Development and integration of pharmacist clinical services into the patient-centered medical home
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Abstract

**Objectives:** To describe the development of pharmacist clinical services within a primary care physician practice using a standardized business plan, the extent of clinical pharmacy service integration into the patient-centered medical home (PCMH), and the clinical changes in the pharmacist’s patient cohort.

**Setting:** A two-physician primary care/occupational care practice in Pittsburgh, PA, from May 2007 to December 2011.

**Practice description:** Pharmacist-led clinic receives physician referrals for medication management, adherence, and disease management services.

**Practice innovation:** Pharmacist practice in a primary care setting with emphasis on integration of clinical services into the medical home model designed by the American Academy of Family Physicians.

**Main outcome measures:** Characterization of the patient’s pharmacist and services provided by the pharmacist. Glycosylated hemoglobin (A1C), body mass index (BMI), low-density lipoprotein cholesterol, high-density lipoprotein cholesterol, total cholesterol, triglycerides, and blood pressure.

**Results:** The top five primary referral reasons were diabetes self-management, weight management, medication adherence, hypertension, and dyslipidemia management. Improvements in clinical parameters were demonstrated for lipids and A1C at 1 and 2 years after baseline. Statistically significant improvements in BMI also were observed.

**Conclusion:** The pharmacist developed and integrated clinical services into a primary care practice, became an integral member of the clinical team in the two-physician PCMH, and improved patient outcomes.

**Keywords:** Primary care, ambulatory care, diabetes, clinical pharmacy, patient-centered medical homes.

The patient-centered medical home (PCMH) is a team-based model of care led by a personal physician who provides continuous and coordinated care throughout a patient's lifetime to maximize health outcomes. The model described by the American Academy of Family Physicians (AAFP) consists of four building blocks: (1) quality measures, (2) the patient experience, (3) practice organization, and (4) health information technology (www.aafp.org/online/en/home/membership/initiatives/pcmh.html). Clinical pharmacy services can be integrated into the medical home's building blocks by locating the pharmacist directly inside the medical home practice or connecting with a pharmacist through community links. The pharmacist focuses on patients with chronic illness and medication-related problems. The pharmacist contributes directly to improved patient health outcomes by ensuring the quality and safety of medication use. Clinical services include medication reconciliation, especially post–hospital discharge, self-management of chronic disease and healthy lifestyle modification, review of polypharmacy and drug related problems, and counseling on medication adherence. With the mandate to restructure health care delivery, the concept of PCMH is gaining momentum. The National Committee for Quality Assurance (NCQA) has developed standards for recognition of PCMH. The standards specify that the practice implement evidence-based care plans, use nonphysician practitioners in care management, coordinate care transitions, and support patient self-management. Nonphysician practitioners include physician assistants, nurse practitioners, clinical social workers, and pharmacists. Including a pharmacist in the medical home supports the Institute of Medicine’s philosophy that the pharmacist is an essential resource on medication use and must be accessible to patients at all times.

Objectives
We describe one type of pharmacy practice model located in a PCMH. The concept is not new, as academic pharmacists and others have been working in primary care settings for years. However, few published references exist about pharmacist clinical services offered in a medical home. The current work describes (1) the development of pharmacist clinical services within a primary care physician practice using a standardized business plan, (2) the extent of clinical pharmacy service integration into PCMH using the AAFP practice model, and (3) the clinical changes in the pharmacist's patient cohort. The Duquesne University Institutional Review Board approved the project.

Practice description
A long-standing relationship between the Duquesne University Mylan School of Pharmacy (Pittsburgh, PA) and the Duquesne University Rangos School of Health Sciences physician assistant program was the connection for developing a pharmacy practice within a primary care medical practice. The medical practice consists of two physicians who are adjunct clinical professors at the Rangos School and familiar with teaching physician assistant students experientially. The practice uses one full-time physician who typically sees 12 to 15 patients per day. The second physician sees patients 3 days a week and teaches at the university 2 days each week. Both physicians are preceptors for physician assistant students. The physical practice includes three examination rooms, a large minor surgery and dressing suite, office manager and physician offices, and a reception area. Our office doubles as an audiometry and optometry exam room. The Internet is accessed through the office Wi-Fi connection. The pharmacist is a senior faculty member board certified in pharmacotherapy and experienced in disease management. The pharmacist spends 12 to 15 hours per week at the practice site. The practice site accommodates students in an advanced pharmacy practice experience (APPE) ambulatory care practice, as well as ambulatory care residents and academic/research fellows. APPE students are on site with the faculty member for 12–15 hours per week, whereas a resident or fellow are on site for eight hours per week. The majority of time is spent in patient care, with about 10% of time spent on research. Research time involves data entry and maintenance.
of the pharmacist’s electronic medical record system. One of the collaborating physicians meets with the APPE student pharmacists twice a week for 1.5 hours each during morning hospital rounds.

