An open learning programme for pharmacists and pharmacy technicians

Older people: managing medicines

CPPE  CENTRE FOR PHARMACY POSTGRADUATE EDUCATION
The University of Manchester

Educational solutions for the NHS pharmacy workforce
An open learning programme
for pharmacists and pharmacy technicians

Older people:
managing medicines

Educational solutions for the NHS pharmacy workforce

© Copyright controller HMSO 2010
**Lead writer**
Lelly Oboh, consultant pharmacist, care of older people, NHS Lambeth, East & South East England Specialist Pharmacy Services NHS Trust

With post-pilot additions by: Naomi Burns, medicines safety pharmacist, Western Sussex Hospitals NHS Trust

**CPPE programme developer**
Paula Higginson, senior pharmacist – learning development

With contributions from external programme developer: Simon Lloyd, medical writer.

**Reviewers**
Nina L. Barnett, consultant pharmacist, care of older people, East & South East England Specialist Pharmacy Services, and Harrow Primary Care Trust

Naomi Burns, medicines safety pharmacist, Western Sussex Hospitals NHS Trust

This learning programme was piloted nationally by the following pharmacists and pharmacy technicians: Julie Lofts-Constable, Rosemary Lim, Susan Minney, Karen Newman, George Pendlebury, Jill Southworth, Rachel Vallance.

**Production**
Outset Publishing Ltd, East Sussex

Published in January 2010 by the Centre for Pharmacy Postgraduate Education, School of Pharmacy and Pharmaceutical Sciences, University of Manchester, Oxford Road, Manchester M13 9PT

http://www.cppe.ac.uk

Printed on FSC paper stocks using vegetable based inks.
Contents

About CPPE open learning programmes vii

About this learning programme xi

Supporting you, your practice and the NHS xiv

Section 1 Older people and healthcare 1

1.1 You and your practice 1
1.2 Older people as a group 3
1.3 The ageing population and health 3
1.4 Healthcare settings 4
  Care at home 4
  Social housing 5
  Intermediate care 5
  Care homes with nursing 6
  Hospital care 6
  Palliative care 7
1.5 Policy context 8

Practice points 7, 9
Reflective questions 1
Summary and intended outcomes 9

Section 2 Ageing and medicines use 10

2.1 Physiological changes and ageing 10
2.2 Pharmacokinetic changes 11
  Absorption 11
  Distribution 11
  Metabolism 12
  Excretion 12
  Estimating renal function 13
  Estimating GFR 13
  Chronic kidney disease and chronic renal failure 14
  GFR and eGFR 15
2.3 Pharmacodynamic and homeostatic changes 17
  Orthostatic circulatory response 17
  Balance 17
  Thirst and hydration 18
  Thermoregulation 18
  Altered receptor sensitivity 19
2.4 Changes in physical and mental health 21
  Visual impairment and loss 21
Section 3 Prescribing in ageing

3.1 Polypharmacy
   Consequences of polypharmacy 34
   Avoiding polypharmacy and/or its consequences 35

3.2 Adverse drug reactions 35
   NSAIDs, including coxibs 38
   Opioid analgesics 38
   Diuretics 38
   Digoxin 39
   Anticoagulants 39
   Antihypertensives 39
   Antiparkinson’s drugs 39
   Insulin and oral hypoglycaemics 39
   Antipsychotics 40
   Benzodiazepines 41
   Anticholinergic drugs 41
   Antibiotics and Clostridium difficile 41
   Cimetidine 41

3.3 Medicines adherence 42
   A summary of the NICE guidelines on adherence 42
   Strategies to reduce polypharmacy and the risk of adverse drug reactions, and improve adherence 44

Exercises 36, 46
Practice point 35
Summary and intended outcomes 47
Suggested answers 48
Section 4 Managing medication risks

4.1 Identifying and assessing older people at risk
   Assessing older people: the single assessment process
   Medicines and risk
   Medicines management risk assessments

4.2 Reducing risks through medicines management
   Medication review
   Medicines reconciliation
   Medicines use reviews
   Repeat dispensing

4.3 Care planning

4.4 Implementing the medicines management aspects of the care plan
   Practice points
   Summary and intended outcomes

Section 5 Collaborative working

5.1 Communication and medications management

5.2 The roles of health and social care staff
   Community nurses
   Doctors
   Healthcare support workers
   Allied health professionals
   Social care team
   Informal caregivers

5.3 The role of the pharmacist and pharmacy technician
   Community pharmacists
   Pharmacy technicians
   Specialist and advanced level pharmacists

5.4 Integrating medicines management into care pathways
   Practice points
   Summary and intended outcomes
   Suggested answers
Section 6  Bringing it all together  83

Case study 1  83
Summary and intended outcomes  87
Suggested answers  89

References  92

Index  97

Tables and figures

Table 1  Changes in receptors and systems in older people that necessitate caution when using certain medicines  19
Table 2  Drugs that should be used with caution and monitored in people over 65  37
Figure 1  Medicines section of the FACE overview assessment version 5, 2005  56
Figure 2  Fuller’s self-medication risk assessment screening tool  58
Figure 3  The nine domains of the risk assessment tool  59
Figure 4  Example of the ACCESS to medicines section from the LOPSDP in-depth medication assessment tool  60
About CPPE

The Centre for Pharmacy Postgraduate Education (CPPE) is funded by the Department of Health to provide continuing education for practising pharmacists and pharmacy technicians providing NHS services in England. We are part of the Workforce Academy, within the School of Pharmacy and Pharmaceutical Sciences, which is part of the Faculty for Medical and Human Sciences.

CPPE offers a wide range of learning opportunities for the pharmacy workforce. Our full learning portfolio is available on the internet at: http://www.cppe.ac.uk

Themes

We have allocated themes to all our learning programmes. There are 28 themes in total and they allow you to navigate easily through our full learning portfolio. We have assigned a different colour to each of our themes, and this is used to identify the theme in the annual prospectus, in CPPE news & events, on our website, and on the covers of all the learning programmes.

This learning programme is part of the Older people theme. You will find additional learning programmes within this theme in our prospectus and on our website.

You can download this programme in PDF format from our website:
http://www.cppe.ac.uk

CPPE 1 2 3

We recognise that people have different learning needs and not every CPPE learning programme is suitable for every pharmacist or pharmacy technician. Some of our programmes contain core learning, while others deliver more complex learning that is only required to support certain roles. So we have created three categories of learning – CPPE 1 2 3 – and allocated each programme to an appropriate category.

The categories are:

CPPE 1 Core learning (limited expectation of prior knowledge)
CPPE 2 Application of knowledge (assumes prior learning)
CPPE 3 Supporting specialisms (CPPE may not be the provider and will signpost you to other appropriate learning providers).

This is a CPPE 1 learning programme.
Continuing professional development

You can use this learning programme to support your continuing professional development (CPD). Consider what your learning needs are in this area. You may find it useful to work with the information and activities here in a way that is compatible with the Royal Pharmaceutical Society of Great Britain’s approach to continuing professional development (http://www.rpsgb.org.uk/registrationandsupport/continuingprofessionaldevelopment) because you will be able to relate it to your personal circumstances more closely. Use your CPD record sheets or go to: http://www.uptodate.org.uk/ to plan and record the actions you have taken.

Activities

Exercises

We include exercises throughout this programme as a form of self-assessment. Use them to test your knowledge and understanding of key learning points.

Practice points

Practice points are an opportunity for you to consider your practical approach to the effective care of patients or the provision of a service. They are discrete activities designed to help you to identify good practice, to think through the steps required to implement new practice, and to consider the specific needs of your local population.

We have designed the practice points in this programme to help you and your team to make links between the learning and your daily practice and to co-ordinate with other healthcare professionals.

Case studies

We base case studies on actual or simulated events. They are included to help you to interpret protocols, deal with uncertainties and weigh up the balance of judgments needed to arrive at a conclusion. We design the case studies to prepare you for similar or related cases that you may face in your own practice.

Reflective questions

These questions are included to give you an opportunity to pause and reflect on your current practice and skills throughout the programme. Thinking about these questions will help you to meet the objectives of the programme and will extend and reinforce your learning.
Assessment

The assessment for this programme can only be accessed through our website at: http://www.cppe.ac.uk

References and further reading

You can find references for all the books, articles, reports and websites mentioned in the text, together with a list of further reading to support your learning at the end of the programme. References are indicated in the text by a superscript number (like this\textsuperscript{3}).

Programme guardians

CPPE has adopted a quality assurance process called ‘programme guardians’. A programme guardian is a recognised expert in an area relevant to the content of a learning programme who will review the programme every six months. We will post any corrections, additions, deletions or further supporting materials that are needed as an update to the programme on the CPPE website. We recommend that you refer to these updates if you are using this (or any other) learning programme significantly after its initial publication date. A full list of programme guardians is available on our website. You can email your comments about this programme to them at: info@cppe.ac.uk

Brand names and trademarks

CPPE acknowledges the following brand names and registered trademarks which are mentioned throughout the programme: Accuhaler\textsuperscript{®}, Atrovent\textsuperscript{®}, Dosette\textsuperscript{®}, Haleraid\textsuperscript{®}, Innolet\textsuperscript{®}, Nomad\textsuperscript{®}, Opticare\textsuperscript{®}, Respimat\textsuperscript{®}, Seretide\textsuperscript{®}, Tena\textsuperscript{®}.

External websites

CPPE is not responsible for the content of any non-CPPE websites mentioned in this programme or for the accuracy of any information to be found there. The fact that a website or organisation is mentioned in the programme does not mean that CPPE either approves of it or endorses it.

Disclaimer

CPPE recognises that local interpretation of national guidance may differ from the examples used in this learning programme and you are advised to check with your own relevant local guidelines. You are also advised to use this programme with other established reference sources. If you are reading this programme significantly after the date of initial publication you should refer to current published evidence. CPPE does not accept responsibility for any errors or omissions.
Feedback

We hope you find this learning programme useful for your practice. Please help us to assess its value and effectiveness by completing the online feedback form available on our website: http://www.cppe.ac.uk via the My CPPE tab. Simply scroll down to find the learning programme title and click on the Tell us what you think icon. CPPE may email you a reminder to do this. You can also email us direct if you think your comments are urgent using the email address: feedback@cppe.ac.uk
Welcome to the CPPE open learning programme: *Older people: managing medicines*. Older people are high users of NHS resources and account for about 60 percent of NHS prescriptions. So, pharmacists will inevitably come into contact with older people or their carers on a day-to-day basis. This learning programme has been designed to extend and facilitate your professional involvement as a pharmacist in the care of older people within national and local frameworks or guidance. It will help to increase your knowledge and enable you to contribute and respond more effectively to the needs of older people and so improve their health.

To complement this book, we have provided a ‘factfile’ that covers the presentation and management of diseases commonly seen in older people. We have created the factfile as an online, interactive PDF; this will mean we can make sure it stays up-to-date, and at the same time it provides you with a resource you can add to, developing a useful reference for the future. As you work through this programme, take some time to print out the factfile and read through selected sections, or possibly all of it, to support your learning. After each of the diseases, we have left space for you to make your own notes based on your experiences and independent learning of managing that condition in older people.

On completion of this programme you will have a better understanding of the changes that come with ageing and the impact these have on medicines use. You will also understand the roles of the interdisciplinary and multidisciplinary teams that provide care for older people and be able to communicate effectively with them to facilitate collaborative working. Additionally, the programme provides you with a resource to help you gain accreditation of competence in providing medicines management and pharmaceutical care to older people.

The study time will depend on you, but we estimate that the reading and activities will take a total of eight hours.

**Target audience**

The target audience for this course is pharmacists and pharmacy technicians in community, primary and secondary care wishing to extend their professional practice in medicines management for older people and their understanding and knowledge of the *National service framework for older people*.¹

**Learning style adopted in this programme**

The programme is divided into six sections plus the factfile, and provides sufficient information to give you a comprehensive overview of medicines management for older people. As you work through the programme we will ask you to reflect on your practice and then to use this resource to develop and extend your practical skills.

We have also included details of the references that we have used at the end of the programme, together with a list of suggestions for further reading.
Learning objectives

CPPE has linked all its learning programmes to the Royal Pharmaceutical Society of Great Britain’s competences for pharmacists and pharmacy technicians. This will make it easier for you to connect your professional practice to your learning needs and learning activities. We have selected only the competences for general pharmacists and pharmacy technicians, but we are aware that others exist.

We have also linked the learning to the dimensions of the NHS Knowledge and Skills framework (KSF).

The competences and dimensions relevant to this programme are:

<table>
<thead>
<tr>
<th>Learning objectives</th>
<th>RPSGB competences</th>
<th>KSF dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pharmacists</td>
<td>Pharmacy technicians</td>
</tr>
<tr>
<td>Describe who 'older people' are, the various settings in which they are commonly</td>
<td>G1 TG2</td>
<td>Equality and diversity</td>
</tr>
<tr>
<td>cared for, and the standards of care outlined in the National service framework</td>
<td></td>
<td>Level 2</td>
</tr>
<tr>
<td>for older people.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outline pharmacokinetic and pharmacodynamic changes commonly seen in older people,</td>
<td>G8 TG7</td>
<td>Health and well-being</td>
</tr>
<tr>
<td>and, how physical, mental, behavioural and socioeconomic factors may affect</td>
<td></td>
<td>HWB6 Level 3</td>
</tr>
<tr>
<td>medicines use.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describe diseases that commonly affect older people, recognise disease</td>
<td>G1 TG2</td>
<td>Health and well-being</td>
</tr>
<tr>
<td>manifestation and understand how they should be managed.</td>
<td></td>
<td>HWB7 Level 3</td>
</tr>
<tr>
<td>Outline the risks posed to older people by polypharmacy, adverse drug reactions,</td>
<td>G7 TG6</td>
<td>Health and well-being</td>
</tr>
<tr>
<td>and medicines adherence issues, and understand how to manage the risks.</td>
<td></td>
<td>HWB7 Level 3</td>
</tr>
<tr>
<td>Understand the various means of improving medication use in older people, including</td>
<td>G3 TG4</td>
<td>Quality Level 2 or 3</td>
</tr>
<tr>
<td>the single assessment process, tools for assessing medication risk, medicines</td>
<td></td>
<td>Service improvement</td>
</tr>
<tr>
<td>reconciliation and medicines use review, and care planning.</td>
<td></td>
<td>Level 2 or 3</td>
</tr>
<tr>
<td>Recognise the roles of various people who provide care to older people, the</td>
<td>G4 TG4</td>
<td>Personal and people</td>
</tr>
<tr>
<td>importance of communication between them, and the possible roles of the pharmacy</td>
<td></td>
<td>development Level 2 or 3</td>
</tr>
<tr>
<td>team.</td>
<td></td>
<td>Service improvement</td>
</tr>
<tr>
<td>Outline the benefits and challenges of integrating medicines management into care</td>
<td>G1 TG2</td>
<td>Quality Level 2 or 3</td>
</tr>
<tr>
<td>packages and care pathways.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrate your knowledge of the various care needs of older people to enable you</td>
<td>G3 TG4</td>
<td>Personal and people</td>
</tr>
<tr>
<td>to improve the services you provide.</td>
<td></td>
<td>development Level 2 or 3</td>
</tr>
</tbody>
</table>
**Working through this programme**

We advise you to work flexibly with the materials to suit your own learning style and needs. There is no right or wrong approach, but remember the aim of your hard work is to enable you to feel confident to meet the challenges facing you.

We recommend that you work through the sections in the order they are presented. In this way, you will develop a comprehensive understanding of how the needs of older people may be met, starting from older people themselves, moving on to disease management, and finishing with service provision. Additionally, before you start, we suggest you skim read the factfile and then refer to it as you feel appropriate as you progress through the programme.

We have designed the programme for self-study, but as you progress through the sections you should aim to talk through some of the issues with your colleagues.

**Online resources**

Some of the references in this programme are to material which is only available online, and we assume that you have access to a computer connected to the internet. If you do not wish to retype all the web addresses into your browser you may find it helpful to download this programme from the CPPE website as a PDF document containing live web links. Log on to: [http://www.cppe.ac.uk](http://www.cppe.ac.uk)

Where we think it will be helpful we have provided the URL to take you directly to an article or specific part of a website. However, we are also aware that web links can change (eg, the Department of Health links) so in some cases we have provided the URL for the organisation’s home page only. If you have difficulty accessing any web links, please go to the organisation’s home page and use appropriate key words to search for the relevant item.

**Note on NICE guidance:** To find any of the NICE guidelines or technology appraisals mentioned in this programme visit the NICE website at: [http://www.nice.org.uk](http://www.nice.org.uk) On their home page, under ‘Search NICE guidance’, enter the relevant topic and click ‘Search’.

**Note on articles:** If you have difficulty locating an article on the internet, search via: [http://www.google.co.uk](http://www.google.co.uk) by typing in the title, author, date and name of the journal. It can also be helpful if you add in, at the end of the search criteria, the website where you think the information may be, eg, [dh.gov.uk](http://www.dh.gov.uk)
When devising this programme we paid special attention to how it would contribute both to your own professional development and to the overall improvement of NHS services. We have illustrated some of these benefits in the diagram below (you will find more detail as you progress through the programme).
The United Kingdom is an ageing society and indeed, population ageing is a global phenomenon. To maintain good health in old age, older people may have a number of specific needs and often have frequent contact with health services. The National service framework for older people\(^1\) (NSF for older people) is a 10-year plan for the UK and includes good medicines management as a fundamental component of each of its standards (note that while the plan runs from 2001 to 2011, the underlying principles will outlast its ‘expiry’). For effective medicines management it is important that pharmacists have good clinical knowledge, but empathy and consideration are also important. We should remember that one day, all of us will become ‘older people’.

1.1 You and your practice

Before beginning the programme, take a moment to reflect on the care you usually provide for older people.

Reflective questions

Think about your encounters with older people or their carers over the last couple of weeks:

1. Who do you perceive to be ‘old’?
2. What were their main concerns, issues, or needs?

3. How did you address these?

4. What knowledge, skills, experience or opportunities (eg, in your contract) helped or prevented you from fully meeting their needs?

5. What do you hope to learn in this programme that will allow you to improve the services you provide to older people?

On completion of the programme, return to these questions, reflect on whether your learning needs have been met and whether you would now handle situations differently with this patient group.
1.2 Older people as a group

When we refer to older people, we need to remember that they are not a homogenous group; different people have different health and social care needs. Broadly however, older people may be considered as three different groups, as defined in the NSF for older people:

**Young elderly**
This refers to people aged 60-74 years, ie, people ‘entering old age’. They tend to be recently retired and have a strong social network. In most of these individuals the ageing process, though advancing, has not yet become clinically significant to drug handling. However, some ‘young elderly’ will already be suffering from long-term conditions and so may have greater health needs than the rest of their peer group, or those still in middle-age.

**Elderly**
People aged 75-84 years are considered to be ‘elderly’ (equivalent to the ‘transitional phase’ group). At about the age of 75 the ageing process becomes clinically significant to drug handling. People may be living independently and leading active lives, but those in poorer health may need more social support to retain their independence or have already moved to sheltered accommodation.

In the acute sector this age group is traditionally considered for admission to specialist elderly care facilities. Many elderly care units have historically not admitted people younger than 75 years old, but this traditional age-defined model of healthcare is less easy to support now that the first standard of the NSF for older people aims to root out ageism in healthcare and not deny necessary support purely on the grounds of age. For example, it would be unfair to deny specialist ‘elderly care’ to a person of 74 years if they need it. Care for any person can often be more appropriate in a unit where the needs of their age group are an integral part of the ethos of care.

**Very elderly**
The ‘very elderly’ are people aged 85 or above (equivalent to the ‘frail older people’ group). They are the generation that lived through most of the upheavals of the 20th century. They are more likely to be widowed, have some level of disability, may live alone in un-modernised homes, have a much reduced social network and may not be as financially secure as the ‘young elderly’. The results of the ageing process are certainly clinically significant to drug handling in this group.

Generally, in the context of this programme, when we mention ‘older people’ we are referring to people in the last two groups.

1.3 The ageing population and health

Better living conditions and improved healthcare using new technology and medicines mean that people are living longer than their predecessors. Currently 17 percent of people in the UK are over 65 and this is expected to increase to 25 percent by the 2050s. The fastest growing age group is the over-85s or very elderly people.
Older people are high users of health and social care resources, including medicines. Around three-quarters of people over 75 have at least one long-term condition, and while people with long-term conditions account for over 30 percent of the population, they use 52 percent of all GP appointments and 65 percent of all outpatient appointments. Considering inpatient care, almost two-thirds of general and acute hospital beds are used by people over 65. Many older people with long-term conditions will require medicines to control their symptoms and/or prevent relapse and worsening of their conditions. People over 65 receive about half of all NHS prescriptions, with 80 percent being repeat prescriptions. More than a third of people over 75 take four or more prescribed medicines. When used appropriately, medicines can improve outcomes and quality of life, but, inappropriate use can lead to increased morbidity, mortality and waste of scarce financial resources. According to the NSF for older people, medicines are implicated in about five to 17 percent of hospital admissions and people over 60 are more likely to be admitted to hospital with an adverse drug effect compared to those under the age of 30.

### 1.4 Healthcare settings

Older people are looked after in various care settings, depending on their health and social care needs. These include care at home, sheltered accommodation, care homes, intermediate care centres and acute hospital settings. The Public Service Agreement 2004 set a target to improve the care of older people by increasing the number of people over 65 supported to live at home by one percent a year in 2007 and 2008. This has been echoed by the White Paper, *Our health, our care, our say* (2006), which recommends changes that will lead to a more integrated health and social care system which delivers services that better meet the needs of the local population, closer to their homes. As a result, the provision of care for older people has increasingly shifted from hospital to the community. Indeed, a major report, commissioned by the King’s Fund, *Securing good care for older people* highlighted that the elderly have a preference for care in their own homes and would support this shift.

Care of very elderly people is ideally led by a consultant physician for older people (geriatrician) with support from a team including GPs, nurses, pharmacists, and occupational therapists. More recently there has been a move for GPs with a special interest in older people to take the lead for this group of older people in the community.

### Care at home

Many older people are able to live independently at home with or without the support of relatives, neighbours and friends. Others require more formal help (via a care package) with personal care (eg, bathing, washing, dressing) and/or assistance with activities of daily living (eg, taking medicines, shopping, cleaning). These activities are funded and provided by social service in-house domiciliary carers or, more commonly, by contracted independent care provider agencies. Recently older people have been able to privately fund domiciliary care through individual managed budgets. (See also Section 4.3 and Section 5 for further information about care planning and collaborative working.)
As far as support with medicines is concerned, the Care Quality Commission (CQC) (formerly the Healthcare Commission, the Commission for Social Care Inspection and the Mental Health Act Commission)\(^7\) in line with national minimum standards,\(^8\) recommend that the manager of the care provider organisation should assess the level of support required by the older person and then provide trained and competent staff to deliver this support. It recommends three levels of support:

**Level 1:** The person takes responsibility for their own medicines.

**Level 2:** It is considered that the person cannot take responsibility for their medicines and that care staff will need to do this.

**Level 3:** Exceptional circumstances where medicines need to be given by specialised techniques.

The latter is less common in practice, although older people will be given injections like insulin and hydroxycobalamin by practice nurses, or district nurses if housebound.

