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Barriers and facilitators of medication reconciliation processes for recently discharged patients from community pharmacists' perspectives

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Abstract

Background—Community pharmacists play a vital part in reconciling medications for patients transitioning from hospital to community care, yet their roles have not been fully examined in the extant literature.

Objectives—The objectives of this study were to: 1) examine the barriers and facilitators community pharmacists face when reconciling medications for recently discharged patients; and 2) identify pharmacists' preferred content and modes of information transfer regarding updated medication information for recently discharged patients.

Methods—Community pharmacists were purposively and conveniently sampled from the Wisconsin (U.S. state) pharmacist-based research network, Pharmacy Practice Enhancement and Action Research Link (PEARL Rx). Community pharmacists were interviewed face-to-face, and transcriptions from audio recordings were analyzed using directed content analysis. The Theory of Planned Behavior (TPB) guided the development of questions for the semi-structured interviews.

Results—Interviewed community pharmacists ($N = 10$) described the medication reconciliation process to be difficult and time-consuming for recently discharged patients. In the context of the TPB, more barriers than facilitators of reconciling medications were revealed. Themes were categorized as organizational and individual-level themes. Major organizational-level factors affecting the medication reconciliation process included: pharmacy resources, discharge communication, and hospital resources. Major individual-level factors affecting the medication reconciliation process included: pharmacists' perceived responsibility, relationships, patient perception of pharmacist, and patient characteristics. Interviewed pharmacists consistently

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responded that several pieces of information items would be helpful when reconciling medications for recently discharged patients, including the hospital medication discharge list and stop-orders for discontinued medications.

Conclusions—The TPB was useful for identifying barriers and facilitators of medication reconciliation for recently discharged patients from community pharmacists' perspectives. The elucidation of these specific facilitators and barriers suggest promising avenues for future research interventions to improve exchange of medication information between the community pharmacy, hospitals, and patients.

Keywords

Community pharmacy; Medication reconciliation; Transitions of care; Qualitative methods

Background

The transition from hospital to community care is a vulnerable time during a patient's health care delivery.¹ As patients transition from hospital to community care settings, they often experience discontinuity in their care as responsibility for their care shifts from one set of providers to another.² As a result, patients often are the only link between inpatient and outpatient health care settings since most providers restrict their practice to one setting.

Medication discrepancies are common for patients who transition from hospital to community care.^{3 and 4} To help address poor care coordination upon discharge, hospitals are utilizing hospital-to-home transitional care programs to facilitate the care coordination for patients post-discharge. However, community pharmacies are not always included in these transitional care programs^{1 and 5} despite many patients receiving their medications from community pharmacies while in the outpatient setting.⁶ According to The Joint Commission (TJC), medication reconciliation is the process of comparing and resolving discrepancies, or differences, between a patient's medication orders for all of the medications a patient is using to their new medication orders.^{7 and 8} TJC has made medication reconciliation a national priority and requires medication reconciliation processes to be implemented at all their accredited institutions.^{9 and 10} To date, however, there are no regulations¹¹ in place to ensure that community pharmacies receive complete, updated patient medication information after a hospital discharge. Not receiving up-to-date information on medications complicates the community pharmacist's role to reconcile medications and prevent medication errors that place the patient at risk of obtaining incorrect medications. If a pharmacist does not know about a change in a patient's medication, the pharmacist will not be able to dispense the updated correct medications and provide appropriate consultation. Therefore, research that elucidates mechanisms by which the patient is at risk of receiving incorrect medications post-discharge from their community pharmacy is needed.

Previous research has documented the barriers and facilitators that community pharmacists encounter with implementing cognitive pharmaceutical services generally,¹² but research examining medication reconciliation processes in the community pharmacy setting for recently discharged patients is scarce.¹³ In other health care settings, a recent systematic review by Chhabra et al (2012) evaluated medication reconciliation interventions in patients

who transition to and from long-term care nursing facilities. The authors reported that clinical pharmacists were effective in these settings by assuming specialized responsibilities during the medication reconciliation processes.¹⁴ Similarly, community pharmacists play a critical role in medication reconciliation processes when patients transition between hospital to home, underscoring the need for attention to be directed at the community pharmacist.

