



# Are medications causing hospital visits among older patients?

AS PHARMACISTS, WE ARE INVOLVED IN HELPING TO MANAGE patients' medication regimes and to ensure that pharmacotherapy helps to achieve positive outcomes. In this quest, we provide counselling to our patients and recommendations to and collaboration with other health care providers. Overall, we work to ensure that medications are properly utilized and managed to avoid or minimize adverse effects. One of the largest groups of patients for whom this monitoring is necessary is the elderly, as we know that they are more sensitive to medications and therefore, susceptible to their adverse effects. A recent study in the *Annals of Internal Medicine* by Budnitz and colleagues considers this particular patient group of older adults (aged 65 and older) and assesses medication use that leads to emergency department visits.<sup>1</sup>

## What did the study involve?

This particular study compared emergency room (ER) visits due to adverse drug events associated with medications listed as inappropriate in the Beers criteria<sup>2</sup> compared to other medications. In order to achieve their goal, the research group used public health surveillance data and compared the number of emergency department visits related to adverse events associated with Beers criteria vs other medications. The Beers criteria<sup>2</sup> used by Budnitz and colleagues is a tool for helping aid the selection of medications in the elderly. It is a list most commonly known to researchers and geriatricians that contains medications considered potentially inappropriate for the elderly.

In addition to the number of ER visits, the researchers also looked at the 2 groups of medications and compared this risk of adverse effects per outpatient prescription visit again using data from 2 cross-sectional surveys. They calculated the risk of adverse events by dividing the estimated number of emergency department visits by the estimated number of outpatient visits at which implicated medications were prescribed.

The methods used in this particular study are associated with certain limitations, many of which are recognized by the

authors. The use of surveys for data collection limits the data to that which was coded as an adverse event and that led to an emergency room visit and does not capture those events that were not properly diagnosed or documented. These surveys also do not provide specific information such as the duration for which the patient was on the medication, if they had been

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on it previously, if they had reported any adverse effects and also if they had been adherent with their prescription. Despite these limitations, this study provides interesting results that may not capture all events but do provide information about safety of medications in the elderly. These results and their implications have great bearing on the

work that we do as pharmacists and the monitoring that we provide for our patients.

## What did the study find?

This study's results suggest that the mere fact that a medication is not listed on the Beers criteria does not imply that it is completely safe for older patients. The study found 4492 adverse drug event cases, of which 3.6% were estimated to be due to Beers criteria medications that are classified as potentially inappropriate; and these medications were found to be prescribed in 10.5% of outpatient visits.<sup>1</sup> Surprisingly, 47.5% of the emergency room visits for adverse drug events were caused by

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10 medications, 9 of which the authors classified into 3 classes — oral anticoagulant or antiplatelet agents (warfarin, aspirin, clopidogrel), antidiabetic agents (insulin, metformin, glyburide, and glipizide) and narrow therapeutic index agents (digoxin and phenytoin).<sup>1</sup> These medications made up only 9.4% of outpatient visits.<sup>1</sup> Of all these medications, only digoxin is listed in the Beers criteria and it was implicated in 3.1% of all ER visits for adverse drug events.<sup>2</sup> Also surprising is that the dose in 45.5% of these cases was considered appropriate at 0.125 mg or less.<sup>1</sup>

The most striking of the findings from this study was that 3 medications alone (warfarin, insulin, and digoxin) caused one-third of all ER visits for adverse drug events among older adults. This finding reached clinical and statistical significance when compared to Beers criteria medications classified as potentially inappropriate. These medications were more likely to be associated with adverse events that required hospitalization.

### What does this study mean to pharmacists?

As pharmacists, we recognize (as do the study's authors) how critical the use of medications such as warfarin, insulin, and digoxin are in the treatment of many patients, both young and old. The authors of this research call for "even small improvements in the use of these medications" to reduce the burden of serious adverse drug events among older patients. Pharmacists are in an ideal situation to help patients and health care providers monitor for, prevent, and manage adverse drug events should they occur. We can provide information to patients about what to expect from their therapy and provide management strategies for adverse effects. We can inquire

about adverse events via telephone and in person when patients come into the pharmacy. Finally, as pharmacists we should advocate for our patients and work with their health care providers to ensure that appropriate bloodwork or other monitoring is done to prevent adverse drug events when possible.

#### Resources

Consult the Beers List at

[www.dcri.duke.edu/ccge/curtis/beers.html](http://www.dcri.duke.edu/ccge/curtis/beers.html).

The CBC's version of the list gives Canadian brand names:

[www.cbc.ca/news/background/seniorsdrugs/beers\\_table\\_more.html](http://www.cbc.ca/news/background/seniorsdrugs/beers_table_more.html).

This study highlights the importance of patient safety and emphasizes that as pharmacists we can play an important role in improving medication safety. Our role can be at the individual patient level or it can be at a systems level through encouraging monitoring and surveillance programs for high-risk medications, especially in high-risk groups. Whatever role we choose to take, this study helps to highlight that every small effort can make a difference in changing patient outcomes, improving resource utilization and patient care. ■

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#### References

1. Budnitz DS, Shehab N, Kegler SR, Richards CL. Medication use leading to emergency department visits for adverse drug events in older adults. *Ann Intern Med* 2007;147:755-65.
2. Fick DM, Cooper JW, Wade WE, Waller JL, Maclean JR, Beers MH. Updating the Beers criteria for potentially inappropriate medication use in older adults: results of a US consensus panel of experts. *Arch Intern Med* 2003;163:2716-24.