ABC of Geriatric Medicine

Edited by Nicola Cooper, Kirsty Forrest and Graham Mulley

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Geriatric Medicine

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Preface

Geriatric medicine is practised by many different clinicians in a wide variety of settings: hospital wards, outpatient clinics, day hospitals, general practitioner surgeries, care homes and the patient's own home.

Most doctors will spend a large part of their time dealing with older patients, which is why geriatric medicine is important. It is also a challenge: illness in older people often presents in atypical ways; and there is sometimes an inaccurate perception that little can be done to help them, or that their problems are 'social' rather than medical.

The *ABC of Geriatric Medicine* is written as an introduction to the specialty. The chapters are based on the UK's postgraduate curriculum for geriatric medicine and cover both general and specific aspects of medicine for older people, with further resources.

This book is for doctors in training – in hospital or general practice – and for medical students and specialist nurses. It can also be used as a resource for teaching. We hope you enjoy using it.

Interpretation of the text

The conditions discussed in this book refer specifically to older people and it should not be assumed that the same approach is relevant in younger patients, unless specifically stated.

The text and figures refer mainly to geriatric medicine in the UK; however, many of the principles apply to other developed countries.

Nicola Cooper
Kirsty Forrest
Graham Mulley

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CHAPTER 1

Introducing Geriatric Medicine

Nicola Cooper & Graham Mulley

OVERVIEW

- Developed countries have an ageing population
- Sick old people often present differently to younger people and can be clinically complex
- Atypical presentations such as reduced mobility are not 'social' problems – they are medical problems in disguise
- Comprehensive geriatric assessment and rehabilitation are of central importance to geriatric medicine and have a strong evidence base
- Simple interventions can often make a big difference to the quality of life of an older person

Geriatric medicine is important because most doctors deal with older patients. In the UK, people over the age of 65 make up around 16% of the population, but this group accounts for 43% of the entire National Health Service (NHS) budget and 71% of social care packages. Two-thirds of general hospital beds are used by older people and they present to most medical specialties (Figure 1.1).

The proportion of older people is growing steadily (Figure 1.2), with even greater increases in the over 85 age group. According to official figures, the numbers of people aged 85 and over are projected to grow from 1.1 million in 2000 to 4 million in 2051.

Geriatric medicine is mainly concerned with people over the age of 75, although most 'geriatric' patients are much older. Many of these have several complex, interacting medical and psychosocial problems which affect their function and independence.

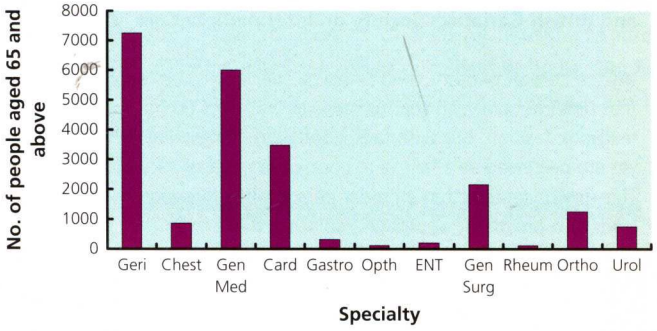

Figure 1.1 The numbers of people aged 65 and above admitted to a general hospital each year, by specialty. (Figures from the Leeds Teaching Hospitals NHS Trust.) Geri, geriatric medicine; Chest, chest medicine; Gen Med, general medicine; Card, cardiology; Gastro, gastroenterology; Opth, ophthalmology; ENT, ear, nose and throat; Gen Surg, general surgery; Rheum, rheumatology; Ortho, orthopaedics; Urol, urology.

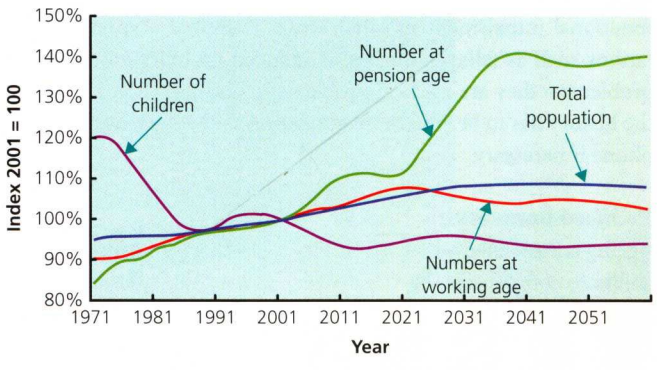

Figure 1.2 Changes in the proportion of people aged 65 and above among the overall population. Information from The UK National Census (2001).