Practice development

Business concept

Widespread integration of clinical pharmacy services into the outpatient care environment or medical home has not occurred, primarily because current reimbursement methods are inadequate. Nonetheless, many in the profession see the mandate for pharmacist clinical services in primary care as a necessity to improve patient outcomes through optimal medication use. In March 2009, a group of pharmacy organizations issued a document presenting seven principles for the integration of clinical services into PCMH (Table 1).10 In July 2010, the Patient-Centered Primary Care Collaborative (PCPCC) released a resource document about integrating comprehensive medication management into the medical home.9 According to PCPCC, pharmacists in the medical home assist in coordination of care, avoid service duplication, and promote safe, efficient, and cost effective medication use. In particular, pharmacists as members of the interprofessional medical team optimize medication use at the point of care in the physician office. The following mission statement was developed by our team, incorporating these concepts into the business plan: Pharmacists will enhance the health and clinical outcomes of patients consulted in a general medical practice through medication and disease management by means of interprofessional collaboration.

Evaluating the market

A critical factor in a successful PCMH is maximizing the benefits offered by medications by improving outcomes.9 Therefore, the pharmacist primarily concentrates on patients with chronic disease. Another group would be primary prevention patients who are considered at risk for cardiovascular disease or diabetes or who have been diagnosed with metabolic syndrome. The physicians educate patients about the benefits of meeting with the pharmacist and then allow patients to choose whether to see the pharmacist.

Process of care

Pharmacist services target the following patient groups:

- Patients taking four or more chronic medications who are nonadherent to medication and healthy lifestyles regimens and require weight management
- Patients with diabetes requiring glucometer training, insulin injection education, and/or diabetes self-management skills
- Those with chronic illness and recently discharged from the hospital for medication reconciliation
- Patients with uncontrolled hypertension, chronic heart disease (coronary heart disease, chronic heart failure), chronic pain, dyslipidemia, diabetes, metabolic syndrome, prediabetes, osteoporosis, obesity, and/or nicotine addiction
- Those who present with adverse events as a result of drug-related problems
- Those requiring immunizations
- Patients who are unable to afford their prescription medications

Patients are asked to sign the statement of confidentiality/informed consent/financial responsibility at the first visit. Patients are encouraged to develop a long-term partnership with the pharmacist. The first visit is scheduled for up to 60 minutes. Follow-up appointments are 20 to 30 minutes and are scheduled 2 to 6 weeks after the initial appointment. Even if goals are reached, maintenance appointments are scheduled quarterly to every 6 months, as everyone is subject to “slips” in behavior. The office staff is responsible for scheduling initial and follow-up appointments and rescheduling cancelled appointments.

Visits are billed for the physician and pharmacist when both are seen on the same day and when the appointment is a stand-alone consult with the pharmacist. Same-day appointments are billed at Current Procedural Terminology (CPT) code 99211 and the physician visit is upgraded. The visits billed for and payments received are the diabetes self-management visit (G0108, $18–55), tobacco consult (99406, $8–15; 99407, $15–32.50), medication therapy management (MTM) new patient visit (99605), and stand-alone visit of nonphysician practitioner education (99211, $18–25).

Clinical services delivery

Delivery of MTM pharmacy services includes the standard five core components10: medication therapy review (MTR), personal medication record (PMR), medication-related action plan (MAP), intervention and/or referral, and documentation and follow-up. The pharmacist and students complete the MTR and PMR. MTR is a process of assessing medication therapies, identifying medication-related problems, and creating a plan to resolve the problems. The PMR is a comprehensive list of prescription medications, nonprescription medications, herbal remedies, and dietary supplements for the patient to take
The pharmacist identifies readiness to change and uses motivational interviewing techniques encouraging empowerment, self-efficacy, and behavior change. These communication techniques meet the criteria established for the “patient experience” building block of the medical home. The pharmacist and students conduct physical assessments, develop pharmaceutical care plans, and document SOAP (subjective, objective, assessment, and plan) notes, interventions, and recommendations. Patients are provided a written set of goals within a medication (or lifestyle) action plan (MAP). The MAP is a document that is a list of actions for patients to track their progress by referring to self-determined goals periodically. Occasionally, the pharmacist arranges for referral to a specialist or consults with another member of the PCMH team. The pharmacist can telephone or electronically send prescriptions to the pharmacy. With the exception of an immunization administration collaborative agreement, the pharmacist did not have any other collaborative MTM (CMTM) agreements at the time of study. However, Pennsylvania state law was recently changed to allow CMTM agreements in the outpatient setting, and additional CMTM agreements may be considered in the future. All recommendations are discussed with the physician verbally and instituted by the end of the patient’s appointment. The CMTM agreement would facilitate an efficient workflow. The pharmacist makes follow-up telephone calls regarding lab results and therapeutic decisions. Follow-up appointments are made before the patient leaves the office.

The pharmacy team assists the practice in meeting criteria for the NCQA-certified diabetes physician recognition program. Through the NCQA program, physicians earn increased respect from peers and patients, distinguish themselves within communities, and are eligible for financial rewards. Another quality improvement project is the completion of the Physician Quality Reporting Initiative (PQRI) data collection sheet for eligible patients. PQRI establishes a financial incentive for professionals to participate in a voluntary quality reporting program analogous with a pay-for-performance program. Examples of quality reporting measures are high blood pressure control, glycosylated hemoglobin (A1C) control, low-density lipoprotein control, and body mass index (BMI). Meeting quality measures enables the practice to be eligible for a year-end bonus.

