**Pharmacist Patient Care Services Selected Reference List**

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| Bodenheimer TS, Smith MD. Primary care: proposed solutions to the physician shortage without training more physicians. Health Aff (Millwood) 2013;32(11):1881-1886. |
| The article discusses how non-physicians can help address the increasing shortage of primary care physicians in the United States. As demand for primary care services is projected to increase, the supply of primary care physicians is continuing to decline. Authors propose that non-physician professionals such as pharmacists and nurses are essential towards saving time for physicians, providing quality care to patients, and improving patient satisfaction. Non-physician healthcare professionals have the capability to offer preventive care, acute care, and chronic care for a variety of conditions and diseases. As an example, pharmacists may act as a coach and regularly follow-up with patients that have chronic conditions like diabetes. Overall, it is predicted that 24% of physician time can be saved by delegating tasks to other non-physician professionals. Other methods of addressing the shortage of primary care physicians include improved technology and increased patient involvement in self-care. |
| Butler A, Dehner M, Gates RJ, et al. Comprehensive medication management programs: description, impacts, and status in Southern California (12/23/2015). California department of public health Web site. Available at: https://www.cdph.ca.gov/programs/  cdcb/Documents/CMMWhitePaperCDPH2015 Dec23FINALrev.pdf. Accessed March 25, 2016. |
| Six healthcare systems in Southern California looked at the effectiveness of comprehensive medication management services (CMM) in improving clinical, financial, and quality measures for patients. Comprehensive medication management (CMM) services included making sure medications were used effectively, safely, and reduced healthcare costs. CMM services have an average return on investment of 4:1. All of the studies showed a decrease in hospital readmission, improvement in clinical outcomes, and cost reductions. Challenges for implementing CMM services included lack of reimbursement, financial incentives, access to health records, adequate staffing, and space. |
| Cobb C. Optimizing medication use with a pharmacist-provided comprehensive medication management service for patients with psychiatric disorders. Pharmacotherapy 2014;34(12):1336-1340. |
| Dr. Cobb completed a single center retrospective study that evaluated the effectiveness of comprehensive medication management (CMM) service for patients with psychiatric disorders. A total of 154 patients with psychiatric disorders were referred to a pharmacist for a CMM evaluation between April 2011 and July 2013. The goal of the CMM was to ensure the patient received appropriate, safe, effective, and convenient medication regimens. Patients went to a total of 256 comprehensive medication management visits. On average 5.6 drug-related problems were identified for each patient. The estimated cost savings was approximately $90,484 averaging $586.55 per patient. The cost of the service was $32,185.93. The return on investment was estimated to be 2.8. |

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| Giberson S, Yoder S, Lee M. Improving patient and health system outcomes through advanced pharmacy practice. A report to the U.S. Surgeon General. Office of the chief pharmacist. U.S. Public Health Service. ACCP Web site. Available at: http://www.accp.com/docs/positions/misc/improving\_patient\_and\_health \_system\_outcomes.pdf. Accessed March 25, 2016. |
| A 2011 report by the Surgeon General discussed the expanding role of pharmacists in improving health care delivery. The report discussed the challenges of healthcare access, workforce shortages, safety, quality, and cost. The report focused on four main discussion points. First, pharmacists’ services after a patient’s initial diagnosis include performing patient assessments, having prescriptive authority to manage chronic diseases, ordering/interpreting/monitoring labs, and developing relationships with patients for follow up care. Second, pharmacists should be recognized as health care providers as currently the Social Security Act or Centers for Medicare and Medicaid Services do not recognize pharmacists as providers. Third, the Surgeon General expressed concerns for sustaining clinical pharmacist services. Finally, the Surgeon General’s report reviewed 298 research studies that found pharmacists improved patient outcomes, increased access to care, enhanced cost-effectiveness, and assured patient safety. |
| Goldstone L, Saldana S, Werremeyer A. Pharmacist provision of patient medication education groups. Am J Health-Syst Pharm 2015;72:487-92. |
| Goldstone and colleagues addressed the problem of patients’ adherence due to lack of education on their medications. Few patients received proper counseling for the medications they were prescribed. Pharmacists counseled approximately 22% of patients in the hospital who were at high risk and 43% of patients in the community setting. In order to reach more patients and maximize time, pharmacists provided group-counseling sessions. Psychiatric and neurologic pharmacists used patient medication education groups (PMEG) to offer their services to a larger groups. Some of the barriers that may limit the implementation of PMEGs include the following: lack of pharmacists that are properly trained, staffing issues, and lack of funding. |