Age-related differences

There are important differences in the physiology and presentation of older people that every clinician needs to know about. These in turn affect assessment, investigations and management (Box 1.1).

Special features of illness in older people include the following.

Multiple pathology

Older people commonly present with more than one problem, usually with a number of causes. A young person with fever, anaemia, a heart murmur and microscopic haematuria may have endocarditis, but in an older person this presentation is more likely to be due to a urinary tract infection, aspirin-induced gastritis and aortic sclerosis. Never stop at a single unifying diagnosis – always consider several.

Atypical presentation

Older people commonly present with 'general deterioration' or functional decline. Acute disease is often masked but precipitates

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Box 1.1 **Atypical presentation**

An 85-year-old lady was recovering from surgery on an orthopaedic ward when she became withdrawn and stopped eating and drinking. Before this she had been well and mobilising. Her temperature, pulse, blood pressure and 'routine bloods' were normal. Her carers thought she was acting as if she wanted to die. However, it was later noted that her respiratory rate was high and a subsequent chest X-ray showed pneumonia. The patient was treated with antibiotics and recovered.

Box 1.2 **Joint statement from the Royal College of Physicians and British Geriatrics Society on Intermediate Care, 2001**

'At the core of geriatric medicine as a specialty is the recognition that older people with serious medical problems do not present in a textbook fashion, but with falls, confusion, immobility, incontinence, yet are perceived as a failure to cope or in need of social care. This misconception that an older person's health needs are social leads to a prosthetic approach, replacing those tasks they cannot do themselves rather than making a medical diagnosis. Thus the opportunity for treatment and rehabilitation is lost, a major criticism of some current services for older people. Old age medicine is complex and a failure to attempt to assess people's problems as medical are unacceptable…Deficiencies in medical care can lead to failure to make a diagnosis; improper and inadequate treatment; poor clinical outcomes; inappropriate or wasteful use of scarce resources; communication errors and possible neglect.'

functional impairment in other areas. Therefore atypical presentations such as falls, confusion or reduced mobility are *not* social problems – they are medical problems in disguise (Box 1.2). Often the history has to be sought from relatives and carers, over the telephone if necessary.

Reduced homeostatic reserve

Ageing is associated with a decline in organ function with a reduced ability to compensate. The ability to increase heart rate and cardiac output in critical illness is reduced; renal failure due to medications or illness is more likely; salt and water homeostasis is impaired so electrolyte imbalances are common in sick older people; thermoregulation may also be impaired. In addition, quiescent diseases are often exacerbated by acute illness; for example heart failure may occur with pneumonia and old neurological signs may become more pronounced with sepsis.

Impaired immunity

Older people do not necessarily have a raised white cell count or a fever with infection. Hypothermia may occur instead. A rigid abdomen is uncommon in older people with peritonitis – they are more likely to get a generally tender but soft abdomen. Measuring the serum C-reactive protein can be useful when screening for infection in an older person who is non-specifically unwell.

Some clinical findings are not necessarily pathological

Neck stiffness, a positive urine dipstick in women, mild crackles at the bases of the lungs, a slightly reduced PaO_2 and reduced skin turgor may be normal findings in older people and do not always indicate disease.

The importance of functional assessment and rehabilitation

Older people may take longer to recover from illness (e.g. pneumonia) compared with younger people. However, their ability to perform activities of daily living and thus gain independence can improve dramatically if they are given time and rehabilitation.

Ethics

Geriatric medicine involves balancing the right to high-quality care without age discrimination with the wisdom to avoid aggressive and ultimately futile interventions. End-of-life decisions, risks vs benefits, capacity and consent, and dealing with vulnerable adults are all part of geriatric medicine.

In acute illness, the above factors combined can make clinical assessment very difficult and early intervention more important. For example, in severe sepsis, older patients may have cool peripheries and appear 'shut down', with a normal white cell count and no fever. Drowsiness is common, and does not necessarily indicate a primary brain problem. The patient may not be able to give a history, and their usual level of function and previously expressed wishes may not be known. Thus, gathering as much information as possible, as soon as possible, is vital.

Comprehensive geriatric assessment

In the 1930s, the very first geriatricians realised that the thousands of patients living in hospitals and workhouses were not suffering from 'old age' but from diseases that could be treated: immobility, falls, incontinence and confusion – called the 'geriatric giants' because they are the common presentations of different illnesses in older people (Box 1.3).

