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Eighth Edition

SYMPTOMS IN THE PHARMACY

A Guide to the Management
of Common Illnesses



WILEY Blackwell

Symptoms in the Pharmacy

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8th Edition

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Preface

This is the eighth edition of our book and appears 28 years after the first. Dr Martin Duerden has joined us as co-author and we wish Dr Paul Paxton well in his retirement. Paul was instrumental in the original development of the ideas and format for the book and made a major contribution over the years. The update in this edition comes at an exciting time for pharmacists in the United Kingdom with increasing emphasis on their clinical role.

Among the changes in this new edition are

- A more explicit emphasis on the evidence base for ‘over-the-counter’ medicines and a clearer explanation of the book’s approach and evidence sources
- A visual display of the guidelines, systematic reviews and other reliable sources of information used to update the book
- Greater highlighting of ‘red flag’ symptoms/signs and explanation of their significance
- A reworked Introduction with consideration of
 - how community pharmacy teams fit within a changing NHS landscape as a source of first contact care
 - increasing digital integration of community pharmacies into wider primary care
- New sections on Erectile Dysfunction and Malaria Prevention to reflect recent POM to P changes

As for previous editions, we have received positive and constructive feedback and suggestions from pharmacists (undergraduate students, pre-registration trainees and practising pharmacists) as well as formal reviewers and have tried to act on your suggestions. We have continued to add more accounts by patients to our case studies. We thank all the pharmacists who sent us comments and we hope you like the new edition.

We once again thank Kathryn Coates and her network of mums, who provided advice on the sort of concerns and queries that they hope their pharmacists can answer.

*Alison Blenkinsopp
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John Blenkinsopp*

Introduction: How to Use This Book

Every working day, people come to the community pharmacy for advice about minor ailments and symptoms. Recent research found that the proportion of general practice and emergency department (ED) consultations for minor ailments potentially suitable for management in community pharmacy was around 13 and 5%, respectively. Encouraging self-care is a good thing, and with increasing pressure on doctors' and nurses' workload, it is likely that the community pharmacy will be even more widely used as a first port of call for minor illness. There are often local initiatives to encourage this. Members of the public present to pharmacists and their staff in a number of ways, which include

- Requesting advice about symptoms and appropriate treatment
- Asking to purchase a named medicine
- Requiring general health advice (e.g. about dietary supplements)
- Asking about effects/symptoms perceived to relate to prescribed medicines

The pharmacist's role in responding to symptoms and overseeing the sale of over-the-counter (OTC) medicines is substantial and requires a mix of knowledge and skills in diseases and their treatment. In addition, pharmacists are responsible for ensuring that their staff provide appropriate advice and recommendations. Key skills are as follows:

- Differentiation between minor and more serious symptoms
- Listening skills
- Questioning skills
- Treatment choices based on evidence of effectiveness
- The ability to pass these skills on by acting as a role model for other pharmacy staff

Working in partnership with patients

In this book we refer to the people seeking advice about symptoms as patients. It is important to recognise that many of these patients will in fact be healthy people. We use the word ‘patient’ because we feel that the terms ‘customer’ and ‘client’ do not capture the nature of consultations about health.

Pharmacists are skilled and knowledgeable about medicines and about the likely causes of illness. In the past the approach has been to see the pharmacist as expert and the patient as beneficiary of the pharmacist’s information and advice. But patients are not blank sheets or empty vessels. They have choices to make and they are experts in their own and their children’s health. The patient

- May have experienced the same or a similar condition in the past
- May have tried different treatments already
- Will have their own ideas about possible causes
- Will have views about different sorts of treatments
- May have preferences for certain treatment approaches

The pharmacist needs to take this into account during the consultation with the patient and to enable patients to participate by actively eliciting their views and preferences. Not all patients will want to engage in decision making about how to manage their symptoms, but research shows that many do. Some will want the pharmacist to simply make a decision on their behalf. What the pharmacist needs to do is to find out what the patient wants.

Much lip service has been paid to the idea of partnership working with patients. The question is how to achieve this. Healthcare professionals can only truly learn how to go about working in partnership by listening to what patients have to say. The list below comes from a study of lay people’s ‘tips’ on how consultations could be more successful. Although the study was concerned with medical consultations, many of the tips are equally relevant to pharmacists’ response to patients’ symptoms.

How to make a consultation more successful from the patient’s perspective: tips from lay people

- Introduce yourself with unknown patients.
- Keep eye contact.
- Take your time; don’t show your hurry.
- Avoid prejudice – keep an open mind.
- Treat patients as human beings and not as a bundle of symptoms.
- Pay attention to psychosocial issues.
- Take the patient seriously.
- Listen – don’t interrupt the patient.

- Show compassion; be empathic.
- Be honest without being rude.
- Avoid jargon, check if the patient understands.
- Avoid interruptions.
- Offer sources of trusted further information (leaflets, web links).

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Use these tips to reflect on your own consultations about minor illness both during and afterwards. Try to feel how the consultation is going from the patient's perspective.

Reading and listening to patients' accounts of their experience can provide valuable insights. Websites and blogs can give a window into common problems and questions, can help to see the patient perspective, and can also show how powerful social media can be in sharing experience and information (Netmums is a good example, www.netmums.com). Do not be patronising about lay networks; why not contribute your own expertise?