| Isasi F, Krofah E. The expanding role of pharmacists in a transformed health care system (1/13/2015). National Governors Association Center for Best Practices Web site. Available at: www.nga.org/CeNter. Accessed March 25, 2016. |
| The National Governors Association summarized the current role of pharmacists and the future direction of pharmacy. Pharmacists under collaborative practice agreements are in a unique position to offer more direct patient care focusing on chronic diseases. Forty-eight states allow pharmacists to collaboratively work with providers. However, state and administrative barriers limit pharmacists’ roles in direct patient care. Four states, California, North Carolina, Montana, and New Mexico have the designation of advanced pharmacy practice (APP). Pharmacists under a collaborative practice agreement with the designation of APP have the ability to prescribe certain medications and be compensated for their services. Compensation for pharmacy services is not universal nor recognized by all insurance companies. Medicaid provides compensation for direct patient care in 15 states and MTM services in 9 states. Barriers that limit pharmacists from offering direct patient care are inconsistent reimbursements and not having access to patients’ health record. |

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| Isetts B, Brummel A, Ramalho de Oliveira D, Moen D. Managing drug-related morbidity and mortality in the patient-centered medical home. Med Care 2012;0:1-5. |
| In 2012, a study in Minnesota looked at four clinics using a team-based medication therapy management system and compared the data of total health expenditures, health benchmarks, and resolution of drug therapy problems with clinics that did not have this system in place. The study found that patients seen at the innovative clinics had lower monthly costs per patient. Approximately 40% of patients with diabetes were able to reach predetermined health benchmarks. Four thousand drug therapy problems were identified and solved. The authors concluded that a team-based approach was helpful in reducing spending and achieving better patient outcomes. Limitations to the study included that it was a single healthcare system and did not look at the long-term reduction in morbidity or mortality. |
| Lunner K, Smith M, Peña C. Optimized medication use: A growing priority for ACOs (03/2014). Leavitt Partners Web site. Available at: http://leavittpartners.com/2014/03/ optimized-medication-use-growing-priority-acos/. Accessed April 4, 2016. |
| In this article, the Leavitt Partners Center provides a review of the challenges and solutions of optimizing medication use in an accountable care organization (ACO). Medication-related issues pertain to 58% of quality metrics established by the CMS, and commercial ACOs often incorporate medication use issues into their quality measurements. Pharmacists help improve direct patient care through medication reconciliation, comprehensive medication reviews, medication adherence promotion, and chronic disease management. Some challenges of improving medication use include lack of payment for pharmacists, competing priorities for the ACO, limited data about reduced future costs from pharmacists, and lack of understanding about the role of clinical pharmacists. To address the challenges associated with optimal medication use, pharmacists are at a unique position to improve quality of care and reduce costs associated with ACOs. |
| Mckee JR, Lee KC, Cobb CD. Psychiatric pharmacist integration into the medical home. Prim Care Companion CNS Disord 2013;15(4). |
| Authors discussed the benefits of integrating psychiatric pharmacists into the patient-centered medical home (PCMH). To address a lack of coordination between behavioral health and primary care providers, the clinical services of psychiatric pharmacists may particularly help reduce costs within a PCMH. Patients with mental illness have higher rates of hospitalizations than those without mental illness, and they are at risk for stigmatization from other members within the population. When integrated into the healthcare team, psychiatric pharmacists may promote medication appropriateness, safety, effectiveness, and adherence through comprehensive medication management (CMM). Psychiatric pharmacists can help reduce costs, considering that CMM services conducted by pharmacists result in an average return on investment of 3:1 to 5:1. The College of Psychiatric and Neurologic Pharmacists (CPNP) advocates for more role-recognition and reimbursement for clinical pharmacists. |

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| Members of the PCPCC Medication Management Task Force. Integrating comprehensive medication management to optimize patient outcomes (06/2014). Patient-Centered Primary Care Collaborative Web site. Available at: https://www.pcpcc.org/sites/default/ files/media/medmanagement.pdf/. Accessed April 4, 2016. |
