

We’ve, of course, done many columns on Beers’ List, the STOPP and START lists, and other topics related to potentially inappropriate medications in the elderly. But in the past couple months there have been several studies focusing on medication dangers in the elderly.

Stevenson et al. ([Stevenson 2020](#)) recently labeled **medication-related harm** as “**a geriatric syndrome**”, calling for a new approach. They developed a conceptual model, where well-recognized physiological changes are incorporated, as well as other rarely considered psychosocial issues that influence medication-related harm. They note that medication-related harm is increasing, driven by increased life expectancy coupled with multimorbidity that frequently leads to polypharmacy and an increased risk of medication-related harm, particularly in the elderly.

They note that, in frail older adults, even 'appropriate' medicines can be harmful due to multiple reserve deficits impairing mechanisms to deal with even a minor side-effect. Age-related physiological changes influence drug handling and age-related changes may impact drug action so that, for specific medicines, the risk of harm is likely to outweigh any potential benefit. But, in frail older adults, depletion of physiologic reserves may increase the risk of medication-related harm, with or without multimorbidity. Add to this the concept of “psychosocial reserve”. They note that a reduction in functional ability, social support, cognition, mood or financial circumstances may all contribute to the depletion of psychosocial reserve. They suggest that poor health due to disease resulting in impaired physiological function and the addition of a new medicine can reduce mood, and thus psychosocial reserve, and vice versa.

They posit that medication-related harm meets the following criteria that have been proposed for something to be a “geriatric syndrome”:

- Is highly prevalent in older adults, especially frail older people
- Is a unified manifestation of multiple causations that do not occur in the same combination in each person or in the same person on repeated occasions
- Is associated with multimorbidity, poor outcomes and other geriatric syndromes

Importantly, they note that even the medicines review the component of the Comprehensive Geriatric Assessment (CGA) concentrates on inappropriate medicines. They stress that more work is required on mitigating harm from **appropriate** medicines

which, despite the anticipated risk of adverse effects, are necessary to delay disease progression and alleviate symptoms.

They note that medication-related harm often masquerades as another syndrome (for example, falls), and so can be misclassified. Hence, medication-related harm should be considered a differential diagnosis in all older adults. We should also no longer consider older adults as having an “atypical” response to medication; but rather they are responding “typically”.

They conclude that a medication-related harm assessment and intervention need to move from a unidimensional medicines focus to a multidimensional assessment, with a toolkit of interventions available to generate an individual care plan.

Concepts in the Stevenson paper drew upon lessons from the Pharm2Pharm study ([Pellegriin 2018](#)), which reduced medication-related harm admissions in older adults by over a third, the majority of which were due to appropriate medicines. This study considered medication management issues in the context of health literacy, cultural practices and social service issues over a 12-month period after hospital discharge, and engaged with the patient and prescriber during follow-up to identify and resolve problems.

Pharm2Pharm assigned specially trained pharmacists the role of managing medications across prescribers and settings for high risk patients. This model assigned hospital consulting pharmacists the responsibility of identifying newly admitted inpatients at risk of medication problems, engaging them, beginning the medication management process and formally handing them off to a community consulting pharmacist at discharge. Their results demonstrated a decrease in community-acquired medication-related hospitalization rate per 1000 admissions of participants aged 65 and older over time in intervention hospitals was 4.28 per quarter greater than in non-intervention hospitals.

Among hospital-acquired medication adverse outcomes, the most frequent medication categories were antibiotics, analgesics (especially opiates), antipyretics and antirheumatics, and corticosteroids. Drugs most frequently the cause of harm originating in the community were anticoagulants, antineoplastic and immunosuppressive drugs and corticosteroids. The rate of community-acquired anticoagulant-related hospitalizations decreased most significantly with the medication management intervention relative to the comparison group.

Key lessons from the Pharm2Pharm study:

- many of the medication-related harm events originated in the community
- a focus on anticoagulants is very important
- a tag team of hospital and community pharmacists works well

We’ve traditionally relied heavily on the “**brown bag**” **medication review**. That, of course, refers to our having patients (and their families in many cases) bring in all their medications (including any OTC medications, herbal supplements, etc.) in a brown bag

so we can go over each one. We look for those that the total number of medications, those that fit in “inappropriate” categories, those that are duplicative, those that may no longer be necessary, and those that may be interacting with each other. We assess patient compliance or adherence to their medications. Importantly, as noted in our October 19, 2010 Patient Safety Tip of the Week “[Optimizing Medications in the Elderly](#)”, we also look to see whether there are medications the patient should be taking but is not taking.

AHRQ provides a nice [Brown Bag Medication Review Tool](#). Murtha et al. ([Murtha 2020](#)) recently used that tool to identify medication nonadherence in a Midwestern clinic. Adult patients were instructed to bring all prescribed and over-the-counter medication to office visits. A reviewer transcribed administration directions and the patient's verbal instruction of how the medication is taken. 58% participants were nonadherent for at least 1 medication. 26% of all medications were nonadherent. Mental health drugs were the highest nonadherence category (38%). The majority of medication nonadherence was due to lack of access. That, of course, fits in with the concept proposed by Stevenson et al. that psychosocial factors need to be a required part of any medication reviews.