Do be aware that some information from these sources can be inaccurate or have poor quality, and some can create unrealistic beliefs and expectations. Others may be overtly promotional. Being a world wide web, occasionally information relates to medicines in different countries. If you are concerned about the quality or relevance of health information that has been accessed by a patient, one suggestion is to gently or tactfully point the patient towards accredited sources of information such as that provided on NHS Choices (www.nhs.uk). Another useful resource that rapidly interrogates and translates news coverage of health topics, and debunks these if necessary, is Behind the Headlines from NHS Choices (<http://www.nhs.uk/News/Pages/NewsArticles.aspx>).

Responding to a request for a named product

When a request is made to purchase a named medicine, the approach should be to consider if the person making the request might already be an expert user or may be a novice. We define the expert user as someone who has used the medicine before for the same or a similar condition and is familiar with it. While pharmacists and their staff need to ensure that the requested medicine is appropriate, they also need to bear in mind the previous knowledge and experience of the purchaser.

Research shows that the majority of pharmacy customers do not mind being asked questions about their medicine purchase. An exception to this is those who wish to buy a medicine they have used before and would prefer not to be subjected to the same questions each time they ask for the product. There are two key points here for the pharmacist: firstly, it can be helpful to briefly

explain why questions are needed, and secondly, fewer questions are normally needed when customers request a named medicine that they have used before.

A suggested sequence in response to a request for a named product

Ask whether the person has used the medicine before, and if the answer is yes, consider if any further information is needed. Quickly check on whether other medicines are being taken. If the person has not used the medicine before, more questions will be needed. One option is to follow the sequence for responding to requests for advice about symptoms (see below). It can be useful to ask how the person came to request this particular medicine; for example, have they seen an advertisement for it? Has it been recommended by a friend or family member?

Pharmacists will use their professional judgement in dealing with regular customers whom they know well and where the individual's medication history is known. The pharmacy patient medication records (PMRs) are a source of backup information for regular customers. However, for new customers where such information is not known, more questions are likely to be needed.

Responding to a request for help with symptoms

1. Information gathering: By developing rapport and by listening and questioning to obtain information about symptoms, for example, to identify problems that require referral; what treatments (if any) have helped before; what medications are being taken regularly; what the patient's ideas, concerns and expectations are about their problem and possible treatment.
2. Decision making: Is referral for a medical opinion required?
3. Treatment: The selection of possible, appropriate and effective treatments (when needed), offering options to the patient and advising on use of treatment.
4. Outcome: Advising the patient what action to take if the symptoms do not improve.

Information gathering

Most information required to make a decision and recommended treatment can be gleaned from just listening to the patient. In some cases, the patient may have prepared a story to tell you and may be dissatisfied if the story is not heard; experience suggests that the story can give you much of the information you might need. The process should start with open-type questions and perhaps an explanation of why it is necessary to ask personal questions. Some patients do

not yet understand why the pharmacist needs to ask questions before recommending treatment. An example might be the following:

- Patient* Can you give me something for my piles?
Pharmacist I'm sure I can. To help me give the best advice, though, I'd like a bit more information from you, so I need to ask a few questions.
 Is that OK?
Patient That's fine.
Pharmacist Could you just tell me what sort of trouble you get with your piles?

Hopefully, this will lead to a description of most of the symptoms required for the pharmacist to make an assessment. Other forms of open questions could include the following: How does that affect you? What sort of problems does it cause you? By carefully listening and possibly reflecting on comments made by the patient, the pharmacist can obtain a more complete picture.

- Patient* Well, I get spells of bleeding and soreness. It's been going on for years.
Pharmacist You say years?
Patient Yes, on and off for 20 years since my last pregnancy. I've seen my doctor several times and had them injected, but it keeps coming back. My doctor said that I'd have to have an operation but I don't want one; can you give me some suppositories to stop the bleeding?
Pharmacist Bleeding ... ?
Patient Yes, every time I go to the toilet blood splashes around the bowl. It's bright red.

This form of listening can be helped by asking questions to clarify points: 'I'm not sure I quite understand when you say...', or 'I'm not quite clear what you meant by...'. Another useful technique is to summarise the information so far: 'I'd just like to make sure I've got it right. You tell me you've had this problem since...'.

Once this form of information gathering has occurred, there will be some facts still missing. It is now appropriate to move onto some direct questions.

- Pharmacist* How are your bowels Has there been any change? (This question is very important to exclude a more serious cause for the symptoms that would require referral.)
Patient No, they are fine, always regular.
Pharmacist Can you tell me what sort of treatments you have used in the past, and how effective they were?

Other questions could include the following: What treatments have you tried so far this time? What sort of treatment were you hoping for today? What other medications are you taking at present? Do you have any allergies?

Decision making

Triaging is the term given to assessing the level of seriousness of a presenting condition and thus the most appropriate action. It has come to be associated with both prioritisation (e.g. as used in accident and emergency [A&E] departments) and clinical assessment. Community pharmacists have developed procedures for information gathering when responding to requests for advice that identify when the presenting problem can be managed within the pharmacy and when referral for medical advice is needed. The use of questioning to obtain the sorts of information needed is discussed below. Furthermore, in making this clinical assessment, pharmacists incorporate management of certain conditions and make recommendations about them.

