Journal of the American Pharmacists Association 59 (2019) 410–415

Contents lists available at ScienceDirect

Journal of the American Pharmacists Association

journal homepage: www.japha.org

ADVANCES IN PHARMACY PRACTICE

Standardized documentation workflow within an electronic health record to track pharmacists' interventions in pediatric ambulatory care clinics

Megan McNicol*, Catherine Kuhn, Sonya Sebastian

ARTICLE INFO

Article history:
Received 5 August 2018
Accepted 21 January 2019
Available online 28 February 2019

ABSTRACT

Objectives: To describe the implementation of a standardized documentation workflow within an electronic health record (EHR) and to track pharmacists' interventions in pediatric ambulatory care clinics.
Setting: Ambulatory care clinics and a transitions-of-care (TOC) service within a pediatric health care system in central Ohio.
Practice description: Ambulatory clinical pharmacists work as integrated members of the health care team in 7 pediatric ambulatory care clinics and a TOC service to achieve the best medication-related outcomes for patients.
Practice innovation: A standardized documentation workflow was established among ambulatory clinical pharmacists to document the interventions made in their practice settings with the use of a tool in the EHR. A weekly report from the EHR was run by a technician to gather intervention data, identify reimbursable opportunities, and document and bill via a separate Internet-based medication therapy management platform.
Evaluation: The success of the new documentation workflow was evaluated, and continuous feedback was gathered from the pharmacists and the billing technician. Updates were provided to the ambulatory clinical pharmacist at monthly staff meetings and workflow changes implemented as needed.
Results: A total of 5210 interventions were documented by the pharmacists in various intervention categories. The 3 most common intervention categories included patient and medication education (1765), medication reconciliations (1170), and compliance assessments (795).
Conclusion: A standardized documentation workflow allowed for consistent tracking of interventions across ambulatory care clinics and a TOC service. Key elements to the successful implementation of this new documentation workflow included proper training and continuous feedback to the ambulatory clinical pharmacists, assistance from a billing technician, and consistent documentation by the ambulatory clinical pharmacists.

Pharmacists are valuable members of the health care team. This has been seen in various pharmacy environments including the adult ambulatory care settings and inpatient pediatrics.[1-9] In the adult ambulatory care setting, pharmacists have had a significant impact on health outcomes in primary care clinics, commonly assisting with the management of diabetes, hyperlipidemia, and hypercholesterolemia.[1-3] Pharmacists have also been integrated into specialty ambulatory care settings, such as cancer centers and anticoagulation clinics, generating significant cost savings and improved outcomes.[4,5] In the inpatient pediatric setting, pharmacists on the rounds team have prevented order entry errors and intervened in other unique patient scenarios, resulting in improved outcomes.[6] In other inpatient pediatric settings, pharmacists have shown the positive impact on pediatric therapeutic drug monitoring, emergency response, and patient care.[7-9] Although much can be learned from pharmacists in these settings, few studies have been done to establish the value of a pediatric clinical pharmacist in the ambulatory care setting.

Disclosure: The authors have declared no potential conflicts of interest.
Previous presentations: Resident poster presentation at APhA2018, Nashville, TN; podium presentation at 33rd Great Lakes Pharmacy Residency Conference, Lafayette, IN.
* **Correspondence:** Megan McNicol, PharmD, Nationwide Children's Hospital, 700 Children's Drive, Columbus, OH 43205.
E-mail address: megan.mcnicol@nationwidechildrens.org (M. McNicol).

https://doi.org/10.1016/j.japh.2019.01.007
1544-3191/

Key Points

Background:

- No standardized documentation workflow for pediatric ambulatory clinical pharmacists exists.
- A tool has been created for inpatient pharmacists to track their clinical interventions, but it has not been used in the pediatric ambulatory setting.
- The ability to bill for medication therapy management services is already in place.

Findings:

- A standardized documentation workflow allows consistent tracking of pharmacists' interventions in pediatric ambulatory care clinics.
- Pharmacists are valuable in completing accurate medication reconciliations, assessing patient compliance, and providing medication education.
- Standardized documentation enables a seamless billing process for interventions made by pediatric ambulatory clinical pharmacists.
- A billing technician is beneficial for a successful reimbursement process of medication therapy management services that are already in place.

