

Implementation of Pharmacist-Driven Comprehensive Medication Management as Part of an Interdisciplinary Team in Primary Care Physicians' Offices

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ABSTRACT

Pharmacist-performed comprehensive medication management (CMM) has shown improved patient outcomes in a variety of settings, leading to an increased interest in the implementation of clinical pharmacist-performed CMM within interdisciplinary care teams. This report describes the initial 3 months of implementing clinical pharmacy into interdisciplinary care teams in primary care clinics, including the workflow of the clinical pharmacist, typical activities performed, and recommendations. The findings indicated positive provider and patient satisfaction. Areas of opportunity were identified to improve provider acceptance rate of pharmacists' recommendations and enhance pharmacist-provider relationships.

The American Journal of Accountable Care. 2020;8(1):8-11

Medication misuse, underuse, and overuse is estimated to contribute to \$300 billion in healthcare costs.¹ Comprehensive medication management (CMM) is the standard of care to ensure that medications (including prescription, nonprescription, alternative, and traditional medications, as well as vitamins and nutritional supplements) are individually assessed to determine that each medication is appropriate for the patient, is effective for the medical condition, is safe given the comorbidities and other medications being taken, and can be taken by the patient as intended. Clinical pharmacists are trained to provide CMM and create an individualized care plan describing goals of therapy, how to achieve them, and necessary actions for follow-up. By working in an interdisciplinary team, pharmacists can positively affect patient satisfaction and clinical outcomes.²

With a projection of 5 billion prescriptions dispensed and 80% of treatment plans containing medications in 2021, it is imperative that patients receive optimal medication regimens.^{2,3} The World Health Organization states that medication adherence for chronic diseases averages only 50% in developed countries, resulting in poor health outcomes and increased healthcare costs.² Pharmacist-driven CMM

can help improve medication adherence along with other clinical outcomes. A retrospective study assessing pharmacist-performed medication therapy management found higher rates of medication adherence, lower glycated hemoglobin levels, and lower low-density lipoprotein levels in patients with type 2 diabetes who received medication therapy management.⁴ Similarly, a study assessing the effect of a collaborative pharmacist–primary care provider team approach to medication therapy in patients with hypertension found a reduction in systolic blood pressure (BP) at 6 and 9 months compared with usual care.⁵

Overall, pharmacist-performed CMM has shown improved patient outcomes in a variety of settings. This report describes the initial implementation of pharmacist-driven CMM into an interdisciplinary care team at an accountable care organization (ACO)’s primary care offices for ambulatory patients.

METHODS

Practice Setting

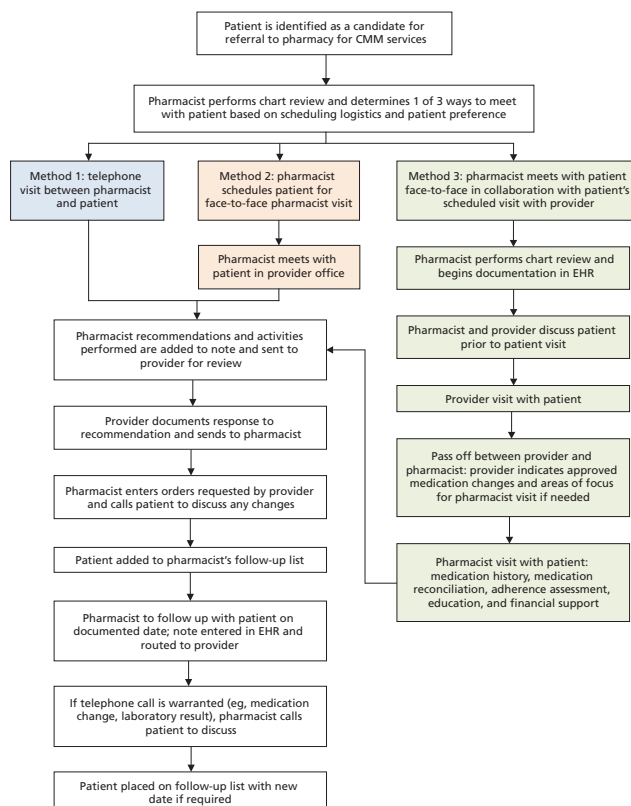
Implementation of pharmacist-driven CMM was performed at a health system that cares for more than 300,000 patients in northern Kentucky and participates in an ACO. The organization is composed of 30 primary care offices, with 50% of patients cared for under a value-based performance program. This report focused on 4 primary care offices staffed with physicians, nurse practitioners, medical assistants (MAs), a social worker, and a care coordinator. Practices were chosen based on interest in ambulatory pharmacy services at their site and opportunity for improvement in quality measures. Each practice serves approximately 10,000 patients, with approximately 2000 visits per month. Four pharmacists participated in the CMM implementation, each spending one 8-hour day per week at 1 of 4 offices. All pharmacists hold a doctor of pharmacy degree and are licensed to practice pharmacy in the state of Kentucky. Three of the 4 pharmacists were enrolled in a postgraduate year 2 program at the time of implementation—2 in programs for ambulatory care and 1 in a program for community administration. The remaining pharmacist, who holds board certification in ambulatory care and has more than 17 years of experience, was employed as an ambulatory pharmacist.