The use of protocols and algorithms in the triaging process is common in many countries including the United Kingdom, with computerised decision-support systems increasingly used. It is possible that in the future computerised decision support may play a greater part in face-to-face consultations, perhaps including community pharmacies.

If the following information were obtained, then a referral would be required.

Pharmacist Could you tell me what sort of trouble you have had with your piles?
Patient Well, I get spells of bleeding and soreness. It's been going on for years, although seems worse this time
Pharmacist When you say worse, what does that mean?
Patient Well ... my bowels have been playing up and I've had some diarrhoea I have to go three or four times a day ... and this has been going on for about 2 months.

For more information on when to refer see 'D: Danger/Red flag symptoms' under the ASMETHOD mnemonic below.

Treatment

The pharmacist's background in pharmacology, therapeutics and pharmaceuticals gives a sound base on which to make logical treatment choices based on the individual patient's need, together with the characteristics of the medicine concerned. In addition to the effectiveness of the active ingredients included in the product, the pharmacist will need to consider potential interactions, cautions, contraindications and adverse reaction profile of each constituent. Evidence-based practice requires that pharmacists need to carefully think about the effectiveness of the treatments they recommend, combining this with their own and the patient's experience.

Concordance in the use of OTC medicines is important and the pharmacist will elicit the patient's preferences and discuss treatment options in this context. Some pharmacies have developed their own OTC formularies with preferred treatments that are recommended by their pharmacists and their staff.

In some areas these have been discussed with local general practitioners (GPs) and practice nurses to cover the referral of patients from the GP practice to the pharmacy. These may be area initiatives arranged by local healthcare organisations (clinical commissioning groups or health boards).

PMRs can play an important part in supporting the process of responding to symptoms. Prior to the introduction of the new community pharmacy contractual framework (CPCF) in 2005, research showed that only one in four pharmacists recorded OTC treatment on the pharmacist's own PMR system. Yet such recording can complete the profile of medication, and review of concurrent prescribed drug therapy can identify potential drug interactions and adverse effects. In addition, such record keeping can make an important contribution to clinical governance. Improvements in IT systems in pharmacies will make routine record keeping more feasible; community pharmacies now have access to part of the NHS primary care medical record (Summary Care Record, SCR). Keeping records for specific groups of patients, for example, older people, is one approach in the meantime. The CPCF for England and Wales includes a requirement to keep a record of OTC advice and treatment:

“Pharmacies will help manage minor ailments and common conditions, by the provision of advice and where appropriate, the sale of medicines, including dealing with referrals from NHS 111. Records will be kept where the pharmacist considers it relevant to the care of the patient.”

At the time of writing, digital integration of community pharmacy with the wider NHS is under active development, for example, so that electronic referrals can be made for an Urgent Medicine Supply Advanced Service (NUMSAS) from the NHS 111 service in England. The NHS 111 call handler will take and record patient consent for receipt of service and data sharing with GP.

Effectiveness of treatments

Pharmacists and their staff should, wherever possible, base treatment recommendations on evidence. For more recently introduced medicines and for those that have moved from prescription-only medicine (POM) to pharmacy (P) medicine, there is usually an adequate evidence base. For some medicines, particularly older ones, there may be little or no evidence. Here, pharmacists need to bear in mind that absence of evidence does not in itself signify absence of effectiveness. Current evidence of effectiveness is summarised in the relevant *British National Formulary* (BNF) monograph. The BNF is now updated every month online and can be found at <https://bnf.nice.org.uk/>.

Useful websites for clinical guidelines in the United Kingdom are NHS Evidence (www.evidence.nhs.uk), which includes links to the BNF (<https://www.evidence.nhs.uk/> and <https://bnf.nice.org.uk/>), Clinical Knowledge Summaries (CKS) (<https://cks.nice.org.uk>), the Scottish Intercollegiate Guideline Network (SIGN) (www.sign.ac.uk) and the National Institute for Health and Care Excellence (www.nice.org.uk). The website for NHS Choices (www.nhs.uk) includes symptom checkers and management advice for minor ailments.

Reference sources used in this book

This book has drawn wherever possible on these types of clinical guidelines and resources (CKS, NHS Choices [which draws on CKS and could be thought of as the portal to evidence for members of the public], BNF, NICE, SIGN, etc.) when discussing clinical management. When necessary, it has also drawn on evidence from high quality systematic reviews such as those produced by the Cochrane collaboration. In the absence of such reviews, randomised controlled trials may be referred to. For many common conditions, research evidence may be lacking as treatment approaches have evolved and developed over many years, and in such cases a consensus of best practice has usually been agreed (e.g. within CKS, or public health guidance).

Also, in this book

Key interactions between OTC treatments and other drugs are included in each section of this book. For further information, the BNF provides an alphabetical listing of drugs and interactions, together with an indication of clinical significance. In this book, generic drug names are *italicised*.

For symptoms discussed in this book, the section ‘Management’ includes brief information about the efficacy, advantages and disadvantages of possible therapeutic options. Also included are useful points of information for patients about the optimum use of OTC treatments, under the heading ‘Practical points’. At any one time, not all of the medicines that could be sold OTC are available as OTC products. Throughout the book we have included the names of medicines and, where possible, have also said where there is an OTC product available at the time of writing.