Today, geriatric medicine is the second biggest hospital specialty in the UK and a popular career choice. It involves dealing with acute illness, chronic disease and rehabilitation, working in

Box 1.3 **The 'geriatric giants'**

The four Is were originally coined by Bernard Isaacs, a professor of geriatric medicine.

- Incontinence
- Immobility
- Instability (falls and syncope)
- Intellectual impairment (delirium and dementia)

Several different illnesses can present as one of the geriatric giants. Two common examples also begin with the letter 'i': iatrogenic disease (caused by medication), and infection. The common sources of sepsis in older people are the chest, urine and biliary tract.

Box 1.4 **Activities of daily living**

- Mobility including aids and appliances
- Washing and dressing
- Continence
- Eating and drinking
- Shopping, cooking and cleaning

multidisciplinary teams in the community and in hospitals, medical education and research.

Comprehensive geriatric assessment is the assessment of a patient made by a team which includes a geriatrician, followed by interventions and goal setting agreed with the patient and carers. This can take place in the community, in assessment areas linked to the emergency department, or in hospital. It covers the following areas:

- medical diagnoses
- review of medicines and concordance with drug therapy
- social circumstances
- assessment of cognitive function and mood
- functional ability (i.e. ability to perform activities of daily living; Box 1.4)
- environment
- economic circumstances.

Randomised controlled trials show that comprehensive geriatric assessment leads to improved function and quality of life, and also reduces hospital stay, readmission rates and institutionalisation. There is no evidence for the effectiveness of a comprehensive assessment that does not include a doctor trained in geriatric medicine.

Rehabilitation is an important aspect of geriatric medicine (see Chapter 11). Many older patients now have rehabilitation in intermediate care facilities or in their own homes. However, some of these patients undergo rehabilitation without the benefit of a comprehensive geriatric assessment, so that the opportunity for diagnosis, treatment and optimum rehabilitation may be lost.

Communication in geriatric medicine

Communication is particularly important in geriatric medicine. A history from the patient's relatives or carers is often required and may differ significantly from that of the patient. The assessment of older people often requires a multidisciplinary team and the observations, skills and opinions of nurses, physiotherapists, occupational therapists and social workers may shed significant new light on the patient's problems. Doctors who work with older people need to be comfortable with this multidisciplinary approach, and the often jigsaw puzzle-like progress in assessment that can sometimes occur.

Communicating with older patients may be difficult because of impaired vision, deafness, dysphasia or dementia. Healthcare professionals can aid communication by checking that the patient can hear what is being said, writing down instructions, and involving carers in the consultation and decision-making.

Simple interventions can make a big difference

Another characteristic of geriatric medicine is that simple interventions can make a big difference to a patient's function and quality of life. Sometimes there is a perception that 'nothing can be done' for very old people. This is rarely the case. For example:

- ear syringing, cataract surgery and a new pair of glasses can dramatically improve a person's sense of social isolation and loneliness
- specially fitted shoes and a properly measured walking aid can improve balance, mobility and confidence
- reducing medications can stop a person from feeling dizzy when they walk and allow them to go out of the house again
- adaptations at home can allow people to function more easily and retain their independence.

When older people have the benefit of medical assessment and treatment for problems which are often perceived as being due to old age (e.g. incontinence, falls, memory problems), they and their carers can enjoy a better quality of life.

The future directions of geriatric medicine

The National Service Framework (NSF) for Older People in England was published in 2001 (Figure 1.3). NSFs are long-term