CMM Process

CMM was performed by an ambulatory care pharmacist based on recommendations by the American College of Clinical Pharmacy.⁶ Pharmacists either met with patients face-to-face or spoke with them via telephone between August 20, 2018, and November 30, 2018. The **Figure** depicts the typical workflow of pharmacy visits. Usually, patients were seen by pharmacists on the same day as their appointment with the primary care provider. However, providers or pharmacists were able to schedule an appointment with the pharmacist only. If the patient was unable to come to the

office, the pharmacist could conduct a telephone visit. Patients were roomed by an MA who received standardized training upon hiring. If BP was elevated, the MA was responsible for repeating BP measurement per office policy. Pharmacist recommendations were discussed with the patient’s primary care provider prior to making changes to medication therapy. The pharmacist documented all interventions, assessments, recommendations, and activities performed in the electronic health record and routed it to the provider. Pharmacists were individually responsible for ensuring follow-up with their patients. Voluntary patient satisfaction surveys were created based on the work of Moon et al⁷ (used with permission); they were either given to the patient to complete at their visit and return to the front desk, or mailed to them within 1 month of CMM with an addressed return envelope to be returned by mail. A voluntary provider satisfaction survey was sent to prescribers via email in January 2019. Pharmacists recorded types and number of interventions, number of recommendations accepted, activities performed, amount of time spent with patients, and total time spent on encounters.

Figure. Clinical Pharmacist Workflow



CMM indicates comprehensive medication management; EHR, electronic health record.

RESULTS

During this 3-month initial implementation period, pharmacists spent an average of 18.8 minutes face-to-face with each patient and 72 minutes total per patient. They provided 836 (5.72 per patient) recommendations, of which 311 (2.13 per patient) were accepted (37.4%) (Table). The most accepted recommendations included ordering laboratory tests (46.5%), discontinuation of medication therapy (37.7%), and administration of immunization (35.3%). Some common activities performed by pharmacists included medication reconciliation, monitoring laboratory test results, and providing education. Pharmacists also utilized assessment tools such as the Patient Health Questionnaire 9, COPD [chronic obstructive pulmonary disease] Assessment Test, Generalized Anxiety Disorder 7-item scale, and American Urological Association Symptom Score Questionnaire.

Approximately one-third (35%) of patient satisfaction surveys were returned, similar to rates in previous published reports (eAppendix [available at ajmc.com]).⁷ More than 90% of patients agreed that the clinical pharmacist helped them understand why they

are taking their medications, make sure that their medications are safe, and feel confident managing their medications. Many patients provided positive comments, including “This is a wonderful service and will help decrease drug interactions and problems” and “She did a very good job of explaining things and helping with questions and concerns.” Approximately 47% of prescribers completed the satisfaction survey. Of those, 93% agreed that patients benefited from seeing the pharmacist. Providers made several positive comments, including “Having a pharmacist available for consultation is very helpful particularly in the complex geriatric and/or diabetic patient.”

The acceptance rate for the pharmacist’s recommendations was lower than published rates in other studies.⁸⁻¹⁰ Ambulatory pharmacy services had not been previously implemented within the organization, making provider engagement low. Frequently, patients cancelled the appointment with their provider and rescheduled for a date outside of the follow-up time frame. This contributed to the low acceptance rate because providers typically wanted to wait until the next office visit before making changes to medication therapy. Lack of standardized follow-up may have also accounted for some of these patients being missed by the pharmacist at their rescheduled appointment date.

