Medication therapy management. *J Mangag Care Pharm*. 2008; 14(suppl S-c):S8-S11.
29. Kohn LT, Corrigan JM, Donaldson MS. To err is human: building a safer health system. Washington, DC: National Academy Press; 2000.
30. Pharmacy Act of Sep. 27, 1961, P.L. 1700, No 699 Section 9.3 added June 1, 2010, P.L.9201, No.29 www.dos.state.pa.us/portal/server.pt/community/state_board_of_pharmacy/12519 (accessed 2011 Nov 14).
31. The Lewin Group. Medication Therapy Management service: a critical review. www.pharmacist.com (accessed 2011 Nov 14).
32. Carter BL, Ardery G, Dawson JD, et al. Physician and pharmacist collaboration to improve blood pressure control. *Arch Intern Med.* 2009; 169:1996-2002.
33. Ponniah A, Anderson B, Shakib S, et al. Pharmacists' role in the post-discharge management of patients with heart failure: a literature review. *J Clin Pharm Ther*. 2007; 32(4):343-52.
34. Lee JK, Grace KA, Taylor AJ. Effect of a pharmacy care program on medication adherence and persistence, blood pressure, and low-density lipoprotein cholesterol: a randomized controlled trial. *JAMA.* 2006; 296:2563-2571.
35. Patient Centered Primary Care Collaborative 2010. Incorporating comprehensive medication management to optimize patient outcomes. http://www.pcpcc.net/files/medmanagepub.pdf (accessed 2011 Nov 14
36. Smith M, Bates DW, Bodenheimer T, et al. Why pharmacists belong in the medical home. *Health Aff.* 2010; 29(5): 906-913
37. Accreditation Council for Pharmacy Education. ACPE About Page. www.acpe-accredit.org/about/default.asp (accessed 2011 Nov 14).
38. Accreditation Council for Pharmacy Education. Accreditation standards and guidelines for the professional program in pharmacy leading to the doctor of pharmacy degree. Chicago, Illinois: Accreditation Council for Pharmacy Education; 2011.
39. Title 49, Pennsylvania Code, Section 27.26. (Short form: 049 Pa. Code § 27.26) www.pacode.com/secure/data/049/chapter27/chap27toc.html (accessed 2011 Nov 14).
40. National Archives and Records Administration. Code of Federal Regulations: Title 42. Cost of approved nursing and allied health education activities. 42CFR413.85. § 413.85; 2010.
41. American Society of Health-System Pharmacists. ASHP accreditation standard for postgraduate year one (PGY1) pharmacy residency programs. http://www.ashp.org/DocLibrary/Accreditation/ASD-PGY1-Standard.aspx (accessed 2011 Nov 14).
42. Board of Pharmacy Specialties. About BPS: Establishment of pharmacy specialties. www.bpsweb.org (accessed 2011 Sep 30).

43. Board of Pharmacy Specialties. BPS 2011 candidates guide. www.bpsweb.org/pdfs/candidatesguide.pdf (accessed 2011 Nov 14).
44. Commission for Certification in Geriatric Pharmacy. Fees and eligibility requirements. http://www.ccgp.org/pharmacist/certification/fees.htm (accessed 2011 Nov 14).
45. Commission for Certification in Geriatric Pharmacy. Statement on pharmacy credentialing, quality assurance and medicare coverage of medication therapy management services. http://www.ccgp.org/links/Statement_Credentialing.pdf (accessed 2011 Nov 14).
46. American Pharmacists Association. Certificate Training Programs. http://www.pharmacist.com/Content/NavigationMenu3/ContinuingEducation/CertificateTrainingProgram/CTP.htm (accessed 2011 Nov 14).
47. Arvantes J. American academy of family physicians: Pennsylvania prepares to revamp approach to chronic care. http://www.aafp.org/online/en/home/publications/news/news-now/government-medicine/20080220pachronic.html (accessed 2011 Nov 14).
48. Kozminski M, Busby R, McGivney MS, et.al. Pharmacist integration into the medical home: Qualitative analysis. *J Am Pharm Assoc*. 2011; 51(2):173-83.
49. Berdine HJ, Skomo MG. The medical home: Development and integration of pharmacist clinical services into the patient-centered medical home. *J Am Pharm Assoc*. Accepted for publication 2012.
50. Academy of Managed Care Pharmacy. Pharmacists as vital members of accountable care organizations: Illustrating the important role that pharmacists play on health care teams; 2011. www.amcp.org/aco.pdf (accessed 2011 Nov 14).
