

Development of a Transition of Care Service Between a Hospital and a Community Pharmacy

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A transition of care, specifically from hospital-to-home, is a vulnerable time for patients. At discharge, patients often receive new treatment plans with alterations to medications, and once home patients are in self-management roles.¹ Complicating these changes, evidence demonstrates patients cannot always retain and recall information presented during hospitalizations.²

Medication errors and adverse drug events are common during transitions, potentially contributing to hospital readmissions.³⁻⁴ Many readmissions are thought to be preventable, prompting the Centers for Medicare & Medicaid Services (CMS) to reduce payments to hospitals with excessive readmissions.⁵ To reduce readmissions, a national focus has been placed on transition programs; specifically, programs assisting patients during the early post-hospital period.⁶

Pharmacists have demonstrated reduced readmission rates by providing medication reconciliation, medication instruction, and disease state education.⁷⁻¹⁰ Community pharmacists are uniquely positioned and have the clinical knowledge to assist patients post-discharge.¹¹

Recognizing the need to address these issues when patients are discharged from the hospital, a partnership was forged between a community pharmacy and hospital in Wisconsin. Streu's Pharmacy is an independent community pharmacy in downtown Green Bay, Wisconsin. It encompasses a retail and long-term care pharmacy and offers medication therapy management (MTM) services, community-based residential facility consulting, and community health education. Bellin Healthcare is a 167-bed, multi-specialty

Abstract

Objective: To develop a transition of care service between an independent community pharmacy and a hospital system for cardiac unit patients following discharge.

Practice Description: A community pharmacist met with patients identified as moderate-to-high risk for readmission following discharge from a hospital's cardiac care unit for an outpatient medication therapy management appointment. Each patient received a medication action plan. Appointment summaries were given to the patient's follow-up provider(s). Patients were followed for 30 days. Patient recruitment, time needed, interventions made and accepted, 30-day readmission rate and patient satisfaction were collected to evaluate the service.

Results: Of the 82 eligible patients invited to meet with the pharmacist, 36 patients (44%) received an appointment. At 30 days, 35 patients confirmed they had no readmissions; one was unreachable. Excluding recruitment and patients who declined after accepting, mean time began at 248 minutes per patient (first 5) and decreased to 182 minutes (remaining 31). Overall, 38% of all medication-related recommendations were accepted (113 total recommendations): 32% prescription (87 recommendations) and 58% over-the-counter (26 recommendations). The pharmacist also recommended 24 non-medication interventions. Surveys indicated patient satisfaction with the service. Seven unsolicited providers expressed gratitude for the pharmacist's work with their patients.

Conclusion: A transition of care service was developed using a community pharmacist to help reduce hospital readmissions. This service model may offer insight for the development of other transition services utilizing the community pharmacist.

hospital system in Green Bay, Wisconsin with clinics located in northeast Wisconsin and the Upper Peninsula of Michigan. Bellin Healthcare offers a wide range of pharmacy services including inpatient, outpatient, home infusion, oncology, and ambulatory care. The purpose of this article is to detail the development of a transitional care service between an independent community pharmacy and a hospital system for cardiac unit patients following discharge.