Patient and provider satisfaction surveys indicated a positive experience for both groups. We might have expected provider satisfaction to be low due to the low percentage of recommendations accepted by providers. However, this may be because providers with a positive or negative experience through acceptance of recommendations were more likely to complete the survey than providers who did not accept recommendations from the pharmacists.

DISCUSSION

Low provider engagement in the early stages of implementation likely played a large role in the low rate of recommendation acceptance. To improve the relationship between pharmacists and providers, pharmacists are now a part of the provider meetings, at which they present medication-related topics. Pharmacists are also now working 2 days per week at their assigned primary care office, increasing face-to-face time with providers and creating stronger relationships. The pharmacy team has become a key participant in all provider meetings for the health system through continuing education presentations, updates on pharmacy impact on value-based performance measures, and updates on medication-related changes in the health system and healthcare as a whole. Through these changes, the relationship between pharmacists and providers has strengthened and provider engagement has increased.

To create a more standardized follow-up process, the pharmacy team is now utilizing the Epic iVent tool to document interventions. This allows the team to track its interventions and return

Table. Activities Performed and Recommendations^a

Type of Recommendation	Number of Recommendations Made	Number (%) of Recommendations Accepted
Dose adjustment	113	29 (25.7)
Addition of medication therapy	146	50 (34.2)
Discontinuation of medication therapy	130	49 (37.7)
Administration of immunization	221	78 (35.3)
Laboratory test order	226	105 (46.5)
Total	836	311 (37.4)
Activity Performed	Number (%) of Patients	
Took medication history	96 (65.8)	
Reconciled medications	96 (65.8)	
Provided patient education	84 (57.5)	
Provided provider education	32 (21.9)	
Monitored laboratory tests	125 (85.6)	
Utilized assessment tool	32 (21.9)	

^aActivities performed by pharmacists and the number of patients who received the service; recommendations made by pharmacists and accepted by providers.

to any interventions that remain open. The team also documents interventions in an Epic Patient Outreach encounter, which allows the pharmacists to document a follow-up date and run daily reports to see which patients need follow-up that day.

The organization has grown to include 7 ambulatory care pharmacists who are each responsible for 1 to 2 value-based performance contracts in which they identify patients in the contract with care gaps and work with the patient and provider to close the gap if appropriate. This has been helpful in creating a more meaningful impact on the health system's performance in regard to its value-based performance contracts.

CONCLUSIONS

There is increased interest in the implementation of clinical pharmacists into interdisciplinary care teams in ambulatory care. In this report, we have described the initial 3 months of implementing clinical pharmacy into an interdisciplinary care team in primary care clinics, including the workflow of the clinical pharmacist, typical activities performed, and recommendations. Other organizations planning to implement pharmacists in the primary care setting may utilize this information to anticipate and mitigate barriers such as low provider engagement, lack of standardized follow-up, and patients missing appointments. Patient and provider satisfaction were considered in this study and, to date, no provider surveys have measured the satisfaction of providers with integrated ambulatory pharmacist services in the primary care setting.

Overall, pharmacist-performed CMM as part of an interdisciplinary care team resulted in positive patient and provider satisfaction. With the large focus on value-based performance outcomes, implementation of pharmacist CMM services may be of interest to organizations looking to improve such outcomes.

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Source of Funding: None.

Author Disclosures: Dr Hatfield Sapp is employed as an ambulatory pharmacist. The remaining authors report no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

Authorship Information: Concept and design (ECHS, SMF, ALH); acquisition of data (ECHS, SMF); analysis and interpretation of data (ECHS, SMF, ALH); drafting of the manuscript (ECHS, SMF, ALH); critical revision of the manuscript for important intellectual content (ECHS); statistical analysis (ECHS, ALH); provision of study materials or patients (ECHS, SMF); administrative, technical, or logistic support (ECHS); and supervision (ECHS, SMF, ALH).