| Pharmacists and physicians within the PCPCC task force wrote this article to describe the role of comprehensive medication management (CMM) in primary care. CMM promotes better health outcomes by assuring appropriate, safe, effective, and adherent use of medications. The CMM should consist of an assessment of a patient’s medication needs, identification of drug-related problems, care plan development with personalized goals, and patient follow-up with objective quality measures. Authors described how to implement pharmacist referrals for CMM into practice. Physicians often refer patients to another pharmacist within their own practice, since primary care sites often employ full-time and part-time clinical pharmacists. In other practices, physicians may refer a patient to a pharmacist practitioner in the community setting. The article provides CPT codes that can be used for CMM conducted by pharmacists and also describes when it is appropriate to use certain billing codes. In addition, the article mentions other payers for pharmacist services such as Medicare Part D, some state programs, and private sector payers. |
| Morrison C, Glover D, Gilchrist S, et al. A Program guide for public health partnering with pharmacists in the prevention and control of chronic diseases. National center for chronic disease prevention and health promotion. CDC Web site. Available at: http://www.cdc.gov/cdcgrandrounds/pdf/archives/2014/ pharmacist\_guide.pdf. Accessed March 25, 2016. |
| The CDC paper summarized the current role of the pharmacist; defined MTM, CMM, and collaborative drug therapy management; provided an overview of pharmacists’ scope of practice; and offered evidence to support the role of pharmacists in team-based health care. The paper referenced the Asheville Project that showed that 69% of patients achieved their cholesterol goal and 81% of patients achieved their hypertension goals after meeting with a pharmacist. |
| Nigro SC, Garwood CL, Berlie H, et al. Clinical pharmacists as key members of the patient-centered medical home: an opinion statement of the Ambulatory Care Practice and Research Network of the American College of Clinical Pharmacy. Pharmacotherapy 2014;34(1):96-108. |
| The ACCP Ambulatory Care Practice Research Network (PRN) wrote an opinion statement about the integration of pharmacists into the PCMH. In the article, authors encouraged pharmacists to assume clinical, team-based roles within the PCMH. Research shows that pharmacists can improve patient care outcomes in a quality and cost-effective manner. However, ongoing development of best practice models is needed to help promote recognition of pharmacist value by third-party payers. The article reviews key primary literature related to the impact of a clinical pharmacist in team-based care. The article additionally described many examples of innovative practice models used by other ACCP members. Authors also conducted a survey, in which 330 ACCP members were asked about involvement within their practice site. Most pharmacists frequently participated in medication reconciliation and comprehensive medication management, but had limited involvement with immunizations and implementing quality improvement projects. |
| Oliveira D, Brummel A, Miller D. Medication therapy management: 10 years of experience in a large integrated health care system. J Manag Care Pharm 2010;16(3):185-195. |
| Oliveira and colleagues conducted a single center retrospective study that looked at 10 years of medication therapy management (MTM) data. The clinical pharmacists saw a total of 9,068 patients between September 1998 to September 2008. Pharmacists met with the patients directly. A total of 33,706 visits were documented and resulted in 38,631 drug therapy problems. The type of problem was then identified. Additional therapy was the most common problem (n=10,870, 28.1%), and subtherapeutic dosage (n=10,100, 26.1%) was the second most common problem. Patients were assessed to see if the MTM services improved their medical condition. The majority, 55%, showed an improvement. Fewer, 23% showed no change while 22% showed their condition worsened. Oliveira and colleagues estimated the return on investment of the MTM service at $1.29 for every $1 spent. |
| Patel MS, Arron MJ, Sinsky TA, et al. Estimating the staffing infrastructure for a patient-centered medical home. Am J Manag Care 2013;19(6):509-516. |
| Patel and colleagues analyzed necessary staffing ratios and incremental costs associated with implementing a PCMH. Authors interviewed nine administrators of PCHMs who either published approaches of their practice model in a peer-reviewed journal or presented their results at an academic meeting. Interviews were conducted by telephone. As a result, authors estimated that 4.25 full-time equivalents (FTEs) of personnel should be required for every physician FTE, including 0.2 FTE pharmacist time. Compared to the base-case, 4.25 FTEs would result in a 59% increase of staffing personnel within a physician’s panel. More reimbursement would be necessary to support an increase in staff members, since $4.68 per member per month is the estimated incremental cost for additional staffing compensation. In a PCMH, improved healthcare outcomes have potential to outweigh additional staffing compensation. The study was limited because of a wide variation in staffing ratios and compensation between different practices in the sample. |
| Peikes DN, Reid RJ, Day TJ, et al. Staffing patterns of primary care practices in the comprehensive primary care initiative. Ann Fam Med 2014;12(2):142-149. |