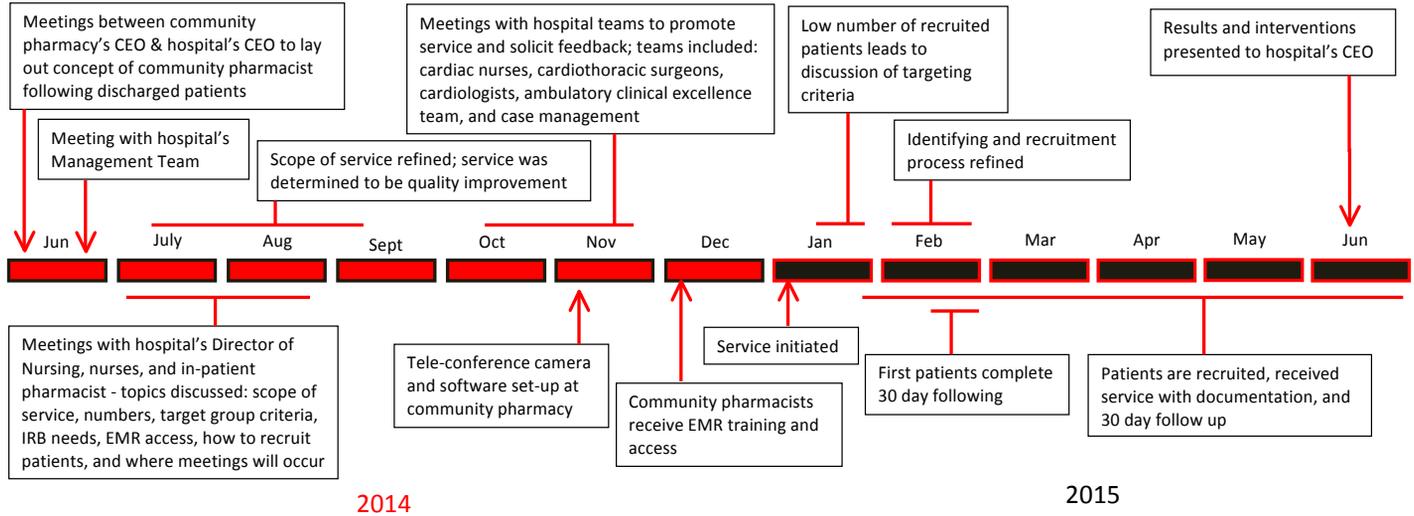
Transitional Care Service Description

Streu's Pharmacy's Chief Executive Officer (CEO) and Bellin's CEO knew and

worked with each other in a community organization. Discussions between senior leaders resulted in a plan to utilize a community pharmacist with patients who were discharged from the hospital to help reduce readmission rates. Further meetings were held by the hospital's management team and the community pharmacy's leadership to determine what patient group(s) would be targeted by the service, how it would function, and where it would occur. Figure 1 displays a timeline of service development, implementation, and evaluation.

CMS's readmission standards led to the hospital management team wanting to target the cardiac unit.⁵ The transition of care service decided to use LACE scores

FIGURE 1. Timeline of Service Development, Implementation, and Evaluation



(Length of stay, Acuity of admission, Comorbidities, and Emergency department visits) to determine the likelihood of readmission, as this was already being used by the hospital.¹² On a scale of 0 to 19, A LACE score of 10 or higher is considered high risk and 5-9 moderate risk. For this transitional care service, target criteria for pharmacist involvement were a LACE score of 9 or higher, chosen by hospital management team, and presence on the cardiac unit. Patients were excluded if they were discharged to a skilled nursing facility, unable to understand consent, did not speak English, lived outside of Wisconsin and were unable to travel in state as the pharmacist was not licensed in Michigan, or had no means of telephone contact. The service was titled “Master My Meds” to help patients understand the service. After 10 MTM appointments and 8 patients completing 30 days with no readmissions, the hospital management team saw the benefit of the service to its patients and expanded the service to include patients with a LACE score of 5 or higher.

Initial recruitment was completed by hospital discharge nurses and case managers who identified and approached patients prior to discharge. They described and encouraged use of the service as well as documented patient consent to be contacted by pharmacy or decline with reason. Although the service was determined to be quality improvement by both institutions’ Institutional Review Boards, patient consent was still obtained so the patients would be prepared for pharmacist contact post-discharge. The

hospital faxed the consent form to the community pharmacy during discharge.

