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Why Pharmacists Belong In The Medical Home

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ABSTRACT Pharmacists can affect the delivery of primary care by addressing the challenges of medication therapy management. Most office visits involve medications for chronic conditions and require assessment of medication effectiveness, the cost of therapies, and patients' adherence with medication regimens. Pharmacists are often underused in conducting these activities. They perform comprehensive therapy reviews of prescribed and self-care medications, resolve medication-related problems, optimize complex regimens, design adherence programs, and recommend cost-effective therapies. Pharmacists should play key roles as team members in medical homes, and their potential to serve effectively in this role should be evaluated as part of medical home demonstration projects.

The joint principles of the patient-centered medical home[1] promote physician-led coordination of patients' health care needs and an integrated team approach to providing patient-centered care. In 2008, the National Committee for Quality Assurance (NCQA) developed standards[2] for recognizing a physician practice as a patient-centered medical home. These standards specify that the practice implement evidence-based care plans, use nonphysicians in care management, coordinate care transitions, support patient self-management, and track test results and patient referrals.

The Role Of Pharmacy

The Patient-Centered Primary Care Collaborative convened a multidisciplinary medication management task force to address medication-related patient outcomes.[3] In 2006, 71 percent of physician office visits had at least one prescription listed in the patient record.[4] Studies have reported that 32 percent of adverse events leading to hospital admission were attributed to medications[5] and that drug interactions are an important issue in medication use at home.[6] Furthermore, only 33–50 percent of patients with chronic conditions adhere completely to prescribed medication therapies.[7]

Finances are an important cause of low adherence to prescribed medication therapies among patients. The Commonwealth Fund reported that 58 percent of U.S. physicians stated their patients often have difficulty paying for medications and care.[8]

Pharmacists can play important roles in optimizing therapeutic outcomes and promoting safe, cost-effective medication use for patients in medical homes. They are well-trained health professionals, yet they are often underused.

As a clinical expert working in an interdisciplinary primary care team, a pharmacist can assess whether medication use by patients at home (in between primary care office visits) is contributing to medication-related problems or failure to achieve desirable outcomes. Although pharmacists are seldom mentioned in medical home discussions, the complementary knowledge and skills of pharmacists and prescribers can lead to improved patient care and medication use—especially for chronic conditions.[9]

During the past twenty-five years, many studies have demonstrated that pharmacists participating in team-based care models in acute care or outpatient clinic settings have made positive contributions to patient care quality and safe medication use.[10] However, less emphasis has been placed on developing new practice models or studying the impact of integrating the pharmacist in primary care practice. The medical home movement provides an opportunity to examine innovative approaches to expanding patient-centered pharmaceutical care in a collaborative, team-based practice model.[11]

In this paper we describe medication therapy management services that pharmacists provide to empower patients and improve collaborations with primary care clinicians. We also describe successful examples of medication management initiatives. Finally, we discuss key factors that facilitate the effectiveness and efficiency of interdisciplinary care teams, including the growing use of health information technology (IT), payment reform, and how to assess the impact of increased participation by pharmacists.

Pharmacist-Provided Clinical Services In Primary Care

ELEMENTS OF PHARMACY PRACTICE Pharmacists practicing with primary care teams concentrate on four core elements[12] of patient-centered medication use and safety, as follows: (1) Comprehensive review of current prescribed and self-care medications for usage and patterns; (2) systematic assessment of each medication for appropriateness, efficacy, safety, and adherence (in this sequence) to achieve optimal therapy goals; (3) development of a personal medication care plan with self-management goals and medication management recommendations; and (4) documentation and communication of the care plan to the patient and all health care providers. The personalized medication care plan contains the pharmacist's recommendations to avoid medication errors and resolve inappropriate medication selection, omissions, duplications, subtherapeutic or excessive dosages, drug interactions, adverse events, adherence problems, cultural competency and health literacy challenges, and costly regimens.

These pharmacist-provided medication management services can be conducted as pre-visit planning in collaboration with a medical home team. The pharmacist's medication care plan recommendations can be shared with the primary care provider before or during a patient's primary care visit.

Such clinical services can occur in various locations, such as primary care offices, outpatient clinics, home visits, work-site health programs, senior centers, and community pharmacists' practices. Although initial patient visits should be face-to-face meetings, pharmacists can use a combination of individual visits, group sessions, phone calls, and electronic consultations for follow-up visits.