To advance the understanding of conditions affecting medication reconciliation processes in the community pharmacy setting, it is necessary to systematically examine the barriers and facilitators faced by community pharmacists when reconciling medications and pharmacists' preferred content and format for communications. By understanding these facets, pharmacists also may adopt specialized roles and interventions may be tailored to improve medication reconciliation processes which will ultimately increase the quality of patient care. Therefore, the goal of this study was to examine community pharmacists' perspectives through a theoretical lens regarding the barriers and facilitators of medication reconciliation processes for recently discharged patients. This goal was accomplished through a qualitative inquiry¹⁵ that analyzed detailed community pharmacist narratives through one-on-one semi-structured interviews. The Theory of Planned Behavior (TPB)¹⁶ and ¹⁷ provided the theoretical framework to structure the interviews, focusing on the barriers and facilitators of reconciling medications from the community pharmacists' perspective.

Objective

The objectives of this study were twofold: 1) to examine the barriers and facilitators community pharmacists face when reconciling medications for recently discharged patients; and 2) to identify pharmacists' preferred content and modes of information transfer regarding updated medication information for recently discharged patients.

Methods

Community pharmacists were interviewed in-depth using a semi-structured interview protocol. The Theory of Planned Behavior (TPB) was used as a guide to generate questions for use in the interview protocol. Approval by the University of Wisconsin (UW) Health Sciences Institutional Review Board (IRB) was obtained prior to implementing this study.

Target population, sampling strategy, and inclusion criteria

The target population for this study was community pharmacists who work in a community pharmacy full-time. Community pharmacy was broadly defined to include licensed pharmacies providing pharmaceutical services primarily on an outpatient basis. Two types of practice locations were included: community pharmacies of 10 stores under the same ownership (i.e., retail) and community pharmacies of fewer than 10 pharmacies under the same ownership (i.e., independent). Community pharmacists were purposively¹⁸ and ¹⁹ and conveniently²⁰ sampled to increase feasibility of recruiting pharmacists and to maximize the understanding of the barriers and facilitators of reconciling medications across the community pharmacy practice settings.

Community pharmacists were identified through the UW School of Pharmacy pharmacist-based research network, Pharmacy Practice Enhancement and Action Research Link

(PEARL Rx).²¹ PEARL Rx is comprised of over 130 community, clinic and hospital pharmacists, half of whom are community pharmacists. In 2011, PEARL Rx members were surveyed via the internet to identify and align interests of pharmacist members and the researchers within the UW School of Pharmacy with funding opportunities. Over half the pharmacists completed the survey, and medication reconciliation was the top priority and research interest for over 80% of participating PEARL Rx pharmacists (particularly community pharmacists). Community pharmacists were asked to participate in this study if the pharmacist 1) practiced full-time in a community pharmacy, 2) was a member of PEARL Rx, and 3) identified medication reconciliation as a priority on the 2011 PEARL Rx online survey. Targeting pharmacists who answered medication reconciliation as a priority on the 2011 survey increased the feasibility of recruiting interested pharmacists.

Recruitment of community pharmacists

Community pharmacists were recruited for this study from December 2012 until December 2013. As part of PEARL Rx, pharmacists already have offered their email and postal addresses to the School of Pharmacy's researchers. Recruitment letters were emailed and mailed to the pharmacists, inviting them to participate in the interview. The emailed and mailed letter had a brief description of the study, information that the study was completely voluntary, and incentive information. Participating pharmacists were paid \$50 for completing the interview. Interviews were scheduled at a convenient time for the community pharmacist and were conducted in their pharmacy or the UW- Madison School of Pharmacy per IRB protocol. To help minimize study bias, no more than one pharmacist per store was interviewed.

Interview guide

Pharmacist interview questions were structured using the Theory of Planned Behavior (TPB) (Fig. 1).^{16 and 17} The TPB posits that an individual's *attitude toward the behavior*, *subjective norms*, and *perceived and actual control* of a behavior shape their *intent* to perform a behavior and the execution of the behavior itself. The TPB has been used widely in research, partly due to its explanatory power and parsimony,^{22 and 23} and the TPB is a well-established and flexible model attracting researchers to this model. Since the focus was on the actual performance of medication reconciliation processes, the TPB was adapted to exclude the *intent* of performing medication reconciliations (Fig. 2). Intent may be used as a proxy for performing the behavior when the behavior cannot be measured. However, since the professional responsibilities of a pharmacist include ensuring patients receive safe and appropriate medication therapy, the pharmacist already performs medication reviews so the intent is not needed as a proxy to the behavior. Therefore, this study explored the community pharmacist reported reconciliation of their patients' medications as the key outcome.

Attitude toward the behavior is the degree to which the individual positively or negatively values the behavior. When applied to this study, the construct represents the degree to which pharmacists negatively or positively value reconciling medications for a recently discharged patient. *Subjective norm* relates to an individual's perception of social normative pressures, or relevant others' beliefs regarding performing behaviors like reconciling medications.