As only two patients were approached within the first 22 days, adjustments were made to the recruitment process. Between other requirements for discharging patients and the novelty of the service, offering it to the patient was easily missed by nursing staff. For this reason, recruitment responsibilities were transferred to the community pharmacy. The primary community pharmacist for this service, a pharmacy resident at the time, visited the hospital on a twice weekly basis on non-staffing days. The pharmacist met with potential patients, introduced the service to them, and invited patients to a transition in care appointment. This was done to establish a relationship with the patients and promote the service. These visits to the hospital took between 30 to 120 minutes depending upon number of qualifying patients. This included patients being discharged that day or with anticipated discharge in coming days. The hospital was a 5-minute drive from the community pharmacy.

After a patient accepted the service, the pharmacist reviewed the patient’s medications and conditions via remote access to the electronic medical record (EMR). Once the patient was home post-discharge, the patient was contacted and an appointment was arranged. These appointments were managed and tracked manually. During the appointment, the pharmacist performed an MTM following the American Pharmacist Association MTM service model.¹³ A medication

action plan (MAP) of important points was provided to the patient, and the pharmacist summarized the visit to the patient’s provider(s). Follow-up visits with the community pharmacist were arranged if deemed necessary through clinical judgment. The pharmacist followed up with enrolled patients each week by phone to assess patient status for 30 days. A final phone call assessed readmission status at 30 days following discharge. An admission was defined as an overnight hospital stay. Post-appointment, a patient satisfaction survey developed for the service was offered to the patient. The survey was not formally validated but was reviewed and piloted by two investigators. The survey had 7 satisfaction statements using a 4-point scale from strongly disagree (1) to strongly agree (4). One statement was negative to identify skew towards desired answers (See Table 4 for the patient satisfaction survey questions).

TABLE 1. Reasons for Declining

Initial Hearing of Service	
Will not use	8
Has a different pharmacist	4
Unknown reason	6
Total	18
After Accepting	
Will not use	2
Too many people/obligations	4
Has a different pharmacist	2
Unknown reason	2
Total	10

TABLE 2. Therapy Issues: Reasons Identified and Examples

Reason Identified	n	Examples
Potential harm	25	Hypoglycemia, hypotension, cutting ER tablets, NSAID w/ CHF
Potential adverse effects	6	Dyspnea, ACE-I cough, edema
Potential needed effects	53	Appropriate statin, ACE-I/ARB, B-blocker, anti-anxiety trial
Effect potentially not needed or seen	28	PPIs with no need, supplements, bowel regimen
Adherence barrier	11	Directions not followed, not sure where to follow up
Medication potentially limiting therapy	4	A-blockers used in CHF
Potential medication cascade	1	H-2 blocker prescribed for dyspnea
Incorrect medication documentation	4	BID use recorded as TID, incorrect PPI listed
Dosage form not working	1	Inhalation device challenging for patient
Clarification Needed	4	Duration of therapy, what to monitor
Total	137	

Key: ER = extended release; NSAID = nonsteroidal anti-inflammatory drug; CHF = congestive heart failure; ACE-I = angiotensin-converting-enzyme inhibitor; ARB = angiotensin receptor blocker; B-blocker = beta-blocker; PPI(s) = proton pump inhibitor(s); A-blockers = alpha-blockers; H-2 blocker = histamine 2 blocker; BID = twice per day; TID = three times per day

Appointments were conducted outside the hospital to minimize potential information overload on the patient and maximize the benefit of repeated instructions away from an inpatient setting.² Initially appointments were to occur at the community pharmacy; however, because of distance concerns and potential appearance of pharmacy promotion, patient choice determined the location: the patient’s home within 20 miles of Green Bay, at a hospital’s clinic site within 20 miles of Green Bay, via teleconference at a remote hospital’s clinic, or at the community pharmacy. Telephone appointments were initially not included, due to concerns of incomplete communication, however the logistics of reaching some patients eventually necessitated some phone appointments.

Communication with providers used SOAP note format (subjective, objective, assessment, plan) in the EMR. Notes were addressed to the patient’s follow-up provider. If the provider was not part of the hospital system, the note was also sent via fax to the provider. Phone calls were placed if information was deemed urgent and to ensure faxes were received.