The appropriate pharmacist-patient visit, whether in person or via one of the other options, depends on the complexity of the patient's medication regimen, medication adherence trends, the number and type of identified medication-related problems, and the patient's progress toward meeting medication self-management goals. Pharmacists develop sustained partnerships with other health care providers, patients, families, and caregivers to focus on patient-specific prescribing options, medication use at home, and follow-up on the achievement of desired medication outcomes.[13]

PAYMENT ISSUES A major barrier in the provision of the described pharmacist-provided primary care services has been the lack of reimbursement models. Payment for pharmacists' clinical services to date have been variable and often initiated as grant-funded pilot projects or demonstration programs.

Another common model involves funding of a pharmacist clinician-educator position by a pharmacy college or primary care or family practice residency program as a model for interdisciplinary care. Alternatively, provider groups with pay-for-performance or quality improvement initiatives may employ or contract with pharmacists, based on expected cost savings, to work with providers and patients on improved chronic disease and medication therapy outcomes, tailored medication adherence programs, or reduced medication-related hospital readmissions.

Some state pharmacist associations and entrepreneurial companies have formed independent networks of trained pharmacists to conduct comprehensive clinical services on a fee-for-service contractual basis with provider groups, payers, health plans, and employers. For example, a Centers for Medicare and Medicaid Services (CMS) Medicaid Transformation Grant demonstration project in Connecticut is studying medication management services provided by a pharmacist network working with primary care offices.[14] Lastly, pharmacist-specific Current Procedural Terminology (CPT) billing codes are available, yet infrequently used, to reimburse medication therapy services.[15]

Pharmacist Education And Training

Many primary care clinicians are unaware of

pharmacists' extensive education and training to prepare for direct patient care roles. Pharmacy curricula increasingly emphasize patient-centered care and medication therapy management. In the 1990s, the doctor of pharmacy (PharmD) degree became the entry-level degree, with a six-year curriculum that includes biomedical, pharmaceutical, clinical, and sociobehavioral sciences as well as multiple clinical rotation experiences to prepare pharmacists for collaborative roles with other health care professionals.[16]

There are approximately 100 U.S. accredited, postgraduate pharmacy specialty residency programs in ambulatory care or community practice. In June 2009 the Board of Pharmaceutical Specialties approved ambulatory care pharmacy practice as a board-certified pharmacy specialty in medication use for preventive and chronic care.[13] Also, several specialized pharmacy training programs exist for immunizations; smoking cessation; anticoagulation therapy; treating chronic diseases such as diabetes, asthma, cardiovascular diseases, and high cholesterol; self-care and nonprescription medicines; pain management; and medication therapy management.[17]

Pharmacist Initiatives To Improve Patient Care

The term "pharmaceutical care" was introduced in 1990 to describe the change in pharmacy practice from solely dispensing products to providing patient-centered care focused on optimal drug therapy and medication safety.[18] Today there is increasing recognition of the value of having shared responsibility among primary care providers, pharmacists, and patients to ensure appropriate, safe, and cost-effective chronic disease medication use.

One way to integrate pharmacists' clinical services in a medical home involves collaborative drug therapy management. In this model, a qualified pharmacist and a physician establish written guidelines authorizing the pharmacist to initiate, modify, or continue drug therapy for specific patients—usually those with chronic diseases. The physician delegates authority to a pharmacist under designated circumstances and delineates the functions, procedures, and decision-making criteria for managing medication therapy.

In primary care, pharmacists working with collaborative agreements typically perform medication-related patient assessments, order lab tests, and monitor and adjust therapy regimens for complex or chronic disease medications. In 1983, Marie Smith and Philip Johnston[19] described a pioneering collaborative model between physicians, clinical pharmacists, and nurse practitioners in an academic center's primary care clinic.

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Now, approximately forty-six states have pharmacy collaborative practice acts (based on personal communication with C. Edwin Webb, director, Government and Professional Affairs, American College of Clinical Pharmacy, 23 March 2010). State regulations vary regarding practice settings, education and training requirements for pharmacists, and clinician or organizational approval processes. Standardizing these variations across states would facilitate the inclusion of pharmacy services in medical homes.

Medication Management Programs

Here we describe several models of successful pharmacist-provided medication management models in operation around the United States.

IOWA FAMILY MEDICINE PROGRAM Physicians and pharmacists collaborated in a prospective, randomized controlled trial of a team-based care model in six community-based family medicine residency programs in Iowa.[20] Clinical pharmacists were employed with funding from a college of pharmacy and family practice residency training programs. A main goal of the intervention was to improve blood pressure control.

