

Medication Reconciliation



Practical tips,
strategies and tools
for pharmacists

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Adverse drug events and medication discrepancies continue to be a patient safety challenge for patients and healthcare professionals. Vulnerable moments, defined as points in time when a patient is at high risk for medication discrepancies, often occur at interfaces of care when a patient moves from one healthcare setting to another, such as admission and discharge from an acute care hospital or changes in setting, service, practitioner or level of care.¹ Medication reconciliation is intended to ensure accurate and consistent communication of patients' medication information through transitions of care. The educational training and expertise of pharmacists uniquely positions them to support patients and other healthcare professionals with medication reconciliation. This article outlines practical tips, strategies and tools for pharmacists to support medication reconciliation.

Potential impact of medication discrepancies

Mounting evidence indicates that medication discrepancies and adverse drug events at interfaces of care may pose a significant patient safety risk. In Canada, published studies have demonstrated that 40–50% of patients experience unintentional medication discrepancies upon admission to acute care hospitals and at least 40% of patients experience discrepancies at hospital discharge.¹⁻⁴ Many of these medication discrepancies, if not intercepted, can be significant and lead to adverse drug events, medication errors, drug therapy problems and preventable patient harm.

Cornish et al found that 54% of patients admitted to a general medicine ward in a Canadian tertiary care teaching hospital had at least one unintended medication discrepancy between physician admission orders and a comprehensive medication history.² In this study, which investigated 151 patients prescribed at least four medications, 39% of discrepancies were judged to have the potential to cause moderate to severe discomfort or clinical deterioration. Overall, the most common type of discrepancy was an omission of a regularly used medication.² Forster and colleagues evaluated the critical interface of discharge in a Canadian teaching hospital where formal medication reconciliation was not performed.⁵ Findings showed that 23% of discharged patients (n=328) had an adverse event within 30 days of discharge, of which 72% were adverse drug events. These patient safety studies raise serious concerns about medication information communication at transition points.⁶

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The following actual patient scenarios are intended to promote a better understanding of the potential impact of medication discrepancies on patients:

- An elderly male's warfarin (prescribed for stroke prophylaxis in chronic atrial fibrillation) is appropriately held prior to elective surgery. However, it is inadvertently not restarted and several months after hospital discharge he suffers a stroke.

- A female long-term care patient is admitted to hospital for the acute management of community-acquired pneumonia. Her long-standing levothyroxine is inadvertently not ordered for the duration of her hospital stay nor during her subsequent transfer back to the long-term care home. The omission of levothyroxine is not identified until she becomes symptomatic four weeks after discharge.

Other common examples of discrepancies include duplicate therapy at hospital discharge (inadvertently often resulting from substitution of a product to match what is carried within the hospital formulary or brand/generic name combinations); commission errors (where home medications that patients have discontinued are inadvertently reinitiated); and incorrect doses or dosage forms.⁷ These types of medication discrepancies can result in patient harm and appear to occur commonly in Canada and around the world.⁸

Safe and efficient transfer of patient medication information appears to pose a significant challenge for all healthcare professionals involved in the continuum of care. Patients are constantly moving from one healthcare setting to another (Figure 1).⁹ At each healthcare setting, multiple clinicians, including physicians, pharmacists and nurses, are involved in patient medication management, which adds to the complexity, risk and exponential number of potential interfaces.⁹ To ensure patient safety and prevent adverse drug events, medication information must transfer seamlessly and accurately across these interfaces. Medication reconciliation is one proactive solution to overcoming the challenge of medication discrepancies.