**Required resources and expenses**

The physician office practice does not use electronic medical records; therefore, the pharmacist purchased Medication Pathfinder (Clinical Support Services, Buffalo, NY). The software is an MTM clinical information system for pharmacists that simplifies collection of patient clinical data and visit documentation. Students document patient reports of symptoms and medication use in the subjective section of the SOAP note and complete the note as an educational exercise. SOAP notes are reviewed, edited, and signed by the faculty preceptor. The note is printed and placed on the paper medical chart for physician review and signature and is part of the permanent medical record. The software enables data extracts to facilitate research conducted at the practice site. Office expenses include supplies, administrative time for scheduling patients, maintaining and retrieving paper charts, billing time, and office space rental. The university pays the pharmacist’s salary.

**Business agreement**

A business agreement between the practice and the pharmacist was necessary for billing. The agreement covers the scope of professional services, credentials (e.g., BCPS, CDE) and time required per week at the practice site. Revenue generated by the pharmacist is collected by the medical practice. The pharmacist carries professional liability insurance, and students are covered by the university. Casualty insurance is also provided by the university. Because the medical home site is an APPE, affiliation agreements were drawn up between the practice and the university. A collaborative agreement for administering immunizations was created. The pharmacy and medical practices have their own Health Insurance Portability and Accountability Act of 1996 (HIPAA) statements. Every pharmacist, student, resident, and fellow completes university-based online HIPAA training. Agreements are available in the online appendices (electronic version of this article, available online at www.japha.org).

**Results**

The pharmacists’ practice was implemented in May 2007. The practice has one full-time and one part-time physician seeing approximately 100 patient visits per week for a total of about 5,000 patient visits per year. The breakdown of office visits by insurance class is atypical of a primary care practice located in southwestern Pennsylvania: Blue Shield, 37.5%; commercial (Aetna, United, Health America, and UPMC), 21.3%; Medicare, 3.0%; and Medicare, 4.7%. Our patient panel for a 0.3-FTE (full-time equivalent) pharmacist is 248 patients (5.0% of active patients in the practice). A total of 100 referrals were made from clinic inception on May 25, 2007, through October 13, 2008 (16 months); 200 referrals were made by May 10, 2010, representing 100 additional referrals in the succeeding 19 months. Referrals were initially made for adherence counseling, adverse drug reaction drug therapy problems, weight management, dyslipidemia management, and then moving to diabetes self-management education.

The mean age of patients (n = 200) was 52.8 years, and each patient had a mean of 3.0 visits. Of the referrals, 53.5% were for women and 46.5% for men. The race profile reflects that of the Pittsburgh region: white, 68% (region, 67.6%); black, 23% (region, 27.1%); and Asian 0.5% (region, 2.8%). No Latino or Hispanic patients have been referred to the clinic (region 1.3%). Table 2 shows the types and percent of patients referred to the clinic relative to diagnosis code. The three most frequent referral reasons to the pharmacist were for (1) diabetes self-management, (2) “other” (e.g., anticoagulation management, heart failure medication and lifestyle management, tobacco cessation counseling), and (3) weight management. Intention-to-treat methodology was used for the data collect-

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Admission to the pharmacist service is ongoing. Patients with a minimum age of 18 years were enrolled in the service as they were referred by the two primary care physicians. Written informed consent to participate was obtained before the first visit with the pharmacist. Because the data collected are from patients consulted in a usual care environment rather than a protocol-driven evaluation, the timing of follow-up clinical outcomes was not strictly defined. Therefore, if patients had multiple measurements throughout the years, follow-up values were identified closest to their anniversary enrollment date 3 months before or after years 1, 2, and 3 of participation in the pharmacist clinical service. Clinical changes over time in our patient cohort were assessed by analysis of covariance using clinical values at 1, 2, and 3 years as independent variables with time in the program as a fixed effect and corresponding baseline value as covariant. Table 3 indicates lipid parameter changes for patients enrolled in the pharmacist clinical service after 1, 2, or 3 years. Statistical significance was achieved for all lipid parameters. Table 4 illustrates improvement in A1C during year 1 and 2. Systolic and diastolic blood pressure was fairly well controlled at the outset for most patients in our cohort. Changes in BMI were statistically significant.

### Discussion

**Practice outcomes: Building blocks of the medical home**

From our experiences in this medical home practice, clinical pharmacy services can be integrated into the four building blocks of the PCMH as described by AAFP.15 A physician practice will achieve NCQA accreditation as a PCMH when criteria within each building block are met. The pharmacist can use the criteria in each building block to develop clinical pharmacy services within the PCMH. As more primary care practices achieve accreditation, alternate reimbursement methods from payers in both government and private sectors should become available.

**Achieving NCQA accreditation as a PCMH**

**Quality measures and patient experience.** The foundation building blocks of the medical home are the ability to provide “quality care” and support a “patient experience” of open communication.