Some sections of the book use the expression ‘referral to doctor’. This is a commonly used expression within pharmacies and is generally well understood by patients. Increasingly in primary care and out of hours (OOH) centres and Emergency Departments (EDs, also referred to as accident and emergency or A & E) patients may not see the doctor directly. Often trained nurses may assess patients, and sometimes suitably qualified clinical pharmacists, and they may prescribe treatment. We have used this phrase for convenience, but sometimes if these alternative systems are fairly well established in your area, this may need explaining to patients.

Pharmacists are likely to be increasingly involved in the management of long-term chronic or intermittent conditions. Here, monitoring of progress is important and a series of consultations is likely rather than just one.

Developing your consultation skills

Effective consultation skills are the key to finding out what the patient’s needs are and deciding whether you can manage the symptoms or whether they might need to be referred to another practitioner. A useful framework for thinking

about and improving your consultation skills is provided by Roger Neighbour's five 'checkpoints'.

A	Connecting	'Have we got a rapport?'	Rapport building skills
B	Summarising (clinical process)	'Can I demonstrate to the patient I have understood why she has come?'	Listening and eliciting skills (history taking and summarising to the patient)
C	Handing over	'Has the patient accepted the management plan we agreed?'	Concordance skills
D	Safety netting	'Have I anticipated all likely outcomes?'	Contingency plans
E	Housekeeping*	'Am I in good condition for the next patient?'	Taking care of yourself

*Housekeeping – This is a period of reflection where practitioners look at themselves and their response to the consultation. It may involve having a brief chat with a colleague, a coffee, or merely acknowledging to oneself the effect a particular consultation has had.

Structuring the consultation

It is very useful to adopt a framework to help structure the consultation. Pharmacists need to develop a method of information seeking that works for them. There is no right and wrong here. Some pharmacists find that a mnemonic such as the two shown below can be useful, although care needs to be taken not to recite questions in rote fashion without considering their relevance to the individual case. Good listening will glean much of the information required. The mnemonic can be a prompt to ensure all relevant information has been obtained. Developing rapport is essential to obtain good information, and reading out a list of questions can be off-putting and counterproductive.

W – Who is the patient and what are the symptoms?

H – How long have the symptoms been present?

A – Action taken?

M – Medication being taken?

W: The pharmacist must first establish the identity of the patient: the person in the pharmacy might be there on someone else's behalf. The exact nature of the symptoms should be established: patients often self-diagnose illnesses, and the pharmacist must not accept such a self-diagnosis at face value.

H: Duration of symptoms can be an important indicator of whether referral to the doctor might be required. In general, the longer the duration, the more likely the possibility of a serious rather than a minor case. Most minor conditions are self-limiting and should clear up within a few days.

A: Any action taken by the patient should be established, including the use of any medication to treat the symptoms. About one in two patients will have tried at least one remedy before seeking the pharmacist's advice. Treatment may have consisted of OTC medicines bought from the pharmacy or elsewhere, other medicines prescribed by the doctor on this or a previous occasion or medicines borrowed from a friend or neighbour or found in the medicine cabinet. Homoeopathic or herbal remedies may have been used. The cultural traditions of people from different ethnic backgrounds include the use of various remedies that may not be considered medicines.

If the patient has used one or more apparently appropriate treatments without improvement, referral to the family doctor may be the best course of action.

M: The identity of any medicines taken regularly by the patient is important for two reasons: possible interactions and potential adverse reactions. Such medicines will usually be those prescribed by the doctor but may also include OTC products and complementary or alternative remedies. The pharmacist needs to know about all the medicines being taken by the patient because of the potential for interaction with any treatment that the pharmacist might recommend.

The community pharmacist has an increasingly important role in detecting adverse drug reactions, and consideration should be given to the possibility that the patient's symptoms might be an adverse effect caused by medication. For example, whether gastric symptoms such as indigestion might be due to a non-steroidal anti-inflammatory drug (NSAID) taken on prescription or a cough might be due to an angiotensin-converting enzyme (ACE) inhibitor being taken by the patient. When the pharmacist suspects an adverse drug reaction to a prescribed medicine, the pharmacist should discuss with the prescriber what actions should be taken (perhaps including a Yellow Card report to the Commission on Human Medicines, which can now be made by the pharmacist or patient) and the prescriber may wish the patient to be referred back to them so that treatment can be reviewed.

The second mnemonic, ASMETHOD, was developed by Derek Balon, a community pharmacist in London:

A – Age and appearance

S – Self or someone else

M – Medication

E – Extra medicines

T – Time persisting

H – History

O – Other symptoms

D – Danger/red flag symptoms.

Some of the areas covered by the ASMETHOD list have been discussed already. The others can now be considered.

A: Age and appearance

The appearance of the patient can be a useful indicator of whether a minor or more serious condition is involved. If the patient looks ill, for example, pale, clammy, flushed or grey, the pharmacist should consider referral to the doctor. As far as children are concerned, appearance is important, but in addition the pharmacist can ask the parent whether the child is generally well. A child who is cheerful and energetic is unlikely to have anything other than a minor problem, whereas one who is quiet and listless, or who is fractious, irritable and feverish, might require referral.