FIGURE 1
PATIENT AND INTERDISCIPLINARY
INTERFACES IN THE MEDICATION
INFORMATION TRANSFER PROCESS⁸

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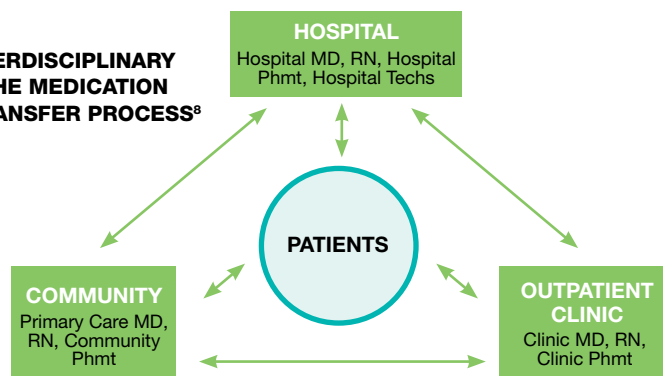
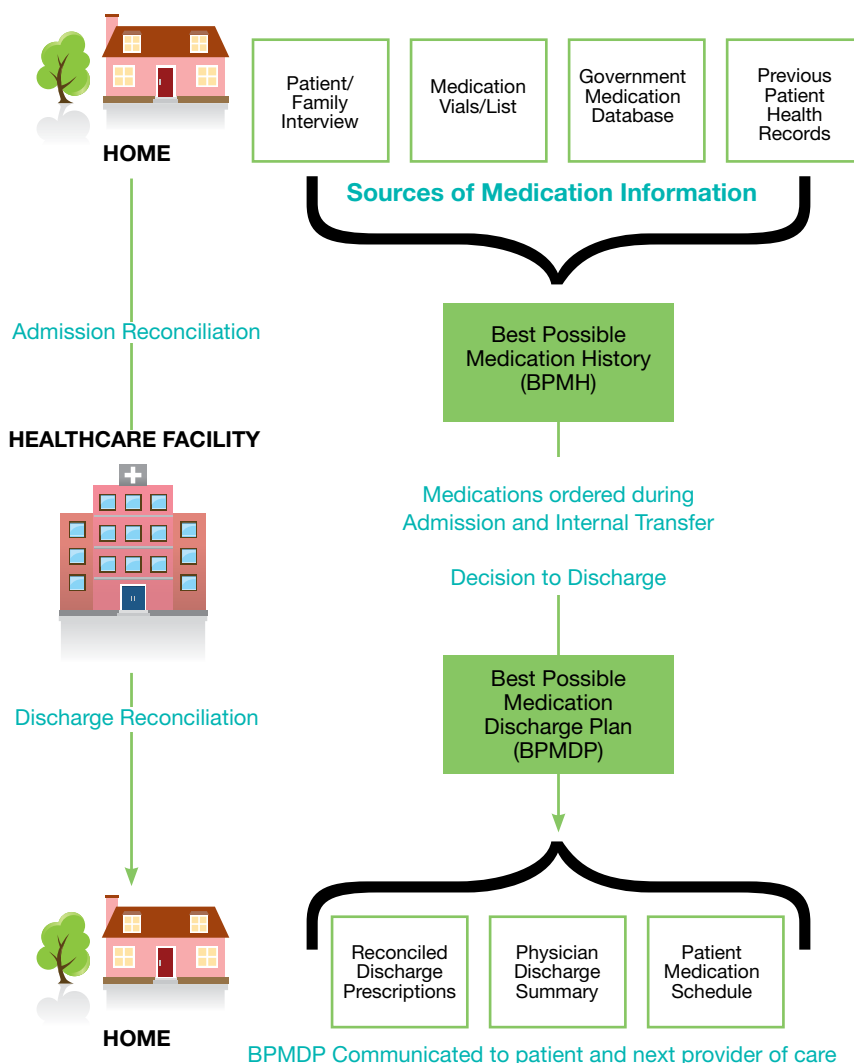


FIGURE 2
OVERVIEW OF MEDICATION RECONCILIATION IN ACUTE CARE
AND IN THE COMMUNITY⁸



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FIGURE 3 EXAMPLE OF A PRESCRIPTION ILLUSTRATING THE BEST POSSIBLE MEDICATION DISCHARGE PLAN⁸

| HOSPITAL NAME AND LOGO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------------|-------|-------|--|------------|------|---------|-----------|-----|------|---------|---|-------------------|-------|----|-----|----|---|--|---|------------|------|----|-------|----|---|-----|---|---------------|-------|----|-----|----|---|-----|--|--|--|--|
| Date: xxx Patient Name: xxx Patient Address: xxx Patient Phone #: xxx | | | | Summary of Medication Allergies: Penicillin - Hives | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hospital Discharge Prescriptions | | | | Summary of Medication Changes Since Admission: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>#</th> <th>Medication</th> <th>Dose</th> <th>Route</th> <th>Frequency</th> <th>Qty</th> <th>Rpts</th> <th>LU Code</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Ferrous Gluconate</td> <td>300mg</td> <td>PO</td> <td>TID</td> <td>90</td> <td>0</td> <td></td> </tr> <tr> <td>2</td> <td>Omeprazole</td> <td>40mg</td> <td>PO</td> <td>Daily</td> <td>30</td> <td>1</td> <td>295</td> </tr> <tr> <td>3</td> <td>Ciprofloxacin</td> <td>500mg</td> <td>PO</td> <td>BID</td> <td>14</td> <td>0</td> <td>336</td> </tr> </tbody> </table> | | | | # | Medication | Dose | Route | Frequency | Qty | Rpts | LU Code | 1 | Ferrous Gluconate | 300mg | PO | TID | 90 | 0 | | 2 | Omeprazole | 40mg | PO | Daily | 30 | 1 | 295 | 3 | Ciprofloxacin | 500mg | PO | BID | 14 | 0 | 336 | New Medications: <ul style="list-style-type: none"> • Ferrous Gluconate 300mg PO TID • Omeprazole 40mg PO Daily • Ciprofloxacin 500mg PO BID | | | |
| # | Medication | Dose | Route | Frequency | Qty | Rpts | LU Code | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Ferrous Gluconate | 300mg | PO | TID | 90 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Omeprazole | 40mg | PO | Daily | 30 | 1 | 295 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Ciprofloxacin | 500mg | PO | BID | 14 | 0 | 336 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Physician Name: xxx CPSO Number: xxx Physician Phone #: xxx Physician Signature: xxx Please contact family physician for repeats | | | | Discontinued Medications: <ul style="list-style-type: none"> • Aspirin 81mg PO daily • Meloxicam 7.5mg PO daily | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| QTY= Quantity, Rpts = Repeats, LU Code = Limited use Code | | | | Adjusted Medications: <ul style="list-style-type: none"> • Atorvastatin increased to 40mg PO QHS • Calcium carbonate increased to 1000mg elemental calcium PO TID with meals • Metoprolol increased to 50mg PO BID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Unchanged Medications to be Continued: <ul style="list-style-type: none"> • Calcitriol 0.25mcg PO daily • Darbeopetin 60mcg SC qFriday • Docusate sodium 100mg PO BID • Ramipril 5mg PO daily • Acetaminophen 325–650mg PO q4h PRN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Additional Comments: E.G. Section 8 filled for XXXX drug <small>An inpatient pharmacist helped to prepare this prescription.</small> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Defining medication reconciliation

