

# Improving the Quality of Medication Use in Elderly Patients

## *A Not-So-Simple Prescription*

*The best way to get rid of a problem is to hold it up to the bright light and look at it from all sides.*  
Andy Rooney

**T**HE QUALITY of medication prescribing and use in older persons has been a recurring issue of substantial concern for policymakers, regulators, health care researchers, and the public. Although there have been numerous efforts to measure the extent of the problem and to identify areas in greatest need of change, constructing meaningful quality indicators relevant to drug therapy in elderly patients has continued to be a challenge.<sup>1</sup> In 1991, Beers et al<sup>2</sup> published explicit criteria for determining inappropriate medication use in the institutionalized elderly patient population, which were updated and expanded in 1997.<sup>3</sup> The Beers criteria have been widely used by regulators as a drug utilization review tool.<sup>4</sup> They have also been used in numerous studies<sup>5,6</sup> that examine patterns of potentially inappropriate prescribing in various US populations and clinical settings. In 1994, Willcox and colleagues<sup>7</sup> attracted national attention to the issue with the publication of a study that used the Beers criteria to assess inappropriate drug prescribing for community-dwelling elderly patients, using data from the 1987 National Medical Expenditure Survey. The authors reported that US physicians had prescribed potentially inappropriate medications to nearly a quarter of all elderly patients living in the community. Newspapers nationwide reported the study's findings under headlines such as "Medication Peril for the Elderly" and "Docs Giving Many Seniors Wrong Drugs."

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More recent research findings have suggested that there have been meaningful improvements in the quality of medication use in elderly patients since 1987. Using data from the 1996 Medical Expenditure Panel Survey, Zhan and colleagues<sup>8</sup> reported that the use of many inappropriate medications had declined substantially. Many of the most notorious drugs on the Beers list were rarely being used in the US community-dwelling, geriatric population. In this issue of the ARCHIVES, Pitkala et al<sup>9</sup> report findings of a study that assessed medication use patterns among home-dwelling, elderly patients in Helsinki, Finland, from 1998 to 1999. The authors characterized the use of inappropriate medications in this popu-

lation as "conspicuously low"; only 12.5% of elderly patients in Helsinki were using any of 40 medications included on the Beers list, a far lower percentage compared with previous US studies.

The findings of these latest studies present a paradox for those who remain concerned about how medications are being used among elderly patients. In one sense, the quality of medication use in elderly patients could be considered to be improving. Alternatively, these studies may have simply been measuring the wrong things. A major limitation in using the Beers criteria to examine medication use in elderly patients is that the list is stocked with relics of a bygone pharmacopeia. Flurazepam hydrochloride, chlorpropamide, oral meperidine hydrochloride, pentazocine, and meprobamate are names that are barely recognizable to those who have completed medical training during the past decade. Many of these drugs are not even available in Finland, which may account for the favorable findings summarized in the article by Pitkala and coauthors. In the United States, it is expected that numerous drugs on the Beers list will just fade away, because almost no one initiates treatment with them anymore.<sup>10</sup>

Data continue to accumulate that reinforce our concerns about the quality of medication use in elderly patients, especially among the frailest in the population. Among the 1.6 million US residents of nursing homes, drug-related injuries are estimated to occur at a rate of 350 000 events per year, and more than half may be preventable.<sup>11</sup> There may be as many as 20 000 fatal or life-threatening adverse drug events per year among the nursing home population; of these, 80% may be preventable. Medications frequently implicated in preventable adverse drug events often do not appear on the "bad drug" lists that are so commonly relied on to measure quality. In fact, the "good drug-bad drug" approach to quality improvement may serve as a distraction from addressing some of the most disturbing issues relating to drug therapy in elderly patients; the underuse of beneficial therapies may considerably dwarf overuse problems in this population. Such underuse problems have been identified in the management of a broad range of chronic conditions in elderly patients, including cardiovascular disease, hypertension, stroke prevention, osteoporosis

prevention, pain management, and depression.<sup>12</sup> The same level of attention and scrutiny given to problems of overuse of drug therapies in elderly patients must be given to those of underuse.

The truth is that few drugs that cause problems for elderly persons are inherently bad; when drugs do cause problems, it is because they are prescribed, dosed, taken, or monitored inappropriately. For example, the benefits of warfarin sodium to prevent strokes in patients with atrial fibrillation has been clearly established. Yet, the use of warfarin is fraught with error in everyday clinical practice.<sup>13</sup> Prescribers frequently make no modifications in warfarin dosing or the frequency of monitoring when drugs with well-established interactions with warfarin are prescribed, substantially increasing the risk of bleeding.<sup>11</sup> The drug itself is not the problem; the problem relates to how the medication is used.