Community pharmacists were asked about possible social influences such as patients, pharmacy and store managers, and colleagues. *Perceived behavioral control* represents the individual's perceived ease of reconciling medications. Community pharmacists were asked if reconciling medications was an easy process, and then pharmacists were asked to expand on their answers ("why" or "why not"). *Actual behavioral control* refers to the skills or resources needed to perform the behavior. Community pharmacists were asked about the staffing, environment, and other resources required to reconcile patient medications post-discharge to examine the pharmacist's actual behavioral control over medication reconciliation. The assumption is that as much as a pharmacist might value a behavior, factors outside his or her control could influence performance of reconciling medications.

Interview guide development

The semi-structured interview protocol was developed in two stages. The interview protocol was constructed, and initial cognitive interviews were conducted with three community pharmacists between February and June 2012 using Willis (1999 and 2004) as a guide.^{25 and 26} The pharmacists were interviewed using a "think aloud" approach as they answered the interview questions.²⁴ First, the *comprehension of the question* was assessed to evaluate if the pharmacist answered what was intended to be asked. Second, the *retrieval from memory of relevant information* examined whether the pharmacist was able to recall certain information from the question asked. Third, *decision processes* examined whether the question was too sensitive to answer completely. Lastly, the pharmacist provided feedback on grammar and question placement to help the flow of the interview.

After the initial cognitive interviews, the revised protocol was pilot tested with three different community pharmacists between October and November 2012. The pharmacist pilot interviews demonstrated the feasibility of study procedures as well as providing experience for the interviewer.^{15 and 26} None of the community pharmacists had difficulty answering questions regarding the facilitators and barriers of performing a medication reconciliation using the constructs in the TPB. All pharmacists were enthusiastic about completing the interview. They reported several barriers and challenges when trying to reconcile medication lists in the community pharmacy. The pilot pharmacist interviews also helped clarify questions by rewording and altering grammar, similar to the results of the cognitive interviews.

The final version of the semi-structured interview protocol consisted of six sections (Table 1). Additional questions and probes evolved from the participants' responses and were elaborated on from the unanticipated content discovered during the interview. The first section of the interview focused on the behavior of reconciling medications. The next three sections were based on the constructs of the TPB model. The fifth section inquired about the content and mode of information transfer pharmacists wanted to reconcile medications for recently discharged patients (i.e., a "wish list"). The last section consisted of the pharmacist and pharmacy's baseline characteristics.

Data analysis

Interviews were audio-recorded and transcribed verbatim by an external professional transcription company. Identifying information such as the names of pharmacy, pharmacy staff, or patient was deleted. Accuracy of all interview transcriptions was verified once received from the external professional transcription company. Directed content analysis was used to qualitatively analyze all pharmacist interview data for patterns and themes within data.²⁷ Directed content analysis is a flexible and foundational method in qualitative research and commonly used in health care research.^{28 and 29} Since the TPB was used as the guiding theory for constructing initial interview questions, the directed content analysis results are organized based on the TPB constructs.

To analyze the pharmacist narratives, two professional second-year pharmacy students (i.e., research assistants) were trained to independently code and create categories from the transcribed narrative data. To help coding integrity, a coding protocol was developed and tested on the first transcript before subsequent interview coding. Once the initial coding protocol was agreed upon by the coders and research team, each remaining transcript was coded by three coders – two research assistants and a member of the research team (KAK). All three coders met weekly to discuss underlying themes and any discrepancies that arose while coding. In concert with the TPB model, each coder highlighted narrative phrases separately for the barriers, facilitators, information sources needed to reconcile medications, and preferred modes of information transfer. If one coder had highlighted lines in their transcript but another coder did not highlight the same lines in the transcript, the discrepancy between codes were discussed until agreement was reached on each code. The coding evolved throughout the analysis and updates to the standardized coding protocol were updated to reflect any changes in coding. Codes and categories were developed using in-vivo coding where codes are named using the pharmacist's own words to help minimize interpretive bias.^{20 and 30} Similar codes then were collated into themes, and all themes were reviewed and named. Interviews were conducted until data saturation, or to the point no new concepts were described by participant pharmacists.²⁹

After data saturation, the TPB was adapted to address the themes and factors discussed by interviewed pharmacists in the context of reconciling medications for recently discharged patients. The Adapted TPB model then was brought back to previously interviewed pharmacists²⁹ to ensure the model reflected the interviewed pharmacist's experiences and the voices of the pharmacists were appropriately represented.