**Social housing**

Social housing is for older people who cannot manage at home by themselves and require some support for day-to-day living. It includes sheltered accommodation, extra care sheltered accommodation, warden-assisted flats, care homes without nursing provision (formerly residential homes), and other similar arrangements.

Support is usually provided by non-clinical staff, eg, a warden who oversees the unit or care workers in residential homes. At some point, the people providing support will become involved to a larger or smaller extent in the ordering, supply, or administration of medicines for their residents. Nursing care is via the district nurse or practice nurse if the patient is able to visit the GP.

**Intermediate care**

Intermediate care provides a single service, facilitated through the primary care trusts (PCT’s), where a multidisciplinary team uses a common assessment, and aims to promote faster recovery from illness, prevent unnecessary acute hospital admission, facilitate timely discharge from secondary care and maximise independent living. It includes a range of integrated services provided at home or in designated care settings.

In areas with established intermediate care services there is evidence of reduced acute hospital admissions and fewer care home placements.\(^9\) There are five service models for intermediate care:\(^10\)

1. Rapid response
2. Hospital at home
3. Residential rehabilitation (inpatient rehabilitation)
4. Supported discharge
5. Day rehabilitation

The ‘rapid response’ model can put a care package in place within 24 hours and provide continued support for about six weeks. For those who have experienced
acute admissions to hospital, the return home can be facilitated by the hospital at home service, residential rehabilitation, or supported discharge. Patients who are in residential rehabilitation units would be able to return home with support for about six weeks, under the supported discharge scheme and the use of day rehabilitation. As all these services are co-ordinated by the same organisation it means that patients do not have to negotiate the services they need across different organisational boundaries.

The multidisciplinary intermediate care teams (ICT) are integrated into the whole system of care. Team members include medical practitioners, nurses, physiotherapists, and occupational therapists, with some involvement from pharmacists, dietitians, speech and language therapists, social workers and care assistants. The ICT may also draw on the expertise of a wide range of other health professionals and other services, such as housing and the independent sector.

Care homes with nursing

More than half a million older people aged 65 or over now live in care homes. Nursing homes are playing a growing part in the provision of support for older people with complex health and social care needs. Some common reasons for admission into care homes include a stroke, falls, fractures, dementia or confusion, social isolation, and, in combination with other factors, the need for complex medicines regimes.

People in nursing homes often require 24-hour nursing care or input and are usually very elderly people with or without mental health problems. Patients with dementia will have input from specialist old age psychiatrists and community mental health teams, but the vast majority of their physical health needs will be met by GPs and care home nurses. Some nursing homes also provide respite and intermediate care services. There is evidence to show that older people in care homes take more medicines than those in the community and are at higher risk of falling.

The Commission for Social Care Inspection 2006 report, *Handled with care?*, showed that although care is improving, nearly half of all nursing and care homes fail to meet national minimum standards for the way they manage residents’ medicines; people are given the wrong medicines, someone else’s medicines, medicines in the wrong doses, or no medicines at all. One of their recommendations was that PCTs take more active steps to ensure that monitoring the prescribing of medicines in nursing and care homes is given a higher priority and that support is given to homes to develop safe working practices. Also, the *NSF for older people* includes a standard specifying that patients should get more help with their medicines from pharmacists. Despite this, pharmacy input to care homes is patchy and varies from PCT to PCT. (If you would like to learn more about the support that pharmacy teams can offer to care homes, then take a look at the CPPE open learning programme, *Supporting care homes.*)

Hospital care

Older people are admitted to hospital for a variety of reasons related to disease management, acute medical events, or as the result of accidents. Non-clinical or social factors also play an important part in the admission of older people to hospital.
Older people may spend a longer time in hospital than is necessary or desirable; in 2002 it was reported that almost nine percent of older people occupying NHS acute care beds were fit to leave hospital, with the most common reason for delay being waiting for care home placement (a quarter of all causes).\textsuperscript{15}

Following an acute hospital stay, an older person may be discharged back to their home, into an intermediate care service (community or bed-based,) or long-term care home. On discharge, medicines may have been added, discontinued, or doses or brands changed, and older people may be unable to continue to manage their medicines as they did before admission; this may increase the risk of adverse drug reactions. Medicines reconciliation and good communication between secondary and primary care are crucial during this transition to minimise the risks. (See Section 4 for further information about medicines reconciliation.)

It is important to implement effective discharge planning in relation to medicines to ensure a seamless transfer of care, and this should be started while the patient is still in hospital. The help that is needed – including medicines management needs – should be identified and put in place well before discharge. It is vital that medicines-related issues are shared between general practice and the hospital setting, or indeed, at any transfer of care, and is crucial to safe medicines management. Effective communication between these settings prevents delays in discharge, bed-blocking, re-admission and reduces the risk of harm, at a time when older people are vulnerable to medicines-related problems.

**Practice point**

Think about a time when you have been involved in the care of an older person transferred from one care setting to another (eg, from hospital to care home, home to care home, hospital to home, etc). What were the challenges and positive aspects you experienced? What processes could be put in place in your locality to improve medicines management during transfer of care?

**Palliative care**

This is provided at home, in care homes, or in hospices for patients who are dying, eg, from cancer, end stages of heart failure or chronic obstructive pulmonary disease (COPD), or dementia. Adequate therapeutic management of pain and other symptoms is crucial to ensure that the older person’s comfort and dignity are maintained through to their death.

**Practice point**

In what settings is care for older people provided in your PCT? Which groups of older people does each setting provide care for?
1.5 Policy context

The *NSF for older people*, published in 2001, sets out a framework for health and social care organisations to improve quality of care and to tackle variations in care for older people by setting national standards. The framework includes eight standards, of which the use of medicines is a fundamental component and integral part.1

**The eight NSF for older people standards**

1. Rooting out age discrimination
2. Person-centred care
3. Intermediate care
4. General hospital care
5. Stroke
6. Falls
7. Mental health in older people
8. The promotion of health and active life in older age

A separate booklet, *Medicines for older people: implementing the medicines-related aspects of the national service framework for older people*,16 sometimes referred to as standard nine, was also published. It sets out how health and social care could ensure that older people gain the maximum benefit from their medicines, thus maintaining or increasing their quality and duration of life, and avoiding unnecessary illness caused by excessive, inappropriate, or inadequate consumption of medicines.

The document highlights key problem areas that need to be prioritised:

- the occurrence of preventable adverse reactions to medicines
- the under use of medicines that are indicated
- medicines that are not taken as prescribed
- wastage due to varied quantities on different repeat prescriptions
- changes in medication after discharge from hospital
- poor two-way communication between hospitals and primary care
- the need to improve repeat prescribing systems
- inadequate dosage instructions on medicine labels
- problems with access to the surgery or pharmacy
- carers’ potential contribution and needs are often not addressed.

More recent documents, such as the *NSF for long-term conditions 2005*,17 *New ambition in old age 2006*;2 the White Paper, *Our health, our care, our say, 2006*;5 the Darzi review 200818 and the pharmacy White Paper, 200819 have reiterated the need for personalised care tailored to the specific health or social care needs of individuals, as well as the drive towards caring for older people and those with long-term conditions closer to home. Effective medicines management services will be needed to deliver this.
Practice point

Reflect on some of the services you currently provide for older people and how you deliver them. How do your services help solve some of the problems highlighted by *Medicines for older people: implementing the medicines-related aspects of the national service framework for older people*? How could you improve your service?

Summary

Older people are a heterogenous group with individual needs. They can be based in a variety of settings in the community, depending on their needs.

The *NSF for older people* is a key government document published to facilitate improved care for older people across health and social care settings. It recognises the importance of good medicines management as part of delivering better care and sets standards and targets around the use of medicines. *Medicines for older people: implementing the medicines-related aspects of the national service framework for older people* has the overall goal of minimising the risk of harm and maximising the benefits from taking medicines and highlights key problem areas where changes should be made.

**Intended outcomes**

By the end of this section you should be able to: Well can you?

- Describe the three broad groups of older people, but recognise all older people as individuals.
- Describe the various healthcare settings commonly used by older people.
- Outline the standards of the *National service framework for older people* and the main issues highlighted in the medicines-related document.
Section 2
Ageing and medicines use

Objectives
On completion of this section you should be able to:

- describe the effects of ageing on the pharmacokinetics of medicines
- understand how pharmacodynamics are affected by the change in homeostatic regulation in older people
- outline the common changes in physical and mental health that accompany ageing and how these may affect medicines use
- describe behavioural and socioeconomic factors that may influence the way an older person uses their medicines.

Ageing brings a number of changes to the body, and it affects the handling of medicines, a person’s vulnerability to adverse effects, and their ability to take medicines. This section outlines these changes and their impact. After working through this section, you may find it helpful to read through selected sections of the factfile, *The presentation and management of diseases commonly affecting older people*, which is available on the CPPE website.

2.1 Physiological changes and ageing

The ageing process begins to affect drug handling around the time people reach their 40s. Pharmacokinetic, pharmacodynamic and homeostatic changes then slowly develop and become clinically significant when people reach about 75. However, some common changes are not overt until a person is well into their 80s. Despite this general pattern, there is considerable variation in the onset, rate and extent of the ageing process, and chronological age is a poor guide to a person’s ‘biological age’.

Of course, being old is not itself a disease state; it is a natural phase of human life. However, age-related diseases and conditions can and should be treated: they are not a ‘normal’ consequence of ageing. Elderly people cope with the normal aspects of ageing with conscious and unconscious adaptations to their lifestyles. The success of these adaptations can be adversely, indeed severely, affected by drug therapy and the development of new diseases or infections. As people age, they recover more slowly from trauma and infectious illness, and the consequences can have a more severe impact on their lives; older people need longer periods of support to help them return to full health and independence.

With ageing, there is a progressive loss of the functional capabilities of most body organs, changes in responses to receptor stimulation and a decrease in homeostatic or counter-regulatory mechanisms, as well as loss of body water and increase in body fat content. These changes have significant implications for drug handling and therapeutics, and may mean that adjustments of drug selection, dose, and frequency need to be made. Also, signs and symptoms of disease may be atypical or blunted; for example, fever may not be present with an infection. You need to
consider the pharmacotherapeutic needs of older people individually, not based on chronological age alone; avoid assumptions and make your decisions based on a full assessment, including a person’s lifestyle and environment.

### 2.2 Pharmacokinetic changes

Pharmacokinetics relates to what the body does to drugs as they move into, through, and out of the body. It includes absorption, distribution, metabolism and excretion and determines the onset, duration, and intensity of drug effects.

#### Practice point

When older people present a prescription, particularly for the first time, how often do you stop to check that the drug doses and formulations are appropriate? If there is a potential problem, what procedures do you currently have in place to rectify it with the patient or prescriber? How can you improve these procedures to ensure that the older person’s treatment is optimised and that they do not suffer undue harm?

#### Absorption

With ageing, the extent of drug absorption is largely unchanged, however the absorption rate may be slowed down. Changes in absorption are not clinically significant.

#### Distribution

The changes in the proportion of body muscle, adipose tissue and water have a significant effect on drug distribution as people age. Water-soluble drugs have a much reduced volume of distribution and achieve higher blood levels for a given dose, meaning doses should be reduced to minimise toxicity; examples include digoxin and verapamil.

Lipid-soluble drugs concentrate in fatty tissue and the brain and have a larger volume of distribution as adipose tissue increases as people age, increasing the body stores of the drugs. As clearance from adipose tissue is relatively slow, the half-life increases; for example, drugs such as nitrazepam, diazepam and chlorpromazine can cause excessive sedation and increased risk of falls in the elderly. Thus, lipid-soluble drugs should be used in smaller doses and at longer intervals in the elderly.

Ageing is associated with a slight reduction in serum albumin and protein but they remain within the normal range. The small changes are not thought to be clinically significant to drug handling. However, there may be a significant decrease in circulating proteins in very elderly people, hepatic impairment, malnourishment, or following major acute episodes, such as surgery or infection; in these cases, medicines that are highly plasma protein bound (greater than 90 percent) are displaced, resulting in higher concentration of free drug and thus toxicity.
Examples include phenytoin (90 percent protein bound), with toxicity seen as ataxia, slurred speech, confusion; warfarin (99 percent protein bound), leading to bruising/bleeding; and, diazepam (99 percent protein bound), causing increased sedation and falls.

**Metabolism**

Many drugs are metabolised by the liver and, for these drugs, a reduction in liver function affects their removal. Liver size reduces and blood flow falls, reducing drug delivery and clearance. While ageing affects the efficiency of some – but not all – of the liver’s metabolic and synthetic functions, overall metabolism tends to be only slightly impaired in the absence of liver disease. For example, the cytochrome p-450 pathway is reduced, meaning that drugs metabolised by this path may need dose adjustments; however, the conjugation pathway is not affected.

Liver function is not measurable (liver function tests (LFTs) indicate liver damage, not metabolic effectiveness) and the clinical significance of age-related changes are hard to predict and can vary greatly between individuals. It is important to note that some older people may have acquired liver disease as a result of an adverse drug reaction, cancer, a viral infection, or alcohol abuse. These people may require significant dose reductions to doses usually used in their age group.

The ability of the liver to withstand stress decreases with age and the healing time after damage is slower. Thus hepatotoxic drugs may cause more severe injury in older people; eg, paracetamol (in people with alcoholism or underlying liver disease, paracetamol can cause toxicity in doses as low as 4-8 g per day), amiodarone, statins, phenothiazines, ciprofloxacin, erythromycin, fluconazole, isoniazid, valproate, methyldopa.

Appendix 2 of the BNF gives guidance on dose modifications necessary for patients with liver impairment and should be regularly consulted when prescribing, or monitoring the outcomes of prescribing, in the elderly. Further information on dosage regimes for specific drugs can be found in the summary of product characteristics (SPC) which can be found in the electronic medicines compendium: http://emc.medicines.org.uk/

**Excretion**

Excretion is the most significant and important age-related pharmacokinetic change and is both predictable and measurable. With ageing, there is a decrease in renal blood flow, renal tubular function, and glomerular filtration rate (GFR). After the age of 30, GFR reduces by 8 mL/min per decade in about two-thirds of the population who do not suffer from renal or hypertensive disease. Thus, two-thirds of elderly people aged 70 to 80 will have about half the renal function of a young adult.

This reduction in renal function affects the pharmacological effects of many drugs, including those related to toxic or active metabolites that are renally excreted. Failure to excrete medicines and their metabolites leads to accumulation and toxicity and drug concentrations may increase by up to 50 percent. For example, the half-life of diazepam could increase to 96 hours, leading to excessive sedation and falls. Drugs may accumulate slowly with chronic use and signs of toxicity may not appear until days or weeks after drug initiation. Also, some drugs cease to be effective with reduced renal function, eg, thiazides when GFR is less than 30 mL/min.
When prescribing for older people, reduced renal function must always be considered, as well as the potential for further damage to the already impaired kidneys from nephrotoxic drugs.

**Estimating renal function**

Creatinine is a by-product of the breakdown of the body’s muscle and its only route of removal from the body is filtration via the kidneys. This means creatinine levels give an indication of renal function.

Older people have less muscle mass than younger adults and so produce less creatinine daily, meaning an older person’s serum creatinine (SeCr) will often remain within the ‘normal’ range until they have quite a significant level of renal failure. Thus, when assessing the renal function of an elderly person serum creatinine on its own does not provide an accurate measure of kidney function. However, the rate creatinine is cleared by the kidney – creatinine clearance (CrCl) or glomerular filtration rate (GFR) – is a better measure of renal function for the purposes of drug dosing. GFR can be directly measured by a 24-hour urine collection or estimated relatively easily using the following formula.

**Estimating GFR**

The Cockcroft and Gault formula can be used to estimate GFR. Estimates are based on a person’s chronological age, sex, serum creatinine (SeCr) and body weight.

\[
GFR\text{(mL/minute)} = \frac{(140 - \text{age in years}) \times \text{weight (kg)} \times 1.2 \text{ (male)} \text{ or 1.0 (female)}}{\text{SeCr (micromols/Litre)}}
\]

Results may be classified, and used to adjust drug doses, as follows:

**Grades of renal failure based on GFR used for dose adjustments**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Absolute GFR</th>
<th>Approximate serum creatinine*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>20-50 mL/min</td>
<td>150-300 micromoles/Litre</td>
</tr>
<tr>
<td>Moderate</td>
<td>10-20 mL/min</td>
<td>300-700 micromoles/Litre</td>
</tr>
<tr>
<td>Severe</td>
<td>Less than 10 mL/min</td>
<td>Greater than 700 micromoles/Litre</td>
</tr>
</tbody>
</table>

* Serum creatinine in elderly people should always be interpreted cautiously and not used as a measure of true renal function.

In relation to the Cockcroft and Gault formula, it is very important to bear in mind the following:

- it should not be used for children or pregnant women
- it gives very unreliable results where renal function is unstable (ie, when serum creatinine is fluctuating)
- it gives very unreliable results where the loss of lean body weight is caused by non age-related factors, such as cancers or severe malnutrition
the formula only gives ‘guesstimate’ results for very elderly patients, but can still provide some useful guidance in this age group.

for non-obese patients, the formula uses total body weight (TBW). If a person is obese (e.g., 20 percent heavier than ideal) then their ideal body weight (IBW) should be used in the formula (see below). However, in very obese patients (about 40 percent excess weight), using ideal body weight (IBW) can underestimate renal function, while using their total body weight (TBW) can overestimate it. In very obese patients an adjusted body weight (ABW) formula (see formula below) can give better results.

if a patient is very oedematous from congestive cardiac failure (CCF) or other congestive conditions then an amount of the weight measured, which is hard to determine, will be fluid rather than tissue. This ‘water-weight’ increases the unreliability of the result of the Cockcroft and Gault calculation.

**Formulae to calculate ideal and adjusted body weights:**

**Ideal Body Weight (IBW)**

- Males: $\text{IBW} = 50 \text{ kg} + 2.3 \text{ kg for each inch over 5 feet}$.
- Females: $\text{IBW} = 45.5 \text{ kg} + 2.3 \text{ kg for each inch over 5 feet}$.

**Adjusted Body Weight (ABW)**

$\text{Adjusted Body Weight} = \text{IBW} + 0.4 (\text{TBW} - \text{IBW})$

**Chronic kidney disease and chronic renal failure**

More recently, the modification of diet in renal disease (MDRD) formula was introduced to calculate ‘estimated GFR’ (eGFR), which is normalised to a body surface area of 1.73 m² (note that eGFR is calculated by the laboratory). It is a more accurate reflection of the true condition of the kidney and takes into consideration race and ethnicity. This formula is used to classify the five stages of chronic kidney disease, as shown below.

<table>
<thead>
<tr>
<th>Degree of impairment</th>
<th>eGFR mL/minute/1.73 m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal – Stage 1</td>
<td>Greater than 90 (with other evidence of kidney damage)</td>
</tr>
<tr>
<td>Mild – Stage 2</td>
<td>60-89 (with other evidence of kidney damage)</td>
</tr>
<tr>
<td>Moderate – Stage 3A</td>
<td>45-59</td>
</tr>
<tr>
<td></td>
<td>30-44</td>
</tr>
<tr>
<td>Severe – Stage 4</td>
<td>15-29</td>
</tr>
<tr>
<td>Established renal failure – Stage 5</td>
<td>Less than 15</td>
</tr>
</tbody>
</table>

**Note:** An eGFR greater than 60, with no structural abnormality or any other evidence of kidney disease, is not considered to be either Stage 1 or Stage 2 chronic kidney disease. Only a minority of people with early stage chronic kidney disease will go on to develop more advanced disease.

Source: adapted from NICE Clinical guideline CG73: Chronic kidney disease, 2008.
GFR and eGFR

GFR and eGFR cannot be used interchangeably and most laboratories now report renal function as eGFR. However, the BNF and SPCs still recommend dose adjustments based on GFR; so to make prescribing dose adjustments, the GFR will have to be calculated. In practice, for most drugs and for most patients (over 18 years) of average build and height, eGFR can be used to determine dosage adjustments in place of creatinine clearance. An individual’s absolute glomerular filtration rate can be calculated from the eGFR as follows:

**GFR Absolute = eGFR • (individual’s body surface area/1.73)**

The exceptions are for potentially toxic drugs with a small safety margin and in patients at both extremes of weight (BMI of less than 18.5 kg/m² or greater than 30 kg/m²); in these cases, creatinine clearance (calculated from the Cockcroft and Gault formula) in addition to plasma-drug concentration and clinical response should be used.

Adjusting doses in renal impairment is dependent on:
1. the extent to which the drug is excreted by the kidney
2. the toxicity of the drug or any active metabolites
3. the nephrotoxicity of the drug
4. the therapeutic index of the drug
5. other conditions that impact on renal function, ie,
   - diabetes
   - hypertension
   - heart failure
   - dehydration, eg, during acute illness like a chest infection, post-myocardial infarction
   - chronic kidney disease – sensitivity to some drugs is increased even if elimination is unimpaired, eg, ACE inhibitors, and many side-effects are tolerated poorly by patients with chronic kidney disease.

Drugs that are exclusively excreted by the kidneys and have a narrow therapeutic index – such as aminoglycosides, lithium and digoxin – can accumulate in patients with reduced renal function, leading to toxicity. Before beginning such drugs, the prescriber should determine baseline renal function and then tailor the dose to the individual and ensure the patient is regularly monitored. For renally excreted drugs with a wide therapeutic index no adjustments are necessary.

It is best to avoid nephrotoxic drugs, but if prescribed they should be used with caution, by starting at a low dose and titrating up to the desired response, a physiological parameter, or the evidence-based dose for the indication, and patients should be regularly monitored. The expected benefits should outweigh the risks of therapy; try to choose the least nephrotoxic drugs within the class at the lowest effective dose.

Appendix 3 of the BNF covers renal impairment and gives guidance on the dose modifications necessary for patients with renal failure. Anyone prescribing, or monitoring the outcomes of prescribing in the elderly should consult it. Further
information on dosage regimes for specific drugs can be found in the SPC, which can be found in the electronic medicines compendium (http://emc.medicines.org.uk/). The Renal Pharmacist Group produce their own Renal Drug Handbook (http://www.renalpharmacy.org.uk) which is a useful reference for more severe levels of renal disease.

Exercise 1

An 80-year-old woman has been transferred to your ward. She was admitted a week ago following a fall. The cause hasn’t been identified but she has since recovered fully and will be discharged tomorrow. On admission, she was known to be a diet controlled diabetic and to have had hypothyroidism. She used thyroxine and the occasional paracetamol for knee pain.

During her stay tests show that she has high blood pressure. The registrar has asked the junior doctor to initiate ramipril 5 mg daily. The patient is 80 years old, weighs 54 kg and her serum creatinine (from bloods taken 12 hours ago) is 110 µmols/Litre.

What action do you take?

Turn to the end of the section for suggested answers.
2.3 Pharmacodynamic and homeostatic changes

Pharmacodynamics relates to what the drug does to the body. Homeostasis is achieved by processes that maintain normal functioning of the body when active and at rest and which moderate the body’s response to the pharmacological effect of medicines.

The pharmacodynamic effect of a drug is due to changes in specific receptor target sites, which depend on the number of receptors, the drug’s affinity for the receptors, and post-receptor events (e.g., impaired activation, amplification, or altered response). Older people may have an altered response to drugs because of a decline of homeostatic or counter-regulatory mechanisms that usually oppose the effects of drugs in younger people, leading to a higher rate and intensity in the adverse effect of drugs.