A major barrier to conducting these studies is that there has not been a consistent way to document the interventions made by pediatric ambulatory clinical pharmacists. Inpatient pharmacists have the opportunity to use tools within the electronic health record (EHR) to document their interventions. Community pharmacists practicing in a retail setting often use Internet-based medication therapy management (MTM) platforms to document services and generate reimbursement. However, those same tools have not been extrapolated to the ambulatory setting and are not specific to the role and environment of pediatric ambulatory clinical pharmacists. For this reason, documentation has proved to be one of the most common barriers to implementing ambulatory clinical pharmacy services.[10]

The present study aimed to develop a standardized documentation workflow that would assist in demonstrating the value of a pediatric ambulatory clinical pharmacist. This documentation would capture the interventions being made by the pharmacists as they work through the patient care process.[11]

Once standardized documentation is established, the ability to collect data on pharmacists' interventions as well as potentially bill for the interventions made becomes more feasible. Although there is not a direct method of reimbursement for these interventions documented in the EHR, there is an opportunity for reimbursement through Internet-based MTM platforms. Despite the inflow of monetary resources that this can provide, research shows that pharmacists often still do not bill for their services, primarily because of a lack of time.[12] The preference is to have all documentation within the EHR rather than requiring the ambulatory clinical pharmacists to log in to a separate Internet-based system to submit MTM claims. The standardized documentation workflow described in the present paper allows pediatric ambulatory clinical pharmacists to demonstrate the clinical impact of their interventions by using the EHR to document their interventions. In addition to this, it also allows reimbursement via an Internet-based system to be conducted in a more efficient manner.

Objectives

The objective of this study was to describe the implementation of a standardized documentation workflow within an EHR and to track pharmacists' interventions in pediatric ambulatory care clinics.

Methods

Practice setting

This study took place at Nationwide Children's Hospital (NCH), a large, academic, free-standing, pediatric hospital located in Columbus, Ohio. NCH has one of the largest pediatric ambulatory services in the country, with many ambulatory care clinics featuring interdisciplinary health care teams. NCH has a robust ambulatory pharmacy program with 3 outpatient pharmacies, a specialty pharmacy, ambulatory clinical pharmacists embedded in the clinics, and an ambulatory pharmacist-led transitions-of-care (TOC) service. This study took place over a 5-month period, from September 2017 to January 2018.

Practice description

This study focused on the interventions of ambulatory clinical pharmacists serving in 7 different ambulatory care clinics and a TOC service within the pediatric health care system. The 7 ambulatory clinics included primary care, complex health care, adult internal medicine, neurology, immunodeficiency, pulmonary/cystic fibrosis, and rheumatology. Working full time in the clinic setting, the ambulatory clinical pharmacists functioned as integrated members of the health care teams. Together with physicians, nurse practitioners, dietitians, nurses, psychologists, and others, the ambulatory clinical pharmacists helped to provide patient-centered care. They did this by seeing the patients independently or by discussing a patient case with the provider to enhance the services provided during the patient's office visit. Common interventions included recommending medication initiation, adjustment, discontinuation, and monitoring. The ambulatory clinical pharmacists also completed compliance assessments, performed medication reconciliations, and provided medication education to both providers and patients. The TOC pharmacist performed many of these same activities on a patient's hospital discharge. In coordination with the discharge planning team, the TOC pharmacist helped to ensure a smooth transition from the inpatient to the outpatient setting, working to minimize medication errors and to educate the patient about home-going medications. The TOC pharmacist then communicated any change in medication or other pertinent clinical information with the ambulatory clinical pharmacist to ensure a smooth transition back to the outpatient setting. This was accomplished with the use of a messaging system in the EHR.