Description of Service Implementation

Data were collected from January 5, 2015 to May 29, 2015. Figure 2 displays the flow of patients through the transitional care service. 82 patients were approached for the service and 64 patients accepted an appointment. 100 patients were not approached due to work flow barriers, the pharmacist not being able to visit the hospital, and/or patients not being available when pharmacist was at the hospital (e.g. away for imaging or asleep). 18 eligible and willing patients were unable to be met. Table 1 displays reasons for declining the service.

Of the 64 patients initialing agreeing to an appointment, 36 patients were seen by a pharmacist (Figure 2). Sixteen were met at home, 3 at the pharmacy, 1 at a hospital clinic, 8 by teleconference, and 8

by telephone. One patient agreed to the service, however, upon returning home and prior to pharmacist appointment the patient was readmitted due to recurring symptoms. It is unknown how many other patients who ultimately declined the service returned to a hospital within 30 days. Through telephone contact with the patient at 30 days, 35 of the patients who received the transitions of care service confirmed they did not have a readmission within 30 days of discharge (97.2%). One patient was not reachable to confirm.

Patients who met with the pharmacist (n=36) were discharged with a mean of 13 prescription and non-prescription medications documented in discharge paperwork. A total of 137 therapy issues were discovered during the transitional care encounters and were communicated to providers. Table 2 lists therapy issues identified with examples. Table 3 displays categories of recommendations and interventions with rates of acceptance. Acceptance rates were determined through retrospective review of the EMR, asking the patient at follow up, or the provider contacting the pharmacist.

The first five patients (1 home, 3 teleconference, 1 telephone) had a mean time of 248 minutes per patient. Mean time breakdown for first five patients was: 41 minutes to arrange appointments, 47 minutes for chart review, 51 minutes to travel and meet with patient, 67 minutes to document and contact providers, and 42 minutes to follow-up. Overall mean time expenditure decreased to 182 minutes per patient (remaining 31 patients) as the pharmacist became more proficient delivering the service, using the EMR, and scheduling patient appointments. Mean time breakdown for remaining patients (n=31) was: 10 minutes to arrange appointments, 24 minutes for chart review, 70 minutes to travel and meet

TABLE 3. Therapy Recommendations and Interventions: Categories and Actions

CATEGORY	Number	Accepted (Rate)	Declined (Rate)	Unknown
Prescription Change Recommendations	87	28 (32%)	5 (6%)	54
Over the Counter Change Recommendations	26	15 (58%)		11
Non-medication Interventions	24			

with patient, 61 minutes to document and contact providers, and 18 minutes to follow-up. Patients who expressed interest in the service at discharge but subsequently declined an appointment (n=10) added 210 minutes of service time not included in above averages. Time recruiting patients was not measured.

Twenty-eight patient satisfaction surveys were returned (78%); 4 appeared to skew towards desired answers and were excluded. Table 4 lists the responses to the satisfaction survey. Overall patients appeared very satisfied with the service. Six patients wrote personal comments indicating how they appreciated the service.

Despite no systematic review of provider feedback, seven unsolicited providers thanked the pharmacist for the information and assessment. Six hospital providers did so via the EMR. One provider outside of the hospital system called the pharmacist to thank him, since the pharmacist had called the provider's office after meeting with the patient noticing potentially overly aggressive glucose lowering therapy and evidence of morning hypoglycemia.

