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# Patient Safety Tip of the Week

# February 22, 2022

# Medication Reconciliation at ICU Exit

Most studies on medication reconciliation have focused on processes at admission or discharge. But medication reconciliation is critical at every transition of care. That includes patient transfers from floor to floor, service to service, and one level of care to another. It is especially important to perform medication reconciliation when patients are transferred from intensive care units. Some medications are only indicated while a patient is in the ICU and, unfortunately, we often see patients discharged from the hospital on those medications when there is failure of medication reconciliation at the transition from the ICU to the floor. The most common examples of the latter are proton pump inhibitors (PPI's). PPI's are often prescribed in critically ill patients to prevent GI bleeding. But they are not intended to be continued once the patient is no longer "critical". Yet we continue to see patients on PPI's, sometimes for years, when they were only intended for the original ICU stay. On the other hand, some important medications that patients were taking prior to admission get discontinued while the patient is in the ICU and never get restarted after the patient leaves the ICU or the hospital.

A new systematic review and meta-analysis does focus on medication reconciliation on transition from adult intensive care settings (Bourne 2022). Bourne et al. included 17 studies, 15 of which were uncontrolled before-after studies, focusing on the interventions used and identifying both facilitators and barriers to effective deprescribing. Pooled analysis of all interventions overall reduced risk of inappropriate medication continuation both at ICU discharge (OR=0.45) and at hospital discharge (OR=0.39). Interestingly, multicomponent interventions, based on education of staff and guidelines, did not show significant difference in inappropriate medication continuation at the ICU discharge point (OR 0.5), but were very effective in increasing deprescribing outcomes on hospital discharge (OR 0.26).

The authors point out the complex nature of ICU stays, often with polypharmacy, frequent medication changes, and fragmentation of care. They note that medication errors are common in adult ICU patients at the interface of transfer to the hospital ward, with errors reported to occur in 46% to 74% of patients.

The key intervention components they found in the included studies were education of staff, medication review, guidelines, electronic transfer/hand-over checklist or letter and

medicines reconciliation. Most targeted inappropriate medication continuation at transfer points.

Whereas we consider all of these to be elements of "medication reconciliation", Bourne et al. considered medication reconciliation more narrowly and separated it out from the other interventions noted above. They found 4 studies that focused on this process, which required review and authorization by medical staff, with pharmacist medication review and advice. Other studies focused on communication at the handoff between ICU staff and the ward staff.

Participation by a clinical pharmacist was the most important facilitator, whether in the educational or review interventions. Technologies and tools that served as facilitators included autopopulation of discharge information, checklists, guidelines with supporting information, and a tailored discharge letter. Barriers included educational gaps, increased workload due to the process, patient discharge during off-hours, and short discharge time frames.

Data on actual patient outcomes, however, was limited. There was also limited information about economic considerations. The authors also noted that none of the studies included the patient and/or family in the processes, despite other studies showing engagement of patients and family being a facilitator to the provision of high-quality care for ICU patients transferring to a hospital ward.

When we use the term "deprescribing", we are often talking about discontinuing potentially inappropriate medications (PIM's) in the elderly patient. Ironically, a hospitalization is often a facilitator for that process. In our June 29, 2021 Patient Safety Tip of the Week "Barriers to Deprescribing" we noted a study by Edey and colleagues (Edey 2019) on pharmacist-led deprescribing rounds upon hospital discharge at a Canadian tertiary care hospital. Deprescribing rounds resulted in significantly more medications deprescribed compared to control (65% vs. 38%). The rates of readmission and emergency department visits were reduced in the arm receiving deprescribing rounds.

The Bourne systematic review shows that multicomponent interventions based on education of staff and guidelines are effective at achieving almost four times more de-prescribing of inappropriate medication by the time of patient hospital discharge and serves as a reminder of the **importance of medication reconciliation at every transition of care**.

Review of medications at hospital admission, discharge, and every transition of care within the hospital provide a good way to ensure that patients are on "optimal" medication regimens. Good medication reconciliation focuses not only on discontinuation of potentially inappropriate medications and reduction in polypharmacy, but also on ensuring patients are taking those medications that are indicated for the various conditions they have. In our October 19, 2010 Patient Safety Tip of the Week "Optimizing Medications in the Elderly" we noted that **underutilization** of appropriate drugs may also be problematic.

And, lest we forget, don't assume the medications you discontinue actually are discontinued. Several of our prior columns (listed below) have noted that poor communication with patients, their other clinicians, and the pharmacies may result in patients continuing to receive those medications you had intended to discontinue. We've also noted how the electronic medical record may perpetuate use of some medications, particularly when the "copy & paste" function is used inappropriately.

**Some of our previous columns on medication reconciliation**:

October 23, 2007 "Medication Reconciliation Tools"
December 30, 2008 "Unintended Consequences: Is Medication Reconciliation Next?"
May 13, 2008 "Medication Reconciliation: Topical and Compounded Medications"
September 8, 2009 "Barriers to Medication Reconciliation"
August 2011 "The Amazon.com Approach to Medication Reconciliation"
January 2012 "AHRQ's New Medication Reconciliation Tool Kit"
September 2012 "Good News on Medication Reconciliation"
October 1, 2019 "Electronic Medication Reconciliation: Glass Half Full or Half Empty?"
July 2020 "Not Following Medication Changes after Hospitalization?"
April 2021 "Anticonvulsants High Risk: How Did We Miss That?"
November 2, 2021 "Adverse Drug Events After Hospitalization"

**Some of our past columns on deprescribing**:

- March 4, 2014 "Evidence-Based Prescribing and Deprescribing in the Elderly"
- September 30, 2014 "More on Deprescribing"
- May 2015 "Hospitalization: Missed Opportunity to Deprescribe"
- July 2015 "Tools for Deprescribing"
- April 4, 2017 "Deprescribing in Long-Term Care"
- October 31, 2017 "Target Drugs for Deprescribing"
- January 2018 "What Happens After Delirium?"
- June 2018 "Deprescribing Benzodiazepine Receptor Agonists"
- November 27, 2018 "Focus on Deprescribing"
- March 19, 2019 "Updated Beers Criteria"
- March 10, 2020 "Medication Harm in the Elderly"
- June 2020 "The Antipsychotics in Dementia Conundrum"
- June 29, 2021 "Barriers to Deprescribing"
- September 2021 "A Primer on Deprescribing"

**Some of our other columns on failed discontinuation of medications**:

May 27, 2014 "A Gap in ePrescribing: Stopping Medications"
March 2017 "Yes! Another Voice for Medication e-Discontinuation!"

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| February 2018 | "10 Years on the Wrong Medication" |
| August 28, 2018 | "Thought You Discontinued That Medication? Think Again" |
| December 18, 2018 | "Great Recommendations for e-Prescribing" |
| August 2019 | "Including Indications for Medications: We Are Failing" |
| August 6, 2019 | "Repeat Adverse Drug Events" |
| October 2021 | "Tool to Prevent Discontinued Medications from Being Dispensed" |

**References**:


Bourne RS, Jennings JK, Panagioti M, et al. Medication-related interventions to improve medication safety and patient outcomes on transition from adult intensive care settings: a systematic review and meta-analysis. BMJ Quality & Safety 2022; Published Online First: 18 January 2022
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Edey R, Edwards N, Von Sychowski J, et al. Impact of deprescribing rounds on discharge prescriptions: an interventional trial. Int J Clin Pharm 2019; 41(1): 159-166
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