#### Table 2. Diagnosis of referred patient cohort (n = 200)

<table>
<thead>
<tr>
<th>ICD diagnosis code</th>
<th>Diagnosis</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>401.00</td>
<td>Hypertension</td>
<td>50.5</td>
</tr>
<tr>
<td>440.9</td>
<td>Atherosclerosis</td>
<td>7.5</td>
</tr>
<tr>
<td>427.31</td>
<td>Atrial fibrillation</td>
<td>4.0</td>
</tr>
<tr>
<td>428.0</td>
<td>Chronic heart failure</td>
<td>4.5</td>
</tr>
<tr>
<td>250.00</td>
<td>Type 1 and type 2 diabetes</td>
<td>37.0</td>
</tr>
<tr>
<td>272.00</td>
<td>Dyslipidemia</td>
<td>49.0</td>
</tr>
<tr>
<td>278.00</td>
<td>Overweight/obese</td>
<td>4.5</td>
</tr>
<tr>
<td>338.2</td>
<td>Chronic pain</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Abbreviation used: ICD, International Classification of Diseases. The total exceeds 100% because patients had multiple diagnoses.

#### Table 3. Baseline to 1, 2, or 3 year changes in LDL cholesterol, total cholesterol, triglycerides, and HDL cholesterol

<table>
<thead>
<tr>
<th>Time period</th>
<th>LDL cholesterol (mg/dL)</th>
<th>Total cholesterol (mg/dL)</th>
<th>Triglycerides (mg/dL)</th>
<th>HDL cholesterol (mg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SD (n)</td>
<td>Mean ± SD (n)</td>
<td>Mean ± SD (n)</td>
<td>Mean ± SD (n)</td>
</tr>
<tr>
<td>Baseline</td>
<td>118.70 ± 43.39 (60)</td>
<td>204.83 ± 57.39 (76)</td>
<td>228.85 ± 188.93 (67)</td>
<td>47.82 ± 15.05 (77)</td>
</tr>
<tr>
<td>1 year</td>
<td>105.97 ± 34.05 (60)</td>
<td>186.77 ± 42.12 (76)</td>
<td>203.45 ± 203.06 (67)</td>
<td>48.55 ± 14.46 (77)</td>
</tr>
<tr>
<td>Baseline</td>
<td>110.87 ± 46.44 (38)</td>
<td>201.55 ± 60.26 (53)</td>
<td>254.25 ± 206.88 (44)</td>
<td>45.63 ± 14.66 (52)</td>
</tr>
<tr>
<td>2 years</td>
<td>99.39 ± 34.43 (38)</td>
<td>181.32 ± 47.57 (53)</td>
<td>236.52 ± 292.62 (44)</td>
<td>49.12 ± 15.77 (52)</td>
</tr>
<tr>
<td>Baseline</td>
<td>97.65 ± 30.96 (17)</td>
<td>184.38 ± 45.23 (24)</td>
<td>218.90 ± 197.29 (21)</td>
<td>48.54 ± 16.42 (24)</td>
</tr>
<tr>
<td>3 years</td>
<td>94.71 ± 31.95 (17)</td>
<td>178.88 ± 46.73 (24)</td>
<td>288.00 ± 489.79 (21)</td>
<td>48.25 ± 14.16 (24)</td>
</tr>
</tbody>
</table>

Abbreviations used: LDL, low-density lipoprotein; HDL, high-density lipoprotein. Data are based on the number of intention-to-treat participants for whom data were available 3 months before or after each yearly time point. P values are based on adjusted mean changes from the analysis of covariance model.

#### Table 4. Baseline to 1, 2, and 3 year changes in A1C, blood pressure, and BMI

<table>
<thead>
<tr>
<th>Time period</th>
<th>A1C (%)</th>
<th>SBP (mm Hg)</th>
<th>DBP (mm Hg)</th>
<th>BMI (kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SD (n)</td>
<td>Mean ± SD (n)</td>
<td>Mean ± SD (n)</td>
<td>Mean ± SD (n)</td>
</tr>
<tr>
<td>Baseline</td>
<td>8.3 ± 1.73 (41)</td>
<td>130.63 ± 13.73 (72)</td>
<td>81.45 ± 10.45 (72)</td>
<td>33.92 ± 7.17 (69)</td>
</tr>
<tr>
<td>1 year</td>
<td>7.7 ± 1.67 (41)</td>
<td>128.37 ± 13.77 (72)</td>
<td>78.05 ± 9.57 (72)</td>
<td>33.23 ± 7.64 (69)</td>
</tr>
<tr>
<td>Baseline</td>
<td>8.25 ± 1.51 (28)</td>
<td>130.27 ± 14.97 (48)</td>
<td>81.51 ± 11.29 (48)</td>
<td>33.91 ± 7.15 (46)</td>
</tr>
<tr>
<td>2 years</td>
<td>8.10 ± 1.79 (28)</td>
<td>126.49 ± 10.36 (48)</td>
<td>76.71 ± 9.89 (48)</td>
<td>33.57 ± 7.25 (46)</td>
</tr>
<tr>
<td>Baseline</td>
<td>8.16 ± 1.41 (41)</td>
<td>128.90 ± 12.48 (28)</td>
<td>79.86 ± 8.60 (28)</td>
<td>33.22 ± 7.16 (27)</td>
</tr>
<tr>
<td>3 years</td>
<td>8.43 ± 1.51 (14)</td>
<td>126.34 ± 9.12 (28)</td>
<td>79.24 ± 7.99 (28)</td>
<td>33.11 ± 6.72 (27)</td>
</tr>
</tbody>
</table>