Pharmacists made an average of four intervention recommendations per patient, with a 96 percent acceptance rate by family medicine physicians. Significantly more patients in the intervention group (63.9 percent) achieved blood pressure control than in the control group (29.9 percent). The mean blood pressure decreased 6.8/4.5 mm Hg in the control group and 20.7/9.7 mm Hg in the intervention group.

ASHEVILLE PROJECT In 1997 the city of Ashe-

In a medical home, a pharmacist could manage chronic medication therapies for selected patients in a more cost-effective manner.

ville, North Carolina, began a project in which community-based pharmacists met with patients to provide care management for chronic health conditions: diabetes, asthma, hypertension, and high cholesterol. Pharmacists performed a variety of patient-specific medication services. These included setting and monitoring treatment goals, assessing adverse drug effects, developing patient-specific adherence strategies, and training patients on home monitoring devices. Patients were referred to their physician as needed. Pharmacists' services were paid for on a fee-for-service basis by the patients' employers.

The Asheville Project realized important clinical and financial outcomes.[21,22] At the first six-month follow-up, 24.3 percent more diabetes patients had optimal hemoglobin A1c values (below 7.0 percent) than at the baseline assessment. Additional increases of 27.2 percent and 18.2 percent more patients with optimal HbA1c values were noted at the second and third six-month follow-ups, respectively. The return on investment was 4:1 for the diabetes program.

In the cardiovascular program, the number of patients with controlled blood pressure increased from 40.2 percent at baseline to 67.4 percent; for low-density lipoprotein (LDL, so-called bad cholesterol) control, the improvement was from 49.9 percent to 74.6 percent. The savings from reduced cardiovascular-related medical costs exceeded the medication and program costs by 12.6 percent. The mean cost per cardiovascular event was $9,931 for the study period, compared with $14,343 during the nonstudy or historical period.

MINNESOTA PROJECT In six ambulatory Minnesota clinics, pharmacist-employees provided medication management services to 285 patients in collaboration with primary care providers. The goal was to improve clinical outcomes and lower total health spending.[23] A total of 637 drug therapy problems were resolved. Seventy-one percent of medication management patients compared with 59 percent of a comparison group met Healthcare Effectiveness Data and Information Set (HEDIS) benchmarks for hypertension. HEDIS measures are set by the NCQA.

Fifty-two percent of medication management patients, compared with 30 percent of a comparison group, met HEDIS criteria for cholesterol. Total health spending declined from $11,965 to $8,197 per person. Reduced or averted expenditures exceeded program costs by more than twelvefold.

EVERETT CLINIC A Washington State multispecialty group practice employed two clinical pharmacists to optimize medication use, improve quality, and reduce costs through targeted drug programs. The pharmacists also assisted the practice in meeting physician pay-for-performance goals and conducting care management programs.

Working closely with physician leadership, the clinical pharmacists focused on hypertension and deep vein thrombosis, minimizing pharmaceutical costs with the use of generic and over-the-counter drugs and lowering the per member per month cost benchmarks for pharmaceuticals.

Pharmacist care programs resulted in a 15 percent increase in the proportion of patients with controlled blood pressure and avoided $450,000 in hospital costs by initiating an outpatient deep vein thrombosis therapy program.[24]

COMMUNITY HEALTH CENTER INC. Community Health Center Inc., a federally qualified health center in Connecticut, incorporated clinical pharmacist services through a partnership with the University of Connecticut School of Pharmacy. A pharmacist clinician-educator was embedded at one site to offer on-site patient care services, including medication therapy management for smoking cessation, hypertension, asthma, diabetes, pain management, and anticoagulation. Primary care providers referred patients to the clinician-educator for office-based visits and virtual consultations using the organizationwide electronic health record.

A typical patient referral identified two medication-related problems that required four interventions with the patient or provider per encounter. The most commonly identified problems stemmed from poor patient adherence (47 percent) and the need for additional therapy (24 percent). Providers accepted 90 percent of the pharmacist's recommendations. The remaining 10 percent usually were nonurgent recommendations to address at a future patient visit.

Unanswered Questions

There are several unanswered questions about the operational models, patient health information exchange, payment structures, and outcome measures for incorporating pharmacists within a medical home. Pilot projects and research studies should consider the following points.