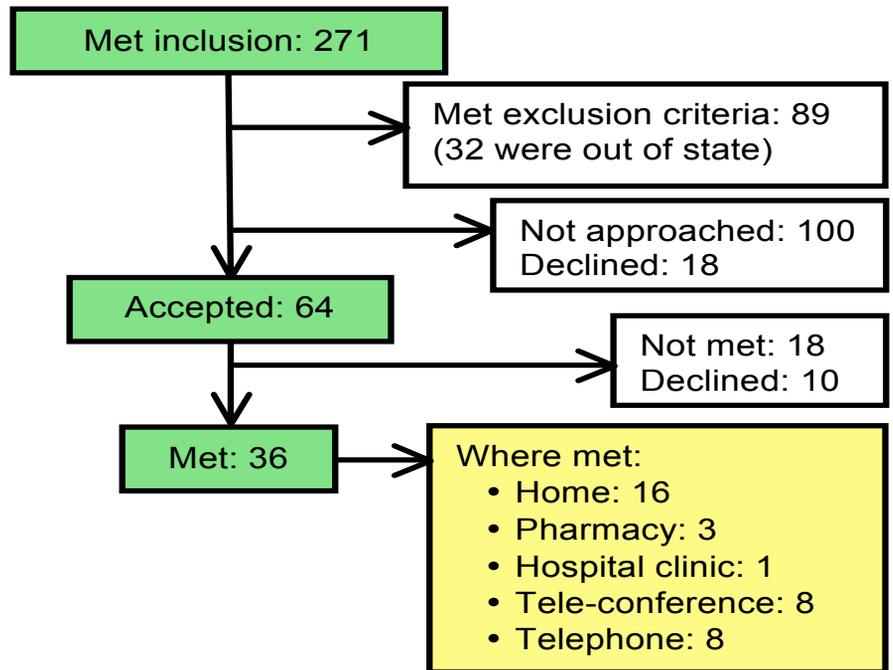
Discussion

This community pharmacist based transition service provided care to 36 patients. While the number of patients served was small, the program appears feasible. Strengths of the service include a seemingly low-to-zero 30-day readmission among patients who met with the pharmacist along with high patient satisfaction.

Development of such a service takes time to integrate and develop processes that work. Monitoring and adjusting for barriers is especially needed during establishment. Given the large number of recommendations despite a small number of patients (mean 3.8 per patient) supports the benefit a pharmacist can provide in a transition setting. This is especially true as over half of the recommendations were regarding prescription medications with over a third identified as accepted by prescribers.

While there was no control group to systematically determine the efficacy of this program, community pharmacy-based transition of care programs have

FIGURE 2. Flow of Patients Through the Service



demonstrated effectiveness in reducing hospital readmissions. For example, TransitionRx was a quasi-experimental study of 90 patients discharged from the hospital with congestive heart failure, chronic obstructive pulmonary disease, or pneumonia who chose whether to receive a transition of care appointment with a community pharmacist or not.¹¹ The low readmission rate seen in the present community pharmacy program being evaluated was consistent with the low readmission rate in the TransitionRx intervention arm of 6.9%. TransitionRx had a statistically significant decrease in hospital readmission with 20% of the usual

care arm being readmitted (p=0.019).¹¹ Of the 87 recommendations made to prescribers for the 30 patients who received appointments, 46% of recommendations were accepted in the TransitionRx program.

As no financial model was known, both organizations supported the service to determine, through data collected, the benefit to patients and cost in resources. The hospital supported the service by providing access to its EMR, allowing integration of an outside service into its discharge workflow and clinics, and a financial payment on an assumed 120 minutes of pharmacist time per patient for 100 patients. The community pharmacy

TABLE 4. Satisfaction Survey Responses

Survey Questions	Mean Response* (SD)
1. You feel satisfied by the service you received	3.71 (0.46)
2. You learned more about your medications	3.67 (0.48)
3. You feel confident to take your medications	3.50 (0.51)
4. The pharmacist clearly listened to you during the session	3.75 (0.44)
5. You felt comfortable with the meeting environment	3.67 (0.48)
6. The pharmacist did not address your concerns	1.29 (0.46)
7. You were comfortable talking to the pharmacist about your health	3.79 (0.41)

*Key: Strongly Disagree (1), Disagree (2), Agree (3), Strongly Agree (4)

supported the service by committing a resident pharmacist with two additional pharmacists trained for the service as back-up if needed. EMR access was given by treating the pharmacists as contracted employees of the hospital. The service also aimed to make it as accessible as possible, giving patients location options to meet with the pharmacist. At the completion of this initial evaluation, the hospital's paid number of 100 patients receiving an appointment had not yet been met and the service continued.