Abbreviations used: A1C, glycosylated hemoglobin; BMI, body mass index; DBP, diastolic blood pressure; SBP, systolic blood pressure. Data are based on the number of intention-to-treat participants for whom data were available 3 months before or after each yearly time point. P values are based on adjusted mean changes from the analysis of covariance model.
munication, goal setting, and accurate documentation. Clinical services delivered according to evidence-based practice guidelines are specified as a component of the medical home’s “quality measures” building block. The pharmacist promotes clinical decisions made at the point of care based on well-established and nationally recognized clinical guidelines and on appropriate drug product selection, in order to optimize drug therapy at the patient visit. These activities promote ongoing high-quality care. The pharmacist establishes rapport with the patient through motivational interviewing; assesses, educates, and sets goals agreeable to the patient; and documents the encounter. Pharmacists offering medication adherence and MTM services also improve effectiveness and safety of care delivered. Finally, the pharmacist facilitates continuity of care by administering vaccinations, conducting medication reconciliation, and suggesting prevention measures.

**Practice organization and health information technology.** The two building blocks stacked on top of the two foundational building blocks are practice organization and health information technology (HIT). The pharmacist takes part in the organization and HIT activities by conducting in-services for staff or monitoring the flow sheets of patients with diabetes to determine whether they are meeting pay-for-performance measures and standards. This two-physician practice takes advantage of HIT in the form of e-prescribing. Features of the system include drug interaction and allergy checks, dosing alerts, and formulary information. The office manager has included the pharmacist as a clinician capable of sending prescriptions with physician approval electronically. The software used is Care360 (Quest Diagnostics), which is an Internet portal through which patient and medical information can be accessed. Electronic medical records will be implemented next, and the pharmacist has been requested to assist with the implementation process. Other technology enhancements to the practice are templates to guide evidenced-based treatment recommendations, alerts when lab parameters are out of range, and Internet access for patients to communicate with practitioners.

**Challenges and benefits to pharmacists and physicians practicing in the medical home**

**Challenges.** One of the most important barriers to pharmacists advancing in the medical home is the lack of reimbursement for clinical services. A key to successful practice in the medical home is for pharmacists to educate both legislators and payers about increasing access for the public to valuable clinical pharmacy services. Although many pharmacists have the legal opportunity to develop CMTM agreements, we are limited to immunizations in this practice. Physician acceptance, slow credentialing status, inadequate knowledge of billing and clinical skills, indifferent attitude of pharmacy practitioners, and insufficient space to perform clinical services are barriers to overcome.16

In our practice, the office manager’s perception of pharmacy services’ value is critical. Managers are interested in the financial impact of the clinical pharmacy service on the physician practice. Managers are concerned with leasing expenses, billing procedures, revenue stream created from the clinical pharmacy service, and clerical expenses generated by the pharmacist and students. A super bill, specifically describing the pharmacist services, is being developed to document billable activities.17

At the time of the experience described here, the PCMH model was not financially viable. The office manager successfully billed for a limited number of pharmacist visits. For January to December 2010, revenues of $1,275 were generated from CPT codes billed other than 99211. Estimated revenue from 99211 billing, using an average reimbursement of $20 per visit, 7 patients per week for 50 weeks, would be approximately $7,000. Keep in mind that this practice is a teaching practice and a pharmacist working solo would likely generate more revenue during the same total weekly clinic hours. Reimbursement for obesity counseling was mandated by the passage of the Affordable Care Act and could increase the clinic revenues. Nonphysician providers are eligible for reimbursement using the following time-based codes: 99401 (15 minutes, $21–45), 99402 (30 minutes, $34–75), 99403 (45 minutes, $48–105), 99404 (60 minutes, $62–135). This is a welcome opportunity, as obesity is associated with many chronic diseases and is a diagnosis of many patients who consult the pharmacist. The practice has applied for accreditation as a tobacco cessation clinic with the Allegheny County Department of Health to generate additional revenue. Another revenue stream can be created by assisting the practice to achieve pay-for-performance measures. One such measure requires asthma or chronic obstructive pulmonary disease patients with an inhaler prescription to have a spirometry test conducted within 2 years. The pharmacist and students now conduct spirometry testing and recommend drug therapy changes. Achieving NCQA accreditation will allow the practice to qualify for other nonphysician provider reimbursements.