As with all features of ageing, individuals vary in which mechanisms are affected most and to what extent. An elderly person may be managing well with homeostatic changes until a drug is taken that interferes with their ability to compensate, making a mild dysfunction of postural hypotension, balance or thermoregulation into a severe deficit. This may lead to an inability to cope, confusion, falls, or hospitalisation. Any new prescribing for an elderly person must be approached with the utmost caution and the potential for interaction with reduced homeostatic mechanisms evaluated.

Orthostatic circulatory response

While resting, blood pressure drops and should return to its active level immediately on rising from a bed or chair. This is called reflex tachycardia. In older people, reflex tachycardia is blunted and the failure of blood pressure to return to its active level quickly enough leads to dizziness, due to postural or orthostatic hypotension (which may be defined as a difference of 20 mmHg between lying and standing blood pressure). This is a common cause of falls and poor mobility and is experienced by most ageing people to varying degrees. Older people naturally adapt to this effect by getting out of bed or standing up more slowly. However, if a medicine causing postural hypotension is prescribed, a normally manageable symptom may become a problem and lead to a fall.

Examples of drugs causing postural hypotension are diuretics, beta-blockers, nitrates, antihypertensives, antidepressants, levodopa and sedatives. When such drugs are prescribed older people should be advised to get up slowly and avoid sudden and abrupt changes in posture.

Balance

In older people there is a reduction in dopamine receptors in the brain which impairs the static reflexes that give postural stability. Older people have a reduced ability to keep balance when presented with a challenge, such as tripping on an uneven surface. This is made worse by sight loss. Older people also have a much greater level of postural sway than younger age groups which makes it easier to push them off balance. The amount of postural sway is very variable and depends on a person’s level of physical activity. Most people naturally adapt to this aspect of ageing by taking extra care negotiating hazards, such as steps or uneven floors. However, unexpected falls can be experienced when medicines are prescribed that make a person more drowsy than normal, either during the day or at night.
Benzodiazepines cause an increase in postural sway in all age groups, particularly older people. Other examples of drugs causing problems with balance, and hence possibly leading to falls, include opioid analgesics, antipsychotics, antidepressants, and non-prescription medicines for cough and colds. These drugs should be prescribed only when necessary and for the shortest period possible, and where appropriate, people should be encouraged to take them last thing before their bedtime. Preparations that are long acting tend to have a carry-over effect lasting until the next day and should be avoided (e.g., nitrazepam).

Thirst and hydration

As people age, the sensation of thirst reduces and water conservation and sodium balance become impaired.

Water balance is maintained by thirst and the secretion of antidiuretic hormone (ADH). With water loss, serum sodium levels rise, which stimulates ADH secretion to reduce further water loss though the kidneys and thirst promotes drinking.

However, the elderly have a lower sensation of thirst and also tend to secrete ADH inappropriately when serum sodium levels are low (hyponatraemia). This is known as the syndrome of inappropriate antidiuretic hormone (SIADH) and may be seen particularly in elderly people with chronic cardiac, hepatic, or renal disease, increasing the risk of severe hyponatraemia. Therefore drugs that cause hyponatraemia, such as selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants (TCAs), carbamazepine, and indomethacin, should be monitored closely.

While many an elderly person may refuse to drink sufficient fluids because of concerns over bladder problems, it is also not uncommon for a person to refuse fluids simply because they just don’t feel thirsty. It is easy for a person who has lost their ‘thirst prompt’ to become dehydrated; carers should be aware of this feature of ageing, particularly if they notice that drinks are being left untouched.

Thermoregulation

Elderly people are not as efficient as younger adults at maintaining body temperature, despite the increased layer of adipose tissue. Heat is also generated though calorie intake and movement, meaning a less physically active person who is not eating much will be less able to generate heat from these sources. This puts the elderly at risk of hypothermia.

Hypothermia is a factor in about 4000 admissions in the UK each winter. Among identified cases of hypothermia, the mortality rate is 50 percent and those in the elderly and very elderly age groups are five times more likely to die if they develop hypothermia than the young elderly or younger age groups. Although many cases of hypothermia are caused by low temperatures, very elderly people may become hypothermic at home in temperatures as high as 22-24°C. Elderly people may become hypothermic on hospital wards, even in the summer, if they have been given tranquillisers or are seriously ill.

Hypothyroidism, diabetes, Parkinson’s disease and Alzheimer’s disease are among the many conditions that pre-dispose the elderly to hypothermia. Medicines associated with hypothermia include chlorpromazine and related drugs, opioids,
barbiturates, tricyclic antidepressants (TCAs), serotonin re-uptake inhibitors (SSRIs) and alcohol.\textsuperscript{21}

**Altered receptor sensitivity**

Drug receptor sites can become more or less sensitive to drugs, leading to exaggerated or reduced effects as shown in Table 1 below.

**TABLE 1 Changes in receptors and systems in older people that necessitate caution when using certain medicines**

<table>
<thead>
<tr>
<th>Receptors/systems affected by ageing</th>
<th>Medicines to use with caution</th>
<th>Potential impact due to altered response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased central nervous system (CNS) sensitivity</td>
<td>Opiates, psychotropics, benzodiazepines, cimetidine, anticholinergics</td>
<td>Agitation, insomnia, confusion, dizziness, extrapyramidal effects</td>
</tr>
<tr>
<td>Increased gastrointestinal sensitivity</td>
<td>NSAIDs, SSRIs, prednisolone</td>
<td>Nausea, vomiting, diarrhoea, constipation, gastrointestinal bleed, dyspepsia</td>
</tr>
<tr>
<td>Increased warfarin receptor sensitivity</td>
<td>Warfarin: reduce dose by 25 percent</td>
<td>Bleeding, bruising</td>
</tr>
<tr>
<td>Increased digoxin receptor sensitivity</td>
<td>Digoxin: 62.5 micrograms or 125 micrograms is sufficient in the majority of older people</td>
<td>Confusion, hallucinations</td>
</tr>
<tr>
<td>Increased benzodiazepine receptor sensitivity</td>
<td>Benzodiazepines: use shorter-acting benzodiazepines and lower doses</td>
<td>Increased and prolonged sedative effects, falls</td>
</tr>
<tr>
<td>Increased sensitivity of acetylcholine receptors</td>
<td>Amytriptyline, oxybutynin, hyoscine</td>
<td>Confusion, blurred vision, constipation, urinary retention, increased heart rate with TCAs</td>
</tr>
</tbody>
</table>
Mr Oostenbrook is an 87-year-old gentleman who has Parkinson’s disease. Yesterday, the ‘meals on wheels’ delivery man found him on the floor in his hallway. He was conscious, but had fallen and was unable to get up. He was admitted to hospital with hypothermia and a fractured wrist.

He has been taking the following medicines:

- Ramipril capsules 5 mg, daily
- Co-codamol tablets 30/500 mg, two times a day
- Nitrazepam tablets 5 mg, at night
- Co-careldopa tablets 100/25, four times daily

What pharmacokinetic and pharmacodynamic factors could have potentially contributed to this incident? How might you suggest his medicines be altered?

*Turn to the end of the section for suggested answers.*
2.4 Changes in physical and mental health

All safe and effective prescribing needs to take into account the patient’s physical and mental disabilities. Any prescriber needs to take care not to worsen any existing physical or mental condition, as well as ensuring that medicines are offered in a form and regime that the patient and their carers can use easily. In general, disability increases with age. *Disability in Great Britain: results of the 1996/7 disability follow-up to the family resources survey* showed that nearly half (48 percent) of the disabled population are aged 65 or over, and about 75 percent of those aged over 80 were disabled.23

**Visual impairment and loss**

About 80 percent of people over 65 have a form of visual impairment, although of course in a large majority, some sight loss will be corrected/improved with glasses.24 This ranges from an inability to read small print on labels, to presbyopia (the inability to focus on near objects caused by ageing), to the peripheral and tunnel vision (caused by age-related macular degeneration and glaucoma respectively), to total sight loss. This affects the ability of older people to use their medicines properly. Many cannot read the directions on labels or in patient information leaflets. Others are unable to see the calibration on insulin syringes or pens, which can result in them taking the wrong dose. In older people with the poorest sight, the ability to read Braille is uncommon unless they have lost their sight at a much younger age.

Anyone prescribing for older people, needs to carefully consider the effects of poor vision on their ability to read and the additional effects of poor vision on balance, mobility and safety and offer appropriate support.

Practical help to support vision-impaired people with their activities of daily living, including taking medicines, is available through the Royal National Institute for the Blind (RNIB) at: [http://www.rnib.org.uk](http://www.rnib.org.uk) The National Pharmaceutical Association updated their useful information leaflet, *Aidstocompliance*, in 2001 (a catalogue of their publications is available at: [http://www.npa.co.uk](http://www.npa.co.uk)). Additionally, some PCT’s and councils run assistance technology programmes and make various aids available to patients.

**Hearing impairment**

As people age any loss of hearing they experience is known as presbycusis. It is the commonest cause for hearing loss in people over 55, with over 50 percent of people over 60 having some degree of hearing loss.25 Good skills in lip-reading are often not learned unless a person has lost their hearing at a much younger age.

It is worth noting that for a person to lip-read a word easily, they must already have that word in their vocabulary and be familiar with how it looks when spoken. New or unfamiliar drug names will often need to be written down and then enunciated carefully to a deaf person before they can understand that word and lip-read it in the future.

Ensuring patient confidentiality is a particular concern when consultations are conducted in writing, or if you need to talk more loudly and risk the conversation being easily overheard outside the consulting area. Hearing aids can help, but often the background noise can be amplified as much as the sound of the voice.
Distortion of the sound can also be a problem, making what is heard unlike the person’s memory of what the sound used to be like and so hard to ‘translate’. This is particularly true of those whose hearing has been lost later in life. It can help to talk more loudly, increasing the volume of sound; whereas shouting just increases the distortion of sound making the speaker more difficult to hear. Care should be taken with drugs that cause ototoxicity, eg, erythromycin at doses above 1.5 g in severe renal impairment, and aminoglycosides.

Swallowing difficulties

Dysphagia is not restricted to older people, however they are more affected by the condition. Often older people that have had some form of head injury, suffered a stroke, have Parkinson’s disease, or other motor neurone diseases, will have swallowing difficulties to a small or large extent. They may experience pain on swallowing medicines, choke on them, or just not be able to swallow medicines.

In practice there is a spectrum of swallowing difficulties, for example, some older people can only swallow small tablets or capsules; others are unable to swallow large round tablets, large quantities of liquid, or may require a thickener. Common examples of difficult to swallow formulations include amoxicillin 500 mg capsules, co-codamol 30/500 mg tablets, and slow-release potassium tablets. Sometimes people resort to using knives and tablet cutters to cut them into smaller pieces, but this may not be appropriate, especially if the drug is a slow-release tablet.

Attention must be paid to patients with swallowing difficulties and the most appropriate formulation must be prescribed.

Reduced mobility and immobility

Ageing is associated with changes in muscles and joints and this may have a significant impact on the lives of elderly people, due to reduced mobility. There are a number of things that can result in reduced mobility, such as pain, musculoskeletal disorders (for example, people awaiting hip replacements), gait disorders, acute illnesses (such as pneumonia or urinary tract infections). Depending on the severity, people may experience difficulties walking, climbing stairs, unsteadiness, or may be wheelchair-bound or even bed-bound.

Reduced mobility can affect many aspects of medicines management or use. Housebound patients have to rely on others to collect their prescription and medicines, and generally have poor access to pharmaceutical care. People with reduced mobility are more likely to be constipated, may experience urinary incontinence as they are unable to reach a toilet in time, and have a higher risk of falls. Prescribers should take care when prescribing as certain drugs can further aggravate these conditions.
Reduced manual dexterity

Hand dexterity is reduced in many older people due to degenerative conditions that affect their muscle control or that cause uncontrolled movements, such as shaking. This can prevent people from carrying out certain simple medicines-related tasks, such as opening child-resistant lids, removing tablets from a blister pack/foil, breaking a tablet in half, picking up a small tablet, unscrewing lids from eye drops, using inhaler devices (e.g., tiotropium inhaler) or other complex devices, measuring liquids, peeling the back off a patch, etc. This could be further complicated by a loss of grip or strength to depress inhaler devices, squeeze a tube, depress a cream dispenser, etc. For easier access, people sometimes ask carers and friends to ‘re-dispense’ medicines into more convenient containers; however, this may lead to, for example, contamination of creams and instability of drugs exposed to light or moisture.

Healthcare professionals, such as prescribers, dispensers, and those carrying out medication reviews or assessments, must take these factors into account to ensure that the older person is able to use their medicines safely and effectively.

2.5 Other factors

Behavioural factors

Patient attitudes, perceptions and expectations affect how and whether or not they take their medicines. The fear of side-effects and undesirable effects on lifestyle may prevent them from adhering and persisting with medicines for long-term conditions.

‘Saving for a rainy day’ or previous experience of having run out of supply can often lead to the hoarding of medicines. In the author’s experience, sharing and borrowing medicines from their spouse and friends (particularly laxatives and painkillers), as well as self-medication with over-the-counter, herbal, and complementary medicines, is common practice among older people. The healthcare professional caring for the patient is often unaware of this, resulting in adverse drug-drug or drug-condition interactions. So, during medication reviews and other consultations, in order to reduce the risks of harm, it is important to have an effective approach to taking the patient’s medication history-taking to ensure you find out about non-prescribed drugs.

Common problems include the use of compound or branded over-the-counter preparations containing NSAIDs, alongside prescribed NSAIDs or other medicines that can lead to gastrointestinal bleeds, eg, SSRIs and prednisolone; the use of St John’s wort with interacting medicines, such as warfarin and other antidepressants; the use of indigestion remedies which can mask the warning signs of more severe gastrointestinal disorders.

In Section 4 we discuss low medicines adherence – which may be intentional or unintentional – in more detail.
Mrs Wilmot is a 76-year-old lady with severe disability due to multi-joint osteoarthritis. She tells you she has itching due to dry skin, which is worse at night and is beginning to disturb her sleep. She spoke to the doctor and he prescribed a tub of E45 cream with a pump dispenser, but she can’t use it as she can’t depress the pump. She asks you if you can give her a tablet.

What suggestions would you make?

Turn to the end of the section for suggested answers.

Socioeconomic factors

Loneliness, bereavement, isolation and multiple morbidities can lead to a lack of motivation to take prescribed medicines. Inadequate social support, housing and transport facilities can reduce access to medicines and pharmaceutical care, for example, some older people may have to catch several buses to reach their GP surgery or pharmacy to pick up their prescriptions or medicines. Many rely on friends, relatives and the goodwill of local community pharmacists and as a result may be unable to get urgent medicines, such as antibiotics, if these individuals are not available at the time, leading to delay in treatment.

Sometimes older people themselves are carers for their spouses and other older people and may neglect their own medicines management needs to attend to more pressing needs of those they care for, for example, people caring for spouses who are terminally ill or very frail. Sensitivity and tact are needed when dealing with the conflicts that may arise between the decisions and views of older people and their carers (eg, relatives) about when or how medicines should or should not be taken.
Poverty, literacy and pharmacocultural issues, such as religious and cultural beliefs, also have an impact on how and whether older people take their medicines. Older people from some black or minority ethnic groups may not speak English as their first language, or be able to read English or even their own native language. Non-clinical community pharmacy staff may be of great help as they often live locally and may be able to speak the language or relate to the cultures. Healthcare professionals need to consider the best way to meet their medicines needs using appropriate resources.

Other ways that healthcare professionals may inadvertently contribute to the problems of medicines in older people include:

- mistaking the effects of ageing for disease, eg, gravitational oedema, insomnia
- target-driven over-prescribing, eg, following quality and outcome frameworks (QOFs), national service frameworks, or NICE targets, without consideration for the ‘whole’ person or their wishes
- under-prescribing in certain areas, eg, transient ischaemic attack (TIA), calcium and vitamin D in osteoporosis
- putting the staff ‘agenda’ before the needs of the patient, such as convenience, time constraints, for example, inappropriate prescribing of sip feeds or antipsychotics in dementia patients
- poor referral and communication systems between disciplines and organisations where there is an identified medicines management need, as well as inadequate commissioning of services to meet the medicines needs of older people.

Regular medication reviews and good prescribing practice that take into account how these factors impact on the older person on a day-to-day basis will help to ensure that the older person gets the best out of taking their medicines. (Section 4 includes advice on a range of strategies that can help in these situations.)
Mrs Andersen is a 79-year-old lady who has requested a medicines use review (MUR) with you. From your discussion and medicines records, you gather the following information:

<table>
<thead>
<tr>
<th>Medicines information from the pharmacy record</th>
<th>Mrs Andersen’s account of what she takes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bendroflumethazide 2.5 mg daily</td>
<td>She takes them in the mornings, but misses her dose on Mondays, Wednesdays and Saturdays. This is because she attends the social club on Monday and Wednesday, and her nephew takes her shopping on Saturday morning. She doesn’t want the water tablets to cause her to have an ‘accident’ during the journey.</td>
</tr>
<tr>
<td>Simvastatin 40 mg at night (initiated a month ago)</td>
<td>She doesn’t take this medicine at all because she is worried the dose is too high. She was taking atorvastatin 10 mg and the GP changed it last month to these new pills which are four times the dose!</td>
</tr>
<tr>
<td>Paracetamol 500 mg to 1 g four times a day, as required</td>
<td>These are supposed to be for her knee pain but they don’t help much. She’s also worried that if she uses them too much she could become ‘dependent’ on them. She only takes one tablet every now and again when her pain is so severe that she can’t walk.</td>
</tr>
</tbody>
</table>

1. Do you think her reasons for not taking the drugs are valid?

2. How would you respond to the issues raised in the review?
3. After the MUR, what suggestions would you make in the care plan?

*Turn to the end of the section for suggested answers.*
Summary

There are many factors that affect the outcomes of healthcare interventions for older people. Pharmacokinetic and pharmacodynamic changes that occur as part of the ageing process have an impact on the effects of medicines. Also the deterioration in physical and mental health in older people can affect their ability to take medicines. Socioeconomic and behavioural factors play a key role in whether older people decide to take their medicines or are able to use them.

You need to be aware of the implications of all these factors to ensure the most appropriate drug, dose, and formulation is selected in order to optimise therapeutic outcomes.

Intended outcomes

<table>
<thead>
<tr>
<th>By the end of this section you should be able to:</th>
<th>Well can you?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe the effects of ageing on the pharmacokinetics of medicines.</td>
<td></td>
</tr>
<tr>
<td>Understand how pharmacodynamics are affected by the change in homeostatic regulation in older people.</td>
<td></td>
</tr>
<tr>
<td>Outline the common changes in physical and mental health that accompany ageing and how these may affect medicines use.</td>
<td></td>
</tr>
<tr>
<td>Describe behavioural and socioeconomic factors that may influence the way an older person uses their medicines.</td>
<td></td>
</tr>
</tbody>
</table>
Suggested answers

Exercise 1 (page 16)

What action do you take?

Drug choice
- For high blood pressure, a diuretic or beta-blocker would be common first choices in older people, but as this patient is diabetic, an ACE inhibitor is probably a good choice.

Initiation
- She has mild renal impairment: GFR = 29 mL/min. The initial dose of ramipril should be 1.25 mg daily, increased at intervals of one to two weeks, to a maximum of 5 mg (as per the BNF). Her renal function should be monitored, i.e., re-tested in a week’s time.
- Caution of the risk of postural hypotension with the first dose.

Effectiveness and side-effects
- Monitor blood pressure and assess side-effects. Check renal function and electrolytes (especially potassium) with each dose increase, and then regularly.

Exercise 2 (page 20)

What pharmacokinetic and pharmacodynamic factors could have potentially contributed to this incident? How might you suggest his medicines be altered?

Pharmacokinetic
- Nitrazepam is a long-acting, renally excreted benzodiazepine; with age-associated declining renal function, the half-life lengthens and increases the risk of drowsiness and falls. If he needs something to help him sleep, zopiclone 3.75 mg or a short-acting benzodiazepine (e.g., temazepam 10 mg) would be a reasonable choice. Depending on the action taken, you may need to consider withdrawal effects.

Pharmacodynamic
- Increased sensitivity of benzodiazepine receptors could result in nitrazepam having an exaggerated sedative effect, leading to greater risks of falls (see ‘Pharmacokinetics’ above for suggested changes regarding nitrazepam).
- There is a risk of postural hypotension due to ramipril. Check the patient’s blood pressure and assess the continued need for ramipril.
- Codeine may increase drowsiness and balance problems which may lead to falls. Opioids also predispose to hypothermia. Consider a change to paracetamol.
- Co-careldopa predisposes patients to drowsiness, low blood pressure and falls. Consider how well the patient’s Parkinson’s disease is controlled and whether the dose can be reduced.
Exercise 3 (page 24)

What suggestions would you make?

- Advise her that she may not need a tablet for the itch if you can find a cream she can use more easily.
- Check whether she thinks she could use a tub or tube and, if so, consider the available forms of alternative emollients. If you find a suitable option, you could suggest it to the GP. Note that a ‘key’ is available for tubes, to help people squeeze out the cream.
- Advise her she should use the cream up to four times a day, as required.
- Ensure the itching is not the result of an adverse drug reaction or another identifiable cause that could be addressed.
- Find out if she has help at home; perhaps someone can help apply the cream.

Exercise 4 (page 26)

1. Do you think her reasons for not taking the drugs are valid?

- Yes, the reasons are valid; just because they are not all factual or do not align with professional views does not make them invalid. A patient’s views and perceptions affect whether or not they start or continue taking their medicines.
- Where views are based on misconceptions, you can provide the patient with appropriate information; once this is done, the patient’s perspective may change.

2. How do you respond to the issues raised in the review?

- Establish how much the patient wants to be involved in decision-making and use an effective communication approach to encourage them to contribute.
- Clarify the patient’s concerns, beliefs and expectation about her medicines.
- You should check whether her current regime of bendroflumethiazide is adequately controlling her blood pressure. If daily dosing is needed, on the days when she goes out she could try to take the doses either two hours before leaving, or when she gets back (providing it is no later than around midday). You may be able to give her some piece of mind by finding out whether there are public toilets in the shopping centre.
- Explain that the simvastatin dose is roughly equivalent to the atorvastatin dose she was taking. Explain the possible reason for the change of statin, for example, as a result of guidance in the Heart Protection Study, or, perhaps atorvastatin didn’t work adequately or caused side-effects.
- Explain that paracetamol is not addictive. For each dose, she should take two tablets. It is best not to wait until the pain is severe to take her dose; in fact, it may help prevent the pain if she takes them regularly.
- Aim to develop a care plan for ongoing treatment, in agreement with the patient.
3. After the MUR, what suggestions would you make in the care plan?

- If necessary, suggest an alternate dosing regime for bendroflumethiazide. It may be necessary to consider changing to another drug if needed; eg, a calcium channel blocker.

- If she would prefer not to take simvastatin, suggest it is changed back to atorvastatin (provided it wasn’t changed due to ineffectiveness or side-effects).

- Suggest she tries increasing her paracetamol use. If this is still insufficient, you could suggest a trial of a regular dose.