HOW TO IDENTIFY PATIENTS FOR SERVICES Empirical data are lacking on the best approach to use in identifying patients who may benefit most from pharmacist-provided clinical services. Primary care providers frequently refer patients back to medical specialists for medication adjustments. However, in a medical home, a pharmacist could manage chronic medication therapies for selected patients in a more cost-effective manner than the current norm. Some considerations for patient selection, enrollment processes, and intervention methods are outlined in Appendix Exhibit 1.[25]

ROLE OF HEALTH INFORMATION TECHNOLOGY In a medical home, all health care professionals—including pharmacists—require timely access to patient information to perform clinical assessments and share recommendations with other team members. However, most community-based pharmacists lack direct access to complete patient information. Pharmacists usually have to call or fax the provider or office staff with patient-related questions or prescription clarifications, which is impractical in a busy pharmacy or primary care office work flow. These interruptive, indirect, and relayed methods of exchanging patient health information are subject to misinterpretation, miscommunication, and inefficiencies that can affect patient medication use and safety.

With the growth of electronic health records and personal health records as well as the emerging health information exchanges, pharmacists working with a medical home can access and contribute relevant patient-specific health information.

▶ **ACCESSING PATIENT HEALTH INFORMATION:** These systems allow a pharmacist—with patients' permission—to review current diagnoses, treatment plans, lab data, home monitoring device data, health professional encounter notes, and hospital discharge summaries. This information is essential for a pharmacist's thorough medication review and assessment.

▶ **CONTRIBUTING PATIENT MEDICATION INFORMATION:** Disparate patient medication histories exist now in pharmacy information databases, e-prescribing systems, electronic health records, payer and pharmacy benefit databases, and patient-generated lists. Pharmacists can verify and update a patient's comprehensive, active medication profile with all of the medications the patient is using at home.

Pharmacist-updated medication profiles and therapy recommendations could be shared in an exchange with the patient's permission.

Health information exchanges could facilitate a centralized, current medication profile that would be available to all licensed health care providers for medication reconciliation purposes. These exchanges could warehouse medication information from multiple providers such as primary care and specialist physicians and retail and mail-order pharmacies, and could contain information about over-the-counter medications, herbal products, dietary supplements, physician samples, cash-pay or patient assistance program medications, and shared medications from family or friends.

Furthermore, it would be desirable if electronic health records had functions allowing team members, including patients, to establish shared goals, track progress toward meeting these goals, and communicate effectively among team members. Today's commercial electronic health records generally are less than optimal in enabling care coordination across care settings and among health professionals.[26]

Even with increased adoption of e-prescribing, it is important to note that clinical blind spots exist as a result of systems that are not interoperable as well as a lack of robust clinical decision support. Medication lists in electronic health records or e-prescribing systems are often incomplete because of discrepancies between actual medications used at home and medications listed in medical records or prescription claims histories. Important medication use instructions are often missing—for example, whether the patient should take whole or split tablets, at what times of the day, in different daily dosages or in tapered dose regimens. If incomplete or inaccurate medication lists are used, the promise of improved medication safety and care quality with electronic health records and e-prescribing is greatly diminished.

The incorporation of pharmacists into small practices will require some ingenuity.

A pharmacist can work with patients, family members or caregivers, and the medical home team to develop an accurate, comprehensive active medication profile that includes current, recently discontinued, or changed medications. Pharmacists can also evaluate regimens for potential drug interactions, allergies, dosage adjustments, adverse events, therapeutic duplication, cost-effective therapies, and adherence trends.

With the development of "meaningful use" requirements for electronic health records and health information exchanges, improved medication management and care coordination within medical homes could be encouraged. Pharmacist-updated medication profiles and therapy recommendations could be shared in an exchange with the patient's permission.

At the point of care, all providers using the exchange would be aware of a sizable amount of patient medication information. This could include prescriptions ordered by other prescribers, such as the primary care physician, specialists, nurse practitioners, physician assistants, dentists, emergency department physicians, and hospitalists. The exchange would also make available active and discontinued prescriptions for each patient as well as prescriptions from recent hospitalizations or emergency department visits.

Nonprescription medications used at home, medication adherence trends, the patient's current medication self-management goals, and current and historical medication-related problems would also be available from the health information exchange. Pharmacists would be able to view prescriptions that were filled at other pharmacies and could identify medication discrepancies requiring reconciliation at points of care transitions such as upon admission to or discharge from a hospital or emergency department.