The challenges to making improvements in the way medications are used in elderly patients abound. We continue to struggle with a scarcity of high-quality evidence on which to base pharmacotherapeutic decisions. Despite many efforts to encourage the inclusion of older persons in research trials, elderly patients rarely comprise more than a small fraction of study participants, even in the case of treatments for medical conditions that are most likely to affect them, including arthritis, cancer, and heart disease.<sup>14</sup> Guidelines issued by the Food and Drug Administration to the pharmaceutical industry to enhance participation of elderly participants in clinical trials of drug therapies have essentially failed.<sup>15</sup> New approaches are required to alter these patterns of exclusion. For example, a program that has provided financial incentives for drug companies (through patent extensions) to test their products on children has reportedly achieved many of its goals.<sup>16</sup> Although some have criticized this strategy as an “indefensible windfall” to the pharmaceutical industry,<sup>17</sup> all indications suggest that this approach has worked, in contrast to guidelines without any regulatory or financial incentive.

What strategies can be used to improve the quality of medication use in elderly patients? Computer physician order entry systems are widely promoted as a powerful tool to prevent errors that lead to serious drug-related injury. These systems can provide clinical decision support to the prescriber, including immediate warnings relating to suboptimal drug choices and serious drug-drug interactions, in addition to real-time prompts regarding drug dosing and monitoring. Furthermore, these systems can facilitate communication between physicians and pharmacies by eliminating illegible handwritten orders and prescriptions. Computer physician order entry is widely considered the gold standard approach to improving medication safety in the hospital setting.<sup>18</sup> Yet, at present, only 3% of US hospitals use these systems,<sup>19</sup> and the challenges to using this strategy in the ambulatory and long-term care settings are greater than in the hospital setting.

An increased emphasis on the involvement of the clinical pharmacist and the nurse specialist in the clinical care team may also provide opportunities to improve the quality of drug therapy in elderly patients.<sup>20</sup> Special-

ized anticoagulation clinics have been increasingly used to provide coordinated care focused on the management of warfarin therapy. Pharmacists or nurses, with expertise in anticoagulation care, often oversee the routine management of patients followed up in these clinics. Anticoagulation clinics optimize treatment with warfarin therapy by providing a systems-based approach to the management of anticoagulation dosing and monitoring,<sup>21</sup> leading to improvements in anticoagulation control,<sup>22</sup> and reductions in bleeding and thromboembolic event rates.<sup>23,24</sup> Multidisciplinary interventional efforts may also have benefits in the pharmacotherapeutic management of various chronic medical conditions, including diabetes mellitus and congestive heart failure.<sup>25</sup>

One of the greatest challenges to making improvements in the quality of medication use in elderly patients relates to the financial resources that are required to implement change. Interventions that will lead to meaningful improvements can be expensive, particularly in the short term. Long-term savings in terms of lower overall health care costs cannot be ensured. Those who pay for health care must be willing to assume the costs for these efforts, without any guarantee that these efforts will save money. In the current health care environment, the investment of financial resources for the sake of improving quality, without an accompanying reduction in costs, is a hard sell.

Inadequate prescription drug coverage for elderly patients further complicates the problem. More than one third of Medicare enrollees in the United States have no outpatient drug coverage; of the remainder, nearly half have intermittent or limited coverage.<sup>26</sup> There is a strong link between lack of prescription drug coverage and underuse of prescribed medications due to costs.<sup>27-30</sup> Even when prescription drug coverage is available, increased cost-sharing for prescription drugs for elderly persons is associated with reductions in use of many essential medications (eg, insulin, antihypertensive agents, anticoagulants, and lipid-reducing agents) and an increase in serious adverse events and emergency department visits associated with these reductions.<sup>31</sup>

In summary, we have become very good at describing the adverse consequences of our current approach to using medications in the elderly patient population. Putting the pieces of the puzzle together to create a solution remains a formidable but not insurmountable task. Improving the quality of medication use in elderly patients will require the following:

- An increased knowledge base regarding pharmaceuticals in older patients through the inclusion of more elderly patients in clinical trials.
- Broader testing and implementation of technological approaches, such as computer physician order entry, to reduce the risk of medication errors across all clinical settings.
- Enhanced collaborations between those who prescribe drugs and those who know medications best (clinical pharmacists).
- The provision of affordable drug coverage, especially for high-risk, elderly patients.

All the pieces of the puzzle lie before us; it remains for us to find a way to fit them together.

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