**Benefits.** Benefits to patients in the PCMH are improved health, preventing admissions to the emergency department and hospital, consults on the risk and benefit of complementary and alternative medicine use, improved monitoring of high-risk drug therapy, access to a drug information resource, and adherence counseling. The most common reasons for lack of adherence are patient inability to comprehend medication schedules as a result of literacy and financial challenges. Students secure prior authorizations for lower copays on medications, access www.needymeds.com for complementary medications, survey local community pharmacies for $4 generic drugs, and fill medication trays for patients. Therefore, patients who are unemployed and younger than 65 years with high copays or have multiple medications with aggregate high copays are able to obtain needed medications. One of the physicians is compensated for time spent on rounds with the student pharmacists. Benefits to the pharmacist of having a physician partner are the ability to collaborate face to face and immediately implement changes to patients’ treatment plans. The medical home site qualifies as an APPEambulatory experience in which student pharmacists work...
PHARMACIST SERVICES IN THE MEDICAL HOME EXPERIENCE

side by side with physicians, physician assistant students, and medical assistants.18

Limitations
The clinical outcomes were characterized as modest. The major limitation of the current findings was that they involved a nonrandomized single-cohort study design of a subset of patients who chose to participate in our collaborative care model. Other limitations included missing or unreported clinical data and diminishing cohort sizes over time. Consistent follow-up with our patients was not achieved. Patients referred for weight management were the most likely to drop out. Typically, these patients were “not ready to make a change” in behavior and chose to not follow up with the pharmacist. Finally, because of the study design limitations, we cannot ensure that our collaboration was the only factor with an impact on the clinical outcomes of our patients. Even so, the strength of our work was demonstrating that pharmacists can collaborate with primary care physicians through a well-planned practice model.

Conclusion
A clinical pharmacy service was implemented in a primary care practice working toward accreditation as a PCMH. The practice was established using business principles for developing services and a timeline for planning. Educating physicians regarding types of patients who benefit from pharmacy services and developing trusting relationships provided the foundation for our practice to survive 3 years and counting. A variety of clinical services were implemented using the AAFP medical home model checklist. The office manager, using his expertise in billing and coding, was able to successfully receive payments for some pharmacist consults. Diabetes self-management was the service most successfully billed. The pharmacist also assisted the practice in achieving quality improvement measures. Although patients’ clinical outcomes were modest, the pharmacy practice is well established.

References

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Appendix 1. Pharmacist Medication Management Clinic

Duquesne University

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This notice describes how health information about you may be used and disclosed and how you can get access to this health information. Please read it carefully and ask any questions.

What is Health Information?
Each time that a service is rendered or a procedure is done, even as simple as a routine blood pressure check, data and information are collected. This is health information or what is commonly referred to as information for or in the medical record or the patient record. Accurate, credible, and timely data and information are used by this facility as the basis for planning your care, as a means of having multiple healthcare providers know about your current health status, as a health legal document, as a record for billing purposes, as a source of data for research, planning, and marketing, as a source of required information for public health officials, and as a means to continue to improve the care that we provide. At this facility, we have always, and will continue to protect the privacy of your health information and the dignity of you as an individual.

On July 6, 2001, the U.S. Federal Government passed compliance regulations that mandate all healthcare facilities to protect health information and inform consumers of the healthcare information practices of the facility.

The Consumer's Health Information Rights
This facility maintains a medical record for you containing medical information concerning you. With this in mind, you have the right to:

- Request a restriction on use and disclosure of health information, although the facility is not required to comply (45 CFR 164.522)
- Obtain a copy of this notice
- Inspect and receive a copy of your medical record (45 CFR 164.524)
- Amend your medical record (45 CFR 164.528)
- Obtain an accounting of disclosures of your medical record (45 CFR 164.528)
- Request your medical record by alternative means or location
- Revoke your authorization to use or disclose your health information except to the extent that action has already been taken.

This Facility’s Responsibilities
This facility’s mission of quality service and respect of the individual has always taken into account protecting health information privacy. Our responsibilities are to:

- Maintain the privacy of your health information
- Provide you this notice of health information practices
- Notify you if we are unable to satisfy a request
- Accommodate all reasonable requests while maintaining quality care and respect for you
- Make you aware of all health information practice policy changes
- We will not use or disclose your health information without your approval except as stated in this notice.

To Request Further Information or Ask Questions
If you would like further information or have questions, this facility, Duquesne University, employs a Compliance Officer who can be reached at 412-396-4419.

If you believe that your privacy rights have been violated, you can file a complaint with the Compliance Officer or with the Secretary of Health and Human Services. There will be no penalty or retaliation for filing a complaint.

Examples of Permitted Types of Uses and Disclosures of Health Information:

For Care and Treatment: Health information obtained by a healthcare practitioner such as a physician, nurse, or therapist, will be entered into your medical record and used to determine a plan of care. For example, healthcare members will write and read what others have written such that your care can be coordinated and everyone is aware of how you are responding to your treatment plan. When you are discharged from this facility, your health information may go with you such that future healthcare providers will have a record of your care. Your health insurer may disclose health information to the sponsor of the plan.