The age of the patient is important because the pharmacist will consider some symptoms as potentially more serious according to age. For example, acute diarrhoea in an otherwise healthy adult could reasonably be treated by the pharmacist. However, such symptoms in a baby could produce dehydration more quickly; elderly patients are also at a higher risk of becoming dehydrated. Oral thrush is common in babies, while less common in older children and adults; the pharmacist's decision about whether to treat or refer could therefore be influenced by age.

Age will play an important part in determining any treatment offered by the pharmacist. Some preparations are not recommended at all for children under 12 years, for example, *loperamide*. *Hydrocortisone* cream and ointment should not be recommended for children aged under 10 years; *aspirin* should not be used in children aged under 16 years; corticosteroid nasal sprays and *omeprazole* should not be recommended for those under 18 years of age. Others must be given in a reduced dose or as a paediatric formulation, and the pharmacist will thus consider recommendations carefully.

Other OTC preparations have a minimum specified age, for example, 16 years for emergency hormonal contraception, 12 years for nicotine replacement therapy (NRT) and 18 years for treatments of vaginal thrush. Pharmacists are used to assessing patients' approximate age and would not routinely ask for proof of age here, unless there was a specific reason to do so.

S: Clarification as to who is the patient – Self or Someone else?

M: Medication regularly taken, on prescription or OTC

E: Extra medication tried to treat the current symptoms

T: Time, that is, duration of symptoms

H: History

There are two aspects to the term 'history' in relation to responding to symptoms: first, the history of the symptom being presented and second, previous medical history. For example, does the patient have diabetes, hypertension or asthma? PMRs should be used to record relevant existing conditions.

Questioning about the history of a condition may be useful; how and when the problem began, how it has progressed and so on. If the patient has had the problem before, previous episodes should be asked about to determine the action taken by the patient and its degree of success. In recurrent mouth ulcers, for example, do the current ulcers resemble the previous ones? Was the doctor

or dentist seen on previous occasions? Was any treatment prescribed or OTC medicine purchased, and, if so, did it work?

In asking about the history, the timing of particular symptoms can give valuable clues as to possible causes. The attacks of heartburn that occur after going to bed or on stooping or bending down are indeed likely to be due to reflux, whereas those that happen during exertion such as exercise or heavy work may not be.

History taking is particularly important when assessing skin disease. Pharmacists often think, erroneously, that recognition of the appearance of skin conditions is the most important factor in responding to such symptoms. In fact, many dermatologists would argue that history taking is more important because some skin conditions resemble each other in appearance. Furthermore, the appearance may be altered during the course of the condition. For example, the use of a topical corticosteroid inappropriately on infected skin may substantially change the appearance; allergy to ingredients such as local anaesthetics may produce a problem in addition to the original complaint. The pharmacist must therefore know which creams, ointments or lotions have been applied.

O: Other symptoms

Patients generally tend to complain about the symptoms that concern them most. The pharmacist should always ask whether the patient has noticed any other symptoms or anything different from usual because, for various reasons, patients may not volunteer all the important information. Embarrassment may be one such reason, so patients experiencing rectal bleeding may only mention that they have piles or are constipated.

The importance or significance of symptoms may not be recognised by patients, for example, those who have constipation as a side effect from a tricyclic antidepressant will probably not mention their dry mouth because they can see no link or connection between the two problems.

D: Danger/red flag symptoms

These are the symptoms or combinations of symptoms that should ring warning bells for pharmacists because immediate referral to the doctor is required. They are often called ‘red flag’ symptoms and we refer to them as such throughout the rest of this book. Blood in the sputum, vomit, urine or faeces would be examples of such symptoms, as would unexplained weight loss. Red flag symptoms are included and discussed in each section of this book so that their significance can be understood by the pharmacist.

Decision making: risk assessment

Most of the symptoms dealt with by the community pharmacist will be of a minor and self-limiting nature and should resolve within a few days. However, sometimes this will not be the case, and it is the pharmacist’s responsibility

to make sure that patients know what to do if they do not get better. This is sometimes called ‘safety netting’. Here, a defined timescale should be used, as suggested in the relevant sections of this book, so that when offering treatment, the pharmacist can set a time beyond which the patient should seek medical advice if symptoms do not improve. The ‘treatment timescales’ outlined in this book naturally vary according to the symptom and sometimes according to the patient’s age, but are usually less than 1 week.

In making decisions the pharmacist assesses the possible risk to the patient of different decision paths. The possible reasons for referral for further advice include the following:

- Red flag signs or symptoms
- Unknown cause for symptoms
- Incomplete information (e.g. an ear condition where the ear has not been examined)
- Duration or recurrence of symptoms
- Potential need for a prescription-only medicine

As a general rule, the following indicate a higher risk of a serious condition and should make the pharmacist consider referring the patient to the doctor:

- Long duration of symptoms
- Recurring or worsening problems
- Severe pain
- Failed medication (one or more appropriate medicines used already, without improvement)
- Suspected adverse drug reactions (to prescription or OTC medicine)
- Red flag symptoms

Discussions with local family doctors can assist the development of protocols and guidelines for referral, and we recommend that pharmacists take the opportunity to develop such guidelines with their medical and nursing colleagues in primary care, where possible. Often this process can be facilitated by the local healthcare organisation (clinical commissioning group or health board). Joint discussions of this sort can lead to effective two-way referral systems and local agreements about preferred treatments.