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REFERENCES

1. Blouin RA, Adams ML. The role of the pharmacist in health care: expanding and evolving. *NC Med J*. 2017;78(3):165-167. doi: 10.18043/ncm.78.3.165.
2. The patient-centered medical home: integrating comprehensive medication management to optimize patient outcomes: resource guide, 2nd ed. Patient-Centered Primary Care Collaborative website. pcpc.org/sites/default/files/media/medmanagement.pdf. Published June 2012. Accessed December 2, 2017.
3. Aitken M, Kleinrock M, Lyle J, Nass D, Caskey L. Medicines use and spending shifts: a review of the use of medicines in the U.S. in 2014. IQVIA website. iqvia.com/-/media/iqvia/pdfs/institute-reports/medicines-use-and-spending-shifts-in-the-us-in-2014.pdf. Published April 2015. Accessed August 10, 2018.
4. Skinner JS, Poe B, Hopper R, Boyer A, Wilkins CH. Assessing the effectiveness of pharmacist-directed medication therapy management in improving diabetes outcomes in patients with poorly controlled diabetes. *Diabetes Educ*. 2015;41(4):459-465. doi: 10.1177/0145721715587563.
5. Hirsch JD, Steers N, Adler DS, et al. Primary care-based, pharmacist-physician collaborative medication-therapy management of hypertension: a randomized, pragmatic trial. *Clin Ther*. 2014;36(9):1244-1254. doi: 10.1016/j.clinthera.2014.06.030.
6. CMM in Primary Care Research Team. The patient care process for delivering comprehensive medication management (CMM): optimizing medication use in patient-centered, team-based care settings. American College of Clinical Pharmacy website. accp.com/docs/positions/misc/CMM_Care_Process.pdf. Published July 2018. Accessed September 15, 2018.
7. Moon J, Kolar C, Brummel A, Ekstrand M, Holtan H, Rehrauer D. Development and validation of a patient satisfaction survey for comprehensive medication management. *J Manag Care Spec Pharm*. 2016;22(1):81-86. doi: 10.18553/jmcp.2016.22.1.81.
8. Lee AJ, Boro MS, Knapp KK, Meier JL, Korman NE. Clinical and economic outcomes of pharmacist recommendations in a Veterans Affairs medical center. *Am J Health Syst Pharm*. 2002;59(21):2070-2077. doi: 10.1093/ajhp/59.21.2070.
9. Carter BL, Bergus GR, Dawson JD, et al. A cluster randomized trial to evaluate physician/pharmacist collaboration to improve blood pressure control. *J Clin Hypertens (Greenwich)*. 2008;10(4):260-271. doi: 10.1111/j.1751-7176.2008.07434.x.
10. Smith SM, Hasan M, Huebschmann AG, et al. Physician acceptance of a physician-pharmacist collaborative treatment model for hypertension management in primary care. *J Clin Hypertens (Greenwich)*. 2015;17(9):686-691. doi: 10.1111/jch.12575.

eAppendix

Implementation of Pharmacist-Driven Comprehensive Medication Management as Part of an Interdisciplinary Team in Primary Care Physicians' Offices

eAppendix Figure. Comprehensive Medication Management Components

Essential Functions	Operational Definitions
<p><i>Collect and Analyze Information</i></p> <p>The clinical pharmacist assures the collection of the necessary subjective and objective information about the patient and is responsible for analyzing information in order to understand the relevant medical/medication history and clinical status of the patient.</p>	<p>1a. Conduct a review of the medical record to gather relevant information (e.g., patient demographics, active medical problem list, immunization history, admission and discharge notes, office visit notes, laboratory values, diagnostic tests, medication lists).</p> <p>1b. Conduct a comprehensive review of medications and associated health and social history with the patient.</p> <p>1c. Analyze information in preparation for formulating an assessment of medication therapy problem</p>
<p><i>Assess the Information and Formulate a Medication Therapy Problem List</i></p> <p>The clinical pharmacist assesses the information collected and formulates a problem list consisting of the patient’s active medical problems and medication therapy problems in order to prioritize recommendations to optimize medication use and achieve clinical goals.</p>	<p>2a. Assess and prioritize the patient’s active medical conditions taking into account clinical and patient goals of therapy.</p> <p>2b. Assess the indication of each medication the patient is taking.</p> <p>2c. Assess the effectiveness of each medication the patient is taking.</p> <p>2d. Assess the safety of each medication the patient is taking</p> <p>2e. Assess adherence of each medication the patient is taking</p> <p>2f. Formulate a medication therapy problem list.</p> <p>2g. Prioritize the patient’s medication therapy problems.</p>
<p><i>Develop the Care Plan</i></p> <p>The clinical pharmacist develops an individualized, evidence-based care plan in collaboration with the healthcare team and the patient or caregiver.</p>	<p>3a. Develop a care plan in collaboration with the patient and the patient’s health care providers to address the identified medication therapy problems.</p> <p>3b. Identify the monitoring parameters important to routinely assess indication, effectiveness, safety, and adherence.</p> <p>3c. Review all medication lists to arrive at an accurate and updated medication list.</p>