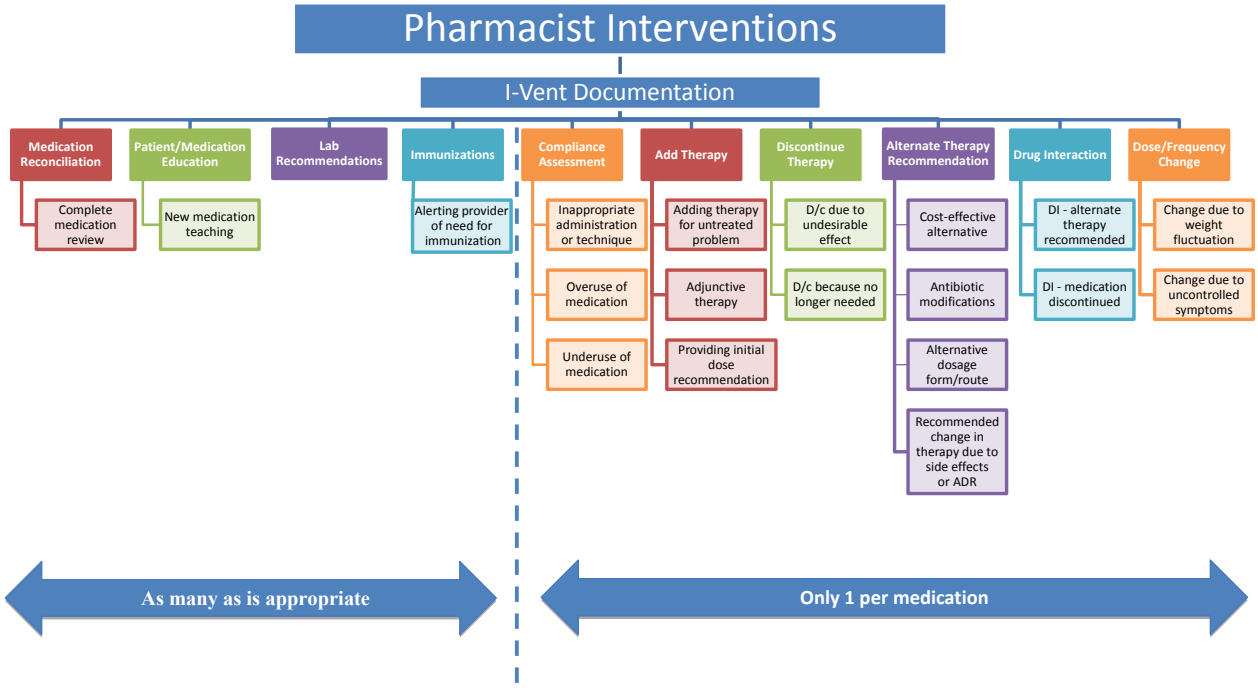

Figure 1. Intervention categories.

Practice innovation

MTM services were already provided in the outpatient pharmacies at NCH. The practice model was established by means of a collaborative approach in the dispensing process between outpatient staff pharmacists and a billing technician.[13] This study was designed to expand on the MTM services already in place in the outpatient pharmacies by using a similar model to capture the interventions being made by ambulatory clinical pharmacists in the clinic setting. The same billing technician assisted in the process for both the outpatient pharmacy and the ambulatory clinic settings. Some patients received MTM services in both the outpatient pharmacy and the ambulatory clinic setting, but the intervention types varied depending on the location of the MTM service. For example, the outpatient pharmacy did not perform comprehensive medication reviews, whereas that was a large component of the MTM services provided by the ambulatory clinical pharmacists.

Despite the ambulatory clinical pharmacists already making many interventions every day in their respective clinics, no method of documentation was in place to track these interventions in a reportable way. The new documentation workflow allowed the ambulatory clinical pharmacists to document their interventions with the use of a standardized tool in the EHR.

Workflow

A documentation tool was created exclusively for use in the ambulatory clinics by the ambulatory clinical pharmacists. The tool was conveniently located within the patient's chart in the EHR and allowed the pharmacists to complete all necessary documentation by selecting from a list of intervention categories tailored to the unique role of the ambulatory clinical pharmacists. By documenting in this manner, it enabled reporting that collected information required for reimbursement without the pharmacists needing to go to a separate Internet-based MTM platform. The reporting was instead used by a billing technician to focus on the platform's billing requirements. It was an efficient process and required very little time for the pharmacist to complete.

Figure 1 shows the 10 categories in which the ambulatory clinical pharmacists documented their interventions. A pharmacy resident who spent time in the various ambulatory clinics surveyed and observed the ambulatory clinical pharmacists and the interventions that they were making. Based on this survey and observation period, as well as consensus among all the ambulatory clinical pharmacists, these 10 intervention categories were deemed to adequately represent the breadth of interventions made in the clinic settings. As seen in Figure 1, a brief description of potential interventions is listed below each documentation category to assist the ambulatory clinical pharmacists in determining how each intervention should be classified. Once the intervention category was determined, documentation of the intervention was associated with a specific medication order in the patient's chart. The ambulatory clinical pharmacists then provided a brief description of the intervention that was made, enabling communication to the billing technician.