Medication reconciliation is a formal process in which healthcare professionals partner with patients to ensure accurate and complete medication information transfer at interfaces of care (Figure 2).⁸ It involves a systematic process for obtaining a medication history, and then comparing that information to medication orders at transitions in order to identify and resolve discrepancies, with the purpose of preventing adverse drug events.⁸ To be effective and sustainable, this process is a shared responsibility of a team of inter-professional practitioners, including physicians, nurses, pharmacists, technicians and other healthcare professionals, in collaboration with patients and their caregivers.

BPMH: the foundation of medication reconciliation

An up-to-date, accurate and complete patient medication record is essential to ensure safe prescribing in any setting.⁸ The foundation of medication reconciliation is the Best Possible Medication History (BPMH). It is obtained by a clinician (e.g., pharmacist) using various sources of infor-

mation and includes a thorough history of all regular medication use (prescribed and nonprescribed).^{7,8} The BPMH is more comprehensive than a routine primary medication history, as it involves a systematic patient interview as well as verification of information with more than one source (e.g., contacting community pharmacies and physicians, as well as inspection of medication vials/patient medication lists, government medication databases and previous patient health records) (Figure 2). The BPMH includes the drug name, dose, frequency and route of administration for each medication a patient is currently taking, even though this may differ from what was actually prescribed.⁸

Identifying and resolving discrepancies at hospital admission

Discrepancies between admission medication orders and the BPMH can be divided into two standard categories.^{7,8} An undocumented intentional discrepancy is one in which the prescriber has made an intentional choice to add, change or discontinue a medication, but this choice is not clearly documented.⁸ It involves a failure to fully

document prescriber intention and often leads to confusion, requires extra clarification and may lead to medication errors. For example, a patient was taking an antihypertensive medication at home, but the patient's surgeon did not order the antihypertensive medication upon admission due to concerns about preoperative hypotension; however, the reason for not ordering the antihypertensive medication was not explicitly documented in the medication record leading to confusion for pharmacists and nurses.

An unintentional discrepancy is one in which the prescriber unintentionally changed, added or omitted a medication the patient was taking prior to admission.⁸ It has the potential to become a medication error that may lead to an adverse drug event. For example, a patient was on acetylsalicylic acid at home, but it was not ordered on admission. When the pharmacist clarifies with the prescriber, it is evident the omission was inadvertent. In order to determine whether an unintentional discrepancy has occurred, any inconsistencies in the BPMH information should be verified with the prescriber and resolved. Similar reconciliation processes should occur at internal transfer between hospital units and levels of care.