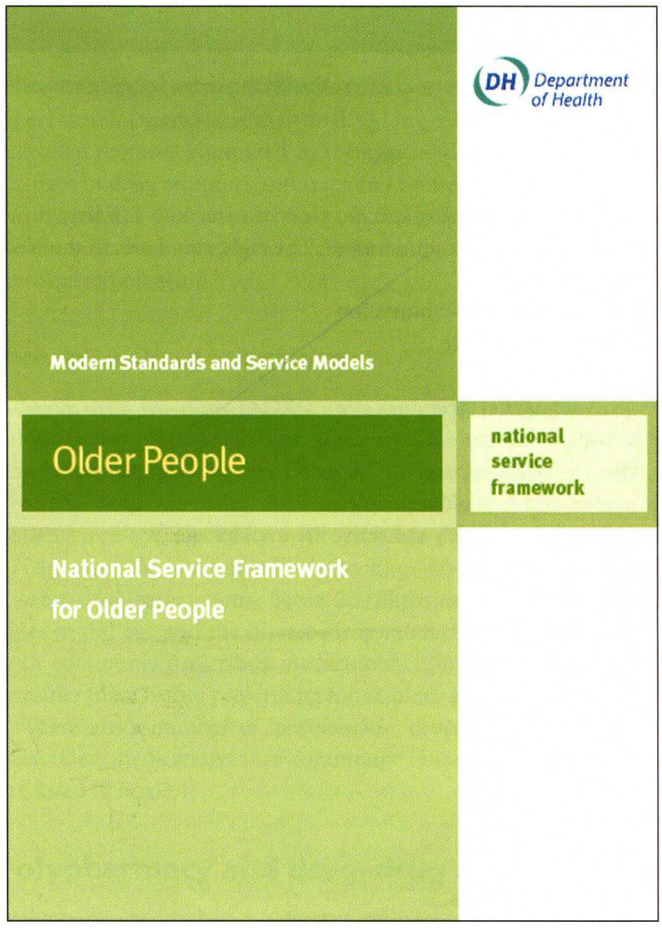

Figure 1.3 National Service Framework for Older People.

Figure 1.4 Elderly stereotypes. UK traffic sign showing a frail elderly couple.

strategies for improving specific areas of care, with funding, measurable goals and set time frames. The eight standards in the NSF for older people are:

- rooting out age discrimination
- person-centred care
- intermediate care
- general hospital care
- stroke
- falls
- mental health in older people
- promotion of health and active life in older age.

This has resulted in improved access to services, an increase in people having assessment and rehabilitation without the need to stay in hospital, and the development of specific age-related services (i.e. stroke and falls). More recently the Department of Health has launched 'dignity in care' which aims to improve key aspects of health and social services care for older people. It covers areas that older people and their carers consider to be important yet are often neglected.

- Being valued as a person (e.g. listened to, respected).
- Being given privacy during care.
- Having assistance with and enough time to eat meals.
- Being asked how one prefers to be addressed (e.g. whether by first name).
- Having services that are designed with older people in mind.

Considerable progress has been made in optimising the assessment and care of older people. However, the future still holds some challenges. These include how we can improve:

- the experience of older people in hospital and care homes
- access to comprehensive geriatric assessment in a variety of settings
- services for older people who present to the emergency department with falls, dementia and minor medical illnesses
- research that answers questions about important geriatric problems and processes of care.

Despite the persistence of some negative stereotypes (Figure 1.4), there is a great deal of variety and job satisfaction to be found in practising geriatric medicine, whether in hospital or in general practice. Older people *can* get better after assessment and treatment, and they are often very grateful for it.

Further resources

www.bgs.org.uk. The British Geriatrics Society website. For hospital doctors, general practitioners and specialist nurses working in geriatric medicine. Contains useful information about comprehensive geriatric assessment and other topics.

Nichol C, Wilson J, Webster S. (2008) *Lecture Notes on Elderly Care Medicine*, 7th edn. Blackwell Publishing, Oxford.

Rai GS, Mulley GP, eds. (2007) *Elderly Medicine: a Training Guide*, 2nd edn. Churchill Livingstone, London.

Department of Health. (2001) *National Service Framework for Older People*. DH, London.

www.dh.gov.uk. The UK Department of Health website. By using the search term 'older people' various relevant policy documents can be found.

CHAPTER 2

Prescribing in Older People

Jon Cooper & Julia Howarth

OVERVIEW

- Most older people are on regular medication
- Pharmacokinetics and pharmacodynamics are different in this age group
- Older people are much more likely to suffer from the side-effects of drugs
- Polypharmacy and problems with concordance are particular issues in geriatric medicine
- Drug trials tend not to include people over the age of 80

Two-thirds of people over the age of 60 are taking regular medication, and over half of those with repeat prescriptions are taking more than four drugs. People in care homes are even more likely to be taking several regular medications. Adverse drug reactions account for up to 17% of hospital admissions.

Pharmacokinetics and pharmacodynamics in old age

Pharmacokinetics refers to what the body does to a drug. Pharmacodynamics refers to what a drug does to the body.

Pharmacokinetic differences

Age-related changes lead to differences in absorption, distribution, metabolism and elimination of drugs. Whilst some of these differences are not clinically significant, some are.