In trying to replicate this collaboration, if personal connections are not already present, pharmacists should attend state medical meetings to seek out potential partners in hospitals, physicians and nurses as well as transition in care coalitions to help network. If a hospital has constructed a transition care team, it would seem to be a good fit for the community pharmacist to be part of such a team. This would allow the hospital to acquire all positive aspects of a community pharmacist without having to hire a new pharmacist or allocate time of a pharmacist on another service. Additionally, patients appeared pleased two different organizations were working together for their health.

To remain a viable service, pharmacists would need to be reimbursed for 180-240 minutes per patient. As recruitment time was not tracked, this may need to be considered into the cost along with reimbursement for travel. Incorporation of pharmacy technicians or pharmacy students may also help reduce pharmacy time delivering the service, reducing overall cost.¹⁴ Of note, although it increased time, pharmacist recruitment appeared to be very important as it was the first contact the patient had with the pharmacist, but whomever approaches the patient would require training on how to sell the benefits of the service to the patient.

The community pharmacy transitions of care service is similar to another transition service embedded within a general medicine practice and a university healthcare system.¹⁰ They provide a checklist of considerations developed through their experience in establishing their transition clinic. The clinic sees about 400 patients annually and a pharmacist is part of the healthcare team. While the

checklist was not published at the time of development of the evaluated service, many of the questions on the checklist were considered during development. The authors of the checklist discuss the need for marketing transition services, supporting findings from this evaluation: being able to sell the service to the patient is important to get patients' commitment to the service.

In recruiting patients, several barriers were identified. First, patients tend to associate the pharmacist with a physical pharmacy. A typical response to the service invitation was their medications were obtained from a different pharmacy. The pharmacist explained the service was not to have the patient change pharmacies, but for a pharmacist to personally go over their medications and conditions with them after getting home. Second, patients were very concerned about payment. The pharmacist assured there was no cost to the patient, and if patient or family were interested, explained CMS readmission incentives for hospitals. Third, even after explanation, some patients remained hesitant and confused about what was offered. These preconceptions required the pharmacist to be a good sales person, taking time to tell stories of positive outcomes of other patients who used the service. A number of patients said they did not fully understand what they were getting when agreeing to the service, but upon completion of the appointment stated they were very satisfied they participated. This was reflected in the comments patients wrote on the satisfaction survey. Those stories were then used to help recruit future patients. Voelker and Trapskin describe a number of similar barriers and gives additional examples on how to market MTM services to patients.¹⁵

One weakness in the development of the service was limited patient participation. Of the 82 patients offered the service, only 36 patients took advantage of it. The patients who participated may have been more motivated to improve their health; this may bias the results in a positive manner. This, along with limiting to English-speaking participants and use of informed consent for the pharmacist to contact patients, may limit the generalizability of these findings into practice. A second limitation was incorporating the service into hospital

discharge workflow. Given time pressures at discharge and the novelty of the service, offering the service was initially omitted by hospital nursing staff and workflow changes needed to be introduced. A third limitation was the acceptance of recommendations to providers was not systematically tracked. As recommendation acceptance could be patient reported, health literacy many have impacted patient response and acceptance of recommendations may actually be higher or lower than estimated in the evaluation. Finally, patients may have received a variety of other post-discharge healthcare services, including home health monitoring. Use of concurrent transitions of care services was not tracked and if other similar services were used the overall influence of each service would not be discernable.

Future directions for the transitions of care service include determining ways to shorten pharmacist time per patient for appointments. This may be through pharmacy technician involvement or may be through process changes. As only 43.9% of participants who were offered the service received a pharmacist appointment, an evaluation of why patients declined the service and interventions to increase patient involvement is warranted.