The billing technician, based in the outpatient pharmacy, was responsible for reviewing the interventions made by all of the ambulatory clinical pharmacists. This was done by pulling a weekly intervention report from the EHR. This report included information on all interventions documented by the ambulatory clinical pharmacists, including patient information, intervention type, the pharmacist who completed the intervention, and any additional notes from the pharmacist. The patient information included the patient's insurance, allowing the billing technician to identify reimbursable

EHR Documentation Category	MTM Claim
Medication Reconciliation	Comprehensive Medication Review
Patient/Medication Education	New or Changed Rx or OTC Therapy
Lab Recommendation	No Billing Appropriate
Immunizations	Needs Immunization
Compliance Assessment	Adherence: Inappropriate Administration/Technique Adherence: Overuse
Add Therapy	Needs Drug Therapy
Discontinue Therapy	Adverse Drug Reaction Unnecessary Drug Therapy
Alternate Therapy Recommendation	Adverse Drug Reaction Suboptimal Drug Cost-Effective Alternative
Drug Interaction	Drug Interaction
Dose/Frequency Change	Dose Too High Dose Too Low

Figure 2. Medication therapy management (MTM) platform versus electronic health record (EHR) intervention categories.

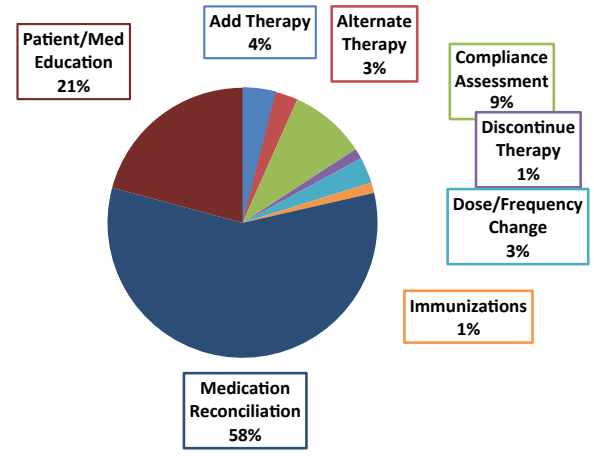

Figure 3. Financial impact according to percentage of reimbursement of each intervention type.

opportunities. At the time of this study, only 1 managed-Medicaid payer offered reimbursement for these services. The billing technician used a chart (Figure 2) and the ambulatory clinical pharmacist's documentation to identify which claim type to submit on the Internet-based MTM platform per payer requirements. For any claims requiring patient follow-up, the billing technician notified the ambulatory clinical pharmacists to complete the task if needed.

This same report from the EHR provided the overall number and type of interventions made, as well as an intervention breakdown according to clinic and pharmacist. Not only did this process allow for identification of reimbursable opportunities, it also provided a context to show the value of a pharmacist in the ambulatory care clinical setting and the many interventions that they make each day to improve patient care.

Training

All of the ambulatory clinical pharmacists attended a 1-hour training session, which outlined the new workflow and the documentation tool in the EHR. The ambulatory clinical pharmacists were also provided clinical scenarios during this training to ensure consistency in their documentation of interventions. In addition to this this 1-hour training session, regular feedback and, if needed, further training were shared at monthly staff meetings.

A training session was also provided to the billing technician. The technician was informed of the ambulatory clinical pharmacists' new workflow and the adjustments that were necessary to enhance the billing method that already existed in the outpatient pharmacies. The billing technician was taught how to run the weekly intervention report in the EHR and how to analyze it appropriately to identify reimbursable opportunities based on the patient's payer. Feedback continued to be gathered from the billing technician on a monthly basis and reported back to the ambulatory clinical pharmacists. This feedback often included ways to increase reimbursable opportunities and optimize communication from the ambulatory clinical pharmacists to the billing technician with the use of the documentation section of the new standardized documentation tool.

Table 1
Number of interventions per category

Intervention type	Number of interventions (n = 5210)	Percentage of total interventions
Patient/medication education	1765	34%
Medication reconciliation	1170	23%
Compliance assessment	795	15%
Immunization recommendation	484	9%
Add therapy	340	7%
Alternate therapy recommendation	239	5%
Dose/frequency change	196	4%
Lab recommendation	128	2%
Discontinue therapy	75	1%
Drug interaction	18	< 1%

Evaluation

Project management and feedback

The project management team, consisting of the ambulatory pharmacy clinical coordinator, pharmacy coordinator of the accountable care organization, and the community care pharmacy resident, met biweekly to assess the progress of the project. This group worked to ensure that continuous feedback was provided to the ambulatory clinical pharmacists and the billing technician. The project team also analyzed the reports that were run from the EHR and worked to identify areas for improvement. Challenges of the new documentation workflow were addressed and changes implemented as needed. These regular meetings with the project team provided an opportunity to evaluate success around the program and to continue to advance the initiative.