Medication reconciliation at discharge

Hospital discharge is another critical interface where patients are at a high risk of discrepancies. The goal at discharge is to reconcile the medications the patient was taking prior to admission (BPMH) and those initiated in hospital, with the medications they should be taking post-discharge, to ensure all changes are intentional and that discrepancies are resolved.^{7,8} This should result in avoidance of therapeutic duplications, omissions, unnecessary medications and confusion. The Best Possible Medication Discharge Plan (BPMDDP) is the most appropriate and accurate list of medications the patient should be taking after discharge.^{1,7,8} It should account for a number of factors, including new medications started in hospital or upon discharge, discontinued medications, adjusted medications, unchanged home medications to be continued, medications put "on hold" while the patient was in hospital, formulary adjust-

FIGURE 4 LETTER TO COMMUNITY PHARMACIST ILLUSTRATING THE BEST POSSIBLE MEDICATION DISCHARGE PLAN⁸

Date: xxx
Patient Name: xxx
Hospital: xxx
Nursing Unit: xxx
NU Phone: xxx

HOSPITAL NAME AND LOGO

Dear Pharmacist,
Your patient xxx was admitted on xxx and discharged on xxx

Documented Allergies:

| ALLERGY | REACTION |
|------------|---|
| Penicillin | Hives 10 years ago; tolerates cefazolin |

The following are medication changes that have occurred:

| New Medications | Rationale |
|-----------------------------|---|
| Ferrous Gluconate 300mg TID | Patient found to be anemic in hospital, values as of Nov 2 Ferritin = 10 ug/L TSAT = 0.15 |
| Omeprazole 40mg Daily | Patient experienced non-H.Pylori upper GI bleed in hospital. Duration of therapy will be reassessed by GI physician in 8 weeks. |
| Ciprofloxacin 500 mg BID | Urinary tract infection E Coli in urine sensitive to Ciprofloxacin; plan to treat for total of 7 days. Started Nov 13 |

| Stopped Medications | Rationale |
|-----------------------|---|
| Aspirin 81mg daily | Patient experienced an upper GI bleed |
| Meloxicam 7.5mg daily | Patient was taking 2-3 times a day. May have contributed to bleed and not to be restarted |

| Dose Changes | Rationale |
|--|--|
| Atorvastatin increased to 40mg HS | Lipid values measured on Nov 2 found to be elevated. LDL = 4.1 mmol/L; HDL = 0.98 mmol/L; Total Chol/HDL = 5.3; TG = 1.12 mmol/L |
| Calcium carbonate increased to 1000mg elemental calcium TID with meals | Phosphate value found to be high @ 2.1 mmol/L on Nov 2. See below. |
| Metoprolol increased to 50mg BID | Blood pressure was elevated in hospital (163/90 mmHg at highest). Target blood pressure is 130/80 mmHg. |

Please find a current list of medications attached.

The following are unresolved/ongoing medication-related issues

- High lipid values
 - Please re-check lipids in 3 months and suggest adjustment of atorvastatin dose accordingly
- Patient was taking Aspirin 81mg EC tablet daily for cardiac protection. It was stopped due to GI bleed; to reassess restarting ASA at next appointment
- Please follow-up with re-initiation of ASA

Other issues include:

- **Education/Counselling**
Patient may benefit from additional discussion on use of NSAIDs for pain. Meloxicam was being taken at higher doses than prescribed. Patient was educated on adverse effects of NSAIDs and instructed to use acetaminophen for pain in the future.
- **Monitoring needed**
Continue to monitor blood pressure and suggest titration of medications accordingly. Monitor phosphate levels and suggest adjustment of phosphate binder accordingly. Re-check iron profile in 3 months.

Please attach this document with the patient's prescriptions if possible. Feel free to contact me if you have any questions or concerns.

Thank you,
xxx Phone: xxx Pager: xxx

Verbal consent was obtained from the patient to release the above information on

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ments and the status of other nonprescription medications (e.g., supplements, herbals). The BPMDP should be formally communicated to the patient, family and community clinicians, including physicians and pharmacists, as well as alternative care facilities. To illustrate the BPMDP, Figures 3-5 provide samples of a prescription, a letter to the community pharmacist and a patient medication schedule.⁷⁻⁹

Medication reconciliation in the community

In contrast to the acute care setting, the community setting can be heterogeneous and medication management can involve a variety of distinct environments, including the patient's home, homecare services and diverse long-term care environments. Patient medication management may vary,

ranging from patient self-administration to nurse administration of medications. Patients may also move between these environments, regularly visit ambulatory clinics or have frequent acute care admissions (Figure 6).

Two distinct types of interfaces of care for medication reconciliation occur in the community: major healthcare setting interface transitions (vulnerable moments e.g., discharge from an acute care hospital to home) and more minor interface transitions (risk points e.g., medication changes upon visit to a primary care physician, cardiologist or an oncology ambulatory clinic).¹ Patients often have multiple independent prescribers influencing their medication management, including primary care physicians, many medical specialists and dentists. Consequently, a patient's medication regimen in the community can be constantly changing without one distinct healthcare provider overseeing and supporting the patient through these processes. For example, patients living at home may visit their primary care physician for blood pressure medications, their oncologist for cancer treatment and their cardiologist for cardiac medications. Every healthcare visit is a potential risk point for medication discrepancies.

