

## Medication Mix-Ups as a Cause of Patient Admission

We recently completed a study to identify the root causes of preventable adverse drug events (pADEs) that caused or contributed to patient admission. Several patients experienced moderate to severe harm because they had **not understood that a change was made to their medications** while in hospital (or following a doctor's office visit), so they did not enact the change after discharge. We are sharing learning from these events in this newsletter and refer to them as "Medication Mix Ups". Patients presented with bradycardia, hypotension requiring vasopressor support, acute kidney injury and hyperkalemia (see reverse for brief case descriptions). Learning from these pADEs applies to any setting (e.g. doctor's office or Emergency Department visit) where medications are changed.

1. **Several patients had a medication stopped during their hospital stay, but were unaware of the change.** After discharge the patient restarted the medication using their existing supply at home.
2. **Patients had new medications started in hospital, but were unaware of this change.** The patients did not recall being given a new prescription to take to a Pharmacy. After discharge, the new medication was not continued.
3. **Patients had a medication dose adjusted in hospital, but were unaware of the change.** Despite taking a prescription to the Pharmacy, as they were unaware of the change, they did not return to pick up the medication with changed directions (dose). They resumed their previous medication dose from their existing supply at home.

### Giving a patient an accurate written discharge prescription did not prevent these medication mix-ups.

But following these 3 steps may be helpful:

1. **Ask the patient and family to show us that they understand the implications of changes.** Using a TeachBack like process could help confirm whether the patient understands your explanation and can implement the medication changes (see box).
2. **In hospital, consider discussing changes to medications immediately with the patient/family (or ask the clinical pharmacist to do this).** This will give the patient and family more time to plan what they need to do and, if the patient has reduced medication use competency, give the hospital team more time to identify which relative to share information with or arrange other supports before discharge. Also, a different physician may be discharging the patient. [As there is currently no automated reminder of stopped or changed medications, a careful comparison of the PCIS Discharge Prescription with the verified medication list at admission is needed to write the discharge prescription (**to identify medications that are stopped, new or with a changed dose**)].
3. **Explain the clinical reason for the change** (i.e for improved therapeutic effect or to respond to a medication side effect). This may help the patient/family understand **why** it is important to enact these changes on discharge.

### How to use the TeachBack Process to verify understanding of information provided.

After explaining the reason for the change in medication or dose, and what they need to do (pick up new prescription, or changed doses or remove stopped medications) confirm understanding by asking open ended questions:

1. **Just to check that I have explained things clearly, can you tell me WHAT (and WHEN) are you going to do when you go home?** Listen for confirmation that they will go to their Pharmacy (that day) and pick up their new prescription.
2. **HOW are you going to remember not to take that medication that we just stopped?** Listen for confirmation that patient/support person will identify the stopped medication(s) at home and have a plan to remove it or return it to Pharmacy or store it separately for the time being.
3. **Can you tell me WHY we needed to make the change in your medication?** Can they explain why the medication is changed (If they understood the importance of the change, they may be more likely to follow the plan).

If the patient has no support person to help them competently manage medication changes, write on prescription for Pharmacist to HELP patient manage the medication changes. **Always specify medications to discontinue. Indicating a changed dose and new medication is also helpful (provides a written reminder for the patient).**

## Examples of cases:

**Case #1:** Patient presented with BP 80/40 with HR 41 in ED, suspected urosepsis (presentation not immediately attributed to a medication mix-up as medications were not verified on admission). Patient had surgery 2 weeks prior. Patient was admitted to ICU for vasopressor support. Family confirmed that following previous discharge patient re-started diltiazem 360mg daily (stopped in hospital after surgery). Family were unaware that this medication was stopped during last admission. Had discharge prescription provided but patient's spouse had not understood the change, had not taken it to Pharmacy as they had supply of medications at home. Spouse *was certain that patient's discharge prescription contained diltiazem (but was actually referring to dalteparin, an in-patient medication not ordered at discharge but which appears on the discharge prescription sheet).*

**Case #2.** Patient presented with AKI, hyperkalemia. Patient had restarted an ARB that was stopped during previous admission. Previous admission was in part due to AKI (attributed to ARB). Patient unaware that she did not receive her ARB during her previous hospital stay and the prescriber's intent was for her not to restart it when home. My Discharge Plan document identifies meds to take rest of day (support person noticed the ARB was not listed but interpreted that to mean that the medication was likely already given that day). Instruction to stop medication was not included on discharge prescription (AKI had resolved earlier in stay, most recent medical issue at discharge was unrelated).

**Case #3:** Patient with high output ileal fistula on high dose loperamide, carefully titrated up in hospital to 20mg BID to control losses, goal to avoid surgery. Discharged but patient and wife unaware of dose change (previously 4mg BID). Spouse was competent caregiver but patient confirmed that they would not be able to recall any instructions if they had been provided to them. Spouse, took accurate prescription to Pharmacy, left there to be filled but as unaware of dose change and purpose, and plenty of supply at home did not understand that the dose was increased. Did not return to Pharmacy. Returned to hospital with increased GI losses, repeat AKI, underwent surgery.

**Case #4:** Patient with cirrhotic ascites, admitted with abdominal swelling and shortness of breath 7 days after recent discharge. Spironolactone newly started in hospital previous admission, intended to be prescribed at discharge. The patient was unaware of intent for them to start new prescription. The document given at discharge "My discharge plan" included medications for rest of day (spironolactone not listed, as already taken that day). Patient interpreted this document to reflect their complete medication list. Patient appeared organized with paperwork and brought this document back to hospital with them.

**Case #5:** Patient had prior surgery, medications changed. Pre-admission diltiazem was stopped, metoprolol started as a substitute, amlodipine also started for hypertension. At the Pharmacy, pharmacist may have mentioned (or gave the impression) that amlodipine was replacing the diltiazem (stopped). Inadvertently, the amlodipine was not provided to patient. When at home, the patient decided to replace the missing amlodipine with a diltiazem dose. Re-start of diltiazem, with new metoprolol resulted in severe bradycardia HR 31. The patient, spouse and possibly pharmacist had mistakenly interpreted that the calcium channel antagonists were interchangeable. Both patient and spouse had capacity to understand medication changes, but received information only at discharge and were not aware of the reasons behind his medication changes. They conveyed that the process of receiving fairly complicated information at discharge was overwhelming and the discharge prescription is messy and does not help understanding of changes.

- Most of these patients had support persons with capacity to understand medication changes, the reasons for them and the importance of enacting them.
- However, even if relevant information was provided, the **TeachBack process** may have revealed gaps in understanding or identify those patients with reduced **medication use competency** who need either this information to be shared with their competent caregiver or their Community Pharmacy to help support enacting medication changes.
- Discussing medication changes in this way **as soon as they occur** could help to identify which patients need engagement from support persons or Community Pharmacy assistance at discharge.