Workflow improvements

The project team, in collaboration with the billing technician and ambulatory clinical pharmacists, identified opportunities for improvement throughout the project implementation. One

improvement made was an adjustment of documentation categories. At the end of the data collection period, the "add therapy" category was divided into separate categories, "add OTC therapy" and "add prescription therapy," which helped the billing technician decipher how to best submit for reimbursement. Another workflow improvement was instruction to the ambulatory clinical pharmacists on how to enhance their intervention documentation. For example, if the pharmacists completed a compliance assessment, they were instructed to document whether they identified overuse or underuse of the medication. Again, this aided the billing technician in proper reimbursement submission.

Results

A standardized documentation workflow was established among pharmacists practicing in pediatric ambulatory care clinics to document the interventions that they were making in their practice settings. Although the interventions differed among the various clinics, the documentation method remained consistent. A total of 5210 interventions were documented by the ambulatory clinical pharmacists in the first 5 months across 7 ambulatory care clinics and a TOC service (Table 1). Of these total interventions, 1765 (34%) were patient and medication education interventions, 1170 (23%) were medication reconciliations, and 795 (15%) were compliance assessments.

Of the 5210 interventions completed by the ambulatory clinical pharmacists, 1855 (36%) of them were eligible to be billed for reimbursement based on the patient's insurance. Of the 1855 interventions potentially eligible for reimbursement, 427 (23%) resulted in a paid reimbursement claim. The intervention categories most likely to result in successful reimbursement were medication reconciliations, patient and medication education, and compliance assessments, accounting for 58%, 21%, and 9% of total reimbursement respectively (Figure 3).

Discussion

A standardized documentation workflow was implemented among ambulatory clinical pharmacists. This enabled the ambulatory clinical pharmacists to easily document within the EHR and capture the clinical impact of their interventions. The new documentation workflow is efficient for the ambulatory clinical pharmacists because they can document their interventions without needing to log in to a separate Internet-based MTM platform. Our institution can now capture the vast number of interventions that the ambulatory clinical pharmacists are making each day, which is vital to expanding our pediatric pharmacy services into additional clinic settings. Although our institution has identified the benefits of having a pharmacist as a member of the health care team, being able to quantify and describe the interventions made will help to justify similar models being implemented at other outpatient pediatric institutions. The completeness of the intervention capture rate was dependent on the ambulatory clinical pharmacist's consistency in documenting his or her interventions. Although some interventions may have mistakenly gone undocumented, the regular feedback and monthly reports to the ambulatory clinical pharmacists helped to keep intervention documentation as a priority and in the forefront of their minds.

In addition to capturing the interventions made, the ability to bill for these interventions is now feasible. The financial impact of the ambulatory clinical pharmacist's interventions was determined by comparing the claims report generated on the Internet-based MTM platform with the report of the pharmacists' interventions in the EHR. With the use of patient-specific identifiers, medication name, and pharmacist name, each intervention could be associated with the matching claim from the MTM platform. The support from a billing technician was vital to the success of the project. The billing technician was an outpatient pharmacy technician who was provided 0.2 FTE hours to dedicate solely to this initiative. This individual handled all aspects of the billing process, including identifying eligible claims, submitting claims on an Internet-based platform, tracking claims progress, orchestrating necessary patient follow-up, and completing paperwork. This simplified the process for the ambulatory clinical pharmacists and enabled them to remain focused on clinical interventions without the burden of claim submission.

Despite the many advances in standardizing the documentation process for interventions made in this pediatric patient population, MTM was originally designed for a Medicare Part D patient population. Because of this, many pediatric interventions were deemed to be ineligible for billing. Of the total interventions made, only 36% of them were potentially eligible for reimbursement, because few payers are currently participating in reimbursement for MTM services. Of that 36%, only 23% of claims actually resulted in reimbursement, owing to other limitations concerning the pediatric patient population. These limitations were primarily due to the current adult focus of the MTM platform. For example, immunization recommendations were commonly documented, yet not billable. This was because the patient had not qualified for a comprehensive medication review which was required for successful billing of an immunization recommendation according to the MTM platform. An opportunity still exists to optimize compensation for the many interventions being made by the ambulatory clinical pharmacists. This can be done by expanding the current adult focus of MTM to include more pediatric interventions. In addition to this, reimbursement could be optimized if additional payers would participate in these services.

