Medication Misadventures in the Elderly: A Year in Review

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ABSTRACT

Objective: This paper reviews recent articles examining medication misadventures that can be defined as medication errors and adverse drug events in the elderly.

Methods: MEDLINE and International Pharmaceutical Abstracts were searched for articles published in English in 2009 using a combination of the terms *medication errors*, *medication adherence*, *suboptimal prescribing*, *monitoring*, *adverse drug events*, *adverse drug withdrawal events*, *therapeutic failure*, and *aged*. A manual search of the reference lists of the identified articles and the authors' article files, book chapters, and recent reviews was conducted to identify additional publications. Those studies that described unique approaches to evaluating medication misadventures in the elderly were included in the review.

Results: The search identified 5 unique studies relating to medication misadventures in the elderly. A cross-sectional study found that a new 8-item paper-and-pencil adherence survey—the Morisky Medication Adherence Scale—was significantly associated with antihypertensive drug pharmacy refill adherence ($P < 0.05$). A cross-sectional study of medication discrepancies that occurred during transition from the hospital to a nursing home found discrepancies in almost 75% of patients. A randomized controlled trial of a computer-generated decision support intervention to reduce potentially inappropriate prescribing in an emergency department found that the intervention was associated with a significant reduction in prescriptions for such medications ($P = 0.02$). One study found that patients who were taking digoxin and had been hospitalized during the previous 2 months were at significantly increased risk for additional hospitalizations due to digoxin toxicity. A survey study of Medicare beneficiaries found that use of multiple types of inappropriate medications was a risk factor for self-reported adverse drug events, independent of the number of medications taken.

Conclusion: Data from these recently published studies could be used to guide the development and evaluation of quality improvement, research, or clinical practice initiatives. (*Am J Geriatr Pharmacother*. 2010;8:77–85)

Key words: medication errors, medication adherence, monitoring, adverse drug events, aged, computerized physician order entry.

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INTRODUCTION

Medication misadventures, which include medication errors and medication-related adverse patient events (MRAPEs), remain a leading public health issue among the elderly.[1] Common medication errors include problems with prescribing, order communication, dispensing, administering, and monitoring. MRAPEs include adverse drug reactions, therapeutic failures, and adverse drug withdrawal events.[2] Elderly patients have several factors (eg, advanced age, frailty, increased drug utilization) that place them at greater risk for adverse outcomes from medication use across multiple care settings.[3] Despite efforts to improve medication errors in older adults, this issue remains a leading cause of morbidity and mortality among the elderly. Therefore, an updated review of the literature on medication misadventures in the elderly continues to be a timely and relevant exercise.

METHODS

MEDLINE and International Pharmaceutical Abstracts were searched for English-language articles on medication misadventures in the elderly published in 2009, using a combination of the terms *medication errors, medication adherence, suboptimal prescribing, monitoring, adverse drug events, adverse drug withdrawal events, therapeutic failure*, and *aged*. A manual search of the reference lists of the identified articles and the authors' article files, book chapters, and recent reviews was conducted to identify additional publications. Those studies that, in the authors' opinion, described unique approaches to evaluating medication misadventures in the elderly were included in the review. Articles were categorized using a previously described classification of medication errors and MRAPEs.[2] Additional articles of interest published during 2009 that are related to medication errors and MRAPEs are listed in the **appendix**.

RESULTS

The literature search identified several recent studies evaluating medication misadventures. However, the authors deemed 5 of these articles[4–8] to be particularly noteworthy in their advancement of the current literature and their topics of study. These studies address adherence,[4] monitoring,[5] prescribing,[6] and adverse drug reactions.[7,8]

Medication Errors

Adherence

Krousel-Wood et al[4] reported on the concordance between a relatively new self-reported measure of medication adherence and pharmacy fill data in a small sample of older adults with hypertension enrolled in a Medicare managed care plan. The authors randomly selected 100 white and 100 black patients from administrative data, 177 of whom were found to be eligible; 116 patients returned the surveys for a response rate of 66%. An additional 29 patients were excluded for various reasons, leaving a final sample of 87 patients.

Respondents filled out the 8-item Morisky Medication Adherence Scale (MMAS),[9] an expanded version of the original 4-item scale.[10] The 8 items, all given a weight of 1, were: (1) Do you sometimes forget to take your high blood pressure pills? (2) Over the past 2 weeks, were there any days when you did not take your high blood pressure medicine? (3) Have you ever cut back or stopped taking your medication without telling your doctor because you felt worse when you took it? (4) When you travel or leave home, do you sometimes forget to bring along your medications? (5) Did you take your high blood pressure medication yesterday? (6) When you feel like your blood pressure is under control, do you sometimes stop taking your medicine? (7) Taking medication every day is a real inconvenience for some people; do you ever feel hassled about sticking to your blood pressure treatment plan? and (8) How often do you have difficulty remembering to take all your blood pressure medication?

Respondents were then categorized into 3 groups: high adherers (perfect score of 8), medium adherers (score of 6 or 7), and low adherers (score <6). The authors collected pharmacy fill data for these patients over the previous year (calendar year 2002) and calculated 3 measures of adherence: the continuous single-interval medication availability (CSA), the medication possession ratio (MPR), and the continuous medication gap (CMG). These measures were averaged across all the antihypertensive drugs a patient was taking over the year to produce 1 score for each of the measures for each patient. *Nonadherence* was defined as a value <0.8 for CSA and MPR or >0.2 for CMG. Finally, the concordance between self-reported and pharmacy fill data was analyzed by measuring the CSA, MPR, and CMG in patients who were low, medium, and high adherers based on the MMAS scale.

Overall, the sample had high self-reported adherence, with 58% of patients having an MMAS score of 8. Only 8 patients (9%) were in the low adherence group, and patients in this group were significantly more likely to be black ($P = 0.04$) and female ($P = 0.03$). There was an association between MMAS category and adherence based on each of the 3 automated adherence measures.