Varkey et al conducted a study of medication reconciliation in a primary care clinic; 98% of visits to the clinic were associated with some discrepancy between the medications a patient was currently taking and the medication list available on the clinic medication record.¹⁰ A structured medication reconciliation process in the community (Figure 7) may help clinicians prevent medication discrepancies and patients safely navigate changes to their medication regimen.

Empowering pharmacists for medication reconciliation

Pharmacists are uniquely positioned and can play a pivotal role to support patients and their healthcare professionals in preventing medication discrepancies. Empowering pharmacists with the skills and strategies to efficiently, accurately and comprehensively conduct a BPMH is criti-

FIGURE 5 PATIENT MEDICATION SCHEDULE ILLUSTRATING THE BEST POSSIBLE MEDICATION DISCHARGE PLAN

Name: xxx **Date: xxx**

Documented Allergies: • Penicillin • Codeine

My family physician is _____ phone _____

Morning

| Medication | Comments | Directions |
|--------------------------------|---------------------------------|----------------|
| Calcium Carbonate 500mg tablet | Phosphate binder Take with food | Take 1 tablet |
| Metoprolol 50mg tablet | For blood pressure | Take 2 tablets |

Noon

| Medication | Comments | Directions |
|--------------------------------|---------------------------------|---------------|
| Calcium Carbonate 500mg tablet | Phosphate binder Take with food | Take 1 tablet |

Supper

| Medication | Comments | Directions |
|--------------------------------|---------------------------------|----------------|
| Calcium Carbonate 500mg tablet | Phosphate binder Take with food | Take 1 tablet |
| Metoprolol 50mg tablet | For blood pressure | Take 2 tablets |

Bedtime

| Medication | Comments | Directions |
|------------------------------------|-------------------------|---------------|
| Atorvastatin 20mg tablet (LIPITOR) | Take at night (bedtime) | Take 1 Tablet |

As needed

| Medication | Comments | Directions |
|--------------------------------|------------------------------|-------------------------|
| Ibuprofen 200mg tablet (ADVIL) | Take as needed for pain only | Take 1 tablet as needed |

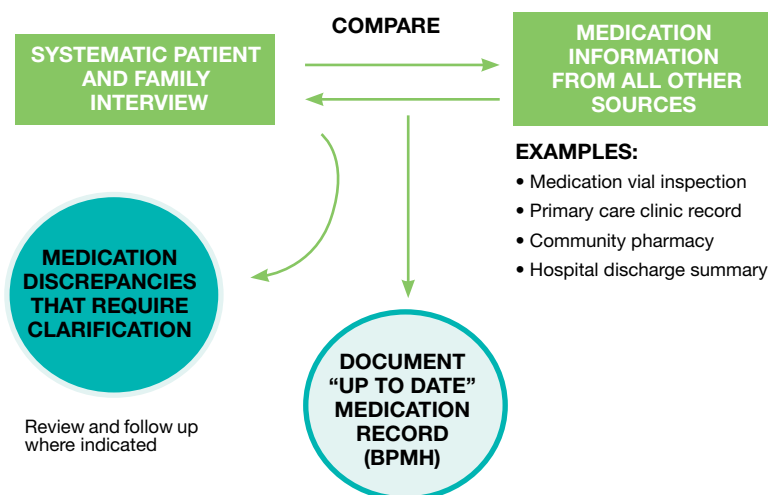
* If discrepancies occur between this list and your prescriptions, please follow the instructions on your medication vials unless your physician has indicated otherwise *

Prepared by _____, Pharmacist, _____ Hospital
Phone: _____ Pager: _____

Adapted from references 8 and 9.

FIGURE 7 PROCESS FOR MEDICATION RECONCILIATION IN THE COMMUNITY

Creating the most “up to date” medication record
(best possible medication history)



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cal toward gathering the necessary information for reconciliation to effectively take place. Awareness of key patient and system factor challenges and barriers is essential to developing and implementing solutions.

OVERCOMING CHALLENGES AND BARRIERS

Communication barriers during patient interviews (e.g., non-English speaking patients, cognitive impairment, level of consciousness issues) can sometimes be overcome by involving interpretation professionals, family members or other clinical staff who can serve as interpreters or facilitators.

Another challenge is that patients often have variable perceptions of what constitutes a “medication,” and therefore may not volunteer information on all medications unless prompted. A systematic review by Tam et al identified omission of medications as the most common type of medication history discrepancy.¹¹ Specific prompt questions about nonprescription categories (including over-the-counter drugs, vitamins, supplements, herbal products and alternative remedies) and unique dosage forms (e.g., eye drops, inhalers, patches, injections, sprays, physician samples) are key to overcoming this challenge. Moreover, proactively explaining to patients the purpose, value and importance of obtaining an accurate medication history will often engage them to actively participate.