- There is a reduced volume of distribution for many drugs because of reduced total body water and an increase in the percentage of body weight as fat. As a result, dose requirements are less than in younger people. For example, digoxin is a water-soluble drug, and lower loading doses may be required. Diazepam is a lipid-soluble drug and the relative increase in body fat may lead to accumulation, causing toxicity.
- Liver metabolism is reduced, leading to slower drug inactivation. Reduced liver blood flow is made worse by cardiac failure, potentially leading to increased drug concentrations, although this is rarely of clinical significance. However, care should be taken when prescribing drugs that are metabolised in the liver and have a narrow therapeutic index: warfarin, theophyllines and phenytoin. Plasma levels of these drugs should be monitored.
- Perhaps the most clinically significant difference is that renal blood flow and mass reduce significantly with age, leading to a reduction in the clearance of many drugs, especially water-soluble ones. Because of less muscle mass, the creatinine can remain within the quoted normal range in older people, despite a significantly impaired glomerular filtration rate (GFR). Doses of some commonly prescribed drugs should be reduced to account for reduced renal function (as measured by GFR). Examples are ciprofloxacin, gentamicin, digoxin and lithium.

Pharmacodynamic differences

There is an increased sensitivity to drugs in general, and lower doses are often required compared to younger adults, primarily due to changes in drug receptors and impaired homeostatic mechanisms. For example, a patient started on treatment for hypertension may develop dizziness due to reduced baroreceptor sensitivity causing postural hypotension.

Adverse drug reactions

Adverse drug reactions (ADRs) are a common reason for hospital admission. Around 80% of ADRs are dose related, predictable and potentially preventable. Other ADRs may be allergic or idiosyncratic (unpredictable). However, ADRs often present in older patients non-specifically e.g. with confusion or falls.

Older people are more likely to have diseases that result in disease–drug interactions. Table 2.1 illustrates examples of diseases in old age and the disease–drug interactions that can occur with commonly prescribed medications. Every prescriber should consider these before prescribing for an older person.

There are a number of 'problematic' drugs in older people – prescribed medications that commonly cause side-effects. These are listed in Box 2.1.

Polypharmacy and drug–drug interactions

'Polypharmacy' is when a patient is taking a large number of different prescribed medications, some of which may be required, and

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Table 2.1 Diseases in old age, and disease–drug interactions with commonly prescribed drug groups.

Disease in older age	Drugs	Potential effect
Dementia	Benzodiazepines Antimuscarinics, (some) anticonvulsants Levodopa	Worsening confusion
Parkinson's disease	Antimuscarinics Metoclopramide	Worsening symptoms Deteriorating movement disorder
Seizure disorder/epilepsy	Antibiotics Analgesics Antidepressants Antipsychotics Theophyllines Alcohol	Reduced seizure threshold/seizures
Glaucoma	Antimuscarinics	Worsening glaucoma
COPD/asthma	β-blockers Benzodiazepines	Bronchospasm Respiratory suppression
Heart failure	Diltiazem, verapamil NSAIDs	Worsening heart failure
Hypertension	NSAIDs, pseudoephedrine	Hypertension
Orthostatic hypotension	Antihypertensives (any) Diuretics Tricyclic antidepressants Levodopa	Postural hypotension Falls
Cardiac conduction disorders	β-blockers, digoxin, diltiazem, verapamil, amiodarone, Tricyclic antidepressants	Bradycardia, heart block, prolonged QTc
Peripheral arterial disease	β-blockers	Intermittent claudication
Peptic ulcer disease	NSAIDs, anticoagulants	Upper gastrointestinal haemorrhage
Hypokalaemia	Digoxin	Cardiac arrhythmia
Hyponatraemia	Diuretics Tricyclic antidepressants Carbamazepine	Worsening hyponatraemia May cause or exacerbate SIADH
Renal impairment	NSAIDS Antibiotics	Acute renal failure
Bladder outflow obstruction/ Benign prostate hyperplasia	Antimuscarinics α-blockers	Urinary retention
Urinary incontinence	α-blocker Antimuscarinics Benzodiazepines Diuretics Tricyclic antidepressants	Polyuria Worsening stress incontinence
Constipation	Antimuscarinics Calcium channel antagonists Tricyclic antidepressants Analgesics (e.g. opioids)	Worsening constipation
Osteoporosis	Steroids Enzyme inducing drugs	Accelerated osteoporosis

COPD, chronic obstructive pulmonary disease; NSAIDs, non-steroidal anti-inflammatory drugs; SIADH, syndrome of inappropriate antidiuretic hormone.