- It may be helpful if the GP also reassures the patient.
Prescribing in ageing

Section 3

Objectives

On completion of this section you should be able to:

- recognise the causes and consequences of polypharmacy
- understand why older people may be at particular risk of adverse drug reactions and list commonly-implicated medicines
- outline how to address medicines adherence issues in older people.

Older people take more drugs than any other age group, which when coupled with factors discussed in Section 2, make them more susceptible to developing adverse drug reactions. These factors also influence whether they are able to take their medicines – as well as whether they decide to.

This section explores the common reasons for polypharmacy and why it may be beneficial in some older people. We also consider some of the consequences of polypharmacy, particularly the risk of adverse drug reactions and low adherence. Prescribing the right medicine is only one aspect of good medicines management. Ensuring that the patient takes the drugs and takes them safely is just as important, and this section will help you to develop effective strategies to help reduce the incidence of adverse drug reactions and improve adherence.

3.1 Polypharmacy

Polypharmacy refers to the use of many drugs at the same time, and may be defined in a number of ways. In clinical studies, it is often defined as the use of five or more drugs simultaneously. In the UK, more than 10 percent of people over 65 take five or more medicines, and 15 percent of people over 75 in the community and in nursing homes take six to eight drugs. However, limiting the number of drugs older people take can be difficult, as many people suffer from multiple pathologies.

A contrasting definition, suggested by some, is that polypharmacy should be defined from a clinical point of view. That is, it should refer to the use of more medicines than are clinically indicated, irrespective of the number of drugs taken. For example, an older person who has had a stroke and a hip fracture, and who has hypertension, could be on six drugs: two blood pressure tablets, an antiplatelet, a statin, a bisphosphonate, calcium and vitamin supplements. However, this would not be considered polypharmacy as all the drugs are clinically indicated and beneficial. If the same patient had also been prescribed short-term co-codamol following the hip fracture, but then, on cessation, continued to take senna and lactulose despite not being constipated, this would be considered polypharmacy.

Whatever definition is used, in practice you will find that many older people have multiple conditions that could benefit from medicines, but, that these medicines – both individually and when used together – can also pose considerable risks to this group: because of pharmacokinetic changes, drug interactions, and/or adverse drug reactions, as well as the severity and consequences of these effects.
There are many reasons for polypharmacy, some justified and others not.

- **The availability of new drugs to treat previously untreatable conditions**
  Advances in medical research have led to the availability of drugs for previously untreatable conditions, like cancer and Alzheimer’s disease.

- **New evidence supports the treatment of existing conditions**
  For example, the use of biological therapies to treat rheumatoid arthritis; the use of ACE inhibitors to prevent macrovascular complications in diabetes; beta-blockers in congestive cardiac failure; statins in coronary heart disease.

- **The availability of more drugs without prescription and over the internet**
  In the last few years many ‘prescription only medicines’ have been declassified to ‘pharmacy only’ medicines so patients are able to purchase them without visiting the GP. The sale of medicines over-the-counter and on the internet have increased access to medicines. Potential problems for older people include, for example, the purchase of over-the-counter cimetidine, or the purchase of over-the-counter diclofenac by people already on prescription proton pump inhibitors (PPIs) and NSAIDs respectively.

- **The NHS being driven by targets**
  Disease registers and incentivised targets around prescribing have led to more medicines use in long-term conditions, eg, an increase in statin prescribing as a result of NICE guidelines and the quality and outcomes framework. Many NICE guidelines make positive recommendations to prescribe drugs. Many NICE technology appraisals recommend drugs are prescribed to reduce morbidity and mortality, and PCTs are obliged to show how the guidance will be implemented within three months of publication. National service frameworks tend to focus on single conditions and make prescribing recommendations for that condition; they may not take into account that many older people have multiple long-term conditions which can result in polypharmacy.

- **Older people are living longer**
  With age, the number of long-term conditions increases and it is not uncommon for older people to have more than four long-term conditions. Most long-term conditions require treatment with drugs.

- **Prescribing in secondary and primary care**
  New drugs are often started when older people are admitted to hospital or visit outpatient clinics, for example, following a myocardial infarction, a hip fracture, an infection, or an operation. Often, hospital prescribers will only review the drugs within their specialty or those specifically relating to the cause of the admission. *A spoonful of sugar* reports that about 18 percent of GP prescribing is hospital-initiated and that many of these medicines are continued for some years after discharge. GPs are often reluctant to change or discontinue medicines started by consultants as they may not have been provided with information on the rationale behind the prescribing, and/or they don’t want to jeopardise relationships. This situation can lead to polypharmacy. Drugs commonly involved include PPIs, warfarin, statins, analgesics, and anti-inflammatory drugs.

Preventing the unnecessary addition of drugs in hospital requires a good knowledge of current medication through efficient history-taking, medicines
SECTION 3

reconciliation and medication review. Also, good discharge information providing clear reasons for each new addition or cessation, as well as medication reviews in primary care, can ensure that drugs are not continued inappropriately.

The increase in the number of non-medical prescribers — such as nurses, pharmacists, and podiatrists — has increased access to prescription medicines. Older people with multiple pathologies will often be seen at a range of specialist centres by various healthcare professionals, all of whom may prescribe medicines to manage specific conditions, with little communication or co-ordination with the patient’s GP; this can lead to polypharmacy. At times, the GP may not be immediately aware that these medicines are being prescribed and taken.

- **Adverse drug reactions are treated with new medicines**

  A ‘prescribing cascade’ is a misinterpretation of an adverse drug reaction (ADR) to one drug, assuming it is a new medical condition, leading to the subsequent inappropriate prescribing of a second drug. To reduce the chances of a prescribing cascade, any new signs and symptoms should be considered as a possible consequence of current drug treatment. The table below shows some examples of prescribing cascades common in older people.

<table>
<thead>
<tr>
<th>Current medication</th>
<th>Misinterpreted ADR</th>
<th>Medication initiated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metoclopramide</td>
<td>Parkinson’s symptoms</td>
<td>Levodopa</td>
</tr>
<tr>
<td>NSAIDs</td>
<td>Hypertension</td>
<td>Antihypertensive</td>
</tr>
<tr>
<td>Pseudoephedrine</td>
<td>Urinary retention</td>
<td>Tamsulosin</td>
</tr>
</tbody>
</table>

- **Demands of patients and carers**

  Less commonly, polypharmacy can result from the demands to initiate drugs from older people themselves, or their carers, or other health staff. Common examples in practice include requests for sip feeds by relatives and care home staff, antipsychotics and sleeping pills by care home staff, and glucosamine by older people.

**Consequences of polypharmacy**

From a health system perspective, polypharmacy increases drug costs and wastage. From the patient’s perspective, polypharmacy can lead to adverse drug reactions and poor therapeutic outcomes, including exacerbations of the chronic conditions.

Increasing the number of drugs and doses a patient takes can potentially reduce medicines adherence, as older people may find it difficult to remember to take them as prescribed. Also, many older people do not like to be prescribed multiple medicines. A complex regime can make people feel socially restricted as they may find it difficult to organise their many medicines around their social life or activities, eg, going to the day centre, or visiting relatives. Also, older people taking many drugs are less likely to manage at home on their own, which may result in them having to stay in a care home.
The risk of adverse drug reactions increases exponentially with the number of drugs used. A recent study carried out among hospital inpatients found that older females and people taking a large number of medicines were more likely to experience adverse drug reactions.\(^{29}\) The study showed that, of the factors considered, the only significant predictor of adverse drug reactions was the number of medicines taken, with each additional medicine multiplying the hazard of an adverse drug reaction episode by 1.14.\(^{29}\) In addition, the more drugs that someone takes, the greater likelihood of drug-drug interactions, especially in older people and those with renal impairment. For example, drugs like warfarin and antidepressants have significant interactions with other drugs; therefore, where it is necessary for older people to take them, attention must be given to the risks and benefits of co-prescribing interacting medicines.

**Avoiding polypharmacy and/or its consequences**

When prescribing for patients with multiple pathologies or long-term conditions, regular monitoring is important so that the number of medicines can be kept to their essential minimum. Before any additional drugs are added to a regime, the prescriber needs to carefully consider whether the symptom requiring treatment is caused by the underlying disease state(s) or is caused by one or more of the existing drugs. In the latter case, amending the current drug(s) prescribed to reduce or eliminate the unwanted effects is more often a better option than adding in another drug to treat the symptom. (See page 44 for further information about strategies to reduce polypharmacy.)

**Practice point**

Find four situations (eg, in your pharmacy records, in a practice you work in) in which an older person has been prescribed six or more medicines. Do you think the use of all the medicines can be justified? Weigh up the advantages and disadvantages of the patient being on this number of medicines. Do you need more information to make these assessments? Are you able to obtain it?

**3.2 Adverse drug reactions**

Adverse drug reactions increase with age and the number of drugs taken. The consequences are more severe in older people with respect to morbidity and mortality. They account for five to 17 percent of hospital admissions and directly increase the length of stay in about a quarter of hospital inpatients;\(^{29}\) however, about half are ‘definitely’ or ‘possibly’ preventable.
List some drugs commonly used in older people that you may suspect could be causing the following side-effects.

- Constipation
- Nausea and vomiting
- Postural hypotension, falls impaired cognition
- Blood disorders
- Gastrointestinal bleeds
- Confusion
- Blurred vision
- Renal failure
- Hypertension
- Extrapyramidal effects

Turn to the end of the section for suggested answers.
In older people, most adverse drug reactions are type A reactions and therefore dose-dependent and predictable.

Age in itself is not a specific cause of adverse drug reactions, but older people are more at risk because of the pharmacokinetic and pharmacodynamic changes, increased polypharmacy, drug-drug interactions, and drug-disease interactions. The most common adverse drug reactions in older people include confusion, delirium, dizziness, gastrointestinal symptoms (particularly diarrhoea, constipation, or nausea), haematological reactions, postural hypotension/falls, and anticholinergic symptoms, such as dry mouth, and dry eyes.

In older people, many adverse drug reactions remain undiagnosed, as they present with vague and non-specific symptoms, like confusion, unsteadiness, and constipation. In addition, they may not occur immediately but take days to develop, eg, excessive sedation due to accumulation of a long-acting benzodiazepine. Therefore, a careful and thorough medication history should be taken, especially when older people present with new symptoms.

Studies have shown that certain drugs or drug classes are more frequently associated with adverse drug reactions in older people. Routledge et al found that antibiotics, anticoagulants, digoxin, diuretics, hypoglycaemic agents, antineoplastic agents and NSAIDs are responsible for 60 percent of adverse drug reactions leading to hospital admission and 70 percent of adverse drug reactions occurring in hospital. A study of admissions to emergency departments in the United States found that digoxin, warfarin and insulin accounted for over a third of drug-related admissions.

A list of about 46 drugs or classes of drug, adapted from the updated Beers criteria in 2003, highlights drugs to be avoided in people over 65 irrespective of their condition or diagnosis, because they are either ineffective or pose an unnecessarily high risk for older people and a safer alternative is available. Those commonly prescribed in the UK include those listed in Table 2 below.

**TABLE 2 Drugs that should be used with caution and monitored in people over 65**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Drug</th>
<th>Drug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indomethacin</td>
<td>Amiodarone</td>
<td>Oxybutynin</td>
</tr>
<tr>
<td>Ketorolac</td>
<td>Digoxin</td>
<td>Lorazepam 3 mg</td>
</tr>
<tr>
<td>Naproxen</td>
<td>Dipyridamole</td>
<td>Oxazepam 60 mg</td>
</tr>
<tr>
<td>Piroxicam</td>
<td>Disopyramide</td>
<td>Temazepam 15 mg</td>
</tr>
<tr>
<td>Dextropropoxyphene products</td>
<td>Doxazosin</td>
<td>Diazepam</td>
</tr>
<tr>
<td>TCAs, eg, amitriptyline, doxepin</td>
<td>Methyldopa</td>
<td>Nitrazepam</td>
</tr>
<tr>
<td>Fluoxetine</td>
<td>Nifedipine (short-acting)</td>
<td>Cimetidine</td>
</tr>
<tr>
<td>Chlorphenamine</td>
<td>Dicycloverine</td>
<td>Ferrous sulphate</td>
</tr>
<tr>
<td>Diphenhydramine</td>
<td>Hyoscine</td>
<td>Nitrofurantoin</td>
</tr>
<tr>
<td>Hydroxyzine</td>
<td>Propantheline</td>
<td>Bisacodyl</td>
</tr>
<tr>
<td>Promethazine</td>
<td>Chlorpropamide</td>
<td></td>
</tr>
</tbody>
</table>
NSAIDs, including coxibs

NSAIDs and coxibs are a common cause of adverse drug reactions in older people. People aged over 65 years are at a higher risk of a gastrointestinal bleed, and though coxibs have a relatively lower risk, overall, the absolute risk remains high in this age group. Where it is necessary to prescribe a traditional NSAID for an older person gastrointestinal protection should be given to minimise the risks.

All NSAIDs and coxibs are nephrotoxic and can cause renal failure. Older people, most of whom have at least mild renal failure, are at particular risk. When it is necessary to use one of these medicines, baseline renal function should be established and renal function should then be monitored regularly.

The BNF classifies piroxicam as a drug of limited clinical value and recommends its use is restricted because of the increased risk of gastrointestinal side-effects and serious skin reactions. Indometacin has an additional risk of effects on the central nervous system, such as dizziness. Coxibs are associated with an increased risk of thrombotic events (eg, myocardial infarction and stroke) and should not be used in preference to traditional NSAIDs, except when specifically indicated. Traditional NSAIDs have a lower risk of thrombotic events, and naproxen and low-dose ibuprofen have not been associated with myocardial infarction.

Several NSAIDs can be bought over-the-counter as single ingredients or in combination with other drugs. Therefore a careful drug history should be taken to avoid their use in those at risk and to prevent people taking more than one NSAID.

Opioid analgesics

Opioids – the most commonly used being morphine – may be used for moderate to severe pain, particularly of visceral origin. Older people generally require lower doses as they often suffer from constipation, drowsiness, nausea and vomiting.

Products combining an opioid with a non-opioid analgesic can provide greater pain relief than a non-opioid alone, but only when an appropriate dose combination is used. Most low-dose combination analgesic preparations have not been shown to provide greater relief of pain than an adequate dose of the non-opioid component given alone, but they increase the risk of side-effects.

Co-proxamol has no advantages over paracetamol but can cause opioid-related side-effects and has been associated with an increased risk of toxicity in overdose. The MHRA has therefore restricted its use to ‘named patient only’ for those who cannot find alternatives to manage their pain.

Diuretics

Diuretics are overprescribed in old age and should not be used on a long-term basis to treat simple gravitational oedema, which usually responds to increased movement, raising the legs, and support stockings.

Diuretics are overprescribed in old age and should not be used on a long-term basis to treat simple gravitational oedema, which usually responds to increased movement, raising the legs, and support stockings. Low doses of thiazides (eg, bendroflumethiazide 2.5 mg) are sufficient to control hypertension in older people with less risk of hypokalaemia and hyperglycaemia than higher doses.
Potassium-sparing diuretics are often not needed to supplement thiazide therapy for hypertension. Older people taking potassium-sparing diuretics (eg, spironolactone for CCF) or taking diuretics with ACE inhibitors should have their potassium levels monitored regularly to avoid hyperkalaemia that can lead to arrhythmias. Diuretics can cause postural hypotension which leads to falls, so the lowest effective dose should be prescribed.

**Digoxin**

The clearance of digoxin is reduced in older people even if they have good renal function, so maintenance doses should be initially low and titrated according to response and plasma levels. The usual maintenance dose of digoxin in very elderly patients is 125 micrograms daily (62.5 micrograms in those with renal disease). Hypokalaemia predisposes to digoxin toxicity and patients should have potassium levels monitored, especially those co-prescribed diuretics.

**Anticoagulants**

Ageing increases people’s sensitivity to the effects of anticoagulants and older people generally require lower doses of warfarin to minimise the risks of bleeding and/or bruising. This may be due to low albumin levels, low weight, impaired renal/liver function, polypharmacy and other factors. In 2007, the NPSA highlighted the risk associated with anticoagulants and made a number of recommendations. These included, among others, the provision of appropriate information to patients on anticoagulants and the need to check the INR before dispensing further supplies (further information is available online at: [http://www.nrls.npsa.nhs.uk/resources/type/alerts/?entryid45=59814&p=3](http://www.nrls.npsa.nhs.uk/resources/type/alerts/?entryid45=59814&p=3))

**Antihypertensives**

Antihypertensives should be initiated at lower doses and titrated up slowly in older people, to reduce the risk of postural hypotension and other adverse drug reactions. Antihypertensives interact with many drugs and diseases and a good knowledge of their pharmacological properties is needed to allow a suitable agent to be chosen. Short-acting nifedipine may increase the risk of mortality and methyldopa may cause bradycardia or exacerbate depression in older people and should be avoided. Doxazosin causes first-dose hypotension and has anticholinergic side-effects.

**Antiparkinson’s drugs**

Many of the drugs used in the management and treatment of Parkinson’s disease, including levodopa, can cause postural hypotension and confusion in older people. It is particularly important to initiate treatment with low doses, increase the dose gradually and carefully monitor for adverse effects. Anticholinergic drugs should be avoided in older people with Parkinson’s disease to reduce the risk of confusion, as many of this group will already have some level of cognitive impairment.

**Insulin and oral hypoglycaemics**

The risk of hypoglycaemia from sulphonylureas may increase with ageing. The long-acting sulphonylureas chlorpropamide and glibenclamide are associated with a greater risk of hypoglycaemia and should be avoided in older people; shorter-
acting alternatives, like as gliclazide, should be used instead. Chlorpropamide has more side-effects than other sulphonylureas, including hyponatraemia due to SIADH and interactions with alcohol. Metformin is excreted by the kidneys and NICE recommends that it should be avoided in people with a GFR below 30 mL/min/1.73 m² to reduce the risk of lactic acidosis. Gastrointestinal adverse effects are common, especially in doses above 3 g per day. Although supporting evidence is weak, NICE recommends that the modified-release preparation should be tried in people who cannot tolerate the gastrointestinal effects of the standard preparations.

Insulin poses a particular problem in older people and can lead to a higher risk of hypoglycaemia. This could be due to problems with manual dexterity, visual impairment, forgetting doses, skipped meals, and renal impairment.

**Antipsychotics**

In the past, antipsychotics were frequently used to manage behavioural and psychological symptoms of dementia. However, olanzapine and risperidone have been associated with a three-fold increase in the risk of stroke in older patients with dementia. Recent evidence has shown that even short-term use of traditional and newer antipsychotics can cause serious adverse effects, including cardiovascular events, tardive dyskinesia, extrapyramidal effects, sedation, orthostatic hypotension, anticholinergic effects, and akathisia.

NICE and the Social Care Institute for Excellence, and the MHRA have issued warnings and guidance on the use of antipsychotics in older people with dementia. NICE recommend that antipsychotics should only be offered after a full discussion with the patient and/or their carers about the risks and benefits, especially the risk of stroke/transient ischaemic attack and possible adverse effects on cognition. If used, antipsychotics should be started at low dose and titrated upwards, with treatment being time-limited and reviewed every three months or according to need.

Despite the evidence and guidance, inappropriate use of antipsychotic medicines in dementia persists. This led to the commissioning and publication of *The use of antipsychotic medication for people with dementia: time for action* in 2009. The report found that, despite gaps in the evidence and knowledge, there was a growing consensus that, when used for behavioural and/or psychological symptoms in dementia, antipsychotics offered limited positive benefits and could cause significant harm. Despite this, some individuals do benefit, and evidence for effectiveness for some patient sub-groups (eg, where risk is severe or complex) who may benefit is currently lacking; hence, a ban on use was not advocated. A key prescribing problem was believed to be that too often antipsychotics are used as first-line treatment, rather than following a trial of other non-pharmacological means.

Overall the report made eleven recommendations to reduce and improve prescribing. These included a nationally-led programme comprising, among other things, local audit and guideline development, capacity building, and PCT commissioned specialist services to support care in care homes and the community. Recommendation 8 makes reference to the potential role of pharmacists in in-reach services to care homes.
**Benzodiazepines**

Older people have increased sensitivity of benzodiazepine receptors, resulting in increased drowsiness, sedation, and higher risks of falls/fractures. Therefore, these drugs should only be prescribed when needed, for the shortest duration possible and at the lowest effective dose to reduce the risk of tolerance and dependence. The *BNF* recommends that they should be used to treat insomnia only when it is severe, disabling, or subjecting the individual to extreme distress.

After long-term use, withdrawal may lead to rebound anxiety insomnia and even delirium. Longer-acting benzodiazepines like diazepam should be avoided because they are likely to accumulate and lead to toxicity. Shorter-acting benzodiazepines with half-lives less than 24 hours, eg, lorazepam and temazepam, may be preferred, but they also have side-effects. Z-drugs, like zopiclone and zolpidem, also act on benzodiazepine receptors and current evidence suggests that they do not offer any benefits over benzodiazepines in terms of efficacy or side-effect profile. They also cause dependence.

**Anticholinergic drugs**

Tricyclic antidepressants have strong anticholinergic and sedating effects, and amitryptiline or doxepin are rarely the antidepressant of choice for older people. Antihistamines found in many over-the-counter cough and cold remedies have potent anticholinergic properties and should be avoided in older people. Safer alternatives are often available. Smooth muscle relaxants (eg, oxybutynin) and gastrointestinal antispasmodics (eg, hyoscine, propantheline) are highly anticholinergic, can cause confusion, and are poorly tolerated in older people so should be avoided, especially for long-term use.

**Antibiotics and Clostridium difficile**

Antibiotic-associated colitis is caused by colonisation of the colon with *C. difficile* and occurs in hospitals (including community hospitals), nursing homes, and less often in primary care settings. It is characterised by diarrhoea, ranging from a mild disturbance to a very severe illness with ulceration and bleeding from the colon (colitis) and at times perforation of the intestine, leading to peritonitis which can lead to death. The risk is higher in patients who have been treated with broad spectrum antibiotics, particularly clindamycin. Older people with serious underlying illnesses are mostly affected. Prevention and control is by prudent antibiotic prescribing to reduce the use of broad-spectrum antibiotics. Although probiotics have been used to prevent or treat the condition in practice, a recent Cochrane systematic review found insufficient evidence to recommend their use.

**Cimetidine**

Cimetidine is a potent hepatic enzyme inhibitor and interacts with many drugs prescribed in older people. It should be avoided in those stabilised on warfarin. Older people with renal impairment or hepatic disease are more susceptible to cimetidine-induced confusion.

For details of adverse drug reactions, cautions and contraindication in older patients refer to the SPCs and *BNF* sections for the individual drugs.
3.3 Medicines adherence

For a patient to obtain the maximum benefit from treatment the prescriber needs to select the best medicines for each patient and they need to be taken as prescribed. Scientific evidence may provide guidance on what will be the best medicine to prescribe, but it does not predict what is actually going to be the best drug for an individual patient. The ‘best’ choice takes the evidence into account, but also considers patient needs, preferences and beliefs.

In the past the terms ‘compliance’ and ‘concordance’ have been used to describe patient behaviour in relation to medicines-taking. However, many healthcare professionals found the terms confusing – so now the term of choice is ‘adherence’. 38

**Compliance** – ‘the extent to which the patient’s behaviour matches the prescriber’s recommendations.’ 38 This definition does not take into account any element of shared decision-making.

