Inappropriate Medication Use as a Risk Factor for Self-Reported Adverse Drug Effects in Older Adults

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Background:

The majority of adverse drug effects occur in the elderly population. This is mainly due to the number of medications that are taken by this population, which reflects of the fact that multiple health problems are more common in older adults. The relationship between number of medications taken and adverse drug effect risk is strong, suggesting that the best way to avoid adverse drug effects is to avoid overuse of medications. Some of these problems also may be avoided by improving medication selection. However, selecting appropriate medications for older adults is complex due to the wide variation in health status among the elderly. Measures of inappropriate medication use have been developed, including lists of drugs that shouldn't be used together (drug-drug interactions or therapeutic duplications), drugs that shouldn't be taken if a person has certain diseases (drug-disease interactions), and drugs that are likely to cause adverse drug effects in elderly people where safer alternatives exist (drugs to avoid in the elderly).

Goals of the study:

The purpose of this study was to determine whether measures of inappropriate medication use are associated with self-reported adverse drug effects, controlling for the number of medications used.

Who was included in this study?

Study subjects were participants in the Prevention of Secondary Conditions Study, a prospective cohort study of Iowa Medicare beneficiaries aged 65 and older. Eligible individuals with mobility limitations were mailed a 19-page baseline questionnaire, and 1,955 responded. Follow-up questionnaires were mailed one and two years after the baseline questionnaire. For this study, 626 participants were included because they had the following characteristics: an established disability affecting their mobility, complete pharmacy dispensing records, continuous Medicare eligibility, and survey data was available.

Inappropriate medication use was defined as: use of a drug on the list of drugs to avoid in elderly people, drug–disease interactions (constructed from linked Medicare claims), drug–drug

interactions, and therapeutic duplications. An adverse drug effect was defined from the following question asked in the second annual follow-up survey: ‘‘In the past 12 months, have you noticed any side effects, unwanted reactions, or other problems from medications you were taking?”

What did we find?

Of respondents to the survey, 22% reported having experienced an adverse drug effect in the past year. Gastrointestinal and central nervous system complaints were the most common adverse drug effects reported. Cardiovascular, antimicrobial, and central nervous system agents were the most commonly used medications.

Over half (51%) of participants were receiving at least one potentially inappropriate medication, and 21% had two or more types of inappropriate use. Use of drugs to avoid and drug-disease interactions were the most common types of inappropriate use. The most commonly used drug to avoid was propoxyphene, a drug for pain. The most common drug—disease interactions involved use beta blockers (a type of drug for high blood pressure) in people with syncope, falls, peripheral vascular disease, chronic obstructive pulmonary disease, or diabetes. Adverse drug effects were reported by 30.1% of those taking a potentially inappropriate medication, compared to 13.5% of those not taking an inappropriate medication. Any inappropriate use, use of a drug on the drugs to avoid list, drug-disease interactions, and number of inappropriate use domains were each found to be risk factors for self-reported adverse drug effects.

Conclusion:

Inappropriate medication use is a risk factor for self-reported adverse drug effects, independent of the number of medications taken. Efforts to reduce adverse drug effects by reducing medication inappropriateness should be encouraged as a complement to efforts focused on lowering the number of medications prescribed.

The summary above is based on a study by Elizabeth A. Chrischilles, PhD, Rachel VanGilder, PhD, Kara Wright, MS, Michael Kelly, PharmD, and Robert B. Wallace, MD, MS. The full article appears in J Am Geriatr Soc. 2009 Jun;57(6):1000-6. This work was supported by an Agency for Healthcare Research and Quality (AHRQ) Centers for Education and Research on Therapeutics cooperative agreement #5 U18HSO16094 (the Iowa Older Adults CERT).