Box 2.1 **Common problems and the drugs that can cause them**

Drugs that cause confusion or affect memory
Antipsychotics
Benzodiazepines
Antimuscarinics
Opioid analgesics
Some anticonvulsants

Drugs with a narrow therapeutic window
Digoxin
Lithium
Phenytoin
Theophyllines
Warfarin

Drugs with a long half-life
Long-acting benzodiazepines (nitrazepam and diazepam)
Fluoxetine
Glibenclamide

Drugs that can cause hypothermia
Antipsychotics
Tricyclic antidepressants

Drugs that cause Parkinsonism or movement disorders
Metoclopramide
Antipsychotics
Stemetil

Drugs that can cause bleeding
Non-steroidal anti-inflammatory drugs
Warfarin

Drugs that predispose to falls
Antipsychotics
Sedatives
Antihypertensives (especially α-blockers, nitrates, ACE inhibitors)
Diuretics
Antidepressants

Box 2.2 **Reasons for polypharmacy in older people**

- Several chronic disease processes requiring specific drug treatments (e.g. ischaemic heart disease, hypertension, stroke, atrial fibrillation, depression)
- More than one physician involved in medical care (for different diseases)
- Admission to residential or nursing home
- Failure to review medication and repeat prescriptions
- Failure to discontinue unnecessary medication
- Failure of physician to recognise poor therapeutic response as non-compliance
- Application of evidence-based medicine (appropriate and inappropriate)
- Prescribing cascade (see Figure 2.3)

Figure 2.1 Polypharmacy and drug–drug interactions. An 86-year-old man with atrial fibrillation, heart failure, renal impairment and benign prostatic hypertrophy presents with dysuria. He has had several falls previously. He is prescribed ciprofloxacin based on previous urine sensitivities. This is an opportunity to review his medication. He takes twelve drugs regularly which are on repeat prescription, including:

- alfuzosin
- atenolol
- amiodarone
- perindopril
- furosemide
- warfarin.

He is on several medications that cause falls. Warfarin therapy may now be unsafe because of this. Ciprofloxacin interacts with warfarin and increases the risk of bleeding.

some not. There is no strict definition of polypharmacy, although the National Service Framework for Older People suggests a definition of being on four or more drugs. Some of the reasons for polypharmacy are listed in Box 2.2.

Taking a large number of different drugs is linked to adverse drug reactions, increased risk of hospital admission, non-compliance, and increased costs to the National Health Service. Figure 2.1 gives an example.

Drug–drug interactions become more likely with increasing number of medications. Herbal remedies and food can also interact with prescribed medication. A patient on warfarin for atrial fibrillation may develop bleeding after starting Gingko Biloba, a herbal medicine that inhibits platelet aggregation. A patient prescribed felodipine for hypertension may develop profound dizziness after drinking grapefruit juice, which increases drug levels.

Concordance

Concordance refers to the agreement between prescriber and patient about the goals of treatment and how such goals will be reached. Concordance is good when there is clear communication (Figure 2.2), understanding and agreement, and a drug regimen that is easy to follow, with packaging, labels and delivery systems that are easy to use. Compliance (or adherence) is the extent to which a person follows the prescriber's advice and drug regimen. Both concordance and compliance are particularly relevant to older people, although age itself is not a predictor of non-compliance. Box 2.3 lists some of the risk factors associated with poor compliance, and Box 2.4 shows the American Geriatric Society guidelines for providing information on medicines to patients.

The *ability* of an individual patient to administer a medicine should also be considered before prescribing. There are several

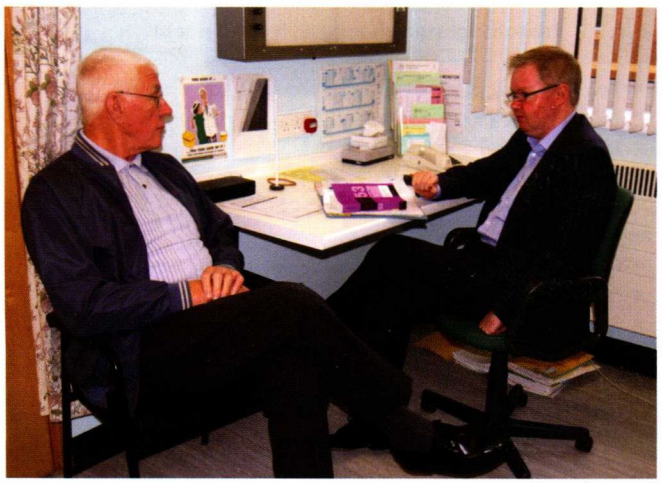

Figure 2.2 Communication and concordance.