**Concordance** – was initially applied to the consultation process in which doctor and patient agree therapeutic decisions that incorporate their respective views, but now includes support in medicine taking as well as prescribing communication. The use of the term ‘concordance’ in relation to prescribing and medicine taking was introduced in a report published by the Royal Pharmaceutical Society of Great Britain. 39 This has stimulated debate and misinterpretation, which has prompted the change to adherence.

**Adherence** – ‘the extent to which the patient’s behaviour matches agreed recommendations from the prescriber. Adherence emphasises the need for agreement and that the patient is free to decide whether or not to adhere to the doctor’s recommendation.’ 38

Another way of putting it would be that: ‘Adherence to medicines is the extent to which the patient’s actions match the agreed recommendations’ 38 and presumes that an agreement has been made.

**A summary of the NICE guidelines on adherence** 38

It is thought that between 33 and 50 percent of patients do not take their medicines as prescribed. The World Health Organization has identified the long-term conditions where adherence is often a particular problem, which include asthma, depression, diabetes, epilepsy and hypertension; all are common in older people. Low medicines adherence can lead to medicines waste, unnecessary prescribing costs, adverse drug effects and unnecessary health costs related to admissions, worsening of conditions or therapeutic failure. Admissions resulting from patients not taking their medicines as recommended cost the NHS an estimated £36-£196 million in 2006/2007.

The aim of the NICE guidance is to address low adherence, by involving patients in decisions about their medicines and supporting them through an agreed plan to ensure they get the best out of their medicines.

The causes of low adherence can be broadly classified as either intentional or unintentional, and it is important that you gain an understanding of these different factors so that you can address low adherence effectively. In practice, both types may occur to a certain extent in the same patient.
- **Unintentional low adherence** is where the patient wants to follow the prescribed drug therapy but cannot because of barriers that are beyond their control. This could include forgetfulness, or the inability to read labels, understand the instructions, open containers, or use devices.

- **Intentional low adherence** is where the patient decides not to follow the prescribed drug regime. This has to do with personal beliefs and preferences that influence perceptions of therapy and their motivation to start and continue with it. This means that each patient will usually weigh up the risks and benefits of taking the medicines from their own perspective and then make a decision as to whether or not to start or continue them.

In recent times the NHS has continuously emphasised the need for patient-centred care in which patient needs and preferences are taken into account and they are given the opportunity to make informed decisions about their care in partnership with healthcare professionals. This also applies when delivering medicines management services.

Pharmacists can be involved with improving adherence at various stages of the medicines cycle; at the time of prescribing, dispensing (standard and repeat dispensing), and medication review (including MURs). NICE highlights the key principles for achieving this (the RPSGB has also produced a quick reference sheet with action points for pharmacists) and recommend that healthcare professionals should:

- adapt their consultation styles to the needs of individual patients so the patient can truly participate in decision-making, taking into account their disabilities, literacy levels, etc
- use the most effective way of communicating with each patient by, for example, considering the use of pictures, symbols, large print, an interpreter or helper, and open-ended questions
- find out how involved patients want to be and offer them the opportunity to achieve this
- accept that the patient has a right to decide not to take a medicine (as long as they have capacity to do so) and record any risk versus benefit advice/information given if the professional believes it may lead to an adverse effect
- ask the patient what they hope to achieve from the therapy, while being aware that the patient may have different views about the risks, benefits and side-effects; for example, an elderly lady may decide not to take her diuretic on Wednesdays when she attends her social club after weighing up blood pressure control and the inconvenience of going to the toilet repeatedly while at the club
- be aware of patients’ concerns about their medicines and how it affects adherence
- explain to the patient how medicines may improve diseases and quality of life, as well as potential adverse effects; for example, the regular use of preventer inhalers may improve symptoms of breathlessness, allowing the patient to walk to the local shops
- offer information that is relevant to a patient’s circumstances, that suits their needs, and is free from jargon; during and at the end of a consultation check to see that the patient has understood
tailor interventions to improve adherence to the specific problem or need the patient is experiencing at the time; no specific intervention can be recommended as a ‘one size fits all’. It is important to establish whether the adherence problem is intentional or unintentional. Jointly explore the options for support and agree the best way forward.

- assess adherence in a non-judgmental way and routinely re-assess it as the patient’s needs and circumstances change. Use opportunities during visits to the pharmacy to do this (eg, when a patient buys over-the-counter medicines, asks for advice about a minor ailment, collects prescriptions, or returns medicines for disposal).

The evidence base for interventions to improve low adherence is inconclusive, but the guidance highlights actions that have been found to be useful, depending on the circumstances:

- patients having a record of medicines taken
- self-monitoring
- simplifying the dose regimes
- using alternative packaging for the medicines and multi-compartment aids
- changing the medicine, formulation, dose, or timing to reduce side-effects
- carrying out medication reviews.

The guidance recognises the need to address poor communication between healthcare professionals that leads to fragmentation and breakdown of medicines management. This is particularly true for many older people where a range of people are involved with medicines management. The guidance emphasises the importance of robust communication processes and ensuring patient information is kept up to date. It points out the potential problems with adherence at transfer of care, as well as the need to share information with other healthcare professionals about medication reviews and their outcomes, especially issues that impact on adherence.

As part of the implementation of the guidance, healthcare professionals, including pharmacists, may need additional training in communication skills, adapting the consultation styles, and in simple interventions to improve adherence.

To find out more about the role of the pharmacy team in improving medicines adherence, take a look at the CPPE open learning programme, Patient-centred care.

Strategies to reduce polypharmacy and the risk of adverse drug reactions, and improve adherence

Many studies have tried to identify older people who are more at risk of adverse drug reactions so they can be highlighted for early intervention to reduce the risks of harm (see Section 5, Managing medication risks). The BNF prescribing guidance for older people, the NSF for older people and other local, national and international documents such as the Fleetwood project,\textsuperscript{41} the Beers criteria and the Australian domiciliary medication review guideline,\textsuperscript{42} provide guidance on how to reduce the medicines risks in older people. A summary of the key points are shown below:

When considering initiating a new drug

- Consider trying non-pharmacological measures, for example, for headaches, sleeplessness, gravitational oedema, and osteoarthritis.
• Think about the whole patient. Consider carefully whether prescribing a drug will offer a benefit to the patient and whether the risks of therapy would be acceptable. Balance efficacy of treatment with quality of life. Query proposed use of prophylactic drugs if their effects will complicate existing treatments or if prognosis is poor. But, do not deny medication that will help, eg, anticoagulants, aspirin, and painkillers.

• Take a thorough drug history, including over-the-counter, herbal remedies, interacting food, and alcohol intake.

• Diagnose accurately and prescribe only if there is an indication for the drug.

• Where possible, treat the cause rather than the symptom. Investigate new symptoms and consider that a new symptom may be caused by existing medicines; do not treat a drug-induced adverse drug reaction (unless the causative drug cannot be stopped).

• Do not add more drugs without reviewing or discontinuing old ones.

• Ensure the patient is involved in making the choice and agrees to the proposed medicines regime. Discuss acceptance, adherence, and pre-empt and discuss potential adverse effects and the impact on daily activities/social life.

• Check the patient will be able to take their medicines as they are proposed to be prescribed; troubleshoot any problems; assess cognitive and functional limitations.

**When prescribing a drug**

• Prescribe from a limited range of well-known drugs. Avoid black triangle (▼) drugs where possible. Watch out for drugs that cause problems in older people.

• Choose drugs with the least risk and highest efficacy and adjust dose accordingly (eg, by renal function). Consider co-morbidities, eg, renal, hepatic, and cardiac impairment.

• Keep the drug regime as simple as possible. Use once-daily preparations and combination drugs where possible.

• Consider formulation, dosage regime, packaging and labelling to suit the individual patient.

• Ensure any support that may be needed to take medicines is in place.

• Set clear therapeutic goals and be clear about the criteria for stopping therapy.

• Explain clearly to the patient about the dosage, duration of treatment, common or serious side-effects, and common drug/food-drug interactions. Provide written instructions to reinforce verbal messages.

• Initiate therapy at the lower end of the dosage range and titrate carefully according to response. Avoid high doses and unnecessarily prolonged treatments. Start low, go slow, and get there!

• Make adequate notes in patient records when drugs are initiated, changed or discontinued.

• Take particular care with drugs with a narrow therapeutic range, such as lithium, warfarin, digoxin, theophylline, and antiepileptic drugs.

• Recommend self-help groups where possible.
• Explain how to get further supplies (repeats) and dispose of unwanted medicines.
• Communicate appropriately and promptly with those involved with the patient’s care on a need-to-know basis.

(Section 4 provides advice about strategies to consider when monitoring and reviewing drugs.)

Exercise 6

Older people who experience pain may need to be prescribed analgesics. There are a number of possible choices, and each has its advantages and disadvantages.

Complete the following table, bearing in mind aspects covered in this section; polypharmacy, adverse drug reactions, and medicines adherence.

<table>
<thead>
<tr>
<th></th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paracetamol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opiates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combinations of paracetamol and opiates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSAIDs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amitriptyline</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary

Polypharmacy is common in older people. On occasions it is justified, but it does increase the risk of adverse drug reactions and low adherence.

Adverse drug reactions are generally more common in older people and they suffer more from the consequences in terms of hospital admissions, increased morbidity and mortality. Some drugs are commonly implicated in causing adverse drug reactions in older people and should be avoided or used with caution and monitored closely.

Low adherence is common in older people and could be intentional or unintentional. In order to solve the problem it is important to determine the reasons for low adherence. Older people should be involved in the decision-making process about the use of medicines when drugs are prescribed, dispensed or reviewed.

Following some key principles when prescribing, and carrying out regular clinical medication reviews, can help reduce polypharmacy, adverse drug reactions and improve adherence.

<table>
<thead>
<tr>
<th>Intended outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the end of this section you should be able to:</td>
</tr>
<tr>
<td>• Recognise the causes and consequences of polypharmacy.</td>
</tr>
<tr>
<td>• Understand why older people may be at particular risk of adverse drug reactions and list commonly-implicated medicines.</td>
</tr>
<tr>
<td>• Outline how to address medicines adherence issues in older people.</td>
</tr>
</tbody>
</table>
Suggested answers

Exercise 5 (page 36)

List some drugs commonly used in older people that you may suspect could be causing the following side-effects.

**Constipation**
Opioids, antimuscarinics, antidepressants, dopaminergics, calcium channel blockers, bisphosphonates, ferrous sulphate, calcium

**Nausea and vomiting**
Opioids, cytotoxics, donepezil, rivastigmine, nefopam, riluzole, dopaminergics, zopiclone, metformin

**Postural hypotension, falls**
Diuretics, benzodiazepines, ACE inhibitors, antihypertensives, levodopa, alpha-blockers, psychotropics, tricyclics, opiates

**Impaired cognition**
Fentanyl, citalopram, fluoxetine, oxybutinin, any opiate, cimetidine, antiepileptics

**Blood disorders**
Carbamazepine, H₂ receptor antagonists, aminosalicylates, riluzole, mirtazepine, trimethoprim, carbimazole, phenytoin, methotrexate

**Gastrointestinal bleeds**
NSAIDs, including coxibs, SSRIs, aspirin, clopidogrel, dipyridamole

**Confusion**
Levodopa, anticholinergics, dopaminergics, nefopam, spironolactone, codeine, tramadol

**Blurred vision**
Antimuscarinics, nefopam, carbamazepine

**Renal failure**
NSAIDs, including coxibs, ACE inhibitors, lithium, angiotensin-II blockers, aminoglycosides, diuretics

**Hypertension**
NSAIDs, including coxibs, sympathomimetics, sibutramine

**Extrapyramidal effects**
Metoclopramide, antipsychotics, donepezil
Older people who experience pain may need to be prescribed analgesics. There are a number of possible choices, and each has its advantages and disadvantages. Complete the following table, bearing in mind aspects covered in this section: polypharmacy, adverse drug reactions and medicines adherence.

<table>
<thead>
<tr>
<th></th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paracetamol</strong></td>
<td>Effective in mild to moderate pain</td>
<td>Only effective in mild to moderate pain, and no anti-inflammatory effect</td>
</tr>
<tr>
<td></td>
<td>Few side-effects compared with other analgesics</td>
<td>Doses usually not optimised; need to be taken regularly for best effect</td>
</tr>
<tr>
<td></td>
<td>Cheap</td>
<td>Lots of tablets to take</td>
</tr>
<tr>
<td></td>
<td>Variety of formulations</td>
<td>Soluble tablets have high salt content</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overdose potential</td>
</tr>
<tr>
<td><strong>Opiates</strong></td>
<td>Effective in moderate to severe pain</td>
<td>Drowsiness</td>
</tr>
<tr>
<td></td>
<td>Variety of choices and formulations, e.g., patches, tablets</td>
<td>Nausea, Constipation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tolerance and dependence</td>
</tr>
<tr>
<td><strong>Combinations of paracetamol and opiates</strong></td>
<td>Effective in moderate pain</td>
<td>Drowsiness</td>
</tr>
<tr>
<td></td>
<td>Simplified dosing regime</td>
<td>Constipation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Doses often not optimised</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dose is inflexible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk of overdose if more than one combination prescribed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>More expensive</td>
</tr>
<tr>
<td><strong>NSAIDs</strong></td>
<td>Effective analgesic and anti-inflammatory</td>
<td>Risk of renal, cardiovascular, gastrointestinal and skin adverse reactions</td>
</tr>
<tr>
<td></td>
<td>Topical preparations available and other formulations, e.g., suppositories</td>
<td></td>
</tr>
<tr>
<td><strong>Amitriptyline</strong></td>
<td>Can be used for neuropathic pain</td>
<td>Unlicensed</td>
</tr>
<tr>
<td></td>
<td>May help sleep</td>
<td>Side-effects, including confusion, drowsiness, constipation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>People may worry about taking an antidepressant (even though it is for pain)</td>
</tr>
<tr>
<td><strong>Gabapentin</strong></td>
<td>Effective for neuropathic pain</td>
<td>Caution in renal impairment: need to reduce dose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use with caution in elderly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Side-effects include confusion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>May rarely precipitate renal failure</td>
</tr>
</tbody>
</table>
Section 4
Managing medication risks

Objectives
On completion of this section you should be able to:
- describe the single assessment process and its four levels
- outline some of the tools for assessing medication risk in older people
- understand how medicines reconciliation, medicines use review and repeat dispensing can improve outcomes and reduce risks for older people
- state the key principles of care planning and recognise the opportunities for and barriers to implementing them.

Each older person needs to be treated as an individual to ensure they get the best from their medicines; some require no assistance, while others need significant support. Often the prescriber may not be familiar with the drug formulation, packaging or the patient’s non-clinical circumstances which may hinder drug-taking. The pharmacist is normally the last healthcare professional to be involved in the medicines process before the patient takes their drugs. It is crucial that as experts in medicines you are able to use this opportunity to identify and address potential risks.

This section discusses the means of identifying patient’s needs, including proactive ways to find those who may be at risk. We also explore ways to ensure that the patient is supported, by providing relevant pharmacy services and practical solutions to ensure they get the most from their medicines, while minimising risk.

Finally, we outline the process of care planning and look at ways that care plans are implemented.

We include examples of a number of assessment tools in this section. You don’t need to memorise these tools; they are included to show you the type of tools that are available and what they cover. We suggest you scan through them to develop a general idea of the underlying principles. Different areas will use different tools; you may wish to find out which ones are used in your local area.

4.1 Identifying and assessing older people at risk

There are established methods for identifying and assessing older people at risk in the community that incorporate medicines use, as well as processes that specifically look at medicines management. Identifying older people who may be at risk and identifying the need for assessment can happen at the same time, or separately, depending on the situation and staff involved.

Assessing older people: the single assessment process

An assessment is defined as ‘the overall process for identifying and recording the health and social care risks and needs of an individual and evaluating their impact on daily living and quality of life, so that appropriate action can be planned’. Up until the
Publication of the *NSF for older people*, assessments were often duplicated and poorly co-ordinated between health and social services, leading to failure to deliver the best package of care.

Since then, however, the single assessment process (SAP) tends to be used when assessing older people. The SAP has been defined as a collection of interconnected activities, integrated over time, between agencies and between types of assessments. ‘Single’ refers to the integrated process, not to a single event, tool, or practitioner. It is a means of identifying and assessing needs by a standardised and consistent approach, without duplication. It is person-centred and outcome-focused. The rationale for the SAP is to enable proper assessment and appropriate provision of care to take place.

The SAP has four levels which can be carried out in any order, depending on the older person’s need:

1. **A contact assessment** is done at the initial contact with the older person. The person’s personal details and key contacts are recorded, together with a summary of their problems and concerns. The assessor should also determine whether the older person has further social or healthcare needs which may require further assessment.

2. **An overview assessment** is usually conducted face-to-face with an older person to collate information and explore some or all aspects of their needs. It considers nine areas or ‘domains’:
   - user perspective
   - clinical background (includes medicines)
   - disease prevention
   - personal care and physical well-being
   - senses
   - mental health
   - relationships and involvement
   - safety
   - immediate environment and resources.

Rather than methodically working through each domain/sub-domains in sequence, the assessor usually covers them in a conversational style, listening and responding to the person’s concerns.

To ensure each of the domains are covered, the assessor will use prompts to find out more details and certain responses will trigger a specialist assessment. After the assessment, any risk factors or key actions are documented in the care plan. The assessor will make plans to provide appropriate services and make any necessary referrals to other agencies or specialist teams. Ideally, all the recorded information should be shared between the relevant agencies and practitioners.
There are two limitations to integrating medicines management into an overview assessment:

- there may be no formal referral pathway for a specialist medication assessment, or there may be inadequate commissioning of mainstream services to support any older person who is identified or assessed as having medicines management needs
- social care and healthcare assessors who are familiar with the single assessment process need to be trained so that they can offer practical solutions to support medicines management as part of the older person’s overall care package.

3. **A specialist assessment** allows the in-depth assessment of a specific problem in one or more areas which may have been identified in an overview assessment.

The medicines aspects of a specialist assessment seeks to confirm the presence, extent, cause, and likely development of a medicines-related problem and establishes links to other conditions and problems. The assessor provides a risk analysis of the problems, identifies the patient’s needs and develops a care plan to manage or reduce identified risks. Finally, the assessment should lead to the provision or commissioning of services to meet the person’s needs. Ideally the medicines aspects of a specialist assessment should be carried out by a pharmacist who has been trained and has experience in the care of older people.

4. **A comprehensive assessment** is a combination of specialist assessments in all or most areas and involves a range of professionals or specialist teams, usually led by a geriatrician. This type of assessment would be required for very elderly people, or those with complex medical problems, such as people in care homes and intermediate care centres. Where there are medicines management issues, a specialist pharmacist would be part of the team of specialists involved.

Other barriers to integrating medicines assessment into the overall SAP include lack of formal pathways or processes to refer to the GP, nurse, pharmacist or other professional or agency and the lack of approved validated specialist medicines assessment tools.

Assessments carried out at any level of the SAP require the involvement of a range of health and social professionals, and pharmacists can make important contributions. For example, in secondary care, potential medicines risks can be identified on admission by ensuring that a pharmacist or pharmacy technician takes an accurate medication history.

It is vital that the older person and their carers are fully involved in the assessment process so that all potential risks can be identified. Patients and carers like to be involved with their own care and value healthcare professionals who are knowledgeable and give them clear information about their health and any medicines they have been prescribed.
How do you currently identify older people who may have medicines management risks in your practice? How best can you build a structured process of identifying and assessing these patients into your routine practice?

Medicines and risk

The medicines-related risks in older people are well documented and several attempts have been made to develop methods to identify and/or assess those who may benefit from additional support with administration, pharmaceutical or medical input. Most of the risks arise due to a combination of patient, drug or disease-related factors, as well as those relating to the care environment and transfer of care.

The *NSF for older people* highlights the following risk factors:

- taking four or more medicines
- taking specific medicines (like warfarin, NSAIDs, diuretics, digoxin)
- recent discharge from hospital
- low level of home or social support available
- poor vision, hearing, or dexterity
- confusion, disorientation or depression.

Other papers and guidance⁴¹,⁴² have mentioned other risk factors, including:

- the number of active chronic medical diagnoses (more than six)
- taking six or more medicines
- recent transfer to or from hospital (acute episode or exacerbation of long-term condition)
- number of doses per day (more than 12)
- complex drug regimes
- advanced age (over 75 years) and increasing frailty
- prior adverse drug reaction
- cognitive impairment, including dementia
- cancer or depression
- decreased renal function (CrCl less than 50 mL/min)
- low body weight or BMI (less than 19 kg/m²).

Case-finding

*Case-finding* is a means of identifying older people at risk of increasing dependency or crisis in the community who could benefit from more in-depth assessment and the assistance that can result. Medicines management can be integrated into general case-finding to seek out those who are at risk from medicines-related problems.
The Sherbrooke questionnaire\textsuperscript{44} is an example of a simple case-finding tool that includes a medicines component and can be administered by post, telephone or face-to-face. Any patient who either has two positive triggers, completes the questionnaire incorrectly, or does not respond, is deemed to have some kind of need and is highlighted for further assessment (usually an overview assessment).

### The Sherbrooke postal questionnaire (with positive triggers in bold)

1. Do you live alone? \hspace{2cm} Yes/No
2. Do you take more than three medications everyday \hspace{2cm} Yes/No
3. Do you use a stick, a frame or a wheelchair to move about? \hspace{2cm} Yes/No
4. Do you see well? \hspace{2cm} Yes/No
5. Do you hear well? \hspace{2cm} Yes/No
6. Do you have problems with your memory? \hspace{2cm} Yes/No

Another example is the Castlefield criteria\textsuperscript{45} which identifies older people who are ‘high resource’ users or have complex needs. People over 75 who meet at least three of the criteria are referred for further assessment.

### The Castlefield criteria

- Four or more active chronic diagnoses
- Four or more medications prescribed for six months or more
- Two or more hospitalisations (not necessarily emergency) in past 12 months
- Two or more A&E attendances in past 12 months
- Significant impairment in one or more major activity of daily living
- Significant impairment in one or more instrumental activities of daily living, particularly where there is no other support
- Older people in the top three percent of frequent visitors to GP practice
- Older people who have had two or more outpatient appointments
- Older people whose total stay in hospital exceeded four weeks in a year
- Older people whose social work contact exceeded four assessment visits in each three-month period
- Older people who receive more than 25 hours/week home care
- Older people taking six or more prescribed medicines
- Older people whose pharmacy costs exceed £100 per month

With case-finding, people identified as being at risk due to a medicines management component can be referred for further assessment by a pharmacist at an early stage.

### Medicines management risk assessments

The NSF for older people recommends that medicines management risk assessments should be done at two levels; first order and second order assessments.
First order assessments

These give an overview of the older person’s medicines needs in the context of their overall needs and ideally should be done as part of the SAP by trained social or healthcare staff. Medication risk assessment tools have been developed by both nurses and pharmacists as part of other pathways, to show which patients need to be referred for more detailed medicines-related assessments. Both validated and unvalidated tools are available and the scoring system in these tools is often subjective. Some examples are described below.