Recently, Romskaug et al. ([Romskaug 2019](#)) found that, among older patients exposed to polypharmacy, **clinical geriatric assessments and collaborative medication reviews** carried out by **a geriatrician in cooperation with the patient's family physician** can result in positive effects on health-related quality of life. Compared to a “usual care” control population, the patients receiving the joint medication management intervention had a significant improvement in health-related quality of life, more drug withdrawals, reduced dosages, and new drug regimens started.

Two other recent studies have dealt specifically with medication harms following hospital discharge. Transitions of care, such as discharge from a hospital, are points where patient outcomes can be affected, especially patients at high risk for medication errors.

Crannage et al. ([Crannage 2019](#)) examined the impact of a discharge medication education program on successful telephone follow-up contact and pharmacist-led post-discharge telephone counseling. 50 patients were included in the initial evaluation of this service; 78% of patients were successfully contacted within 2 business days after discharge, an increase from a 20% success rate prior to service implementation. At follow-up telephone calls, patients reported taking an average of 16 medications. The 30-day readmission rate was 10% for patients receiving this service, compared with 19% prior to implementation.

Pareekh et al. ([Pareekh 2020](#)) analyzed data on patients age 65 and older who were discharged from five UK teaching hospitals and developed a tool that might be used to predict the risk of an older adult experiencing medication-related harm requiring healthcare use following hospital discharge. Their tool derivation cohort consisted of 818 patients, 15% of whom experienced ‘definite’ medication-related harm requiring healthcare use. Modelling resulted in a prediction tool (the PRIME tool) with eight variables measured at hospital discharge: age, gender, antiplatelet drug, sodium level,

antidiabetic drug, past adverse drug reaction, number of medicines, living alone. The authors acknowledge that the tool needs to be validated in multiple settings before it should be adopted widely.

Notably, in the Pharm2Pharm study mentioned above ([Pellegrin 2018](#)), the hospital-acquired medication harm rate did not change. Rather, the rate of admissions with community-acquired medication harm was reduced by 4.28 admissions per 1000 admissions per quarter in the Pharm2Pharm hospitals relative to the comparison hospitals. This suggests that deployment of pharmacists in the community to review medications in high-risk patients should have an increased role.

Of course, identifying medications that should be stopped or have the dose altered is just the first step. Knowing how to manage those situations is the next step. Our many columns on deprescribing listed below have many recommendations and links to useful resources on deprescribing.

Some of our past columns on Beers' List and Inappropriate Prescribing in the Elderly:

- January 15, 2008 “[Managing Dangerous Medications in the Elderly](#)”
- June 2008 “[Potentially Inappropriate Medication Use in Elderly Hospitalized Patients](#)”
- October 19, 2010 “[Optimizing Medications in the Elderly](#)”
- September 22, 2009 “[Psychotropic Drugs and Falls in the SNF](#)”
- September 2010 “[Beers List and CPOE](#)”
- June 21, 2011 “[STOPP Using Beers' List?](#)”
- December 2011 “[Beers' Criteria Update in the Works](#)”
- May 7, 2013 “[Drug Errors in the Home](#)”
- November 12, 2013 “[More on Inappropriate Meds in the Elderly](#)”
- January 28, 2014 “[Is Polypharmacy Always Bad?](#)”
- March 4, 2014 “[Evidence-Based Prescribing and Deprescribing in the Elderly](#)”
- September 30, 2014 “[More on Deprescribing](#)”
- February 10, 2015 “[The Anticholinergic Burden and Dementia](#)”
- May 2015 “[Hospitalization: Missed Opportunity to Deprescribe](#)”
- July 2015 “[Tools for Deprescribing](#)”
- November 2015 “[Medications Most Likely to Harm the Elderly Are...](#)”
- August 2, 2016 “[Drugs in the Elderly: The Goldilocks Story](#)”
- October 31, 2017 “[Target Drugs for Deprescribing](#)”
- January 2018 “[What Happens After Delirium?](#)”
- May 2018 “[Antipsychotic Use in Nursing Homes: Progress or Not?](#)”
- June 2018 “[Deprescribing Benzodiazepine Receptor Agonists](#)”
- October 2018 “[STOPP/START/STRIP](#)”
- November 27, 2018 “[Focus on Deprescribing](#)”
- March 19, 2019 “[Updated Beers Criteria](#)”

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- March 4, 2014 “[Evidence-Based Prescribing and Deprescribing in the Elderly](#)”
- September 30, 2014 “[More on Deprescribing](#)”
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- 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](#)”

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! ”
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 ”

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? ”

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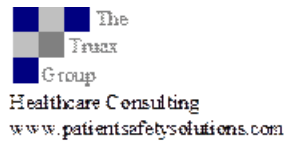
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<https://qualitysafety.bmj.com/content/29/2/142>



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