Adverse drug reactions in elderly people

Doctors should pay greater attention to managing the risk-benefit relationship to improve care of patients over 65, urge **Jerry Avorn** and **William Shrank**. The challenge of safer prescribing, says **Anne Spinewine**, lies in shared decision making

A substantial cause of preventable illness

Patients over 65 years old bear the greatest burden of illness and thus are the greatest beneficiaries of drugs to prevent, ameliorate, or treat conditions. One of the most rapidly growing segments of the population, they consume an ever increasing proportion of all prescribed drugs.

For decades elderly people were excluded from randomised trials of many preventive drugs, reinforcing scepticism over whether they would benefit from treatment of conditions such as hypercholesterolaemia and hypertension. But elderly patients may benefit from such treatments at least as much as their younger counterparts. In fact, because of the higher prevalence of preventable disease in older patients, they often derive greater benefits from such prescribing than younger patients.

For this reason, much primary care has shifted from the treatment of acute illness to the management—often pharmacological—of "risk states" in elderly people, including hypertension, hypercholesterolaemia, and osteoporosis, as well as diseases such as atrial fibrillation, heart failure, and diabetes. Solid evidence from clinical trials indicates that appropriate prescribing can substantially reduce the burden of preventable morbidity in these conditions. Although such concerns are traditionally seen as a problem of the industrialised world, they are rapidly becoming a major issue facing developing countries as well.

But this benefit comes at a price: the high prevalence of adverse drug reactions in older patients. The problem has several sources. One is the altered pharmacokinetic status of elderly people; they are less able to metabolise and excrete many common drugs, even in the absence of liver or kidney diseases. They may also have altered pharmacodynamic responses, with some receptor systems (such as those for opiates and benzodiazepines) having greater sensitivity with advancing age, and others (such as those for insulin) showing reduced sensitivity. Unfortunately, the under-representation of older patients (especially frail ones) in clinical trials makes it even harder for the prescribing doctor to prevent untoward drug reactions in older patients.

When an elderly person experiences an adverse drug reaction, it may be mistakenly attributed by the patient or doctor to a new disease or (even worse) the ageing process itself. Examples include the parkinsonian side effects of many antipsychotic drugs and the fatigue, confusion,

The challenge of safer prescribing

Quality improvement for the care of older people has become a priority in many countries. Elderly people consume a large proportion of health care, including drugs, and evidence shows that prescribing to this group is often inappropriate. Inappropriate prescribing occurs in all care settings and at the transition between settings. Negative consequences include adverse drug events, higher costs for the patient and society, and impaired quality of life.

Specific approaches tailored to the needs of frail elderly people are needed. A recent review of ways to optimise prescribing to older people found that geriatric medicine services (involving a multidisciplinary team that includes a geriatrician and other health-care providers with specialised geriatrics training), involvement of pharmacists in care, and computerised decision support can all improve the quality of prescribing to this group in different settings.

Quality improvement strategies are more likely to be effective when there is direct interaction with the prescriber and when the strategies are provided at the time of prescribing. In nursing homes, involvement of nurses in strategies is another important factor. The effect of educational interventions is mixed, although the lack of training of doctors in geriatrics is often cited as a cause of inappropriate prescribing.

However, widespread diffusion of effective approaches has not yet occurred. As in many other fields, translating research into practice is a delicate task. In the domain of quality improvement for safer prescribing to older people, this is further complicated by a lack of strong data showing the impact of effective approaches on important health outcomes. Also, the question of who should meet the cost of such approaches is a matter for debate. And we lack data on the cost effectiveness of strategies. With regard to computerised decision support systems, we first need systems that have been tailored to elderly patients before they can be implemented more widely.

It is important to take environmental barriers into account. Some barriers can be specific to the setting of care or even to the country of practice. For example, improving the quality of prescribing of neuroleptics in nursing homes is less likely to occur without an increase in staffing and resources. Direct contact with prescribers

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or depression-like symptoms that can result from excessive use of heavily marketed psychoactive drugs. Elderly people are at special risk of such misattributions because of the pervasive cultural assumption that growing older brings with it a collection of inherent and inevitable disabilities. The problem is compounded by the slender preparation that most students receive in geriatrics and in clinical pharmacology. There is ample evidence of the clinical burden of iatrogenic illness in the elderly. Studies of US patients aged over 65 indicate that each year more than 180 000 life threatening or fatal adverse drug effects occur in the outpatient setting, of which over half may be preventable. Another study attributed 6.5% of all hospitalisations in the general population to adverse drug events, a rate that is likely to be higher in elderly people.