Box 2.3 **Risk factors associated with non-compliance**

Risk factor	Association
Cognitive function	Strong
Health belief model	Strong
Polypharmacy	Strong
Not having home care services	Strong
Using more than one community pharmacy	Strong
Lifelong need for medication	Strong
Medication regime complexity	Strong
Side-effects experienced	Strong
Knowledge about medicines	Moderate
Poor recall of medicines being taken	Moderate
Female gender	Weak

Risk factors given in **bold type** are also correlated with the likelihood of hospital admission due to non-compliance. Col N, Fanale JE, Kronholm P. The role of medication non-compliance and adverse drug reactions in hospitalizations of the elderly. *Arch Intern Med* 1990; 170: 841–5.

Other factors influencing non-compliance include a poor relationship with the prescriber and insufficient time allowed for the consultation.

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Box 2.4 **Information to give patients to improve compliance**

About a specific medicine
Name of the drug
Purpose of the drug
Dose or 'strength'
When to be taken in relation to food or other medicines
Common side-effects
How long to take medicine for
Other warnings

General information about medicines
Do not take someone else's tablets
Keep taking medicine at the prescribed dose unless otherwise directed
Do not transfer medicines into an inappropriate container
Avoid taking your medicines in the dark

From: American Geriatric Society guidelines; Ennis KJ, Reichard RA. Maximizing drug compliance in the elderly. Tips for staying on top of your patients' medication use. *Postgrad Med* 1997; 102: 211–24.

Box 2.5 **Evidence applied inappropriately to old people**

A 93-year-old lady with severe dementia is admitted to hospital from her nursing home with chest pain and non-specific changes on her electrocardiogram. Her performance status is poor. She is usually hoisted from bed to chair, is incontinent, and requires assistance for all activities of daily living. She is enrolled in the 'acute coronary syndrome protocol'. She is given aspirin 300 mg, clopidogrel 300 mg, simvastatin 40 mg and enoxaparin 50 mg twice daily by subcutaneous injection.

It is unclear whether the chest pain was angina, and if it was, whether it was stable angina or an acute coronary syndrome. No relevant trials have included patients of this age and co-morbidity. She is at higher risk of gastrointestinal bleeding compared to younger patients, may find regular injections distressing, and her long-term survival would not be affected by a statin.

strategies (e.g. Dossett box, inhaler aids) that can be employed to assist people with medicine-taking. Many of these can be advised by a pharmacist.

Evidence-based prescribing in older people

There is an increasing evidence base for drug management in older patients with diseases that are more prevalent with old age (e.g. atrial fibrillation, hypertension, heart failure, stroke and high cholesterol). However, applying evidence-based medicine to *all* older patients is not necessarily appropriate for a number of reasons. Old patients are often excluded from clinical trials. Clinical application of evidence extrapolated from younger adults should sometimes be undertaken with caution. Interpreting evidence should be based on clinical significance as well as statistical significance, and the risks of adverse effects should be considered as well as the benefits. Box 2.5 shows an example of how 'evidence' is sometimes applied inappropriately to older people.

On the other hand, some drugs are under-prescribed in older people; for example, antidepressants, some treatments for heart failure, and warfarin. This is because of worries about side-effects despite evidence that the benefits outweigh the risks in this age group. Decision support tools (e.g. stroke risk for atrial fibrillation – see Chapter 7) or evidence-based resources may help in individual decision-making.

Better prescribing

How can prescribing in older patients be improved?

Box 2.6 **Drug-related problems that may be identified at a medication review**

- A medical condition is present that requires drug therapy but patient is not receiving any
- The patient has a medical condition for which the wrong drug is being taken
- Too little or too much of a correct drug is being taken
- The patient is suffering from an adverse drug reaction
- The patient has a problem resulting from a drug–drug, drug–food or drug–disease interaction
- The patient is taking a drug for which there is no valid indication

Review all medicines regularly

The Department of Health recommends that every person over the age of 75 has a medication review at least annually, the aim of which is to identify and resolve drug-related problems. Individual drugs and repeat prescriptions should be reviewed by the general practitioner or pharmacist. This has been shown to reduce the number of ADRs in older people. There is sometimes a reluctance to discontinue drugs if the patient has been on them for a long time, or if they were prescribed by another specialist. However, due to age-related changes, some drugs that were once beneficial may now be unnecessary or even causing harm. Box 2.6 outlines some drug-related problems that may be identified at a medication review.