Commission errors (i.e., assuming patients are taking medications that they are not) are the second most common type of medication history discrepancy.¹¹ These often occur when clinicians inappropriately assume patients are taking medications according to prescription vial labels. When inspecting medication vials, pharmacists should inquire about recent changes from vial directions (i.e., dose changes, stopped medications initiated by either the patient or the physician). In addition, pharmacists should inquire about why patients may be taking medication differently from directions (e.g., concerns about side effects, allergic reactions or lack of efficacy). It is also important to verify whether vials contain medications other than those on the label (patients at times rearrange medications from formats originally dispensed).

An open-ended questioning style (“tell me how you take this medication”) is most useful to create a comfortable and non-judgmental interview environment. The patient’s medical conditions can be used as effective triggers to inquire about commonly used medication classes to prevent medication omissions. Interview questions about details of patient adherence are also essential. Shalansky and colleagues presented some concise and effective phrasing of questions for this purpose:¹²

- Did the doctor change the dose or stop any of your medications recently?
- Have you changed the dose or stopped any of your medications recently?
- Have any of the medications been causing side effects?
- Your prescription profile indicates that you may have run out of some medications. Are you still taking any of these?

The challenge of poor patient recall of the medications they are taking can be overcome by contacting peer community pharmacists for clarification. It is important to anticipate that the patient may visit multiple pharmacies.

Other challenges include the time and resources (clinician and physical space) to conduct an effective BPMH, as well as accessibility to patient medication vials and personal medication lists. Successful strategies to overcome these challenges include a proactive approach to scheduling patient appointments and reminders to bring in vials and medication lists. Interviews can be scheduled on a certain day of the week

or at times when additional staffing is available. Being proactive includes gathering as much information as possible prior to the patient interview. This includes past medication histories, community pharmacy profiles, primary care medication records and provincial database information. This also allows for advance review of information and anticipation of clarification questions.

PRACTICAL TIPS FOR OBTAINING A BPMH

Figure 8 summarizes 10 practical tips for obtaining an efficient, comprehensive and accurate BPMH.⁸ Using tools such as a systematic interview guide (Figure 9) or trigger tool can support a comprehensive and efficient medication history.^{8,13,14}

Patient and family role in medication reconciliation

Patients are key partners in ensuring effective reconciliation at transitions in care and their involvement should be encouraged by the healthcare team. Specifically this includes engaging patients and families in the development and maintenance of up-to-date, complete and accurate medication records; educating patients on both efficacy and safety endpoints to watch for; requesting that patients bring their medication bottles and current medication records to each healthcare appointment; and providing regular opportunities for patients to report any medication concerns or side effects.

FIGURE 8 PRACTICAL TIPS FOR OBTAINING A BEST POSSIBLE MEDICATION HISTORY^{8,13}

TOP 10 PRACTICAL TIPS

How to Obtain an Efficient, Comprehensive and Accurate Best Possible Medication History (BPMH)

- 1 Be proactive.** Gather as much information as possible prior to seeing the patient. Include primary medication histories, provincial database information, and medication vials/lists.
- 2 Prompt questions about non-prescription categories:** over the counter drugs, vitamins, recreational drugs, herbal/traditional remedies.
- 3 Prompt questions about unique dosage forms:** eye drops, inhalers, patches and sprays.
- 4 Don't assume patients are taking medications according to prescription vials** (ask about recent changes initiated by either the patient or the prescriber).
- 5 Use open-ended questions:** (“Tell me how you take this medication?”).
- 6 Use medical conditions as a trigger** to prompt consideration of appropriate common medications.
- 7 Consider patient adherence with prescribed regimens** (“Has the medication been recently filled?”).
- 8 Verify accuracy:** validate with at least two sources of information.
- 9 Obtain community pharmacy contact information:** anticipate and inquire about multiple pharmacies.
- 10 Use a BPMH trigger sheet** (or a systematic process/interview guide). Include efficient order/optimal phrasing of questions and prompts for commonly missed medications.

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FIGURE 9 BEST POSSIBLE MEDICATION HISTORY INTERVIEW GUIDE (UNIVERSITY HEALTH NETWORK)^{8,14}

Introduction

- Introduce self and profession.
- I would like to take some time to review the medications you take at home.
- I have a list of medications from your chart/file, and want to make sure it is accurate and up to date.
- Would it be possible to discuss your medications with you (or a family member) at this time?
- Is this a convenient time for you?
- Do you have a family member who knows your medications that you think should join us? How can we contact them?

Medication Allergies

- Are you allergic to any medications? If yes, what happens when you take (allergy medication name)?

Information Gathering

- Do you have your **medication list or pill bottles (vials)** with you? *Use show and tell technique when they have brought the medication vials with them*
- How do you take (medication name)?