Payment Reform Strategies

Thomas Bodenheimer and colleagues[27] have contended that multidisciplinary teams are necessary for consistently good chronic care and that payment reform is critical for the sustainability of such teams. In a physician group practice, pharmacists can optimize medication use, improve care, and reduce costs.[24]

LEVELS OF REFORM Several levels of payment reform—from minor tinkering to major restructuring—could support a sustainable role for pharmacists in the medical home. A relatively simple payment reform would be for primary care practices to make greater use of the fee-for-service billing codes for pharmacist medication therapy management and to negotiate with payers for reasonable payments. Based on national data, competitive payment levels for sustainable pharmacist-provided comprehensive medication management services should be in the range of an annual median salary of $106,410 for an employed pharmacist[28] or provide a program contract rate of $2–$3 per minute of medication management service.[29]

FINANCIAL INCENTIVES Payment reforms that provide financial incentives for the care of patients with chronic conditions could create a positive scenario for medical homes to employ pharmacists. Ideally such reform would include both a care coordination fee and generous pay-for-performance bonuses. As an effective medical home team member, a pharmacist could perform medication-related care coordination and quality improvement functions that physicians lack time to accomplish. A pharmacist also could help the practice achieve performance targets.

CAPITATION More fundamental payment reform would involve reimbursement based on capitation (payment per member of the practice per month) or global budgeting for medical homes. This approach would give the practice incentives to transfer care from face-to-face visits toward phone or e-mail visits, and to delegate care from physicians to other team members.[11] Capitated or globally budgeted medical homes could direct patients with complex medication regimens, high-cost therapies, poor adherence, or lack of desired clinical outcomes to receive comprehensive medication management services provided by a pharmacist.

COST REDUCTION Whether paid through fee-for-service, through fee-for-service plus a care coordination fee and performance bonuses, or through capitation and global budgeting, the medical home should be able to reduce the total health care costs of its patients by reducing unnecessary emergency department visits, specialty consultations, and hospitalizations. Given the prevalence of medication-related problems in rising health care costs, pharmacists are key team members in these cost containment efforts.

If payers share a substantial proportion of their cost savings with the medical home, a business case could be built for reimbursing pharmacists' services in primary care practices.

SMALL PRACTICES Because 46 percent of primary care physicians practice in offices with only one or two physicians, the incorporation of pharmacists into small practices will require some ingenuity. One pragmatic model would be for small primary care practices to contract clinical pharmacist services for targeted patients based on the considerations outlined in Appendix Exhibit 1.[25] Pharmacist payment would be made from pay-for-performance revenues, care coordination fees, bonuses to practices that reduce emergency department visits and hospitalizations, or fees from additional physician visits made possible when pharmacists provide time-consuming services for patients with complex conditions.

BUSINESS CASE For each of these payment reform options—or a combination of several different options—the business case for including pharmacists in medical home models should be calculated based on actual expense and revenue dollars.

Quality Assessment and Improvement

Although preliminary data from demonstration projects and elsewhere have documented the value of having pharmacists as care team members, the roles and activities that we suggest need to be assessed rigorously in the context of medical home models. Evaluations should assess the process and outcomes of care in models that include pharmacists for managing medication therapy.

Ascertaining whether these interventions are having the desired results will require process measures directly related to pharmacist-provided care. Consistent with the medical home philosophy, such evaluations should include patients' reports about their experiences.

Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys are widely used as standardized measurement of patient care experiences.[30] The CAHPS Clinician and Group Survey has been endorsed by the National Quality Forum and is being modified to assess critical medical home domains. The CAHPS survey could easily be adapted to assess pharmacist medication management services in medical homes from the patient's perspective.

There should be a rigorous assessment of the extent to which the intended involvement of pharmacists is actually realized. Such assessments should include documented participation of pharmacists in team conferences, their involvement in clinical decision making, team functional dynamics, and the culture of the clinical setting. Measures of care quality and effectiveness should also include attainment of major clinical endpoints.

Conclusion

As plans continue for the transformation of primary care, pharmacists can make substantial contributions to innovative, collaborative, interdisciplinary primary care models. Within a medical home, health care professional teamwork is crucial for care coordination and quality improvement initiatives to optimize chronic disease medication outcomes and promote medication safety.

Pharmacist-provided medication management services and collaborative drug therapy management programs, supported by robust electronic health records and health information exchanges, should be implemented and evaluated with appropriate reimbursement models in medical home demonstration projects or research studies sponsored by the CMS, state agencies, employers, commercial payers, physician groups, or academia. ■

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NOTES

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25 The Appendix Exhibit can be accessed by clicking on the Appendix Exhibit link in the box to the right of the article online.

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