Rosenbloom et al carried out a study that identified four main areas where older people might need help with medicines: access, compliance, day-to-day management, and clinical aspects. They then developed and tested four ‘trigger questions’ to be used as a tool to identify older people with medicines needs in any of the areas. The questions were revised after the London Older People’s Service Development Programme (LOPSDP) medicines management project 2003 tested them within the SAP overview assessment, to trigger a referral for a specialist in-depth medication assessment by a pharmacist. Within the project those answering YES to either questions 1 and/or 4 and NO to question 2 and 3 were referred for further assessment.

The four trigger questions (revised 2004)

1. Do you need help getting a regular supply of your medicines? (ACCESS issues)
2. Do you always take all of your medicines the way that your doctor wants you to? (COMPLIANCE issues)
3. Can you swallow and use all of your medicines and get all of your medicines out of their containers? (DAY to DAY Management issues)
4. Do you think that some of your medicines could work better? (CLINICAL issues)

Since the review, the four questions have been used in a number of ways; for example, as part of case-finding and discharge planning. They have also been incorporated into the medicines section of the Functional Assessment of the Care Environment (FACE) overview assessment tool (a tool which is accredited by the Department of Health), as shown overleaf.
FIGURE 1 Medicines section of the FACE overview assessment version 5, 2005
(accredited by the Department of Health for use in the single assessment process)

<table>
<thead>
<tr>
<th>Medication</th>
<th>* = need</th>
<th>no = no need</th>
<th>? = possible need</th>
<th>n/k = not known</th>
<th>n/a = not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current medications</td>
<td>Takes medication</td>
<td>None reported</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Details:

Access to medication

Taking medications as prescribed

Managing labels/containers

Swallowing medicines

Uses compliance aids? Yes No

Uses reminder aids? Yes No

Pharmacist support? Yes No

Does the person feel that their medication is effective? Yes No

Medication reviewed in past year? If no arrange G.P. review, if not known check with G.P. Yes No

Needs in relation to medication identified? If Yes, make arrangements for review or appropriate referral.

<table>
<thead>
<tr>
<th>Prompts or guidance</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access to medication</strong></td>
<td>Help required to order/collect prescriptions/medicines from surgery or pharmacy</td>
</tr>
<tr>
<td>Do you need help getting a regular supply of your medicines?</td>
<td></td>
</tr>
<tr>
<td>Do you need help ordering your repeat medicines or collecting prescriptions from the surgery or pharmacy?</td>
<td></td>
</tr>
<tr>
<td>Do you buy any medicines from the shops/chemist?</td>
<td></td>
</tr>
<tr>
<td><strong>Taking medication as prescribed</strong></td>
<td>Need for information on use/benefits</td>
</tr>
<tr>
<td>Do you always take your medicines the way your doctor asked you to?</td>
<td></td>
</tr>
<tr>
<td>Do you know what you are taking each medication for?</td>
<td>Need for support to take/use medicines</td>
</tr>
<tr>
<td>Do you always take your medicines as prescribed?</td>
<td>Link with memory loss</td>
</tr>
<tr>
<td>Does your pharmacist advise you or help you with your medicines?</td>
<td></td>
</tr>
<tr>
<td>Is the pharmacist, district nurse or a carer involved with managing your medicines?</td>
<td></td>
</tr>
<tr>
<td>Do you need help remembering to take your medicines regularly?</td>
<td></td>
</tr>
<tr>
<td><strong>Day-to-day management</strong></td>
<td>Need for support? Link with conditions, eg, arthritis, poor eyesight</td>
</tr>
<tr>
<td>Do you have any difficulty taking or using your medicines, eg, swallowing tablets, opening containers, using inhalers, drops, creams, insulin?</td>
<td></td>
</tr>
<tr>
<td>Can you read the labels?</td>
<td></td>
</tr>
<tr>
<td>Do you use a compliance aid, eg, Dosette box, Nomad tray, blister trays?</td>
<td></td>
</tr>
</tbody>
</table>
A nursing tool was developed by Dinah Fuller in 1996 that used five assessment domains: mental state, number of medicines, living arrangements, physical condition, and attitude/ability to assess medicine needs.

A postal questionnaire based on this tool was sent to all registered patients in a GP practice to identify those who might need help with their medicines. Thirty-seven percent of the patients received referrals to the GP, a nurse, a community pharmacist, or social services for further support, often to more than one agent per person. The authors concluded that the criteria used in this questionnaire provided a useful guide to the presence of medicines-associated risks in older people. Fuller further developed the tool to include seven domains to facilitate validation:

1. Number of prescribed items
2. Mental state
3. Hearing
4. Vision
5. Social circumstances
6. Physical condition
7. Attitude towards medication

The 2002 version of the tool was validated in 2004 by Professor R Watson at the University of Hull and is summarised in Figure 2 below.

---

**Do you feel that your medication is effective?**

<table>
<thead>
<tr>
<th>Do you feel that your medication is effective?</th>
<th>Need for medication review, eg, if on more than four medicines, medicines not helping, side-effects present</th>
<th>Link with condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your medication help you or do you feel it could work better?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does it make you feel worse?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you know what side-effects to look out for? (changing the order as it makes more sense to ask if they know what side-effects before asking if they experience any)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you experiencing any side-effects?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do they affect your daily activities?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Integrating the information**

<table>
<thead>
<tr>
<th>Integrating the information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Does medication need a review?</td>
<td></td>
</tr>
<tr>
<td>Does person need support to take/use medicines?</td>
<td></td>
</tr>
<tr>
<td>Consider need for referral to GP/ pharmacist for medication review?</td>
<td></td>
</tr>
<tr>
<td>Is approach to medication in tune with broader abilities and needs? eg, are there problems caused by forgetfulness?</td>
<td></td>
</tr>
<tr>
<td>Consider impact on health and daily activities as well as upon carer.</td>
<td></td>
</tr>
<tr>
<td>Consider need for specialist assessment by pharmacist.</td>
<td></td>
</tr>
</tbody>
</table>

Source: FACE joint overview assessment.
Second order assessments

Second order assessments are used in situations where complex medicines-related problems are identified and a specialist assessment is needed using a validated risk assessment tool. The assessment may be carried out as part of an SAP specialist assessment or a full clinical medication review. Some examples are included below.

The risk assessment tool (RAT) is a partially validated tool used by Essex Rivers Healthcare NHS Trust and referenced in Medicines and older people: implementing the medicines related aspects of the NSF. It was developed to assess the potential for medication risk for patients about to be discharged from hospital. A significant correlation was found between the patient’s ‘total risk score’ and the number of medicines-related problems actually identified at the home visit. The RAT has been shown to be effective at identifying the patients who would most benefit from extra pharmaceutical care after discharge, but further work is needed.

### FIGURE 2 Fuller’s self-medication risk assessment screening tool
(validated and refined April 2004)

<table>
<thead>
<tr>
<th>Enter score below</th>
<th>Number of prescribed medications</th>
<th>Mental state</th>
<th>Vision</th>
<th>Social circumstances</th>
<th>Physical condition</th>
<th>Attitude and knowledge about medicines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 1 drug</td>
<td>2 2 drugs</td>
<td>3 3 drugs</td>
<td>4 4 or more drugs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Alert and orientated</td>
<td>4 Oriented but sometimes forgetful</td>
<td>8 Confused, muddled/disoriented/very forgetful</td>
<td>12 Very confused/forgetful</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Can see to read with no aids</td>
<td>2 Needs glasses/aids to read print</td>
<td>4 Difficult to read print with glasses/aids</td>
<td>6 Unable to see</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Living with others who can fully support medication needs</td>
<td>2 Living with others who usually/sometimes support medication administration</td>
<td>3 Living alone with some help from paid carers or family/friend</td>
<td>4 Living alone with no help</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Can manage to open bottles/packets independently</td>
<td>2 Weakness of hand/poor co-ordination, but can manage to open bottles/packets with difficulty</td>
<td>3 Disabled. Requires some help to open bottles/packages</td>
<td>4 Severely disabled unable to manage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Interested about prescribed medicines and knows all about them, believes they are important</td>
<td>2 Fairly interested about prescribed medicines and knows enough about them to administer them safely/believes they are important</td>
<td>8 Not very interested about prescribed medicines. Does not believe they are important/unable to recall medicines regime</td>
<td>12 Disinterested and/or unwilling to take prescribed medication</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Minimum score: 6</th>
<th>Maximum score: 42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total your score and then see guidance for risk assessment</td>
<td></td>
</tr>
<tr>
<td>6-13 Low risk</td>
<td>14-16 Medium</td>
</tr>
<tr>
<td>17-22 High risk</td>
<td>23-42 Very high risk</td>
</tr>
</tbody>
</table>

Source: Reproduced with kind permission of D Fuller, 2004.
required to fully validate it. Figure 3 below shows the nine domains considered in the assessment.

**FIGURE 3 The nine domains of the risk assessment tool**

<table>
<thead>
<tr>
<th>Domain</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number of medications</td>
<td>10</td>
</tr>
<tr>
<td>2. Doses and frequencies per day</td>
<td>10</td>
</tr>
<tr>
<td>3. Number of formulations</td>
<td>10</td>
</tr>
<tr>
<td>4. Reason for admission and relevance to medication</td>
<td>10</td>
</tr>
<tr>
<td>5. Co-existing medical conditions including mental health</td>
<td>10</td>
</tr>
<tr>
<td>6. Home support available</td>
<td>10</td>
</tr>
<tr>
<td>7. Professional support available</td>
<td>10</td>
</tr>
<tr>
<td>8. Impact of medication on lifestyle (side-effects, blood tests, etc)</td>
<td>20</td>
</tr>
<tr>
<td>9. Need for concordance (assesses impact of ‘not taking’ or ‘taking too many’ doses)</td>
<td>10</td>
</tr>
</tbody>
</table>

Total 100 points

Source: Green, D, 2000.

The scoring system is complex, but succinctly explained by the accompanying documentation. The ‘total risk score’ is out of 100. A score of up to 25 requires no further input from the pharmacy, 25 to 50 requires liaison with the community pharmacist, and a score of over 50 suggests a post-discharge pharmacist visit is required.

The LOPSDP *in-depth medication assessment tool*[^52] is a tool developed as part of the LOPSDP to assess older people who have been identified as needing a specialist assessment. It has not been validated. It looks in detail at the four areas identified by the four trigger questions (as referred to above in first order assessments) to determine the patient’s needs, and a care plan is then developed and agreed with the patient or carer. The question relating to the clinical aspects explores clinical issues similar to those in a full medication review. Since being developed, the tool has been adapted and used by a number of PCTs to assess medicines needs in older people. Figure 4 overleaf shows part of the medicines section of the tool.
### FIGURE 4 Example of the ACCESS to medicines section from the LOPSDP in-depth medication assessment tool

**2. Access issues**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A.</strong> Does the patient have regular appointments with the GP/District nurse?</td>
<td>No</td>
<td></td>
<td>Yes, <em>How often?</em></td>
</tr>
<tr>
<td><strong>B.</strong> Does the patient visit the GP?</td>
<td>On their own</td>
<td>With a relative/family member</td>
<td>With a carer</td>
</tr>
<tr>
<td></td>
<td>With a friend</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other <em>(specify)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>C.</strong> Who orders repeat prescriptions for the patient?</td>
<td>Carer</td>
<td>Practice Nurse</td>
<td>District Nurse</td>
</tr>
<tr>
<td></td>
<td>Relative/family member</td>
<td>Pharmacist</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other <em>(specify)</em></td>
<td>Not applicable <em>(If not applicable, go to G)</em></td>
<td></td>
</tr>
<tr>
<td>i) If the patient does this, does he/she need to be reminded?</td>
<td>No</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>ii) If yes, who reminds him/her?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>D.</strong> Who collects repeat prescriptions from the surgery and takes them to the pharmacy?</td>
<td>Patient</td>
<td>District Nurse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carer</td>
<td>Pharmacist</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>Relative/family member</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>E.</strong> Who delivers medication to the patient?</td>
<td>Patient collects their own</td>
<td>District Nurse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carer</td>
<td>Pharmacist</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>Relative/family member</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F.</strong> Does the patient ever run out of repeat medication?</td>
<td>No</td>
<td></td>
<td>Yes, <em>How often does this occur?</em></td>
</tr>
<tr>
<td><strong>G.</strong> How does the patient access OTC medication <em>(eg. if they have a cold)</em>?</td>
<td>Patient</td>
<td>District Nurse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carer</td>
<td>Pharmacist</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>Relative/family member</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>H.</strong> Does the patient have any problems accessing either pharmacy and/or GP services?</td>
<td>No</td>
<td></td>
<td>Yes, <em>Explain:</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**What are the main issues or risks identified, regarding ‘access’ issues?**

- **Tip:** If patient cannot order/collect prescription or medication, consider ordering collection/delivery support

Source: Oboh, L. 2004.¹²
4.2 Reducing risks through medicines management

Medication review

There is a robust body of evidence from national and international research to show that medication reviews carried out by a range of professionals can reduce the risks of medicines-related problems. The evidence includes studies involving pharmacists undertaking medication reviews for older people in the community and in care homes.

The NSF for older people set a target that by 2002 all older people taking medicines should have a medication review done annually, with six-monthly reviews for people on four or more medicines. However, it does not specify how the reviews should be conducted or who should carry them out. The ‘medicines management’ section of the quality and outcomes framework of the General Medical Services (GMS) contract includes two indicators relating to medication review.

- Indicator 11: a medication review is recorded in the notes in the preceding 15 months for all patients being prescribed four or more repeat medicines.
- Indicator 12: a medication review is recorded in the notes in the preceding 15 months for all patients being prescribed repeat medicines.

As in the NSF for older people, the framework does not state who should carry out the medication reviews, but it recommends that, in order for the indicator to be met, a minimum of a level 2 review should be carried out (as defined by the Medicines Partnership Room for review guide, 2002).

A recent publication by the National Prescribing Centre, A guide to medication review 2008 updates the old Room for review guide. It states that patients taking medicines require different types of review, depending on their needs and circumstances. It describes three types of review which have no pre-determined order, that can be selected to suit the needs of the individual.

### Types of medication review

<table>
<thead>
<tr>
<th>Type</th>
<th>Definition</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prescription review</td>
<td>Addresses technical issues relating to the prescription, eg, anomalies, changed items, cost-effectiveness</td>
</tr>
<tr>
<td>2</td>
<td>Concordance and compliance review</td>
<td>Addresses issues relating to the patient’s medicines-taking behaviour</td>
</tr>
<tr>
<td>3</td>
<td>Clinical medication review</td>
<td>Addresses issues relating to the patient’s use of medicines in the context of their clinical condition</td>
</tr>
</tbody>
</table>

In practice, the different types of medication review may overlap and the benefits gained may vary depending on the patient’s needs. However, older people with complex needs and at higher risks from medicines-related problems will benefit from having a full clinical medication review.

The guide emphasises that it is important for patients to be fully involved for the review to achieve its full potential. It also notes the need for good communication
and referral processes among healthcare professionals, as well as adequate sharing of information, particularly when non-medical staff are involved in carrying out medication reviews. Additionally, it highlights the need to integrate medication review with other services and care pathways so they are not carried out in isolation, but form part of joined-up care for the patient.

Thorough drug monitoring is an essential part of any medication review if you are to reduce the risk of medicines-related problems and ensure maximum benefits. There is an opportunity for monitoring whenever new drugs are being started, when a new diagnosis is made, or when there is a change in the older person’s circumstances. When monitoring, it is essential to interpret any findings in the context of the patient as a whole.

For drug monitoring to be effective, the current list of drugs the older person is taking must be accurate and include over-the-counter, herbal, and complementary medicines.

All drugs must be regularly monitored for:

- **Continued effectiveness**
  It is important to monitor drug therapy to check that the desired therapeutic goal is being achieved. This can be done objectively by measuring beneficial effects, such as blood pressure, HbA1c, pain assessments, frequency of epileptic seizures, pain control, temperature readings, bowel movement, peak flow readings, weight gain or loss to confirm that the drug is working as it should. Also biochemical parameters like thyroid function tests, bone mineral density, U&Es, serum lipids, haemoglobin levels, etc, are often used. However, you can also monitor drug effectiveness by asking the patient how they are feeling, for example, is the pain being controlled, are they feeling better, sleeping better, etc.

- **Safety via monitoring for adverse drug effects**
  Patients can be assessed or asked about signs and symptoms of adverse effects, such as cough with ACE inhibitors, incidents of falls with drugs that cause postural hypotension, and bleeding or bruising with warfarin. U&Es should be monitored for drugs that cause electrolyte disturbances and damage renal function. Other tests include liver function tests (eg, for statins), thyroid function tests (eg, for amiodarone) or full blood count tests (eg, for carbamazepine) as appropriate. Therapeutic drug monitoring should be undertaken where indicated according to national guidance, eg, for lithium, methotrexate, DMARDS, and clozapine. Some drugs require specific tests as indicated by the SPC and the BNF, eg, regular blood pressure measurements with erythropoietin.

- **Continued appropriateness of dose, drug and formulation**
  As the older person’s circumstances change, their prescribing and medicines management needs will also change. For example, a drug that was suitable before a stroke may need to be changed to a soluble or liquid formulation due to swallowing difficulties. Common instances in practice occur where an older person was co-prescribed a drug to deal with an adverse drug reaction of another essential drug, which is continued after the original drug has been stopped, for example, the prescribing of an opioid analgesic and a laxative, or an NSAID and a PPI to treat acute conditions. Also doses of drugs may need to be increased or decreased to increase effectiveness, or to reduce the risks of adverse effects.
Adherence issues and medicines management support

It is important that adherence is assessed regularly to ensure that the drug is being taken and the older person and the prescriber are still in a concordant agreement as to how the drugs should be taken. Patient medication records and GP computer systems can give indications as to whether patients are adhering to their therapy or not; eg, ordering more reliever inhalers compared with preventative inhalers may be an indication that they are not using the latter appropriately.

Many prescribers expect patients to ‘self-monitor or manage’ their conditions and feedback if the desired effect is not achieved or adverse drug effects occur. The extent to which this approach works in practice varies considerably with each patient. Some older people don’t like to ‘bother’ the doctor about the drug not working or causing adverse effects, and some do not even know that the effects they are experiencing may be caused by their therapy. So regular scheduled medication reviews become a vital opportunity for pharmacists to discuss drug therapy with the patients.

Medicines reconciliation

Medication errors in hospital inpatients lead to increased morbidity, mortality and economic burden to the health service. They occur most commonly on transfer between care settings, particularly at the time of admission. There is between 30-70 percent unintentional variance between the medicines patients were taking before admission and their prescriptions on admission.\(^{59}\) The aim of medicines reconciliation on admission to hospital is to ensure that medicines listed on admission correspond to those that the patient was taking before admission.

Medicines reconciliation aims to ensure that each time a patient’s care is transferred from one care setting to another, a minimum dataset of accurate and timely information about that patient’s medicines is communicated to the next person responsible for his or her care.

**Medicines reconciliation** is defined by the National Prescribing Centre as:

- collecting information on medication history (prior to admission) using the most recent and accurate sources of information to create a full and current list of medicines (for example, GP repeat prescribing record, supplemented by information from the patient and/or carer), and
- checking or verifying this list against the current prescription chart in the hospital, ensuring any discrepancies are accounted for and actioned appropriately, and
- communicating any changes, omissions and discrepancies through appropriate documentation.\(^{59}\)

The NICE and NPSA guidance on medicines reconciliation published in 2007\(^ {59}\) recommends that all healthcare organisations that admit adult inpatients should put policies in place for medicines reconciliation on admission. This includes mental health units, inpatient intermediate care units and continuing care centres in the community. The guidance recommends that pharmacists should be involved in medicines reconciliation as soon as possible after admission (ideally within 24 hours) and should have clearly defined responsibilities.
If you would like to learn more about the process of medicines reconciliation, take a look at the CPPE learning@lunch programme, *Medicines reconciliation*.

Older people are high users of inpatient services and often receive medicines from a variety of health professionals. Drugs are often added or discontinued on admission to hospital as this is an opportunity to make appropriate changes to medication. It is therefore important that an accurate list of current medicines is obtained at the time, to reduce the risk of errors, polypharmacy and adverse drug reactions. Before prescribing, details of the name of the medicine(s), dosage, frequency and route of administration need to be recorded. Establishing these details may involve discussion with the patient and/or carers and the use of records from primary care. Medicines reconciliation does not routinely include medicines review, although it can provide the trigger to review medicines.

**Example from Lambeth PCT**

Primary care pharmacists are involved in medicines reconciliation when patients are admitted into the intermediate care centre bedded units. They screen the medication administration records (MAR) sheets, patient drugs, repeat prescription slip, discharge prescriptions, and then liaise with the GPs and supported discharge team to ensure that the patient receives the most up-to-date drugs prescribed.

**Medicines use reviews**

A medicines use review (MUR) is an enhanced service under the pharmacy contract in which the pharmacist undertakes a structured review with patients receiving medicines for long-term conditions, to establish a picture of their use of both prescribed and non-prescribed medicines. The aim is to help patients to understand their therapy, to identify problems they may be experiencing, and offer possible solutions. In order to address local priorities, PCTs may recommend that MURs are targeted at certain patient groups.

MURs should involve the patient, and draw on both the patient’s own reporting and the pharmacy records. You should carry out the MUR using the principles outlined in the NICE adherence guidance\(^8\) to ensure that the patient is fully involved in decisions and well supported to get the best out of their medicines. After the MUR, you should ensure that a copy of the review, including the care plan, is given to the patient and GP.

The MUR is not a clinical medication review, nor a discussion about the medical condition, beyond that which is necessary to meet the MUR objectives, nor does it assess treatment effectiveness using test results. However, as part of your professional role you should be able to identify any dose irregularities, interactions and adverse reactions.

Older people are likely to benefit from MURs as many suffer with long-term conditions (such as chronic obstructive pulmonary disease, osteoarthritis, hypertension, and osteoporosis) where drug therapy has a significant impact on controlling symptoms, preventing exacerbations and reducing mortality. Also MURs are the ideal opportunity to deal with patients experiencing adherence problems (intentional and unintentional), needing more information about
medicines, having problems understanding or using their medicines, or having physical problems in dealing with medicines administration.

However, at present, there are several limitations to MUR services that have to be tackled before the full benefits can be achieved for older people. An optimal MUR service requires:

- good communication between GPs and community pharmacists before and after the MUR
- multidisciplinary promotion of the MUR service among health and social care staff
- increased patient awareness, with support from GPs and PCTs, to explain what MURs are and their potential benefits
- mutual understanding and agreement of preferred patient groups that need to be targeted to meet local priorities
- good referral systems into the MUR service, and formal integration of MURs into other care pathways for older people, eg, single point of access referral route, SAP pathways for very elderly people and those who have experienced a fall
- audits and further research to be carried out on MURs to show the benefits and to share best practice
- funding to top up for extra follow-ups, and for patients who are housebound, living in care homes and other hard to reach older people who would benefit from the intervention.

**Repeat dispensing**

Repeat dispensing allows patients to collect a supply of their repeat medicines from their community pharmacy over an agreed period of time without having to go back to the GP each time. If the patient collects their medicines from the pharmacy it gives the pharmacist an opportunity to check whether the patient is still taking their medicines, re-assess adherence, check any problems with medication and intervene appropriately. If you identify a problem then this, in turn, would trigger a further intervention, for example, an MUR, providing collection and delivery services, medication review, or referral to the GP.