| Authors of the article conducted a descriptive analysis to estimate the current staffing composition of primary care practices, and the article additionally discussed gaps within current staffing ratios. Data was obtained from the Comprehensive Primary Care Initiative (CPC) conducted by the CMS in 2012. Seven regions participated in the CPC, and sites were selected if they received CMS imbursement for transitioning into a team-based healthcare model. Peikes and colleagues included 496 primary care facilities within their analysis. As a result, 53% of study sites reported having physician assistants or nurse practitioners, while 36% of sites reported having registered nurses. Nearly all sites had medical assistants and administrative staff. 7% or fewer sites reported having pharmacists, health educators, or social workers. Authors concluded that not enough information is available to determine which staffing ratios result in optimal patient outcomes and benefit-to-cost ratios. Shifting roles and expanding team members within primary care could enhance patient satisfaction, reduce cost of downstream services, and address shortages in primary care physicians. Some challenges of expanding teams include communication issues and clarifying which responsibilities each profession should cover. |
| Sanchez S, Tyrrell R, Walsh T, Weiss M, Kuchta S. Integrated pharmacy models in primary care (2014). The Advisory Board Company Web Site. Available at : wwww.advisory.com. Accessed March 25, 2016. |
| Five programs were evaluated to see how well they could be integrated into the clinical care setting. In the first program at the University of Michigan, pharmacists evaluated medications, reconciled medication lists, and conducted follow up appointments. The clinical outcomes of the service showed a 0.8% decrease in HbA1c for patients’ with an HbA1C <7% and 1.4% decrease for patients’ with HbA1c >9%. In a second program at the University of Southern California, pharmacists initiated, adjusted, and discontinued medications. The pharmacists found 19,696 problems in 1,993 patients. The outcomes of the study were a decrease for inpatient admissions (13.1%) and a decrease in emergency room visits (37.8%). The third study at Hennepin County Medical Center, looked at MTM services for patients who were on 10+ medications or who had a diagnosis of asthma. Pharmacists found 9,040 medication errors and decreased the 30-day readmission rate by 3.4%. The estimated cost avoidance for the study was $2 million. The fourth program at the University of North Carolina, assessed transitioning away from grant funded projects to billable services for program sustainability. The goal of the study was to improve ACE, beta blocker, inhaled corticosteroids and dexa scan screening rates. Pharmacists billed for Medicare Wellness Visits or employee wellness visits. The study found that it would take between 12-18 months to transition from grant funding to billable services. The last program at the University of Connecticut, evaluated the effectiveness of pharmacists in determining medication errors after reviewing patient medications. The pharmacists found 917 errors and 3,248 drug discrepancies in 88 patients. The return on investment was determined to be 2.5. |
| Smith M, Bates D, Bodenheimer T. Pharmacists belong in accountable care organizations and integrated care teams. Health Affairs 2013;32:11. |
| A 2013 article published in Health Affairs discussed the importance of developing a team based approach for healthcare. Medical homes, accountable care organizations, and community-based care teams should have pharmacists included on their multidisciplinary teams. Pharmacists participating at the full level of their licenses can help solve complex medical problems and offer CMM services. Multiple studies showed the involvement of pharmacists improved patient outcomes. Some challenges that prevent the widespread adoption of pharmacists into healthcare teams are company policies and pharmacists not being recognized as reimbursable providers. |
| Valkova S, Gorokhovich M, Sacks N. Avoidable costs in U.S. healthcare (06/2013). IMS Institute for Healthcare Informatics Web site. Available at:http://www.imshealth.com/en/  thought-leadership/ims-institute/reports/avoidable-costs. Accessed April 4, 2016. |
| The IMS Institute for Healthcare Informatics released a report to describe the national impact of unnecessary healthcare expenditures, and authors proposed ways of reducing avoidable healthcare costs. The report stated that $213 billion of avoidable medication-related costs pertain to six different categories: nonadherence to medication, delayed care, antibiotic misuse, medication errors, inadequate use of generic drugs, and polypharmacy in the elderly. Nonadherence accounts for the largest portion of avoidable costs related to medication, and most of these expenses are spent towards hospital admissions. To support savings in healthcare costs, the report included case-by-case examples of how organizations conducted interventions to reduce healthcare costs. Authors also identified which type of stakeholders would benefit from various types of interventions. The report concluded that a team-based approach is required to significantly reduce unnecessary healthcare costs. |