Results

Pharmacist recruitment and characteristics

A total of eleven pharmacists were approached for participation, but one pharmacist was unable to participate due to lack of time, thus resulting in ten pharmacists interviewed (see Table 2). The majority of pharmacists were female ($n = 7$, 70%) and had a Pharm.D. degree ($n = 6$, 60%). The median number of years practiced by pharmacists was 10 years. The median number of hours worked per week was 40; one pharmacist transitioned the week of the interview into working part time. She reported working the low end of the range of 24

hours per week. Interview times ranged from 35 to 90 min. Five of six of the pharmacists who worked in retail pharmacies had drive-through services; no independent pharmacies had a drive-through service. Further, no pharmacies had electronic access to hospital or outpatient clinical medical records.

Themes

Over 250 pages of transcribed interview data were analyzed for the ten pharmacists. Pharmacists generated similar themes during the interviews and are described below by TPB construct: attitude toward medication reconciliation, subjective norms, and perceived and actual behavioral control.

Attitude toward medication reconciliation: advantages and disadvantages

Advantages of medication reconciliation—All pharmacists expressed the importance of reconciling medications for their recently discharged patients. Pharmacists felt that reconciling medications was “part of their job” or a “standard of care” for pharmacists. The most salient advantages of reconciling medications were to: help prevent medication errors such as duplication of therapy and inappropriate therapy, decrease costs for providers and insurance companies via a decrease in unnecessary health care utilization, and help patients understand what medications they are taking. A retail pharmacist expressed:

“I think it helps ensure the patient understands what they should be taking. I think it helps prevent medication errors. I think it helps ensure that we’re not duplicating therapy or missing or having gaps in therapy based on what they may have gone in with [to the hospital] and what they may have come out with.”

Disadvantages of medication reconciliation—In regards to disadvantages for reconciling medications for recently discharged patients, all pharmacists identified medication reconciliations as time-consuming. Half of the pharmacists also cited the lack of reimbursement as a disadvantage for reconciling medications. A pharmacist practicing in an independent pharmacy setting was concerned about the lack of reimbursement when trying to compete in an environment dominated by large retail pharmacies. The pharmacist also indicated that billing for services is time-consuming. She expressed a dilemma between providing standard care for patients and not being reimbursed for her pharmaceutical services overall:

“You know, and it’s awful to say that, but it’s a reality... We’re a small store and we don’t get reimbursed like the big boys. And so there’s a lot of pressure... But when you do it right, you make \$1.20 on the script. It’s hard to justify that. It’s a reality of the situation. And payments are only going down. An ability to bill for this that would not be so incredibly time-consuming... would help.”

Subjective norms: social beliefs and pressures

Referents valuing medication reconciliation—Pharmacists identified many social influences (i.e., referents) they believed valued or approved of their behavior of reconciling medications. Referents included professional pharmacy organizations, physicians, patients, and pharmacy management. Pharmacists discussed that relationships were critical when

reconciling medications. When relationships were established with referents, pharmacists had an easier time soliciting information from providers and patients regarding the patient's prescriptions. However, six pharmacists commented that even though patients expect pharmacists to dispense the correct medication to them, the patient is generally unaware of all the duties of a pharmacist and therefore may not disclose all of the pertinent medication information to the pharmacist. A pharmacist practicing in a retail setting reflected:

“... my personal feeling is pharmacy just doesn't do a good job of advocating and explaining what it is that we do to the public. And I think because people don't understand what we do, then it's easy for them to dismiss or reduce us down to the count, pour, lick, and stick function that we serve because that's what they can see. All we're doing is taking stuff from a big bottle and putting it into a smaller one. All you have to do is slap a label on it.”

When asked about organization-level support of medication reconciliations, responses varied by pharmacists. Pharmacists practicing in independent pharmacies viewed their upper management as “supportive” for their role reconciling medications for recently discharged patients. One pharmacist stated, “We are senior management... the buck stops here” when referring to her senior management. Another independent pharmacist described that it was easy to implement or provide pharmaceutical services overall because of their small, horizontal organizational structure.

Referents not valuing medication reconciliations—Four pharmacists practicing in retail settings had different feelings regarding their upper management valuing medication reconciliation processes. These pharmacists felt that upper management was driven by budgets, prescription counts, and costs. Additionally, they were displeased with their organization's practice of distributing gift cards, or other coupons, that incentivize patients for transferring a prescription from a pharmacy competitor. Ultimately, the pharmacists believed this practice increases the use of multiple pharmacies. One pharmacist reflected:

“I think actions speak louder than words, and if you look at things, for example, the \$25 gift cards to transfer your prescriptions... That probably would be the epitome of being against consolidation of having everything [prescriptions] at one home.”