Any patient can use the repeat dispensing system, subject to agreement with their GP and, ideally, the community pharmacist. However, patients with stable long-term conditions (such as hypothyroidism, hypertension, and osteoporosis) are most likely to benefit. Some of the benefits include patient convenience, reduction of GP workload associated with generating repeat prescriptions, reducing waste, and more integration of care between community pharmacists and GPs.

Repeat dispensing is an essential service under the pharmacy contract and is available from any pharmacist that has been trained to carry out the service.

The process of ordering and collecting prescriptions and medicines from the GP and community pharmacy can prove quite difficult for some older people and their carers and may involve several trips. The housebound, people with reduced mobility and those who are the main carers for other older people and have to make arrangements for their own medicines as well, are more likely to be affected.
The problem is made worse if drugs are not synchronised to start and finish at the same time, or the pharmacist is unable to dispense the full amount of drugs in one visit.

### 4.3 Care planning

Care planning has been defined as ‘a process based on an assessment of an individual’s risks and needs that determines the level and type of support required to meet those needs, and the objectives and potential outcomes to be achieved’.

After gathering the necessary information about an older person – through an assessment, medication review, MUR, etc – a care plan is formulated. In relation to medicines, a care plan should summarise the patient’s main risks or needs, the outcomes or outputs to be achieved, and should include details of the services or interventions that need to be provided, as agreed with the patient or their carer.

These interventions may require the input of the older person, their carer or other health or social care professional. Therefore, the care plan should document who will carry out the interventions, when they should be done, and the review period.

**Key principles in care planning**

- Identify the problems or risk, e.g., in each of the four main areas: access; compliance; day-to-day management and clinical.
- Prioritise these in order to achieve realistic goals.
- Write the anticipated outcome or outputs for each one.
- For each risk factor or problem state the action you have agreed with the patient to reduce the risk or solve the problem; the options agreed should take into consideration the older person’s strengths, abilities, and the social support available to them.
- Refer to and communicate with other relevant personnel involved in the care with the patient’s consent, e.g., community pharmacist, care manager.
- Refer the older person for service provision, review, or further assessment.

In order to make the best use of scarce resources it is important that the level of support provided matches the need of the older person. For example, non-clinical staff and carers can order and collect medicines or look after administration. This leaves clinical staff to focus on older people who are the most vulnerable and who have complex healthcare problems. Relatives and carers also have an important role to play, but the *NSF for older people* notes that their potential is not fully utilised.

An easy to understand, jargon-free copy of the care plan should be given to the older person. Ideally, with the patient’s consent, the care plan should be shared among other relevant personnel.
4.4 Implementing the medicines management aspects of the care plan

For many older people, it may be sufficient to provide simple practical solutions to help them with their medicines. Those who are more vulnerable may need referral for additional support from specialists and advanced level pharmacists, GPs, community matrons, district nurses, GPs with special interest (GPwSI), and geriatricians.

So, if there are medicines management aspects of a care plan for an older person, then ideally a pharmacist should be involved in developing the care plan, so that those aspects of a person’s needs are met effectively. The pharmacist would then take the lead to ensure that the various aspects of the care plan are co-ordinated and carried out. Unfortunately, this rarely happens, except in the few instances where a pharmacist is employed or commissioned to carry out this task as part of their role. Most pharmacists are not in a position to be able to manage a ‘case load’ of patients, unless they have been commissioned to provide a complete service, for example, a case management pharmacist in primary care who will be responsible for any necessary follow-up as part of the care plan. A pharmacist who may carry out an MUR will not be funded to follow up the care plan, as the scope of the MUR does not extend to taking responsibility for ensuring that the care plan is implemented. In practice it has been found that when pharmacists are given responsibility to implement any actions related to a care plan, the time that the GP would normally spend making simple medication changes or requesting monitoring tests is reduced.60, 61 Also these actions are carried out more frequently than if the responsibility remains with the GP. So, it has been suggested that, where possible, the pharmacist should get agreement to implement as much of the medicines management aspects of the care plan as possible.60

Many resources are available that provide guidance to patients and professionals on simple practical solutions to meet the medicines management needs of older people. The National Pharmaceutical Association (NPA), Primary Care Contracting, Royal National Institute for the Blind (RNIB) and Age Concern have produced useful resources on their websites.

Some simple solutions are available from the NHS, for example, spacer devices, non-clicklock bottle tops, and devices to aid administration of eye drops like Opticare, and insulin administration like Innolet are available on FP10 prescription. Others like the Haleraid have to be purchased, and winged tops are not available in pharmacies. Currently it is up to individual pharmacists to provide reminder charts, medicines administration charts, multi-compartment compliance aids, measuring cups and other aids that help older people manage their medicines.
SECTION 4

better, so support is inconsistent. The extent to which the Disability Discrimination Act 2005 is implemented in community pharmacy varies depending on the way it is interpreted in day-to-day pharmacy practice.

To make sure that the older person continues to benefit from the care plan, their progress should be monitored regularly according to their needs and the care plan should be updated as necessary. The HOMER study\(^6\) showed that isolated ‘one off’ pharmacist contact with older people does not change outcomes. For community pharmacists, a separate appointment does not always need to be made for any follow-up, as it can be done as part of repeat dispensing, during medicines delivery, by telephone or during routine visits to the pharmacy for advice on over-the-counter drugs.

### Practice point

What formal or informal referral processes do you have with your local GPs for following up older people who you have:

- identified or assessed as having medicines management needs, or
- developed an action plan for, to meet those needs?

### Summary

Older people will have contact with a range of health and social care personnel, as their needs vary. As a result, the level of assessment required will also vary. There are a number of common tools available to assess medicines management needs and the NSF for older people recommends assessments that are appropriate to the level of need, as well as overview or specialist medicine assessments.

However, an assessment is not an end in itself; what is vital is that the assessment leads in turn to the development and implementation of a care plan that meets the patient’s needs. A lead person must take responsibility to ensure that the care plan is implemented and if there are medicines management aspects to the care plan then this can be a member of the pharmacy team. If you are involved in developing a care plan it is important to assess the older person’s needs and then to ensure that the care plan addresses those needs; this forms the cornerstone of effective medicines management services.

In choosing the most appropriate intervention to support older people with medicines you need to be aware of the services that are available within your locality, including pharmacy services, and which options are best suited to the older person’s situation – giving greater priority to services that will help the older person remain at home.
### Intended outcomes

By the end of this section you should be able to:  

Well can you?

- Describe the single assessment process and its four levels.

- Outline some of the tools for assessing medication risk in older people.

- Understand how medicines reconciliation, medicines use review and repeat dispensing can improve outcomes and reduce risks for older people.

- State the key principles of care planning and recognise the opportunities for and barriers to implementing them.
Section 5
Collaborative working

**Objectives**

On completion of this section you should be able to:

- recognise the importance of communication with the patient, as well as between care providers
- describe the role of various people who provide care for older people
- develop your understanding of the possible roles of the pharmacy team in caring for older people and be aware of how best to improve the services you provide
- outline the benefits and challenges of integrating medicines management into care packages and care pathways.

The New ambition for old age document cites timely interventions through joined-up care as the key principle in the care of very elderly people.\(^2\) Joined-up care is achieved by all parties working together to identify problems at an early stage, provide appropriate interventions to prevent a crisis, and rapid response when a crisis occurs to quickly restore health, independence and well-being. This is in step with the NSF for older people, which has previously recommended agencies adopt a joint approach in the care of older people through collectively setting goals, sharing resources and responsibilities, overarched by good communication and shared access to records.\(^1\) This enables an holistic view of the older person's needs, better assessment, and the most appropriate support to be given in the context of the individual's health and social circumstances.

Many vulnerable older people and those with complex needs have multidisciplinary teams and agencies involved in their care and good communication is essential between professionals and patients, as well as between professionals themselves. In this section we outline the roles of key people who provide care for older people, and then discuss how medicines management can be integrated into the care pathway.

### 5.1 Communication and medicines management

Medicines management for older people is 'everybody's business' and many health and social care personnel, as well as formal carers, friends and relatives are involved in medicines-related activities. Each has a vital role to play to ensure the patient gets the best from their medicines.

We have seen in the previous chapters that, aside from health, socio-economic factors have a huge part to play in how older people use their medicines and the resulting therapeutic outcomes. It follows that the more you know about these factors, the more likely it is that you will be able to make appropriate decisions. For example, an older person who is unable to self-administer their medicines may appear to have an unmet need; but, if a neighbour visits daily to administer those
drugs, the need is already met and may require no further action. This type of information can only be obtained through collaborative working, including sharing of records and information.

**Practice point**

What support is available in your locality from health or social care for the following groups of older people who need help with medicines:

- a) non-English speaking?
- b) people who are blind?
- c) people with dementia?

### 5.2 The roles of health and social care staff

Many older people in the young elderly and elderly groups have no special health and social care needs. However, the care of the very elderly and those with complex medical, psychological, and social needs should be provided by a multidisciplinary team, which – depending on their main need – is usually led by geriatricians and other specialists such as GPwSIs or community matrons. Such teams work from various locations in the community and collaborate through virtual wards, regular multidisciplinary team meetings, or case conferences, or, they may be co-located, as in community hospitals and intermediate care centres.

Core members of the healthcare team include:

**Community nurses**

**District nurses** provide nursing care and practical assistance to older people in their own homes or care homes without nursing (residential homes); particularly people who are housebound and unable to visit their GPs. Most are attached to practices within the same geographical areas from which they receive referrals and to which they refer. They carry out a range of activities, such as blood pressure monitoring, blood glucose monitoring, dressing changes, administration of medicines that require particular techniques like injectables, suppositories, PEG (percutaneous endoscopic gastrostomy) feeding, and oxygen. They aim to support the older person to live as independently as possible in the community. They are a ready source of medicines information and provide advice to older people and their carers on medicines issues. All district nurses can prescribe from a limited drug formulary which includes dressings, creams, and some pharmacy-only medicines.

It is common nowadays for district nurses to lead a team of junior nurses and healthcare support workers to whom they provide training and supervision. As district nurses take on newer and more clinical roles – like administering cytotoxics and care planning – they need to delegate some of the routine tasks, such as blood pressure monitoring and weighing patients, to these team members. All nurses are
involved in health promotion, promoting independence and well-being, and supporting positive lifestyle changes. Many district nurses have regular contact with local community pharmacists and maintain a good professional relationship. They often need information on drug and dressing availability, appropriate formulations, drug-drug interactions, and side-effects. Many are involved in the initiation of multi-compartment aids.

**Practice nurses** have more or less the same role as district nurses, but they work within the GP surgery with patients on the practice list. They are more involved with health promotion, screening, immunisation and travel health. Some run long-term condition clinics, prescribe, carry out prescribing audits, and may go on to train as advanced nurse practitioners.

**Advanced nurse practitioners** are registered nurses who have undertaken an additional course of study of at least up to a first degree level to enable them to practice at an advanced level. They make autonomous professional decisions for which they take full responsibility, they screen for disease risk factors, and diagnose and treat patients. In the community, they are generalists like GPs and work in practices to provide complete episodes of care, including prescribing, for patients with a range of acute and chronic conditions. They have major roles in areas where there is a scarcity of GPs, and some PCTs have nurse practitioner-led practices.

**Community matrons** are nurses who have been named as the case manager or co-ordinator for vulnerable older people with long-term conditions. They are usually senior nurses who provide nursing care, plan and co-ordinate ways to meet the health and social care needs of these older people. They do this by proactively seeking out vulnerable older people, assessing their physical, mental and social care needs and developing a personalised care plan that may involve liaising with various individuals, teams or agencies to implement it.

The community matron is responsible for co-ordinating the care plan and ensuring it is implemented promptly and reviewed regularly. They are champions and advocates for older people and their carers, procuring and co-ordinating all aspects of the patient’s care, for example, social care support to provide personal care, respite for care-givers, and ensuring older people get all their financial entitlements and benefits. They also provide clinical care, including prescribing and nursing care, but may delegate some nursing tasks to district nurses. Usually they have a case load of patients for six to eight weeks’ duration, working in geographic areas attached to GP practices. They receive referrals to care for older people who are vulnerable, have complex needs, and/or frequently attend the accident and emergency department or hospital in general. Their main aim is to prevent hospital admissions, help people remain at home, and improve their quality of life.

**Community psychiatric nurses** provide continuing care to older people with mental health problems, such as dementia and schizophrenia. They may be based in an acute hospital, mental health trust, GP surgery, or be part of a specialist care home support team. They work closely with social care staff and relatives, as well as other community nurses and GPs who remain in charge of managing the physical health needs of the older person.

**Other nurses** include those with specialist roles in the community, such as continence and stoma, palliative care, tissue viability, diabetic specialists, and older
people nurses. They have received extra specialist training to enable them to practice in their specific area. They receive referrals from other health or social care personnel for older people who need specialist care.

Other non-specialist nurses work in community settings, such as intermediate care centres, rapid response, and supported discharge teams. Care home nurses provide 24-hour care to older people and are involved in the administration of medicines. Many rely on their local community pharmacists for all kinds of information and advice on the use of medicines.

Doctors

GPs are the gatekeepers of healthcare for older people in the community. They provide general medical care and refer people to other specialist clinicians for specialist or complex care. They also make referrals to social care. The majority of medication reviews and repeat prescribing are carried out by GPs and their staff.

Specialist doctors often work with very elderly people or those with more complex healthcare problems, who need extra care, such as people in nursing homes, intermediate care centres, community hospitals, or falls clinics. Geriatricians and old age psychiatrists are consultants based in hospital who provide outreach services to older people in the community. Old age psychiatrists are concerned with older people who have mental health needs.

GPwSI in the care of older people are GPs who have been accredited to deliver specialist clinical services to older people beyond the scope of their core professional role, or who undertake advanced interventions not normally undertaken by their peers. Like geriatricians, GPwSIs carry out the comprehensive geriatric assessment – a multi-dimensional, multidisciplinary process to determine a frail older person’s medical, psychosocial and functional capacities, find out their problems and then formulate a therapeutic plan to meet their needs.

Healthcare support workers

The role of healthcare support workers has been developed to improve skill mix in nursing teams to enable qualified clinical staff to focus on clinical roles. They may be called healthcare assistants or rehabilitation support workers, depending on the team or setting in which they work. They are involved in a range of medicines-related tasks, like collecting prescriptions/medicines, purchasing over-the-counter medicines, and are usually trained to administer medicines as delegated by the qualified staff. They may visit the local pharmacy regularly and ask for general information about prescribed and non-prescribed medicines, dose timings, and multi-compartment aids.

Allied health professionals

In the community, many allied health professionals are based in community health centres, clinics or from GP surgeries, but will also visit housebound older people.

They often receive referrals from GPs, community matrons, and other healthcare professionals who identify the older person as needing help. Apart from dietitians, allied health professionals provide care for older people with any illness, injury or disability that affects their ability to carry out personal/domestic tasks or interferes with mobility, leisure, communication or swallowing.
Occupational therapists assess and treat people with physical and mental disabilities by using specific activities to help them overcome their disabilities and promote independence in their day-to-day life. They teach patients how to cope with their disabilities and suggest adjustments they can make to help with the activities of daily living. They can also receive referrals from social care.

Occupational therapists may be interested in the range of devices and compliance aids that are available to support older people with medicines taking and may be able to suggest individualised devices to meet an older person’s particular need. They can be an important link for pharmacists when optimising medicines management.

Physiotherapists assess physical ability, diagnose and carry out interventions to help maximise functional ability and improve posture. Some specialise in musculoskeletal, neurological (including stroke) or complex rehabilitation. They prescribe exercises and carry out manipulation or mobilisation techniques to help older people who have had a stroke, fallen, or suffer with Parkinson’s disease and musculoskeletal conditions like osteoarthritis. They are usually an integral part of the falls team. They often ask pharmacists questions about pain management or cardiovascular drugs, as well as the effects of drugs on posture, falls, postural hypotension and exercise. They can administer drugs under patient group directions (PGDs) and a few are non-medical prescribers.

Podiatrists and chiropodists assess, diagnose and treat foot and lower limb problems. Podiatrists can administer drugs under PGDs and a few are non-medical prescribers. Sometimes they provide foot health education sessions to elderly groups and their carers.

Speech and language therapists assess and treat older people who have difficulties with communication, eating, drinking and swallowing. They often require information about the side-effects of drugs that have an impact on these difficulties, as well as ‘easy to swallow’ drug formulations.

Dietitians assess older peoples’ nutritional needs, develop plans and provide support to individuals or groups of older people on how to stay healthy through a proper diet. They often see malnourished older people or patients with specific conditions, like diabetes and stroke who need help with their diets.

Social care team

Social workers and care managers are responsible for assessing older people, primarily to establish their individual social care needs (including support with medicines) and then to develop a care plan and a package of care designed to meet those individual needs. As part of the assessment process they determine if the older person meets the eligibility criteria for these services. They implement, monitor, and review the care package at regular intervals. They recommend and commission services, such as home care or day care, from providers in the independent sector, as well as care packages to provide support with medicines, including multi-compartment aids. They receive referrals from and refer to GPs and nurses. There is scope for social workers to refer to and take referrals from community pharmacists, but only a few organisations have formal structures in place to enable this.
Domiciliary care workers (formerly home helps) are usually employed by private care provider agencies and less frequently by social service departments, to provide support with personal care such as bathing, cleaning, preparing meals, and medicines taking. They must be trained in medicines administration and assessed as competent before they can carry out routine medicines-related tasks. They could be the first people to identify important medicines management issues, but may not be confident to refer. Domiciliary care workers have managers who assess the older person’s needs and translate care plans into daily tasks or activities for the workers to carry out.

Sensory impairment rehabilitation teams help older people who have visual and hearing impairments. Their services include assessment, providing advice, information, equipment, and support to enable them to maintain or regain their independence. Older people, their carers, and other personnel can refer or seek advice.

Informal caregivers

Informal caregivers, including the older person’s relatives, are part of the team and, wherever possible, should be involved in setting goals and decision-making. It is important to know the role they play concerning medicines for the older person, to avoid duplication and confusion with other caregivers. Based on their knowledge of the older person’s habits and lifestyle, they can often provide insight into what may be achievable treatment goals. However, caution must be exercised, as sometimes the wishes of the older people do not necessarily match those of their carers.

Informal carers usually have regular contact with the local pharmacist and often want information on drug-related issues, particularly relating to side-effects, ‘as required’ medicines, and the consequences of adjusting drug dosage or frequency.

Practice point

Do you have any older people who you provide extra support to? How do you ensure that other healthcare professionals are aware of this support to ensure seamless care?

5.3 The role of the pharmacist and pharmacy technician

Community pharmacists

Community pharmacists are key frontline members of the primary healthcare team, delivering a range of medicines management services for older people. For example, as we mentioned above, in the context of care homes, the CSCI identified that all too often, older people receive the wrong medicine, the wrong dose of medicine, or no medicine at all; this clearly suggests a role for community pharmacists.
Throughout this programme we have stressed that with safe medicines use and management, people will receive the maximum benefit with the minimum risk. When this is not the case, not only can the full potential benefits be lost, but the person’s health may become worse. And when harm does occur, costs – in terms of expenditure and time – often increase. This is true for all patient groups, but older people are at particular risk as they often have greater needs and can be more vulnerable. In many situations, the way medicines are used could be considered one of the critical determinants of the final outcome of care. An older person may receive good services from multiple providers, but if in the end, their medicines compromise their health and quality of life, the health and social care services are not meeting their objectives.

However, while from a pharmacy perspective, it could be argued that it often all comes down to medicines, at the same time, pharmaceutical care is not all about medicines. When providing care for older people, community pharmacists play an important role regarding medicines and patients, ie, carrying out clinical reviews, medicines use reviews, providing multi-compartment compliance aids, or care for minor ailments.

Also, as outlined earlier in this section, care for older people is provided by a wide range of professionals, many who are involved in the prescribing or provision of medicines to older people. Joint working is essential, and pharmacists can provide a range of support and advice services to other groups that may, as a result, directly and indirectly improve the way medicines are used and ultimately benefit patients. For example, pharmacists may be involved in care worker training to help ensure medicines are administered as intended and that adverse outcomes are picked up at an early stage. Or, pharmacists could help to ensure that regulations are met regarding safe storage of medicines in care homes. Also, community pharmacies can target MURs towards older people to deal with adherence and medicines-related problems. Closer working between GP practice-based pharmacists and community pharmacists can also support the pharmaceutical care of older people.

So, for pharmacists to provide the full spectrum of services required to ensure older people receive a high quality and responsive service they need to have good clinical knowledge and skills, be integrated with the wider care team, and be comfortable working in a variety of settings.

**Practice point**

Reflect on the pharmaceutical care needs of the older people you provide, or could provide, services to. Which needs are met and unmet? Which aspects of your role involve working directly with medicines and which involve working with other care providers?
Pharmacy technicians
The involvement of pharmacy technicians in the care of older people is continuing to broaden. They can be directly involved in improving medicines use – as in medicines provision – or indirectly – as in suggesting ways of improving systems in care homes.

While dispensing medicines is one of their key roles, they also have the opportunity to check current prescriptions against the patient’s medication record to identify any unexpected changes or potential drug interactions. They can check the frequency with which medicines are ordered and identify any patients who are not taking their medicines, or may be taking too many or stockpiling (perhaps inadvertently).

Many pharmacy technicians will have direct patient contact. Patients may ask specific questions about their medicines, or pharmacy technicians may pro-actively provide advice, for example, pointing out where particular changes have been made, or checking for side-effects. When visiting a care setting, pharmacy technicians may also identify risks and opportunities for improving systems; for example, medicines storage may be inadequate, or a care home may be accruing large amounts of some medicines.

Practice point
In your area of work, which services for older people are currently provided by pharmacy technicians? What additional services could be provided? What training may be needed to allow these services to be provided?

Exercise 7
Having reflected on the involvement of members of the pharmacy team in the practice points above, write a list of services that community pharmacists and/or pharmacy technicians could provide for older people.
Specialist and advanced level pharmacists

Advanced or specialist pharmacists have the opportunity to act as the lead in the co-ordination of medicines management issues in older people with complex needs. In 2008, the Department of Health published a guide for accreditation of practitioners with a special interest in the care of older people, which includes pharmacists. Like GPwSIs, these pharmacists will be commissioned to carry out clinical services beyond their normal generalist roles. They should have the clinical knowledge, expertise, and skills to provide clinical pharmacy services to the most vulnerable older people and those with complex needs. In recent years a few PCTs have put community clinical pharmacy teams in place, led by ‘older people pharmacists’ who have developed the extra skills and expertise and have experience working with older people.

Specialist pharmacists carry out in-depth medication assessments, clinical medication reviews, and co-ordinate all aspects of pharmaceutical care for older people on their case loads. They work closely with other healthcare colleagues, social care personnel, and agencies in the independent and voluntary sectors. Some of these pharmacists work within case management teams, care home support teams, and intermediate care teams, as well as for individual or groups of GP practices, or specific groups of older people.