Conclusion

A transition of care service was developed using a community pharmacist to help reduce hospital readmissions. This service appears feasible, was successful in improving prescribing, and had high patient satisfaction. This service model may offer insight for the development of other transition services utilizing a community pharmacist. ●

Brian Barkow was a PGY-1 Community Resident at Streu's Pharmacy Bay Natural in Green Bay, WI through the University of Wisconsin-Madison School of Pharmacy Community Residency Program at the time this work was completed. At the time of this publication, he is a Pharmacist and Pharmacy Manager at the Hemophilia Outreach Center in Green Bay, WI. Amanda Margolis is a Lecturer at the UW-Madison School of Pharmacy and a Clinical Pharmacist at the William S. Middleton Memorial Veterans Hospital in Madison, WI. Korey Kenelty is an Assistant Professor at the Department of Pharmacy Practice and Science,

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References

1. Mueller SK, Sponsler KC, Kripalani S, Schnipper JL. Hospital-based medication reconciliation practices: a systematic review. *Arch Intern Med.* 2012;172(14):1057-1069.
2. Horwitz LI, Moriarty JP, Chen C, et al. Quality of discharge practices and patient understanding at an academic medical center. *JAMA Intern Med.* 2013;173(18):1715-1722.
3. Coleman EA, Berenson RA. Lost in transition: challenges and opportunities for improving the quality of transitional care. *Ann Intern Med.* 2004;141(7):533-536.
4. Kanaan AO, Donovan JL, Duchin NP, et al. Adverse drug events after hospital discharge in older adults: types, severity, and involvement of Beers Criteria Medications. *J Am Geriatr Soc.* 2013;61(11):1894-1899.
5. Centers for Medicare & Medicaid Services. Readmissions Reduction Program. <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program.html>. Accessed June 22, 2015.
6. Coleman EA. The Care Transition Program: health care services for improving quality and safety during care hand-offs. <http://www.caretransitions.org/>. Accessed July 19, 2015.
7. Snyderman D, Salzman B, Mills G, et al. Strategies to help reduce hospital readmissions. *J Fam Pract.* 2014;63(8):430-438a.
8. Kilcup M, Schultz D, Carlson J, Wilson B. Postdischarge pharmacist medication reconciliation: impact on readmission rates and financial savings. *J Am Pharm Assoc.* 2013;53(1):78-84.
9. Balling L, Erstad BL, Weibel K. Impact of a transition-of-care pharmacist during hospital discharge. *J Am Pharm Assoc.* 2015;55(4):443-448.
10. Otsuka SH, Sen S, Melody KT, Ganetsky VS. A practical guide for pharmacists to establish a transition of care program in an outpatient setting. *J Am Pharm Assoc.* 2015;55(5):527-533.
11. Luder HR, Frede SM, Kirby JA, et al. TransitionRx: Impact of community pharmacy postdischarge medication therapy management on hospital readmission rate. *J Am Pharm Assoc.* 2015;55(3): 246-254.
12. Walraven CV, Dhalla IA, Bell C, et al. Derivation and validation of an index to predict early death or unplanned readmission after discharge from hospital to the community. *CMAJ.* 2010;182(6):551-557.
13. American Pharmacists Association, National Association of Chain Drug Stores Foundation. Medication therapy management in pharmacy practice: core elements of an MTM service model (version 2.0). *J Am Pharm Assoc.* 2008;48(3):341-353.
14. Margolis A, Martin B, Mott D. Trained student pharmacists' telephonic collection of patient medication information: evaluation of a structured interview tool. *J Am Pharm Assoc.* 2016;56(2):153-160.
15. Voelker S, Trapskin K. Six shortcuts for marketing your MTM services. *J Pharm Soc Wis.* 2016;19(4):12-14.

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