One retail pharmacist further described her dilemma between her organization's business model which rewards fast customer service and the patient's perception of pharmacists in the community as well as her ability to perform her duties, including medication reconciliations:

“... we want pharmacy and pharmacists to be respected as health care professionals, but the retail side of it is, we want patients to have their prescriptions in less than 15 minutes... This is not a drive-through service... But a lot of times making the convenience and advertising with the quick wait times, that sort of thing, there is pressure put on us, because we got to get these people out of here within 15 minutes. But that doesn't give me enough time to call their other doctors and make sure that they know that they're being prescribed this [post-discharge medication].”

Perceived and actual behavioral control: barriers and facilitators

Barriers to medication reconciliation—Discussion of perceived behavioral control revealed that pharmacists felt the medication reconciliation process to be difficult and time-consuming for recently discharged patients. Time was the largest concern when reconciling medications. A pharmacist practicing in an independent setting cited time as a major concern 15 times during the interview. For example when referring to completing medication reconciliations:

“Time. Time. Oh, my gosh, you know, it takes a lot of time... And so there’s a lot of time involved... But it’s incredibly, that is incredibly time-consuming. That will take up two or three hours...”

Pharmacists discussed factors that increased the amount of time to reconcile medications post-discharge for patients. Pharmacists agreed that not having access to the patient’s electronic medical record (EMR) affected the time it took to reconcile medications and the overall medication reconciliation process. Pharmacists did not have access to clinical notes outlining important information such as labs, indications, medical and medication histories, and other relevant information needed to reconcile medications post-discharge. A retail pharmacist explained that since her pharmacy was not connected to the closest inpatient facility, she frequently called prescribers for prescription clarification. She described it as “almost impossible” to reach a prescriber from the discharging facility once a patient is discharged. To clarify a prescription for a patient post-discharge, the pharmacist explained she tries to contact the prescriber who signed the medication order which is usually a hospitalist:

“We try calling the doctor who wrote the order. If they’re a hospitalist, then we get transferred all around the hospital, chasing the hospitalist around... And any time that they’re not there, they always tell us, refer your questions to the primary care physician. Nine times out of ten, the primary care physician doesn’t even know that this patient was in the hospital and was prescribed this medication from the hospitalist.”

Another barrier was enough pharmacist and technician staffing hours to provide the pharmacist with the time to reconcile medications. The pharmacists practicing in the retail settings expressed concerns over their pharmacy staffing multiple times during the interview. For example:

“... staffing is definitely an issue if we need the actual time to sit down and to try to figure out what a patient is on, contact all their prescribers and even go through with patient and say, do you know why you are on this medication? You know, a lot of times they [the patient] have no idea why they take things. And I think that’s definitely important, so when they at least go to the hospital the next time, they can say I’m on this because of this. And I think that helps too. But with budget cuts and lack of staffing, it’s a lot of times really hard to do that, to put it into our normal work flow...”

Facilitators to medication reconciliation—Pharmacists discussed factors that facilitated the medication reconciliation process. Pharmacists practicing in independent

pharmacies explained that post-discharge care coordination teams, also referred as “transitional care teams” by the pharmacists, helped facilitate the medication reconciliation process by providing the pharmacist with an alert that the patient is being discharged and will be picking up prescriptions at the pharmacy. This alert usually came via a phone call. These pharmacists further explained that the care coordinators often would fax over the discharge medication list to the pharmacy when the patient is discharging from the hospital and before the patient or caregiver arrived to pick up a prescription post-discharge. This helped the pharmacist reconcile prescriptions before the first dispensing of a prescription post-discharge. The post-discharge care coordinators also provided a direct phone number if the pharmacist had any questions regarding the prescriptions. Knowing who to contact at the hospital and having a direct telephone number for a discharging provider facilitated the medication reconciliation process. Therefore, it was important for the pharmacist to have a relationship with the post-discharge care coordination team.