For Billing and Payment: Health information on a bill sent to an insurer may include health information. This health information is restricted to that which is needed for the financial transactions.
For Healthcare Operations: In order to provide quality care, healthcare providers at this facility may use your health information, for example, to analyze the care, treatment, and outcomes of your medical case and of others. This health information will be used to continually improve the care of the services that we provide to you.

For Directory Purposes: We will use your name, facility location, general medical condition, and religious affiliation for directory purposes unless you instruct us not to. This health information is only for the use of clergy and to people who ask for you specifically by full name (although religious affiliation will not be given to the latter).

For Clergy: Unless you specify that you object, health information such as your name, room number, and general medical condition will be given to clergy for professional purposes only.

For Business Associates: In order to provide quality care, this facility requires business services such as pharmacy, medical equipment, medical laboratories, etc. These services will have use of your health information as it pertains to their service delivery. Also, please know that these business associates must follow our standards for protecting your health information.

For Notification: We may use or disclose health information, such as your general condition, to notify or assist in notifying a family member or person responsible for your care.

For Communication: We may use or disclose health information to family members or those that you deem responsible for your care, health information relevant to your care and their need to know.

For Research: We may disclose health information to researchers if they have appropriate consent forms and the research has been approved by our institutional review process. The researchers will be held to this facility’s health information privacy standards.

For Funeral Directors: We may disclose health information to funeral directors in accordance with state laws and for professional purposes only.

For Organ Procurement Organizations: Consistent with applicable law, we may disclose health information to organ procurement organizations or organizations involved in the procurement, banking, or transplantation of organs for the purpose of tissue donation and transplant.

For Marketing Purposes: We may contact you to provide information on appointment reminders or alternative treatments and services that may benefit you given your medical condition.

For Fundraising: We may contact you for fundraising efforts that are aligned with the mission of this facility.

For the Food and Drug Administration: As requested or required by the FDA, we may disclose health information relative to an adverse health condition related to food, food supplements, product and product defects related to food, or post marketing surveillance information to allow product recalls, repairs, or replacements.

For Workers Compensation Issues: In compliance with Worker’s Compensation laws, health information may be revealed to the extent necessary to comply with the law and your individual case.

For Public Health Requirements: As required by law, health information may be disclosed to public health or legal authorities for the jurisdiction of disease, injury, or disability prevention or control.

For Correctional Institutions: Should you be an inmate in a correctional institution, health information may be disclosed to the institution or its agents that which would be necessary for your health and safety and the health and safety of other individuals.

For Law Enforcement Agencies: Health information may be disclosed to law enforcement agencies for purposes required by law or subpoena. For Judicial and General Administrative Proceedings: Patient health information may be released per minimum necessary requirements for proceedings. For Healthcare Oversight: Patient health information may be used by health oversight agencies for activities such as audits, inspections, and licensure activities.

For Specialized Government Functions: In the event that appropriate military authorities require information, it may be released at the minimum necessary level.

For Victim of Abuse, Neglect, and Domestic Violence: Information may be released to social service agencies or protective services in order to protect an individual. Other uses and disclosures are to be made with your written authorization and you may revoke such authorization at any time.

Effective Date: 05/27/2007
Appendix 2

DUQUESNE UNIVERSITY
SCHOOL OF PHARMACY

CLINICAL AFFILIATION AGREEMENT

This agreement is made by and between the DUQUESNE UNIVERSITY SCHOOL OF PHARMACY (hereinafter referred to as the “SCHOOL”), located at 600 Forbes Avenue, Pittsburgh, PA 15282 and ------------------ (hereinafter referred to as the “PHYSICIAN”), located at ------------------ and shall become effective July 1, 2009 and ending June 30, 2011.

WHEREAS, the SCHOOL is engaged in the education of students to become practicing pharmacists; and

WHEREAS, as an integral part of its curriculum, the SCHOOL requires each student to engage in a practicum known as the Professional Experience Program (hereinafter referred to as the “PROGRAM”) and consisting of various rotations served under the guidance and tutelage of practicing pharmacists at their practice site; and

WHEREAS, the PHYSICIAN maintains a physician office practice;

WHEREAS, the PHYSICIAN is desirous of participating in the SCHOOL PROGRAM by making its physician office practice available as a learning site for students of the SCHOOL; and

WHEREAS, it is in the common interest and mission and to the mutual benefit of the parties to educate and prepare competent health care professionals and;

WHEREAS, the parties desire to define their respective roles and responsibilities in the experiential education of the SCHOOL’s students.

NOW, THEREFORE, the parties hereto agree as follows:

I PREAMBLE

The Preamble as above is incorporated herein by reference as though more fully set forth.

II RESPONSIBILITIES OF THE SCHOOL
1. The SCHOOL will determine all phases of the administration of the PROGRAM, admission requirements, curriculum content, evaluation, graduation and all other pertinent matters that are internal to the SCHOOL. The SCHOOL will maintain the necessary records of the students.

2. The SCHOOL will assure that students and faculty participating in the PROGRAM maintain professional liability insurance to cover the activities of such students and faculty in an amount not less than $500,000 per occurrence and $1 million per annual aggregate and general liability insurance in an amount not less that $1 million minimum per occurrence during their assignment to the PHYSICIAN. The SCHOOL will provide the PHYSICIAN with a certificate of insurance evidencing such coverage.