Despite these gloomy realities, the most notable aspect of drug induced illness in elderly people is the most encouraging. Once recognised, a side effect of a drug is probably the single most reversible affliction in all of geriatric medicine. Usually, care of elderly people requires the management of conditions with a downward course. But discovering that a symptom is caused by a drug presents an uncommon opportunity to effect a total "cure" by stopping the offending prescription or lowering the dose. In our own practices we have often seen patients on a seemingly inexorable trajectory towards institutional care whose functional capacity was restored by thoughtful reassessment of their drug regimens. This has led to the useful if overstated recommendation that "any new symptom in an older patient should be considered a possible drug side effect until proved otherwise."

As well as being alert to the possibility of new iatrogenic problems, it is also prudent to reassess a patient's entire drug regimen at least twice a year, including categories often overlooked by patients and doctors: drugs bought over the counter and "nutraceuticals" such as herbal remedies or dietary supplements. Although these products are often devoid of therapeutic benefit, they can impose important toxicities, and their interactions with prescribed drugs are poorly understood. With growing use of the electronic medical record, we can expect that drug regimen review will increasingly be prompted by the computer in the course of routine care. In one computerised system for entering prescription orders, the system automatically checks all prescribed drugs and dosages against the age of the patient and recommends a lower dose or different drug if necessary.

Non-compliance with prescribed drug regimens can produce a different kind of drug related morbidity. In this "silent epidemic," as much as half of prescribed drugs are simply not taken. Considerable morbidity results from this other kind of drug related illness in elderly people, in which potentially useful treatments are not taken or (because of misplaced therapeutic nihilism) not prescribed in the first place.

Broader systems based and educational approaches are emerging to guide the evidence based use of drugs in older patients so as to reduce their burden of iatrogenic illness while ensuring that needed drugs are prescribed properly. Better attention to managing this benefit-risk relationship will play an increasingly important role in maintaining and improving the health of an ageing population.

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(such as with a clinical pharmacist) is not always feasible in nursing homes, and this can decrease the efficacy of the intervention. In some countries pharmacists do not have access to patients' records. Consequently, a quality improvement strategy that is effective in one care setting cannot be directly transposed to another without adaptation. The same applies to transposition between countries, because of differences in practice environments and culture.

Big improvements in communication at the interface between primary and secondary care are urgently needed too. Many adverse drug events result from problems with communication relating to management of drugs during the transition between care settings. National online databases of drugs dispensed to patients (as in Denmark), to which all doctors and pharmacists have access, should help to tackle such problems. The same should apply to patient records. Such a challenge should be taken up at the national level, although of course steps must be taken to protect patients' privacy. Better communication among prescribers to track changes in treatment and to record the reasons for those changes will also help to avoid the fragmentation of care. This aspect should be included in measures of quality performance.

Big improvements in communication at the interface between primary and secondary care are urgently needed

Quality improvement strategies for safer prescribing in older people must include shared decision making. The beliefs and preferences of older patients concerning treatment affect adherence and, in turn, the safe use of drugs. Several recent studies have shown the importance of considering patients' wishes, but many questions remain unanswered.

The high prevalence of people with dementia and the need to involve carers in decisions complicate further the task of shared decision making. Furthermore, many prescribers are not familiar with the principles of shared decision making or are reluctant to engage in it because of the extra time needed. Therefore a huge amount of work needs to be done here, from research to implementation. Education and training programmes for prescribers should include sessions on communicating with patients and on involving them in decisions. Health authorities should also consider including this dimension of care in quality performance measures.

What are the most urgent of the unanswered research questions? We need more clinical trials that enrol frail elderly patients, to enhance our knowledge of the benefits and risks of treatments in this group. With regard to quality improvement strategies, we need to evaluate the effect of multifaceted approaches on important health outcomes and costs. This is a challenging task that will certainly require multicentre trials with large samples.

It is important that quality improvement approaches are multidisciplinary in nature, use computerised decision support systems that are specific to this age group, and take the patient's view into account.

Meanwhile, national health systems should provide incentives for prescribers to regularly review treatments, develop information systems to facilitate seamless care, and encourage the implementation of multidisciplinary approaches including geriatric medicine services. Quality improvement strategies need to be customised to account for differences in patients, prescribers, and environmental factors.

