Medicines and older people

There is no widely accepted definition of an 'older person'. The terminology used to describe older people is also variable (e.g. aged, elderly, frail elderly). Although chronological age on its own may not be an appropriate way to categorise people, in general those over 65 (over 50 for Aboriginal and Torres Strait Islander people) are often described as aged, older or elderly.

People over 65 years comprise approximately 12% of the Australian population, but consume a disproportionate number of prescription and other medicines. Older people are more likely to have multiple medical problems and to be taking multiple medications. As a result of this and their advancing age, they experience unique problems with the use of medications. They also experience more adverse events involving medicines than younger people.

Pharmacists can play a role in improving the quality use of medicines in older patients.

Factors complicating medicine use in older people

Changes in pharmacokinetics

A number of physiological changes occur with ageing, and these may modify the absorption, distribution, hepatic metabolism and renal excretion of medicines. Many medicines are cleared more slowly in older people.

In particular, the age-related decline in kidney function may lead to a decrease in the renal clearance of medicines and their metabolites. Decreases in both the glomerular filtration rate and renal clearance of drugs of up to 50% occur between the ages of 25 and 85 years, with a mean decrease of about 1% per year after age 40 years. Common medical conditions in the elderly, such as hypertension and diabetes, can also adversely affect renal function.[1] This is important for those medicines that are predominantly renally cleared (e.g. digoxin, lithium) or that have a renally cleared active metabolite (e.g. allopurinol, morphine). Special care is required in using these medicines, particularly if there is only a small margin between the plasma concentrations that produce the desired clinical effect and those that cause toxicity (i.e. drugs with a narrow therapeutic index). In general, elderly patients require smaller drug doses. It must be recognised, however, that physiological variability increases with age and therefore the dosage regimens must be individualised and reassessed over time.

Alterations in receptor sensitivity and homeostatic mechanisms

Older patients may differ from younger people in their pharmacodynamic sensitivity to medicines: generally, they are more sensitive to the effects of medicines. This may be partly explained by changes in the neuro-endocrine system that occur with ageing. The following examples illustrate this point.

Orthostatic hypotension

The homeostatic mechanism that protects against orthostatic hypotension may be impaired in older people. As a result, they are at increased risk of this adverse effect with any medicine that causes blockade of α-adrenergic receptors as a primary effect (e.g. prazosin) or secondary effect (e.g. tricyclic antidepressants, phenothiazines). In addition, several other vasodilators (e.g. glyceryl trinitrate, isosorbide dinitrate), diuretics, ACE inhibitors and anti-Parkinsonian drugs (e.g. levodopa, bromocriptine, pergolide) are more likely to cause orthostatic hypotension in older people.

Orthostatic hypotension may decrease quality of life by decreasing the person's confidence in their ability to move around and may lead to falls and fractures, which can cause significant morbidity in the elderly.[2]

Central nervous system effects

Hypnotics, anxiolytics and other central nervous system depressant medicines may cause confusion, incontinence and unsteady gait, which may result in falls and fractures. People receiving dopamine agonists (e.g. pergolide, ropinirole) may experience episodes of uncontrollable somnolence that have the potential to compromise safety and quality of life. Benzodiazepine hypnotics are useful drugs but are on occasion over-used, especially in the elderly. These agents lose their effectiveness as hypnotics after about 10 to 14 days' continuous use because of the development of tolerance. Unfortunately, they may continue to exert the effects previously mentioned and therefore lead to significant morbidity in older patients.

Confusion is common in the elderly. Causes include infection (e.g. urinary tract infection), metabolic abnormalities (e.g. acute renal failure), hypothyroidism and electrolyte disturbances, and medicines (e.g. drugs with anticholinergic properties).

Anticholinergic effects

Medicines with anticholinergic effects (e.g. tricyclic antidepressants, some anti-Parkinsonian drugs,