3. Notwithstanding any provision to the contrary contained in any policy of insurance covering the PHYSICIAN for professional liability, the parties agree that the SCHOOL’s insurance, as reflected above, shall be the primary insurance with respect to activities of all students and faculty. It is further agreed that neither the PHYSICIAN nor the SCHOOL assume any liabilities to each other, except as specifically stated in this contract. As to liability for damages or injuries or death to persons, or damage to property, the SCHOOL and the PHYSICIAN do not waive any defense as a result of entering into this contract unless such a waiver is expressly and clearly stated.

4. The SCHOOL will notify students that they are to obtain prior written approval from the SCHOOL and PHYSICIAN before publishing any material relative to the fieldwork.

III RESPONSIBILITIES OF THE PHYSICIAN

1. The PHYSICIAN will permit students and the SCHOOL faculty to access the hard copies of the patient medical record in the physician’s medical office.

2. The PHYSICIAN agrees to maintain a sufficient level of staff support to carry out adequate service functions so that an assigned student will not be expected to perform in lieu of staff.

3. The PHYSICIAN will maintain ultimate authority and responsibility for patient care.

4. The PHYSICIAN will permit students to shadow the physician during patient visits in the physician office practice as appropriate and encourage referrals to the Pharmacist Adherence and Medication Management Clinic located on-site at the physician’s office practice.

5. The PHYSICIAN will permit two students to accompany him on patient care rounds twice weekly for patient room visits, discussions, and project/drug information assignments. Patient cases may be brought by the pharmacy students for discussion, from other community sites
such as the Center for Pharmacy Care and the Spirit of Health Mobile Health Care Site.

6. The PHYSICIAN permits pharmacy students to attend (without receiving credit) classes given in the courses, Medical Sciences I and II taught by himself as an Adjunct Professor in the Duquesne University School of Health Sciences.

IV MUTUAL RESPONSIBILITIES

1. Neither the SCHOOL nor the PHYSICIAN shall discriminate against any person because of ancestry, color, age, disability, national origin, race, religious creed or sex.

2. The number of students and the scheduling of their rotations at the PHYSICIAN will be determined by mutual agreement between the PHYSICIAN and the SCHOOL.

3. The SCHOOL and the PHYSICIAN will maintain confidentiality of patient records and student records. If requested, students will sign a Statement of Confidentiality of Patient Information provided by the PHYSICIAN.

4. Both the PHYSICIAN and the SCHOOL will agree that students are not considered employees of the PHYSICIAN but rather students in the fieldwork phase of a professional education, and therefore are not eligible for any of the benefits of employees. The SCHOOL and the PHYSICIAN agree that students are at all times acting as agents of the SCHOOL and not as agents of the PHYSICIAN.

5. The SCHOOL is responsible for dismissal of a student for academic or disciplinary reason, but the PHYSICIAN maintains the right to remove a student from the PROGRAM if the student does not comply with the safety, ethical, or treatment standards of the PHYSICIAN. In the event of a student’s pending or immediate dismissal by the PHYSICIAN, the Director of Experiential Education at the SCHOOL must be notified immediately. The SCHOOL and the PHYSICIAN will determine jointly if and when such a student should be permitted to again work with the PHYSICIAN.

V COMPENSATION

1. The PHYSICIAN will act as preceptor for two students per experiential rotation of five (5) weeks in duration. Compensation will be provided per five (5) week experiential rotation in the amount of ------------per rotation. The PHYSICIAN and SCHOOL will mutually determine the number of rotation blocks offered per year.
VI TERMINATION

1. Either party may terminate the within agreement by the provision of a 30-day notice of its intention to terminate to the other party. Such notice shall be forwarded to the appropriate representative of the other party by 1st class mail.

2. The aforesaid notice notwithstanding, any student already assigned to the PHYSICIAN shall be permitted to begin and/or complete his/her assigned rotation during or extending beyond such 30-day notice, provided that the PHYSICIAN has been notified of such student assignment prior to the effective date of notice of the termination.

WHEREFORE, with the intent of entering into the within Affiliation Agreement, the parties hereby affix their hands through their authorized representatives.

Date:

__________________________________________________________

Associate Dean of Professional Programs
Duquesne University Mylan School of Pharmacy

Date:

______________________________

Smithfield Medical, PC

Date:

__________________________________________________________

Associate Professor of Pharmacy Practice
Duquesne University Mylan School of Pharmacy
Appendix 3

Pharmacist Medication Management and Adherence Center
Smithfield Medical, PC
309 Smithfield Street
Pittsburgh, PA

Confidentiality/Informed Consent/Financial Responsibility Statement

I have been given a copy to read of the Pharmacist Medication Management and Adherence Center’s notice of health information practices statement. Since, Pharmacist services are an extension of the physician office visit, I also consent to responsibility for any office visit co-pays as required by my health insurance plan. I acknowledge receipt of the statement and financial responsibility as designated by my signature.

_______________________________  ____________________
Name                                    Date