Nonetheless, this information can be used to support pharmacist integration into additional ambulatory care clinics based on the evidence of the many interventions that the ambulatory clinical pharmacists are making. These interventions not only optimize medication use but also enhance patient care and improve patient safety.

Conclusion

Implementation of a standardized documentation workflow allowed for consistent tracking of pharmacists' interventions across various pediatric ambulatory care clinics and a TOC service. Key elements to the successful implementation of this new documentation workflow included proper training and consistent feedback to the ambulatory clinical pharmacists and billing technician, assistance from a billing technician, and consistent documentation by the ambulatory clinical pharmacists. This standardized workflow establishes a process to demonstrate the value of a pediatric clinical pharmacist in the ambulatory care setting.

References

1. Fazel MT, Bagalagel A, Lee JK, Martin JR, Slack MK. Impact of diabetes care by pharmacists as part of health care team in ambulatory settings: a systematic review and meta-analysis. *Ann Pharmacother*. 2017;51(10):890–907.
2. Mason JD, Colley CA. Effectiveness of an ambulatory care clinical pharmacist: a controlled trial. *Ann Pharmacother*. 1993;27(5):555–559.
3. Lee AJ, Boro MS, Knapp KK, et al. Clinical and economic outcomes of pharmacist recommendations in a Veterans Affairs medical center. *Am J Health Syst Pharm*. 2002;59:20707.
4. Randolph LA, Walker CK, Nguyen AT, Zachariah SR. Impact of pharmacist interventions on cost avoidance in an ambulatory cancer center. *J Oncol Pharm Pract*. 2018;24(1):3–8.
5. Manzoor BS, Cheng WH, Lee JC, Uppuluri EM, Nutescu EA. Quality of pharmacist-managed anticoagulation therapy in long-term ambulatory settings: a systematic review. *Ann Pharmacother*. 2017;51(12):1122–1137.
6. Tripathi S, Crabtree HM, Fryer KR, Graner KK, Arteaga GM. impact of clinical pharmacist on the pediatric intensive care practice: an 11-year tertiary center experience. *J Pediatr Pharmacol Ther*. 2015;20(4):290–298.
7. Welsh C, Miah R, Girotto J. Survey evaluating the practice of children's hospitals having pharmacist collaborative drug therapy management protocols. *J Pediatr Pharmacol Ther*. 2016;21(6):494–501.
8. Johnson MR, Nash DR, Laird MR, Kiley RC, Martinez MA. Development and implementation of a pharmacist-managed, neonatal and pediatric, opioid-weaning protocol. *J Pediatr Pharmacol Ther*. 2014;19(3):165–173.
9. Bembea MM, Rapan Parbuoni KA, Zimmer KP, et al. Characteristics of medication use during pediatric medical emergency team events and the role of a pharmacist-provided medication supply. *J Pediatr Pharmacol Ther*. 2012;17(3):236–245.
10. Lounsbery JL, Green CG, Bennett MS, Pedersen CA. Evaluation of pharmacists' barriers to the implementation of medication therapy management services. *J Am Pharm Assoc (2003)*. 2009;49(1):51–58.
11. Joint Commission of Pharmacy Practitioners. Pharmacists' patient care process. 2014. Available at: https://jcpp.net/wp-content/uploads/2016/03/PatientCareProcess-with-supporting-organizations.pdf. Accessed June 20, 2018.
12. Beatty SJ, Mccormick KM, Beale DJ, et al. Current trends in outpatient pharmacy services and billing. *J Am Pharm Assoc (2003)*. 2012;52(2):154–160.
13. Sneed G, Kappeler K, Gilmore T, Kuhn C. Implementation of a medication therapy management collaborative within a pediatric health system. *J Am Pharm Assoc (2003)*. 2018;58(4S):S114–S119.

Megan McNicol, PharmD, Advanced Patient Care Pharmacist; Nationwide Children's Hospital, Columbus, OH; at time of study: PGY-1 Community Care Resident, Nationwide Children's Hospital, Columbus, OH

Catherine Kuhn, PharmD, BCACP, FAPhA, Pharmacy Coordinator, Population Health, Partners For Kids/Nationwide Children's Hospital, Columbus, OH

Sonya Sebastian, PharmD, BCACP, Pharmacy Clinical Coordinator, Ambulatory Services, Nationwide Children's Hospital, Columbus, OH