Pharmacists also commented that complex medication regimens make it difficult to reconcile medications unless the patient or their caregiver is a good “historian.” Being able to rely on the patient or their caregiver facilitated the medication reconciliation process because the pharmacist did not have to contact outside providers to clarify medication orders. A retail pharmacist recounted an incident when she had to rely on providers for clarification because the patient was not sure which medication to take post-discharge:

“We had a patient who was discharged, and the hospitalist put him on nebivolol. The patient had currently been taking metoprolol. We didn’t know if one was supposed to be replacing it. Patient thought that they were supposed to be taking both of them together. Couldn’t get a hold of the hospitalist to ask if they knew this person was on metoprolol to begin with, and is this supposed to be replacing it? ... We had a three day wait time before we even had a response to figure out what this patient was supposed to be on... we didn’t even hear back from the hospitalist, it was a primary care physician who ended up making the executive decision.”

Adapting the Theory of Planned Behavior Model—The TPB was adapted to address the themes and factors discussed by interviewed pharmacists in the context of reconciling medications for recently discharged patients (Fig. 3). The adapted model was evaluated by five previously interviewed pharmacists (three retail and two independent) to verify the factors and relationships within the model accurately represented the pharmacists’ perceptions. Since the interviewed pharmacists reported their primary concern and barrier was the *time* needed to reconcile medications, *time* was placed as a direct antecedent of medication reconciliation. Other themes were grouped as either organization-level or individual-level themes. Many of these themes relate either directly or indirectly to the amount of time it takes to reconcile medications.

Many organizational-level themes were identified when pharmacists discussed their perceived and actual control of reconciling medications. Organization-level themes arising from the pharmacist interviews largely related to the resources and prerequisites (i.e., the pharmacists’ actual behavioral control) needed to perform the medication reconciliation. Pharmacists consistently identified pharmacy resources, hospital resources, and the resulting

hospital's discharge communication as key factors in their medication reconciliation and the time to reconcile medications. Similarly, organization-level resources have a direct influence on the actual time of performing medication reconciliations and also are seen as influencing the individual-level relationships and patients' understanding of the pharmacist's job responsibilities. Further, a pharmacy's organizational values, such as culture, were shown to influence the pharmacist's perception of their responsibility to reconcile medications for recently discharged patients.

Individual-level themes related to the individual pharmacist, the patient and the pharmacist's relationships with others. Many of these individual-level themes were identified when pharmacists were asked about the subjective norm of reconciling medications. Moreover, the pharmacists' perceived sense of responsibility to perform medication reconciliations and their patients' perceptions of pharmacists were reported to influence their relationships with patients and other health care professionals. From pharmacists' interviews, the relationships and patient perceptions in turn also influenced time for reconciling medications and the ensuing actual reconciliation. All pharmacists indicated it was their personal responsibility (i.e., part of their job description) to reconcile medications which directly supports medication reconciliation in this adapted TPB model. Similarly, patient characteristics related to complexity of regimen also were discussed as influencing the amount of time required to reconcile medications. The relationships the pharmacist has with prescribers and other health care professionals influenced the discharge communication between the discharging hospital's personnel and the community pharmacy.

Preferred content and modes of information transfer

Pharmacists were asked what would be on their "wish list" of information to help the community pharmacist reconcile medications for recently discharged patients (Table 3). Pharmacists consistently responded that multiple items would be helpful when trying to reconcile the patient's medication list before the patient picks up their first prescription fill post-discharge. All pharmacists indicated that they did not receive "stop orders" from hospitals or other providers when medications were to be discontinued for their patients and would be helpful to receive when patients are discharged.

All pharmacists indicated that information transfer would be the easiest through electronic modes (i.e., e-prescribing or electronic medical records). Electronic communication is easier to access and store at the pharmacy where physical space is limited. The second preference for information transfer was fax for eight of the ten pharmacists. Two pharmacists, one practicing in an independent and one pharmacist practicing in a retail setting, agreed that phone would be their second choice because they may listen to the voicemail when it was convenient for them. Both pharmacists also indicated that faxes are sometimes hard to read due to writing and transmission.

Discussion

Reconciling medications to ensure patients receive the most updated and timely prescriptions post-discharge is a standard of care for pharmacists but proves to be challenging. This research represents the first theory-driven study of community

pharmacists' perspectives of the barriers and facilitators they face during medication reconciliation processes for recently discharged patients. The Theory of Planned Behavior (TPB) informed the interview questions, which revealed barriers that significantly increased the time to reconcile medications and hindered the overall medication reconciliation process – a foundational process for preventing medication errors. However, community pharmacists also identified processes and factors that helped overcome some of these barriers. Both the barriers and facilitators identified in this study may be a catalyst for potential solutions addressing medication reconciliation issues in the community pharmacy.