Consultant pharmacists in the care of older people are expert practitioners in this field, but also have the additional role to provide professional leadership, and contribute to research, education and training to deliver better outcomes for older people. In primary care, a significant part of their role involves developing and commissioning innovative pharmacy services to drive improvement in the quality of pharmaceutical care for older people. They usually work in a collaborative network of general pharmacy practitioners, pharmacists with special interests and other healthcare professionals.
Practice point

Reflect on how you would address the following problems and which local services or individuals from your networks you may refer to.

a) An older person you know well, who usually comes in to buy Tena Lady pads, asks to see you. In the consulting room, she asks if you have any other pads that more absorbent than the Tena pads as they no longer keep her dry. She says she has become quite conscious of the smell and so has not been to her social club for two weeks.

b) Mrs Kross comes in to collect her mum’s medicines and apologises for leaving it for so long. She explains that her mum was admitted to hospital following a fall at home and although she had a few bruises there was no fracture. She has been back home for a week and refuses to go out for fear of falling. She has lost confidence and is very slow to carry out basic tasks. She keeps saying she doesn’t want to be a nuisance to anyone. Mrs Kross is at her wits’ end and asks for your advice.

5.4 Integrating medicines management into care pathways

A care pathway is the route that a patient will take from their first contact with an NHS staff member to the completion of their treatment. Integrated care pathways are defined as ‘structured multidisciplinary care plans which detail essential steps in the care of patients with a specific clinical problem and describe the expected progress of the patient’. They are becoming popular in the NHS as a way of delivering care to patient groups with a specific clinical problem. Of the many care pathways that have been developed, some are particularly relevant to older people; for example, most long-term condition pathways, falls integrated care pathways, and the urgent care pathway for older people with complex needs.

In the community, clinical pharmacy services are not routinely provided as part of mainstream NHS care, nor integrated within many care pathways. This means they are not joined up with routine care and are often added as an afterthought, so that potential medicines problems may not be adequately tackled. The London Local Pharmaceutical Committees Forum and National Pharmacy Association, in a joint response to the Healthcare for London consultation, called for the community pharmacy contract to be integrated in patient pathways. They suggest that this could be achieved by including community pharmacists as part of the multidisciplinary team when patient pathways are developed, with closer working relationships with other health and social care professionals, as well as commissioning pharmacy services that address long-term conditions.

Pharmacists can offer a range of services that help to improve clinical and cost-effectiveness, promote adherence, reduce adverse drug reactions, help older people manage their medicines independently in the community, and reduce hospital admission. When care pathways are being developed it is important to consider the positive impact of these pharmacy services, so that the patient gets the full benefits...
from their use of medicines. Relevant community pharmacy services would include MURs, repeat dispensing, screening, point of testing, monitoring, clinical medication reviews and assessments.

Consider the following situation as an example of the way that an intervention from the pharmacy team can result in improved outcomes. There is evidence to show that medicines adherence and persistence with bisphosphonates is poor in at least 50 percent and 80 percent of patients by the first and third years of initiating therapy respectively. Adherence problems usually occur within the first three months and are associated with a higher risk of fracture.66 So, if the care pathway for a patient with a fractured neck of femur care includes a referral for an MUR or medication review within three months of prescribing bisphosphonates, this would help to ensure that any adherence problems are detected promptly and then rectified.

Sometimes pharmacists are the only healthcare professionals that are in regular contact with older people who are vulnerable and hard to reach; they may become aware of medicines management issues that would benefit from early intervention by another health or social care professional. However, there are no structured processes in place to make referrals to these individuals. One way of doing this is to develop a care pathway for older people identified as requiring medicines support and integrate this with a SAP – including overview and in-depth assessments, as well as medicines support services that form an integral part of the older person’s care package. This allows medicines support to be reviewed and monitored, together with other aspects of care.
Summary

Pharmacists can contribute effectively to the care of older people if they are included in multidisciplinary team arrangements. They need to be aware of the local processes that are in place so that they can confidently refer and communicate with others involved in the care of older people.

Older people access care at many points in the health and social care system and some will invariably need support with medicines along the way. Pharmacists are the experts in medicines and should be involved in the design and delivery of care pathways to ensure that older people identified as needing extra help get the right support to enable them to get the best out of their medicines.

Intended outcomes

By the end of this section you should be able to: Well can you?

- Recognise the importance of communication with the patient, as well as between care providers.

- Describe the roles of various people who provide care for older people.

- Develop your understanding of the possible roles of pharmacists in caring for older people and be aware of how best to improve the services you provide.

- Outline the benefits and challenges of integrating medicines management into care packages and care pathways.
Suggested answers

**Exercise 7 (page 77)**

Write a list of services that community pharmacists and/or technicians could provide for older people.

- Medicines supply
- Repeat dispensing
- Advice and counselling
- Health promotion
- Drug information and education to patients, carers, members of health and social care teams
- Referrals and signposting
- Medication review, including medicines use review
- Medicines management assessments
- Disposal of unwanted medicines
- Provision of support devices and compliance aids including multi-compartment aids
- Supply of over-the-counter medicines, support for self-care and minor ailment schemes
- Extended prescribing and specialist clinical roles
- Treat minor ailments
- Prescription collection and delivery
- Monitoring, eg, blood pressure, cholesterol
Section 6
Bringing it all together

Objectives

On completion of this section you should be able to:

- integrate your knowledge of the various care needs of older people to enable you to improve the services you provide.

In this section we present a case study for you to work through that will help you to apply what you have learnt from this programme.

Case study 1

Brian Chambers is 82 years old and lives in a warden-assisted flat. He has been referred to you by the community matron as he is not coping with his medicines. The warden has found him breathless a couple of times in the last two weeks and is concerned about his health. She feels strongly that he should be moved to a nursing home, as he needs a lot of support with his medicines.

You carry out a domiciliary visit and gather the following information.

<table>
<thead>
<tr>
<th>Prescribed medication</th>
<th>Indication</th>
<th>Potential problem or prescribing issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salbutamol 100 microgram inhaler, two puffs four times a day as needed</td>
<td>COPD</td>
<td>He is not using his inhaler, even when getting breathless. He is unable to use the device when he needs it. He also has a volumatic spacer (which he never uses).</td>
</tr>
<tr>
<td>2. Atrovent inhaler, two puffs, twice daily as needed</td>
<td>COPD</td>
<td>He hardly uses it, as it gives him a dry mouth.</td>
</tr>
<tr>
<td>3. Seretide 250 microgram inhaler, two puffs twice daily</td>
<td>COPD</td>
<td>This was prescribed by the hospital. He has never used it and it expired nine months ago. FEV is 50 percent of the expected volume and he has roughly two exacerbations/year.</td>
</tr>
<tr>
<td>4. Nitrolingual spray</td>
<td>Angina</td>
<td>He has three expired sprays. He has difficulty using the spray and so rarely uses it. His mouth is very dry and he is not drinking enough fluid.</td>
</tr>
<tr>
<td>5. Amlodipine 5 mg daily</td>
<td>?</td>
<td>BP: 119/70 and 108/60; Pulse 85</td>
</tr>
<tr>
<td>6. Aspirin 75 mg daily</td>
<td>CHD</td>
<td></td>
</tr>
<tr>
<td>7. Digoxin 62.5 micrograms daily</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>8. Lansoprazole 15 mg daily</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>9. Ferrous sulphate tablets 200 mg, twice daily</td>
<td>Anaemia</td>
<td>He is not taking the evening dose. Last Hb: 15 g/100 mL</td>
</tr>
<tr>
<td>10. Paracetamol 500 mg, two, four times a day.</td>
<td>?</td>
<td>He is not in any pain at all, although the carer gives him a dose every morning.</td>
</tr>
</tbody>
</table>
Other information
The patient has little or no knowledge about his medicines.
He cannot use his inhaler devices or the GTN spray as he hasn’t got the strength to push.
The warden has a stack of blister packs (about 12 weeks’ worth) with many medicines unused.
Over-the-counter medicines – none.
The record kept by the carer is poor and inconsistent; so I am unable to establish which medicines are currently being given.

Access issues

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the patient live alone?</td>
<td>Yes</td>
</tr>
<tr>
<td>Is the patient able to answer the door?</td>
<td>The door is always open – if it wasn’t someone could ask the warden for access.</td>
</tr>
<tr>
<td>Are they able to use the telephone unassisted?</td>
<td>Yes</td>
</tr>
<tr>
<td>Do they require assistance when they leave the house and go out?</td>
<td>He recently tripped on the corner of the road (not dizziness) – this has affected his confidence to go out.</td>
</tr>
<tr>
<td>Does the patient have regular appointments with the GP/district nurse?</td>
<td>He is on the community matron caseload.</td>
</tr>
<tr>
<td>Does the patient visit the GP?</td>
<td>No</td>
</tr>
<tr>
<td>Who orders repeat prescriptions for the patient?</td>
<td>Pharmacist</td>
</tr>
<tr>
<td>Who collects repeat prescriptions from the surgery and takes them to the pharmacy?</td>
<td>Pharmacy</td>
</tr>
<tr>
<td>Who delivers medication to the patient?</td>
<td>Pharmacy</td>
</tr>
<tr>
<td>Does the patient ever run out of medication?</td>
<td>No</td>
</tr>
<tr>
<td>How often?</td>
<td>For now the patient is more or less housebound.</td>
</tr>
</tbody>
</table>

Compliance and day-to-day medicines management issues

Use of compliance aids

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who assists/administers the patient’s medication?</td>
<td>The domiciliary care worker, but they won’t give any medication that is not in the Dossette box. The patient is not given inhalers or offered the GTN spray. The care worker only visits in the morning and at teatime – this explains why other doses are not taken.</td>
</tr>
<tr>
<td>Does the patient currently have a compliance aid?</td>
<td>Yes</td>
</tr>
<tr>
<td>Is the patient able to use this compliance aid unassisted?</td>
<td>No</td>
</tr>
<tr>
<td>Who initiated the compliance aid?</td>
<td>Unclear, however care workers will only administer via the compliance aid.</td>
</tr>
<tr>
<td>Who fills the compliance aid?</td>
<td>Pharmacist</td>
</tr>
</tbody>
</table>
Patient’s attitude to taking medication

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there any problems with taking medication as prescribed?</td>
<td>The patient says he takes his medicines whenever he is given them and is happy to do so.</td>
</tr>
<tr>
<td>Does taking medication fit in with daily routine?</td>
<td>The care worker visits first thing in the morning to give morning doses (notes suggest doses are given as early as 7am at times). No planning for taking aspirin after food. Often the patient has to be woken up.</td>
</tr>
<tr>
<td>Do people often have to remind the patient to take medication?</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the patient feel confident about how and when to take medicine?</td>
<td>No, he is unable to say whether medicines had been given or not by the care worker.</td>
</tr>
</tbody>
</table>

a. Identify factors that predispose Mr Chambers to an increased risk of adverse drug reactions and low adherence.
b. Identify the key medicines management support needs for Mr Chambers and list them on the blank care plan template below, making recommendations about the best way to tackle each one.

**Pharmaceutical care plan for Mr Brian Chambers**

<table>
<thead>
<tr>
<th>Pharmaceutical needs identified</th>
<th>Plan</th>
<th>Anticipated outcomes and action to be taken by whom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adherence and day-to-day medicines management issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical issues</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(Identify the problem or risk involving medication, including failure to prescribe for a condition.)*
c. Who might you need to liaise with to ensure that each recommendation is implemented?

d. As the healthcare professional who is taking the lead in the assessment of this patient, how might you follow up or monitor the implementation of this care plan using the current provisions in the pharmacy contract?

e. Taking into consideration the current NHS agenda do you think Mr Chambers should be moved to a care home? What suggestions can you make relating to medicines management that may prevent this move?

Turn to the end of the section for suggested answers.

Summary

Older people are high users of medicines and are also more likely to suffer from adverse effects of medicines. Many do not take their medicines as prescribed, because of a number of reasons, which could be intentional or unintentional. Adverse drug effects and low adherence can lead to otherwise preventable hospital admissions, poor therapeutic outcomes and a waste of financial resources.

As medicines experts, pharmacists have a big contribution to make in improving medicines management and ensuring that older people get the best from their medicines in the community. However, to do this they must understand the effects of ageing on pharmacotherapeutics, as well as the wider factors that impact on the way older people use their medicines. They must also be able to apply these principles to drug selection, dosage adjustments and pharmaceutical care, to improve clinical effectiveness and promote adherence.
There are certain conditions that are more common in older people and a good grasp of the drugs used to treat those conditions is essential, particularly in choosing those that are more effective and avoiding those with the greatest risk of harm.

Medication reviews, medication assessments and medicines use reviews play an important role in trying to reduce polypharmacy, adverse drug effects and improving adherence. Pharmacists can be more involved in undertaking these services for targeted older people, but in order for the full benefits to be realised it is important that they involve the patient in the process. Follow-up and good communication between healthcare professionals are important to ensure that recommendations are implemented.

Pharmacists need a basic understanding of the roles of the range of individuals, teams and agencies that are involved in care of older people and need to be able to work collaboratively with them to improve medicines management.

Older people are living much longer and advanced technology and better healthcare means that this trend is on the increase. Older people with long-term conditions will need medicines to manage their conditions and require support to help use them effectively. To achieve this, health and social care organisations will need to utilise the knowledge and expertise of generalist pharmacists in the community, as well as develop community clinical pharmacy teams led by specialist pharmacists to provide the extra support for older people who are more vulnerable or who have more complex healthcare needs.
Suggested answers

Case study 1 (page 83)

a. Identify factors that predispose Mr Chambers to an increased risk of adverse drug reactions and low adherence.

- Age
- Polypharmacy
- Living alone and more or less housebound
- Knows little about his medicines
- Physically unable to use inhalers or spray
- Carer only comes twice a day; medicines prescribed with greater frequency not given
- Carer sometime comes early in the morning while patient is still asleep
- Not taking aspirin with food; unclear whether he is being given lansoprazole due to poor care records. Is his anaemia due to bleeding?
- Dehydrated?
- Unnecessary supply of paracetamol
- Poor documentation making it unclear what has been given
- Inability to access GP easily as he is housebound
- A large amount of unused medicines available

b. List the medicines management support needs identified and make recommendations on how to tackle each one in the care plan below.

Pharmaceutical care plan for Mr Brian Chambers

<table>
<thead>
<tr>
<th>Pharmaceutical needs identified</th>
<th>Plan</th>
<th>Anticipated outcomes and action to be taken by whom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access issues</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to GP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to carer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Adherence and day-to-day medicines management issues</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-adherence; lack of understanding about medicines</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Pharmacy order, dispense and deliver medicines; patient probably doesn’t have easy access to GP as essentially housebound.
- Greater access to carer? Speak to team leader about increased access.
- Address issues of administration and recording with social services.
- Query need for compliance aid. Provide training and education to carer and remove need for blister pack.
- Consider if the patient can manage medicines with other means, eg, MAR chart, education. Will only need four oral drugs, all taken in the morning, plus inhalers.
- Check patient’s eyesight as it could be the possible cause of his recent fall.
- Dispose of expired medicines.

- Gain a clear picture of what medication he is taking.
- A compliance aid would aid self-administration when needed for relief.
- Better understanding of why and how to use medication will help with adherence.
- Improve documentation.
- Action to be initiated by pharmacist.
### Clinical issues

*(Identify the problem or risk involving medication, including failure to prescribe for a condition.)*

| Change salbutamol to a breath-activated device? Or purchase Haleraid device to use with current inhaler. |
| Review the need for a corticosteroid; is it indicated? If so, stress the importance of regular use of Seretide; consider a change to an Accuhaler? Discontinue Seretide if necessary. |
| No breath-activated ipratropium available. Is it needed? Switch to tiotropium or Respimat? |
| Advise on patient’s use of inhalers, and advise him to use spacer and rinse mouth after steroid. |
| Review need for paracetamol. If needed, suggest use ‘as required’. |
| Review need for amlodipine – despite not taking it for a while his blood pressure is low. |
| Consider initiating calcium and vitamin D. |
| Consider the need for lansoprazole: any indigestion? Does the patient have a history of gastrointestinal problems? |
| Consider warfarin for atrial fibrillation – taking into consideration non-compliance, etc. |
| Is digoxin used for atrial fibrillation? Monitor pulse. |
| Despite taking only one iron tablet a day his haemoglobin is normal. Stop iron and monitor? |
| Is patient still experiencing angina? If infrequently – supply a new spray or switch to tablets. If frequently – review for prophylaxis. |
| Explain use of nitrolingual spray to relieve heart symptoms. |

Reduce inappropriate prescribing and risk of adverse drug reactions. Effectively manage long-term conditions and prevent long-term complications.

Action to be initiated by pharmacist in liaison with prescriber.

### c. Who might you need to liaise with to ensure that each recommendation is implemented?

- GP for any changes to the patient’s medicines
- Community matron for communication issues
- Social services/care agency for issues relating to record-keeping and administration of medicines
- The warden to monitor and feedback
- Family
d. As the healthcare professional is who is taking the lead in the assessment of this patient, how might you follow up or monitor the implementation of this care plan using the current provisions in the pharmacy contract?

- Repeat dispensing – ensure that each time a medicine is dispensed the patient is asked whether or not they are still using it, that it’s working, etc.
- MUR – to follow up on the patient’s understanding and low adherence issues.

e. Taking into consideration the current NHS agenda do you think Mr Chambers should be moved to a care home? What suggestions can you make relating to medicines management that may prevent this move?

Where possible, older people should be supported to live in their own homes rather than being moved to a care home. Simplifying the patient’s medicines regime may help him to take his medicines correctly. A monitored dosage system is already being supplied, which the care worker is helping the patient to use, but a care worker may need to visit more frequently if additional medicines are prescribed which need to be given at different times of the day.

You may want to consider involving a community matron to assess chronic obstructive pulmonary disease more regularly and perhaps a falls team.


43. NHS care records services: single assessment process. *Glossary of health, social care and information technology (including long-term conditions).* Available online at: [http://www.cpa.org.uk/sap/glossary/glossary.html#Sing01](http://www.cpa.org.uk/sap/glossary/glossary.html#Sing01) (accessed 12 April 2009).


61. Author's own experience, 2009.


A
absorption 11
ACE inhibitors, use of 15
adherence 42
adherence and medicines management 63
adherence and prescribing 45
advanced level pharmacists, role of 78
advanced nurse practitioners, role of 72
adverse drug reactions 34, 35
adverse drug reactions and prescribing 45
age and disability 21
ageing and physiological changes 10
ageing population, statistics 3, 4
altered receptor sensitivity 19
antibiotics and Clostridium difficile 41
anticholinergic drugs, use of 41
anticoagulants, use of 39
antidiuretic hormone 18
antihistamines, use of 41
antihypertensives, use of 39
anti-Parkinson’s drugs, use of 39
antipsychotics, use of 40
assessment process 50

B
balance 17
behavioural factors 23
benzodiazepines, use of 18, 41

C
care at home 4
care home nurses, role of 73
care homes and medicines management 5, 6
care homes with nursing 6
care managers, role of 74
care pathways and medicines management 79
care planning 66, 67
caregivers, role of 75
case-finding 53
Castlefield criteria 54
chiropodists, role of 74
chronic kidney disease 14
chronic renal failure 14
cimetidine, use of 41
Clostridium difficile and antibiotics 41
Cockcroft and Gault formula 13, 14
collaborative working Section 5, 70
communication and medicines management 70
community matrons, role of 72
community nurses, role of  71
community pharmacists, role of  75
community psychiatric nurses, role of  72
complementary medicines, use of  23
comprehensive assessment  52
consultant pharmacists, role of  78
contact assessment  51
co-proxamol, use of  38
coxibs, use of  38
creatinine levels  13

deafness  21, 22
delirium and benzodiazepines  41
dementia and antipsychotics  40
dietitians, role of  74
digoxin, use of  39
disability and age  21
discharge planning  7
distribution  11
district nurses, role of  71
diuretics, use of  38
domiciliary care workers, role of  75
drug absorption  11
drug distribution  11
drug metabolism  12
drug monitoring  62
drug-related hospital admissions  37
dysphagia  22

elderly, definition  3
excretion  12

first order risk assessments  55-57
Fuller’s self-medication risk assessment tool  58

geriatricians, role of  73
glomerular filtration rate (GFR)  13, 14, 15
GPs, role of  73

hand dexterity  23
healthcare assistants, role  73
healthcare settings  4
healthcare support workers, role of  73
hearing impairment  21, 22
hepatotoxic drugs 12
home care 4
homeostatic changes 17
hospital admissions, drug-related 37
hospital care 6
hydration 18
hypertension, postural 17
hypoglycaemics, use of 39
hypothermia 18, 29

I
imobility 22
in-depth medication assessment tool 59, 60
indomethacin, use of 38
informal caregivers, role of 75
insulin, use of 39
intentional low adherence 43
intermediate care 5, 6

J
joined-up care 70

K
kidney disease 14
kidney function 13

L
lipid-soluble drugs 11
low medicines adherence 42

M
manual dexterity 23
medication errors 63
medication history-taking 23, 37
medication review 23, 61
medicines adherence 42
Medicines for older people: implementing the medicines-related aspects of the national service framework for older people 8
medicines management
  and adherence 63
  and care homes 5, 6
  and care pathways 79
  and care planning 67
  and communication 70
  and risk 61
  risk assessments 54
medicines reconciliation 63
medicines use reviews 64
medicines-related risk 53
metabolism 12
metformin, use of 40
mobility problems 22
monitoring 62

N
nephrotoxic drugs, use of 15
NSAIDs, use of 15, 38
NSF for older people standards 8
nursing homes 6

O
occupational therapists, role of 74
opioid analgesics, use of 38
oral hypoglycaemics, use of 39
orthostatic circulatory response 17
ototoxicity 22
over-the-counter drugs, use of 23
overview assessment 51

P
palliative care 7
patient-centred care 43, 44
pharmacists and care pathways 79, 80
pharmacodynamic changes 17, 29
pharmacokinetic changes 11, 29
pharmacy technicians, role of 77
physiological changes and ageing 10
physiotherapists, role of 74
piroxicam, use of 38
podiatrists, role of 74
polypharmacy 32-35, 37
polypharmacy and adherence 44
postural hypertension 17, 29
potassium-sparing diuretics, use of 39
practice nurses, role of 72
presbycusis 21
prescribing and adherence 45
prescribing and adverse drug reactions 45
prescribing cascade 34
prescribing in ageing Section 3, 32
psychiatric nurses, role of 72

R
rapid response 5
reconciliation of medicines 63
reduced mobility 22
reflex tachycardia 17
renal failure 14
renal function 13
repeat dispensing 65
risk and medicines 53
risk assessment 53
risk assessment tools 58

S
second order assessments 58
selective serotonin reuptake inhibitors, use of 18
self-medication risk assessment tool 58
sensory impairment rehabilitation teams, role of 75
Sherbrook questionnaire 54
sight problems 21
single assessment process 50-52
social care 74
social housing 5
socioeconomic factors 24, 25
specialist assessment 52
specialist doctors, role of 73
specialist pharmacists, role of 78
speech and language therapists, role of 74
swallowing difficulties 22
syndrome of inappropriate antidiuretic hormone (SIADH) 18

T
therapeutic drug monitoring 62
thermoregulation 18
thirst 18
tricyclic antidepressants, use of 18, 41

U
unintentional low adherence 43

V
validated risk assessment tool 58
very elderly, definition 3
visual impairment 21
visual loss 21

W
warfarin and cimetidine 41
water balance 18

Y
young elderly, definition 3