- **How often or when** do you take (medication name)?

Collect information about dose, route and frequency for each drug. If the patient is taking a medication differently than prescribed, record what the patient is actually taking and note the discrepancy.

- Are there any **prescription**

- medications** you (or your physician) have recently stopped or changed?
- What was the reason for this change?

Community Pharmacy

- What is the name of the pharmacy that you normally go to? (*Anticipate more than one*)
- May we call your pharmacy to clarify your medications if needed?

Over-the-Counter (OTCs) Medications

- Do you take any medications that you buy without a doctor's prescription? (*Give example, e.g. Aspirin*). If yes, how do you take (OTC medication name)?

Vitamins/Minerals/Supplements

- Do you take any **vitamins** (e.g. multivitamin)? If yes, how do you take (vitamin name(s))?
- Do you take any **minerals** (e.g. calcium, iron)? If yes, how do you take (mineral name(s))?
- Do you use any **supplements** (e.g. glucosamine, St. John's Wort)? If yes, how do you take (supplements name(s))?

Eye/Ear/Nose Drops

- Do you use any eye drops? If yes, what are the names? How many drops do you use? How often? In which eye?
- Do you use any ear drops? If yes what are the names? How many drops do you use? How often?

Which ear?

- Do you use any nose drops/nose sprays? If yes what are the names? How many drops do you use? How often?

Inhalers/Patches/Creams/Ointments/Injectables/Samples

- Do you use any **inhalers? medicated patches? medicated creams or ointments? injectable medications** (e.g. insulin)? For each, if yes, how do you take (medication name)? (*Include name, strength, how often*)
- Did your doctor give you any medication **samples** to try in the last few months? If yes, what are their names?

Antibiotics

- Have you used any **antibiotics** in the past 3 months? If so, what are they?

Closing

- This concludes our interview. Thank you for your time. Do you have any questions?

- If you remember anything after our discussion please contact me to update the information.

Note: Medical and Social History, if not specifically described in the chart/file, may need to be clarified with patient

onstrated that pharmacist-provided admission medication histories was one of seven clinical pharmacy services associated with a reduced mortality rate; the reduction in the number of deaths per hospital was almost twice that of any other clinical pharmacy service investigated.¹⁷

Kwan et al conducted a Canadian randomized controlled trial with 464 surgical patients at an acute care teaching hospital.⁴ The main intervention was a proactive interdisciplinary admission medication reconciliation process in which pharmacists conducted patient BPMHs in a surgical preadmission clinic to support surgeon post-op prescribing of home medications. Findings demonstrated that multidisciplinary medication reconciliation (with pharmacists, nurses and physicians partnering proactively with the patient) resulted in a 50% reduction in the number of patients with discrepancies linked to home medications compared to the standard of care. The intervention also resulted in a reduction in the number of patients with clinically significant discrepancies that had the potential to cause possible or probable harm (29.9% vs. 12.9%).

In 2009, Karon and colleagues conducted a model-based cost-effectiveness analysis of interventions aimed at preventing medication errors with medication reconciliation at hospital admission.¹⁸ The aim of the study was to assess the incremental costs and effects (measured as quality-adjusted life years) of a range of medication reconciliation interventions. All five interventions for which evidence of effectiveness was identified were estimated to be extremely cost effective when compared to the baseline scenario. The pharmacist-led reconciliation intervention had the highest expected net benefits and a probability of being cost effective of more than 60% by a quality-adjusted life-year value of £10,000.¹⁸ New evidence on the positive impact of medication reconciliation and the beneficial effects of pharmacists is continually emerging.¹⁸

Medication reconciliation initiatives

From an international perspective, the World Health Organization (WHO) has

(cont'd on page 52)

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Pharmacist's role and impact in medication reconciliation

Pharmacists can play a key leadership role in medication reconciliation, to prevent patient harm and address unmet patient needs at transition points.⁶ Medication reconciliation can play a supporting role to effective and holistic pharmaceutical care, as these two often “overlap and intersect and are not separate and distinct patient care activities.”⁶

Several studies provide evidence of the positive impact of pharmacist involvement in medication reconciliation. On admission to hospital, Ong et al demonstrated that when patients were assessed with a pharmaceutical care process, 65% of patients' drug-related problems were linked to medication information transfer.¹⁵ A complete current medication record (BPMH) is an essential foundational element for therapeutic assess-

ment. Moreover, optimal medication reconciliation requires qualified assessment to elevate the quality of this evaluation from a clerical (simple comparison of lists) to a clinical assessment task.⁶ In this regard, pharmacists have unique skills and training distinct from other healthcare professionals that enable them to take a leadership role and make unique contributions to effective medication reconciliation.