51. Cranor CW, Bunting BA, Christensen DB. The asheville project: long term clinical and economic outcomes of a community pharmacy diabetes care program. *J Am Pharm Assoc*. 2003; 43(2):173-84.
52. Bunting BA, Cranor CW. The asheville project: long-term clinical, humanistic, and economic outcomes of a community-based medication therapy management program for asthma. *J Am Pharm Assoc.* 2006; 46(2):133-47.
53. Bunting BA, Smith BH, Sutherland SE. The asheville project: clinical and economic outcomes of a community-based medication therapy management program for hypertension and dyslipidemia. *J Am Pharm Assoc.* 2008; 48:23-31.
54. Michaels NM, Jenkins GF, Pruss DL, et al. Retrospective analysis of community pharmacists' recommendations in the North Carolina Medicaid medication therapy management program. *J Am Pharm Assoc*. 2010; 50(3):347-53
55. Trapskin K, Johnson C, Cory P, et al. Forging a novel provider and payer partnership in Wisconsin to compensate pharmacists for quality driven pharmacy and medication therapy management services. *J Am Pharm Assoc*. 2009; 49:642-651
56. Kripalani S, LeFevre F, Phillips CO, et al. Deficits in communication and information transfer between hospital-based and primary care physicians: implications for patient safety and continuity of care. *JAMA*. 2007; 297(8):831–41.
57. Hammond RW, Dole EJ. The pharmacist clinician: prescriptive authority in New Mexico. J Manag Care Pharm. 1996; 2(5):594-596.
58. Hammond RW, Schwartz AH, Campbell MJ, et.al. ACCP position statement: Collaborative drug therapy management by pharmacists. *Pharmacotherapy.* 2003; 23(9):1210-25.
59. Stone J, Hoffman GJ. Medicare hospital readmissions: Issues, policy options, and PPACA. Congressional Research Service. Washington D.C.; 2010 Sep 21.
60. Forster AJ, Murff HJ, Peterson JF, et al. The incidence and severity of adverse events affecting patients after discharge from the hospital. *Ann Intern Med.* 2003; 138(3):161–7.
61. Coleman EA, Smith JD, Raha D, Min SJ. Post hospital medication discrepancies: prevalence and contributing factors. *Arch Intern Med.* 2005; 165(16):1842–7.
62. American Society of Health-System Pharmacists Continuity of Care Task Force. Continuity of care in medication management: review of issues and considerations for pharmacy. *Am J Health Syst Pharm*. 2005; 62:1714–20.
63. Ellitt GR, Brien JE, Aslani P, et al. Quality patient care and pharmacists' role in its continuity – A systematic review. *Ann Pharmacotherapy.* 2009; 43:677-91.
64. Gillespie U, Alassaad A, Henrohn D, et al. A comprehensive pharmacist intervention to reduce morbidity in patients 80 years or older: a randomized controlled trial. *Arch Intern Med.* 2009; 169:894-900.
65. Isetts BJ, Schondelmeyer SW, Artz MB, et al. Clinical and economic outcomes of medication therapy management services: The Minnesota experience. *J Am Pharm Assoc.* 2008; 48:203-11.
66. Cipolle R, Strand L, Morley P. Pharmaceutical care practice: The clinician's guide. McGraw-Hill; 2004.
67. National Committee for Quality Assurance. NCQA patient-centered medical home: Health care that revolves around you. www.ncqa.org/Portals/0/Programs/Recognition/2011PCMHbrochure_web.pdf (accessed 2011 Nov 14).
68. Landon BE, Gill JM, Antonelli RC, et al. Prospects for rebuilding primary care using the patient-centered medical home. *Health Affairs*. 2010; 29:827-34.
69. Lounsbery JL, Green CG, Bennett MS, et al. Evaluation of pharmacists' barriers to the implementation of medication therapy management services. *J Am Pharm Assoc*. 2009; 49:51-8.
70. Cook DM, Mburia-Mwalili A. Medication therapy management favors large pharmacy chains and creates potential conflicts of interest. *J Manag Care Pharm.* 2009; 15:495-500.
71. American Academy of Family Practitioners. Medicare shared savings program: accountable care organizations final rule. http://www.aafp.org/online/etc/medialib/aafp_org/documents/policy/fed/background/medicare-aco-summary.Par.0001.File.dat/AAFPFinalMedicareACO.pdf (accessed 2011 Nov 21).
72. Reinke T. Medication therapy management program in NC saves $13 million. *Managed Care Magazine*. 2011; 20(10):17-18.
73. American Academy of Family Physicians. Disease management (position paper). http://www.aafp.org/online/en/home/policy/policies/d/diseasestatemgt.html (accessed 2011 Nov 14).