Assess the patient

A good history, examination and any appropriate tests are important in making an accurate diagnosis. A drug history should include not just prescribed medication, but any 'borrowed' medication and over-the-counter drugs. Allergies should be clarified, as many patients are intolerant rather than truly allergic to drugs. Consideration should be given to the factors that affect compliance (listed in Box 2.3). Always consider that symptoms may be a side-effect of medication, in order to avoid a 'prescribing cascade' (Figure 2.3).

Think about non-pharmacological treatment

There are many non-pharmacological options available that should be considered first where appropriate, for example, dietary modification, physiotherapy or clinical psychology.

Think about the risks as well as the benefits

The appropriateness of a particular drug should be considered, taking into account the patient's perceptions, potential risks (side-effects, drug–drug and drug–disease interactions, the patient's physical status, and any compliance issues) versus potential benefits (quality of life and survival). Such risk vs benefit assessments may change over time in individual patients.

Start with a lower dose for most drugs

ADRs are closely related to the dose of drug. A 'start low and go slow' approach is often effective, with improved tolerability and compliance.

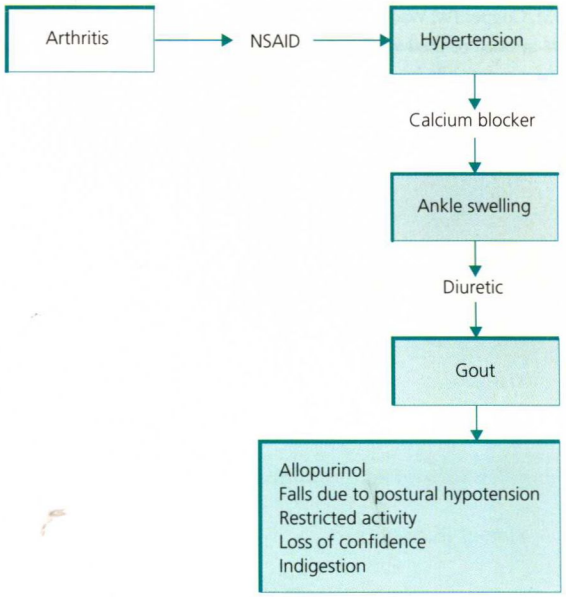

Figure 2.3 Prescribing cascade. Failure to recognise the side-effects of commonly prescribed drugs can lead to a 'prescribing cascade', resulting in unnecessary drug costs and reduced quality of life for an individual. A 78-year-old lady is prescribed a non-steroidal anti-inflammatory drug (NSAID) for arthritis of the knees. She then develops hypertension, a side-effect of this drug. She is put on a calcium blocker for hypertension, then develops ankle swelling, a side-effect of this drug. She is put on a diuretic for ankle swelling, then develops gout, a side-effect of this drug. She is put on allopurinol for gout, and then develops all the other complications listed: postural hypotension as a result of the calcium blocker and diuretic, leading to restricted activity and loss of confidence, and indigestion which is a side-effect of the NSAID.

Think about the route of administration

Some patients with poor dentition may find chewable tablets difficult to take. Some people may have swallowing problems, and others may have poor dexterity, making inhalers or pumped sprays difficult to use. In hospital or care homes it is especially important that certain regular medications are continued via a different route if the patient is temporarily unable to take them in the usual way. Examples include: anti-epileptic drugs, drugs for Parkinson's disease, angina medication, and long-term benzodiazepines.

Provide information and education

Adopting a patient-centred approach improves health outcomes for patients. Talking with patients about their disease and its treatment is an important part of concordance, particularly when starting a new drug or stopping old ones. Written information and involving relatives and carers (including care home staff), especially for people with cognitive impairment, is also helpful.

Further resources

Department of Health. (2001) *Medicines and older people: implementing medicines-related aspects of the NSF for Older People.* DH, London.

Fick DM, Cooper JW, Wade WE, Waller JL, Maclean JR, Beers MH. Medications to be avoided or used with caution in older patients. Updating the Beers criteria for potentially inappropriate medication use in older adults: results of a US consensus panel of experts. *Arch Intern Med* 2003; 163: 2716–24.

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