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Home > Volume 336, Number 7650 >BMJ 2008;336:956 doi:10.1136/bmj.39520.686458.94 (Published 8 April 2008)

This article has a correction
Please see: *BMJ* 2008;**336**

BMJ 2008;336:956 doi:10.1136/bmj.39520.686458.94 (Published 8 April 2008)

Making a Difference

Adverse Drug Reactions in Elderly People

The challenge of safer prescribing

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*Doctors should pay greater attention to managing the risk-benefit relationship to improve care of patients over 65, urge **Jerry Avorn** and **William Shrank** (doi: 10.1136/bmj.39520.671053.94). The challenge of safer prescribing, says **Anne Spinewine**, lies in shared decision making*

Quality improvement for the care of older people has become a priority in many countries. Elderly people consume a large proportion of health care, including drugs, and evidence shows that prescribing to this group is often inappropriate.[1] Inappropriate prescribing occurs in all care settings and at the transition between settings. Negative consequences include adverse drug events, higher costs for the patient and society, and impaired quality of life.

Specific approaches tailored to the needs of frail elderly people are needed. A recent review of ways to optimise prescribing to older people found that geriatric medicine services (involving a multidisciplinary team that includes a geriatrician and other healthcare providers with specialised geriatrics training), involvement of pharmacists in care, and computerised decision support can all improve the quality of prescribing to this group in different settings.[2] Quality improvement strategies are more likely to be effective when there is direct interaction with the prescriber and when the strategies are provided at the time of prescribing. In nursing homes, involvement of nurses in strategies is another important factor. The effect of educational interventions is mixed, although the lack of training of doctors in geriatrics is often cited as a cause of inappropriate prescribing.

However, widespread diffusion of effective approaches has not yet occurred. As in many other fields, translating research into practice is a delicate task. In the domain of quality improvement for safer prescribing to older people, this is further complicated by a lack of strong data showing the impact of effective approaches on important health outcomes. Also, the question of who should meet the cost of such approaches is a matter for debate. And we lack data on the cost effectiveness of strategies. With regard to computerised decision support systems, we first need systems that have been tailored to elderly patients before they can be implemented more widely.

It is important to take environmental barriers into account. Some barriers can be specific to the setting of care or even to the country of practice.[3] For example, improving the quality of prescribing of neuroleptics in nursing homes is less likely to occur without an increase in staffing and resources. Direct contact with prescribers (such as with a clinical pharmacist) is not always feasible in nursing homes, and this can decrease the efficacy of the intervention. In some countries pharmacists do not have access to patients' records. Consequently, a quality improvement strategy that is effective in one care setting cannot be directly transposed to another without adaptation. The same applies to transposition between countries, because of differences in practice environments and culture.[4]

Big improvements in communication at the interface between primary and secondary care are urgently needed too. Many adverse drug events result from problems with communication relating to management of drugs during the transition between care settings.[5] National online databases of drugs dispensed to patients (as in Denmark),[6] to which all doctors and pharmacists have access, should help to tackle such problems. The same should apply to patient records. Such a challenge should be taken up at the national level, although of course steps must be taken to protect patients' privacy. Better communication among prescribers to track changes in treatment and to record the reasons for those changes will also help to avoid the fragmentation of care. This aspect should be included in measures of quality performance.

Quality improvement strategies for safer prescribing in older people must include shared decision making. The beliefs and preferences of older patients concerning treatment affect adherence and, in turn, the safe use of drugs.[7 8] Several recent studies have shown the importance of considering patients' wishes, but many questions remain unanswered. The high prevalence of people with dementia and the need to involve carers in decisions complicate further the task of shared decision making. Furthermore, many prescribers are not familiar with the principles of shared decision making or are reluctant to engage in it because of the extra time needed. Therefore a huge amount of work needs to be done here, from research to implementation. Education and training programmes for prescribers should include sessions on communicating with patients and on involving them in decisions. Health authorities should also consider including this dimension of care in quality performance measures.

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Meanwhile, national health systems should provide incentives for prescribers to regularly review treatments, develop information systems to facilitate seamless care, and encourage the implementation of multidisciplinary approaches including geriatric medicine services. Quality improvement strategies need to be customised to account for differences in patients, prescribers, and environmental factors.

Footnotes

Competing interests: None declared.

Provenance and peer review: Commissioned; not externally reviewed.

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Correction to Spinewine 336 (7650): 956

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Correction

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In reference 5 of this article by Anne Spinewine (*BMJ* 2008;336, doi: 10.1136/bmj.39520.686458.94), the name of the first author should be Witherington (not Whiterington).

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