Barriers and facilitators discussed in the context of the TPB were grouped as organizational or individual-level factors (Fig. 3). However, some of these factors may not be modifiable. For example, it was revealed when probing pharmacists about their behavioral control of reconciling medications that having access to the discharging hospital's EMR system would facilitate the medication reconciliation process at the community pharmacy. However, this may be a non-modifiable organizational-level factor from the community pharmacist's perspective. On the other hand, some organizational and individual-level factors are modifiable to help the pharmacist with the medication reconciliation process, and future research should be directed at both the modifiable organizational-level and individual-level factors as implied in Fig. 3.

Relationships are central to the practice of health care and were a major theme for community pharmacists throughout the interviews, particularly when questioned regarding their subjective norms. Relationships are a modifiable factor and may facilitate the process of reconciling medications for pharmacists. The expanded role of the community pharmacist to include responsibilities for medication management and subsequently patient education points to the importance of coherent and active relationships with patients, their caregivers, health care providers, and health care coordinators. Pharmacist–patient and pharmacist–provider relationships have been examined in the past^{31, 32, 33, 34, 35 and 36}; however, research is sparse examining these relationships when patients transition from one health care setting to another.³⁷ As such, future research should focus on the influence of relationships with respect to discharge communication for reconciling medications in the community pharmacy. In addition to counseling patients on their new medications post-discharge, pharmacists may educate patients about their professional duties and solicit patients to provide pharmacists with their hospital discharge medication lists.

Pharmacists also may circumvent non-modifiable factors such as access to the hospital's EMR system by reaching out to hospital discharge care coordinators for discharge medication and medical information. Hospital personnel in turn will alert the pharmacy when the patient is discharging and fax over the discharge medication list. These relationships with hospital personnel have the potential to span even further than the faxing of medication lists to the community pharmacy. In a study by Cesta et al (2006), a tool was created by hospital personnel so that medication information may be transferred to pharmacists involved in the patient's care including other inpatient and outpatient pharmacists. The tool was available electronically for pharmacists who used the same EMR system but may be printed for pharmacists who do not have access to the patient's hospital medical record.³⁸ As part of the discharging process, patients would be encouraged to give

the printed tool to their community pharmacist or the tool can be faxed to the patient's community pharmacy by hospital personnel. Future research should examine the design and implementation of tools used to increase the continuity of medication information between the hospital and the patient's community pharmacy.

Another significant potential modifiable factor that was revealed during the discussion of behavioral control of medication reconciliation was the pharmacist's control over staffing to meet high prescription volume times of the day. Providing pharmacist overlap time or the use of pharmacy interns and technicians may help with freeing up time for the pharmacist. Pharmacy technicians and interns are being used to obtain medication histories in other settings,³⁹ and ⁴⁰ suggesting this may be feasible in the community pharmacy. Further, pharmacy support staff may undergo additional training so they can identify prescriptions from recently discharged patients. Pharmacy support staff can follow up with the patient or their caregiver and ask probing questions regarding any medication changes during the patient's hospital stay. Signs also can be posted in the pharmacy encouraging patients to disclose any recent hospitalization events with pharmacy staff. Other tools such as checklists can be used to streamline the interviewing process. A checklist can be developed to assist the medication reconciliation process similar in the study by De Winter et al (2011). In that study, a standard set of questions was used to aid the pharmacist who probed patients or their caregivers about their prescription and non-prescription medication use.⁴¹ Checklists have shown benefit in other health care endeavors,⁴² and future research should examine similar checklists in the community pharmacy to streamline and improve the quality of the medication reconciliation process.

Pharmacists listed pieces of information they would like to have when reconciling medications for recently discharged patients, and many of these pieces of information were not usually received by the pharmacists. All pharmacists stated they wanted access to the patient's hospital discharge medication list. A basic premise of reconciling medications is having a list of current medications the patient is taking; however, clinical decisions by prescribers are not routinely relayed to community pharmacists. Subsequently, the community pharmacist must rely on information they receive through prescription orders, patients, and caregivers or solicit information from the prescribing provider; this lack of information is not limited to the community pharmacy. An earlier study found that 10% of patients transitioning from a nursing home to a hospital emergency department were transferred without any documentation from the nursing home.⁴³ Studies are still documenting the lack of information transferred with patients by the discharging facility when transitioning from one health care setting to another. Many providers routinely contact the community pharmacy to check their patient's medication-taking history underscoring the significance of including community pharmacies. Therefore, it is critical for community pharmacies to be included in transitional care research.