	<p>3d. Determine and coordinate who will implement components of the care plan (i.e., patient, clinical pharmacist, other health care provider).</p> <p>3e. Determine the type of follow-up needed.</p> <p>3f. Determine the appropriate timeframe for patient follow-up.</p> <p>3g. Determine the appropriate mode for follow-up (e.g., in person, electronically, by phone).</p>
<p><i>Implement the Care Plan</i></p> <p>The clinical pharmacist implements the care plan in collaboration with the healthcare team and the patient or caregiver.</p>	<p>4a. Discuss the care plan with the patient.</p> <p>4b. Ensure patient understanding and agreement with the plan and goals of therapy.</p> <p>4c. Provide personalized education to the patient on his/her medications and lifestyle modifications.</p> <p>4d. Provide the patient with an updated, accurate medication list.</p> <p>4e. Implement those recommendations that you as the clinical pharmacist can implement.</p> <p>4f. Communicate the care plan to the rest of the care team.</p> <p>4g. Document the encounter in the electronic health record</p> <p>4h. Arrange patient follow-up.</p> <p>4i. Communicate instructions for follow-up with the patient</p>
<p><i>Follow up and Monitor</i></p> <p>The clinical pharmacist provides ongoing follow-up and monitoring to optimize the care plan and identify and resolve medication therapy problems, with the goal of optimizing medication use and improving care.</p>	<p>5a. Provide targeted follow-up and monitoring (e.g., in person, electronically, or via phone), where needed, to monitor response to therapy and/or refine the care plan to achieve patient and clinical goals of therapy</p> <p>5b. Repeat a comprehensive medication management visit at least annually, whereby all steps of the Patient Care Process are repeated to ensure continuity of care and ongoing medication optimization.</p> <p>5c. If the patient is no longer a candidate for CMM, ensure that a plan is in place for continuity of care with other care team members.</p>

eAppendix Table. Patient and Provider Satisfaction - Results for each question on the patient satisfaction survey distributed within 1 month of CMM services and provider satisfaction survey sent to all providers at the four primary care offices in this study in January 2018. Patient satisfaction survey adapted with permission from Moon, J et al.⁹

Patient Satisfaction Survey (n=49)				
Question	Strongly Agree	Agree	Disagree	Strongly Disagree
My clinical pharmacist helped me understand why I am taking each of my medications (%)	36 (69.23)	14 (26.92)	2 (3.85)	-
My clinical pharmacist helped me understand how to know if my medications are working (%)	32 (62.75)	16 (31.37)	3 (5.88)	-
My clinical pharmacist made certain that my medications are safe (knowing possible side effects of my medicines and avoiding drug interactions) (%)	35 (68.63)	15 (29.41)	1 (1.96)	-
My clinical pharmacist helped me find easier ways to take my medications (%)	29 (56.86)	19 (37.25)	3 (5.88)	-
My clinical pharmacist helped me understand the best ways to take my medicines (%)	35 (68.63)	14 (27.45)	2 (3.92)	-
My clinical pharmacist is working as a team member with my other healthcare providers (%)	36 (69.23)	16 (30.77)	-	-
After talking with my clinical pharmacist, I feel more confident to manage my medications (%)	35 (67.31)	14 (26.92)	3 (5.77)	-
My clinical pharmacist listened to concerns about my medications (%)	39 (75)	12 (23.08)	1 (1.92)	-
I would recommend my clinical pharmacist to a family member or friend (%)	41 (78.85)	9 (17.31)	2 (3.85)	-

	1 (Excellent)	2	3	4	5 (Poor)
Overall, how would you rate the quality of care and services you received from the clinical pharmacist? (%)	44 (90)	4 (8)	1 (2)	-	-
Provider Satisfaction Survey (n=14)					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Patients are willing to see the clinical pharmacist to discuss medications (%)	6 (43)	6 (43)	1 (7)	-	1 (7)
My patients have benefited from seeing the clinical pharmacist (%)	8 (57)	5 (36)	-	-	1 (7)
I would prefer to conduct medication reviews myself (%)	-	-	6 (43)	5 (36)	3 (21)