Accidents and injuries

Pharmacists are often asked to offer advice about injuries, many of which are likely to be minor with no need for onward referral. The list below shows the types of injuries that would be classified as ‘minor’.

- Cuts, grazes and bruising
- Wounds, including those that may need stitches
- Minor burns and scalds

- Foreign bodies in eye, nose or ear
- Tetanus immunisation after an injury
- Minor eye problems
- Insect bites or other animal bites
- Minor head injuries where there has been no loss of consciousness or vomiting
- Minor injuries to legs below the knee and arms below the elbow, where patients can bear the weight through their foot or move their fingers
- Minor nose bleeds

Pharmacists need to be familiar with the assessment and treatment of minor injuries in order to make a decision about when and where referral is needed. Referral to the ED may need to be considered in certain circumstances. The list below provides general guidance on when a person might need to immediately go to the ED.

- There has been a serious head injury with loss of consciousness or heavy bleeding.
- The person is, or has been, unconscious or confused for whatever reason.
- There is a suspected broken bone or dislocation.
- The person is experiencing severe chest pain or is having trouble breathing.
- The person is experiencing severe stomach ache that cannot be treated by OTC remedies.
- There is severe bleeding from any part of the body.

Each attendance at the ED costs the NHS over £100 and pharmacies have an important role in considering whether to refer a patient to a minor injuries unit or walk-in service (if there is one locally) and explaining to patients about when ED attendance is needed.

Privacy in the pharmacy

The vast majority of community pharmacies in England and Wales have a consultation area. Research shows that most pharmacy customers feel that the level of privacy available for a pharmacy consultation is now acceptable. There is some evidence of a gap between patients' and pharmacists' perceptions of privacy.

Pharmacists observe from their own experience that some patients are content to discuss even potentially sensitive subjects in the pharmacy. While this is true for some people, others are put off asking for advice because of insufficient privacy.

The pharmacist should always bear the question of privacy in mind and, when possible, seek to create an atmosphere of confidentiality if sensitive problems are to be discussed. Using professional judgement and personal experience, the pharmacist can look for signs of hesitancy or embarrassment on the

patient's part and can suggest moving to a quieter part of the pharmacy or to the consultation area to continue the conversation.

Patient group directions and symptoms in the pharmacy

A patient group direction (PGD) is a legal framework to allow the safe supply of a medicine for specific patients. PGDs are widely used in the NHS and in some areas community pharmacies are commissioned to provide a service that may include one or more PGDs, the most common being stop smoking services, the supply of emergency hormonal contraception, and the provision of influenza vaccinations. PGDs can also be used in private sector services. Pharmacies providing NHS or private PGDs are required to meet specific criteria for quality and safety of services. Such requirements usually include demonstration of competencies and the keeping of certain records. The list below shows the range of PGDs that might be seen in community pharmacies.

- Erectile dysfunction
- Antimalarials
- Influenza and hepatitis B vaccine
- Meningitis vaccine
- Stop smoking (varenicline)
- Hair loss (private supply)
- Emergency contraception
- Salbutamol inhalers (for repeat supply)
- Oral contraception
- Cystitis treatment (*trimethoprim*)
- Weight loss (*orlistat* 120 mg)

Working in partnership with family doctors and nurse colleagues in primary care

Community pharmacists are the key gateway into the formal NHS through their filtering of symptoms, with referral to the GP surgery, the OOH service or the ED when necessary. This filtering is more correctly termed triaging and is increasingly important in maximising the skills and input of pharmacists and nurses.

Many community pharmacists are now working more closely with local GP practices and local healthcare organisations by participating in NHS minor ailment schemes. Scotland has had a national service with electronic records for several years, and there has been discussion about a national service in England. Currently in England and Wales, this is a locally-commissioned service decided upon by local healthcare organisations.

Some areas have policies to dissuade GPs from prescribing OTC medicines and require patients to buy these.

There is a great deal of scope for joint working in the area of OTC medicines. We suggest that pharmacists might consider the following steps:

- Agreeing guidelines for referral with local family doctors, perhaps including feedback from the GP to the pharmacist on the outcome of the referral. Two-way referrals with OOH centres are also helpful.
- Using PMRs to keep information on OTC recommendations to patients.
- Keeping local family doctors and nurses informed about POM to P changes.
- Using referral forms when recommending that a patient sees his or her doctor.
- Agreeing an OTC formulary with local GPs and practice nurses (or at local healthcare organisation level).
- Agreeing with local GPs the response to suspected adverse drug reactions.

Actions like these will help to improve communication, will increase GPs' and nurses' confidence in the contribution the pharmacist can make to patient care and will also support the pharmacist's integration into the primary care team. Patients will also appreciate this work and have greater confidence and understanding of pharmacists as part of their clinical support network.

About the Companion Website

This book is accompanied by a companion website:

www.wiley.com/go/Blenkinsopp/SymptomsPharmacy8e

The website includes:

- Multiple choice questions and answers for practice.