In a systematic review, Kaboli et al concluded that “reconciling medications” was one of only five interventions by clinical pharmacists that actually resulted in improved outcomes for hospitalized patients (the others were interacting with the healthcare team on patient rounds, interviewing patients, providing patient discharge counselling and providing patient follow-up).¹⁶ Furthermore, an observational study by Bond and colleagues, involving almost three million patients in 885 U.S. hospitals, dem-

feature

(cont'd from page 32)

recently prioritized medication reconciliation as one of three patient safety strategies, within the collaborative initiative Action on Patient Safety: High 5s.^{8,19} Canada has been selected by the WHO to lead medication reconciliation for the participating countries (the Canadian Patient Safety Institute will be the lead technical agency and ISMP Canada will support leadership of the medication reconciliation intervention). Nationally, Accreditation Canada has made medication reconciliation a mandatory requirement for various health settings, including acute care and homecare. Safer Healthcare Now!, a national Canadian patient safety campaign (started in 2005) to reduce preventable patient adverse events has championed medication reconciliation as one of a handful of core patient safety strategies; it includes more than 400 national interprofessional teams in acute care, long-term care and home care.⁷ In addition, the Canadian Society of Hospital Pharmacists' 2015 campaign has endorsed medication reconciliation activities as a high priority for pharmacists.²⁰

Tools and strategies, such as expanded pharmacist access to provincial medication databases, may contribute to efforts to improve the accuracy and efficiency of medication reconciliation.²¹ Several provinces have recently initiated programs that allow for community pharmacist reimbursement models for medication reviews. For example, Ontario's MedsCheck is a provincially funded initiative that reimburses pharmacists who perform an annual one-on-one 30-minute patient interview, reviewing patient medications and providing the patient with an up-to-date medication record; it includes additional opportunities to perform a MedsCheck followup upon admission to hospital or following a recent hospital discharge.²² Figure 10 depicts a system for linking MedsCheck and medication reconciliation. Many teams have also implemented effective models that involve pharmacy technicians or pharmacy students systematically partnering with pharmacists to support clerical and cognitive medication reconciliation activities at many interfaces.^{23,24}

Conclusion

Medication discrepancies at interfaces of care pose a significant medication safety risk for patients. This provides an opportunity, as pharmacists are uniquely positioned to bridge this important patient safety gap to support patients and other healthcare professionals with medication reconciliation at vulnerable care transitions. Awareness of key medication information transfer challenges will allow for implementation of effective solutions. Systematic tools and strategies can support clinicians in performing comprehensive, efficient and effective medication reconciliation.

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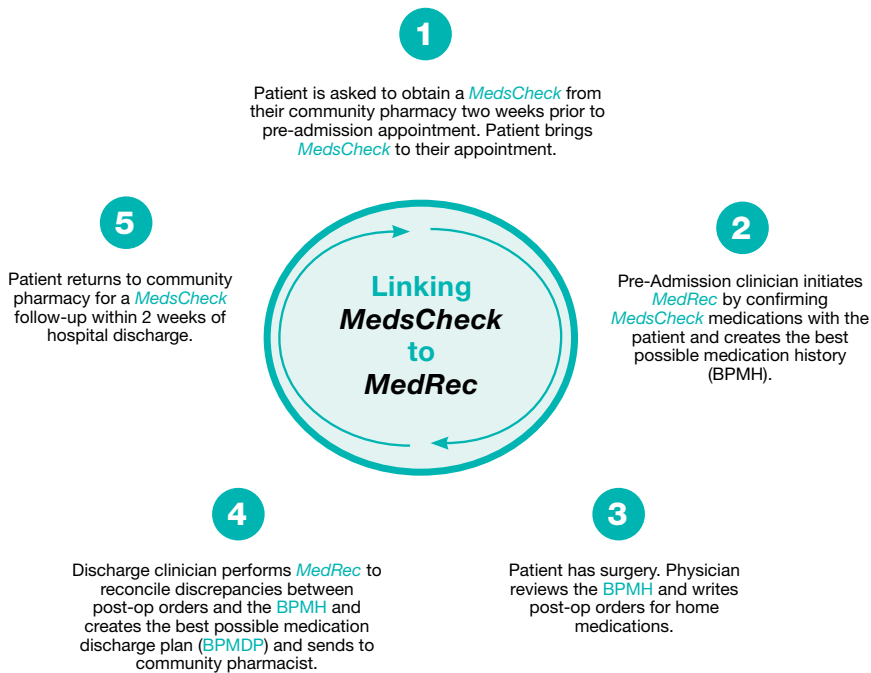
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FIGURE 6 CHALLENGES OF MEDICATION INFORMATION TRANSFER IN THE COMMUNITY



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FIGURE 10 LINKING MEDSCHECK AND MEDICATION RECONCILIATION

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