

Patient Safety Tip of the Week

August 2, 2016

Drugs in the Elderly: The Goldilocks Story

In our numerous columns on inappropriate prescribing in the elderly (see full list below) we've usually emphasized that the elderly are all too often prescribed not only inappropriate drugs but also too many drugs (polypharmacy). But in our January 28, 2014 Patient Safety Tip of the Week "[Is Polypharmacy Always Bad?](#)" we discussed a study by Payne and colleagues ([Payne 2014](#)) which pointed out that most previous studies linking polypharmacy to unplanned hospitalizations have had certain flaws. They then performed a retrospective analysis of patients in Scotland to further study the relationship between medications and hospitalizations. Though it was a retrospective analysis rather than a randomized controlled trial, their findings were interesting. Yes, they confirmed that there is a strong correlation overall between the number of drugs taken and the risk of unplanned hospital admission. Patients taking 4-6 medications were more than twice as likely to have an unplanned admission than those taking 1-3 medications. And those taking 10 or more medications were 6 times more likely to be admitted than those taking 1-3 medications. But when they factored in comorbidities they found that the strength of the association between number of medications and unplanned admissions was greatly reduced as the number of comorbidities increased. In fact, for the patients with the most comorbidities (6 or more conditions) there was no difference in the risk of unplanned admission between those taking 4-6 medications vs. those taking 1-3 medications. Even for those taking 10 or more medications the risk was only moderately increased (OR 1.5). They explained their results by noting that many studies on polypharmacy have ignored one very important factor that seems counterintuitive: **underprescribing!** That is, patients on multiple medications may not be taking a medication that is very important for at least one of their underlying conditions. Of course, it may not be truly underprescribing. Rather it may reflect poor compliance, a phenomenon we tend to see increase with the number of medications prescribed.

Now a new study from Belgium attempts to answer this question as to whether the elderly are prescribed too many or too few drugs ([Wauters 2016](#)). Researchers applied the STOPP and START criteria (see our June 21, 2011 Patient Safety Tip of the Week "[STOPP Using Beers' List?](#)") to a cohort of community-dwelling adults, aged 80 and older (mean age 84.4). The mean number of medications prescribed was 5 (surprisingly few by US standards). But they found that polypharmacy, underuse, and misuse were high (all around 60%) and that underuse and misuse often coexisted. In only 9% of this population was there no overuse, underuse or misuse. After adjustment for number of medications and misused medications, there was an increased risk of mortality and

hospitalization for every additional underused medication. Associations with misuse were less clear. Their main finding was that **every additional underused medication was associated with a relative increase in mortality rate of 36%, and in hospitalization rate of 26%** after 18 months, independent of the number of medications taken, and of the number of misused medications.

The authors of both the Payne and Wauters studies therefore caution against the use of “polypharmacy” per se as a quality indicator because it may be misleading. Measures of inappropriate prescribing (eg. Beers’ list, STOPP list) are likely to be better quality metrics than using total number of medications. In our June 21, 2011 Patient Safety Tip of the Week “[STOPP Using Beers’ List?](#)” we noted the STOPP criteria identified potentially avoidable ADE’s impacting on hospitalization over twice as often as did Beers’ criteria.

We’ve done multiple columns on Beers’ list, the STOPP list, and inappropriate prescribing in the elderly (see the list at the end of today’s column). We are also strong advocates of regular reviews of a patient’s medications (medication therapy management or MTM). See our May 7, 2013 Patient Safety Tip of the Week “[Drug Errors in the Home](#)” for details on MTM. We’ve mentioned multiple times that when we do such reviews on high-risk patients we almost always come away with medication lists that are 1-2 medications shorter (because of therapeutic duplication or medications no longer needed). Several of our columns also deal with how to “deprescribe”. But the work described in the Payne and Wauters studies would suggest we need to add another column to our MTM sheets – one for evidence-based medications that are missing for a condition the patient has!

In our hospitals we’ve already added such a column to our discharge checklists and this has helped hospitals improve their compliance with quality metrics for a variety of P4P programs. But we probably have not kept up to date on our similar MTM lists on the outpatient side.

So is polypharmacy always bad? In analogy to the Goldilocks fairytale, is our prescribing in the elderly too many, too few, or just right? What we really need to strive for is “eupharmacy” or, as Goldilocks would have said “just right”.

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...](#)”

References:

Payne RA, Abel GA, Avery AJ, et al. Is polypharmacy always hazardous? A retrospective cohort analysis using linked electronic health records from primary and secondary care. *British Journal of Clinical Pharmacology* 2014; 15 January 2014
<http://onlinelibrary.wiley.com/doi/10.1111/bcp.12292/pdf>

Wauters M, Elseviers M, Vaes B, et al. Too many, too few, or too unsafe? Impact of inappropriate prescribing on mortality, and hospitalisation in a cohort of community-dwelling oldest old. *British Journal of Clinical Pharmacology* 2016; published online 18 July 2016
<http://onlinelibrary.wiley.com/doi/10.1111/bcp.13055/abstract>



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