Chapter 1

Respiratory Problems

Colds and flu

The common cold comprises a mixture of viral upper respiratory tract infections (URTI). Although colds are nearly always self-limiting, some people go to their general practitioner (GP) for treatment, and increasingly there is concern about overprescribing of antibiotics when this happens as these do not improve outcome. Self-management or getting advice and support from a pharmacist are usually much better options. Many people choose to buy over-the-counter (OTC) medicines for symptomatic relief and this is to be encouraged. However, some of the ingredients of OTC cold remedies may interact with prescribed therapy, occasionally with serious consequences. Therefore, careful attention needs to be given to taking a medication history and selecting an appropriate product where indicated. Educating people on the self-limiting nature of symptoms is also important.

What you need to know

Age (approximate)
Child, adult
Duration of symptoms
Runny/blocked nose
Summer cold
Sneezing/coughing
Generalised aches/headache
High temperature

- 2 Respiratory Problems
- Sore throat
 - Earache
 - Facial pain/frontal headache
 - Flu
 - Asthma
 - Previous history
 - Allergic rhinitis
 - Bronchitis
 - Heart disease
 - Present medication

Significance of questions and answers

Age

Establishing who the patient is – child or adult – will influence the pharmacist's decision about the necessity of referral to the doctor and choice of treatment. Children are more susceptible to URTI than are adults and may get complications. Very young children and babies are also at increased risk of bronchiolitis, pneumonia and croup, and these conditions need to be considered. Older people, particularly if they are frail and have co-morbidities (e.g. diabetes), may be at risk of complications such as pneumonia.

Duration

Patients may describe a rapid onset of symptoms over hours or a gradual onset over a day or two; the former is said to be more commonly true of flu, the latter of the common cold. Such guidelines are general rather than definitive. The symptoms of the common cold usually last for 7–14 days. Some symptoms, such as a cough, may persist after the worst of the cold is over and coughing for 3 weeks is not unusual. This is often poorly recognised, so expectations of recovery may be unrealistic, and it is worth advising patients that this may happen.

Box 1.1 NICE Guideline: Respiratory tract infections (self-limiting)

The average total lengths of the illnesses are as follows:

- Acute otitis media: 4 days
- Acute sore throat/acute pharyngitis/acute tonsillitis: 1 week
- Common cold: 1½ weeks
- Acute rhinosinusitis: 2½ weeks
- Acute cough/acute bronchitis: 3 weeks

Source: NICE Clinical Guideline 69 (CG69) (July 2008).

Symptoms

Runny/blocked nose

Most patients will experience a runny nose (rhinorrhoea). This is initially a clear watery fluid, which is then followed by the production of thicker and more tenacious, often coloured mucus. Nasal congestion occurs because of dilatation of blood vessels, leading to swelling of the lining surfaces of the nose and can cause discomfort. This swelling narrows the nasal passages that are further blocked by increased mucus production.

Summer colds

In summer colds, the main symptoms are nasal congestion, sneezing and irritant watery eyes; similar symptoms are commonly caused by allergic rhinitis (see Allergic rhinitis: Duration, later in this chapter).

Sneezing/coughing

Sneezing occurs because the nasal passages are irritated and congested. A cough may be present (see Cough: What you need to know, later in this chapter) either because the pharynx is irritated (producing a dry, tickly cough) or as a result of irritation of the bronchus caused by postnasal drip.

Aches and pains/headache

Headaches may be experienced because of inflammation and congestion of the nasal passages and sinuses. A fever may also cause headache. A persistent or worsening frontal headache (pain above or below the eyes) may be due to sinusitis (see below). People often report muscular and joint aches and this is more likely to occur with flu than with the common cold (see below).

High temperature

Those suffering from a cold often complain of feeling hot, but in general a high temperature (e.g. exceeding 38°C) will not be present. The presence of fever may be an indication that the patient has flu rather than a cold (see below).

Sore throat

The throat often feels dry and sore during a cold and may sometimes be the first sign that a cold is imminent. A sore throat can be a prominent feature in colds and flu, and it is often treated erroneously as a throat infection (see the separate section on sore throat later in this chapter).

Earache

Earache is a common complication of colds, especially in children. When nasal catarrh is present, the ear can feel blocked. This is due to blockage of the Eustachian tube, which is the tube connecting the middle ear to the back of the nasal cavity. Under normal circumstances, the middle ear is an air-containing compartment. However, if the Eustachian tube is blocked, the ear can no longer be cleared or air pressure equilibrated by swallowing and may feel uncomfortable and deaf. This situation often resolves spontaneously, but decongestants and inhalations can be helpful (see 'Management' below). Sometimes the situation worsens when the middle ear fills up with fluid and is under pressure. When this does occur, the ear becomes acutely painful and this is called acute otitis media (AOM). AOM is common in young children and usually the best treatment is pain relief. A secondary infection may follow, but even in the context of infection, the evidence for antibiotic use is conflicting with some trials showing benefit and others showing no benefit from taking antibiotics. Overall the evidence from clinical trials shows that without antibiotic treatment, symptoms will improve within 24 h in 60% of children and will settle spontaneously within 3 days in 80% of children. Antibiotics have also been shown to increase the risk of vomiting, diarrhoea and rash, and these risks can be greater than the potential for benefit. Antibiotics are most useful in children under 2 years of age with pain in both ears or with a painful ear with discharge from that ear (otorrhoea), so in these circumstances suggesting getting a fairly rapid doctor or nurse assessment is appropriate. Do not advise that antibiotics may be needed as this raises expectations that may not be met; it is better to say that examination is required.