Limitations

The small convenience sample of community pharmacists was recruited from a pharmacist-based research network in Wisconsin, thus limiting generalizability. PEARL Rx pharmacists may systematically differ from pharmacists not in a research-oriented network or who

practice in other geographic locations. Further, all interviewed pharmacists were subject to social desirability bias.⁴⁴ and ⁴⁵ It is possible that pharmacists exaggerated their issues with performing medication reconciliations because they knew the study was examining barriers and facilitators for reconciling medications. To help overcome social desirability bias, both direct and indirect questions regarding medication reconciliations were asked.⁴⁶ Indirect questioning refers to asking the respondent to describe the “nature of the external world” as opposed to pinpointing the conversation on the pharmacist.

Regarding the pharmacist interviews and the interpretative nature of qualitative research, the research team may have introduced bias into the analysis and classification of the themes derived from pharmacist narratives. The relationships between factors in the Adaptation of the TPB were drawn from the pharmacist interviews and should be further tested in future research. In addition, there is a danger of confirmation bias which refers to the research team favoring information that supports their beliefs.⁴⁷ Also, a priori constructs within the TPB were used to help construct the interview questions and solicit barriers and facilitators of reconciling medications. Solely using the TPB to direct interview questions may have limited the identification of facilitators or barriers.

Conclusion

Community pharmacies and pharmacists are a critical health care resource for many patients in the community, but they may be overlooked in transitional care. The interviewed community pharmacists identified several actual and perceived barriers and facilitators when reconciling medications for recently discharged patients. The elucidation of these specific facilitators and barriers suggest promising avenues for future research interventions to improve exchange of medication information between the community pharmacy, hospitals, and patients.

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Fig. 1.
A depiction of the Theory of Planned Behavior.

Fig. 2.
A depiction of the Theory of Planned Behavior as used in study.

Fig. 3.

The Adapted Theory of Planned Behavior and the factors associated with medication reconciliation as addressed by pharmacists in their interviews. Gray indicates actual behavioral control; Green indicates subjective norm; Purple indicates attitude toward the behavior; Red indicates perceived behavioral control. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Table 1

Sections of interview protocol and sample questions from each section

Section of interview protocol	Sample questions
Behavior – Medication reconciliation	How do you define “medication reconciliation”? How often do you encounter recently discharged patients in practice?
TPB construct – Attitude toward reconciling	What advantages/disadvantages do you see for reconciling a patient’s medication profile at the community pharmacy after the patient is discharged from the hospital?
TPB construct – Subjective norm	What individuals or groups think you should perform medication reconciliations for recently discharged patients? What individuals or groups do you think should provide more support for you to be able to reconcile medications for recently discharged patients?
TPB construct – Perceived and actual behavioral control of reconciling medications	Is reconciling medications for recently discharged patients an easy process for you? Why or why not? What factors or circumstances make it difficult for you to reconcile medications for recently discharged patients?
Desired information and preferred methods for receiving information to assist with reconciling medications	What information is needed to accurately reconcile medications when patients are recently discharged from the hospital? What is your preferred method of transferring patient information to the pharmacy from the discharging hospital?
Pharmacy and pharmacist characteristics	How long have you been practicing? What is the daily or weekly prescription volume of your pharmacy?

TPB; Theory of Planned Behavior. The following questions were planned during each qualitative interview. Additional questions evolved from the participants’ responses. When unanticipated content was discovered, it was elaborated on during the interview process.

Table 2Characteristics of community pharmacist sample ($N = 10$)

Characteristics	Values
Male	30% (3)
Race	
Caucasian	90% (9)
Pharm.D. degree	60% (6)
Years of pharmacist practice, median (range)	10 years (3.5–31)
Number of hours worked per week, median (range)	40 hours (24–55)
Daily prescription volume, mean (SD, range) ^a	322 prescriptions (127.2, 150–570)
Practice locations	
Retail (>10 stores under same ownership)	60% (6)
Independent (<10 stores under same ownership)	40% (4)

SD, standard deviation.

Data are given as percentage (number) unless otherwise indicated.

^aBased on nine pharmacists; one pharmacist was a floater pharmacist who worked across multiple stores so the daily prescription count widely varied.

Table 3

“Wish List” of information wanted by community pharmacists for reconciling medications for recently discharged patients

Discharge diagnosis
Indications for medications
Labs such as glucose and cholesterol levels
Medication changes post-discharge/discharge medication list
Medication insurance
Medications used during hospitalization
Next provider appointment(s)
Stop-orders for medications to be discontinued
Patient's primary care provider