In summary, a painful ear can initially be managed by the pharmacist. There is evidence that *paracetamol* and *ibuprofen* are effective treatments for AOM. However, if pain were to persist or be associated with an unwell child (e.g. high fever, very restless or listless, vomiting), then referral to the GP would be advisable.

Facial pain/frontal headache

Facial pain or frontal headache may signify sinusitis. The sinuses are air-containing spaces in the bony structures adjacent to the nose (maxillary sinuses) and above the eyes (frontal sinuses). During a cold, their lining surfaces become inflamed and swollen, producing catarrh. The secretions drain into the nasal cavity. If the drainage passage becomes blocked, fluid builds up in the sinus. This causes pain from pressure that is called acute sinusitis. It can become secondarily (bacterially) infected but this is rare. If this happens, more persistent pain arises in the sinus areas. The maxillary sinuses are most commonly involved. A recent systematic review indicated only a small benefit from antibiotics even in acute sinusitis that had lasted for longer than 7 days.

Antibiotics however may be recommended if the symptoms of sinusitis persist for more than 10 days or are severe with fever ($>38^{\circ}\text{C}$), severe local pain,

discoloured or purulent nasal discharge or if a marked deterioration in sinusitis symptoms develops following a recent cold that had started to settle (so called ‘double sickening’). These may be reasons to direct patients for further assessment. When these features are not present, treatment should be aimed at symptom relief. Options include *paracetamol* or *ibuprofen* to reduce pain; an intranasal decongestant (for a maximum of 1 week, in adults only) may help if nasal congestion is problematic. Oral decongestants, commonly found in combination products with an analgesic, are generally not recommended for sinusitis. A randomised controlled trial found that steam inhalations had little effect in sinusitis but that saline nasal irrigation improved symptoms, patients were more likely to feel they could manage the problem themselves and used less OTC medication. Pharmacists can recommend a short video showing patients how to use saline nasal irrigation that was used in the trial. Drinking adequate fluids and rest will generally help.

Flu

Differentiating between colds and flu may be needed to make a decision about whether referral is needed for patients in ‘at-risk’ groups who might need to be considered for antiviral treatment. Flu is generally considered to be likely if

- Temperature is 38 °C or higher (37.5 °C in the elderly).
- A minimum of one respiratory symptom – cough, sore throat, nasal congestion or rhinorrhoea – is present.
- A minimum of one constitutional symptom – headache, malaise, myalgia, sweats/chills, prostration – is present.

Infection with the influenza virus usually starts abruptly with sweats and chills, muscular aches and pains in the limbs, dry sore throat, cough and high temperature. Someone with flu may be bedbound and unable to go about usual activities, and this differentiates it from viruses causing cold. There is often a period of generalised weakness and malaise following the worst of the symptoms, and this may last a week or more. A dry cough may also persist for some time.

True influenza is relatively uncommon compared with the large number of flu-like infections that occur, but when it does occur, it can spread rapidly throughout a community (it is then said to be a ‘flu epidemic’). Influenza is generally more unpleasant than a cold, although both usually settle with no need for referral.

Because of damage caused to the airways by the influenza virus, flu can be complicated by secondary lung infection (pneumonia or pneumonitis). Such complications are much more likely to occur in the very young, who have not yet developed resistance, the very old and frail, who may have impaired immunological responses, and those who have pre-existing heart disease or respiratory disease (asthma or chronic obstructive pulmonary disease [COPD]), where further damage is more critical. People with kidney disease, a weak

6 Respiratory Problems

immune system or diabetes are also at greater risk of pneumonia. Warning that pneumonia complications are developing may be given by a severe or productive cough, persisting high fever, pleuritic-type chest pain (see Respiratory symptoms for direct referral, at the end of this chapter) or delirium. If this is suspected, people with such symptoms need urgent referral for further assessment.

Asthma

Asthmatic attacks can be triggered by respiratory viral infections. Most asthma sufferers learn to start or increase their usual medication to prevent such an occurrence. However, if these measures fail, referral is recommended.

Previous history

People with a history of COPD, also sometimes called chronic bronchitis or emphysema, may need referral. COPD should be considered in patients over the age of 35 who are or who have been long-term smokers and who have shortness of breath on exercise, persistent cough, regular sputum production and frequent winter ‘bronchitis’ or wheeze. Ideally all COPD patients should get an annual flu immunisation, although this will not protect against colds or all strains of flu virus. Such patients may be advised to see their doctor if they have a bad cold or flu-like infection, as it often causes an exacerbation of their COPD. The main signs to watch for are worsening cough, purulence of sputum and increasing shortness of breath. In this situation, the doctor is likely to increase the dose of inhaled anticholinergics and β_2 -agonists and prescribe oral steroids and a course of antibiotics. Certain OTC medications are best avoided in those with heart disease, hypertension and diabetes (see section on Management: Decongestants, earlier in Colds and flu).

Present medication

The pharmacist must ascertain if any medicines are being taken by the patient. It is important to remember that interactions might occur with some of the constituents of commonly used OTC medicines.

If medication has already been tried for relief of cold symptoms with no improvement, and if the remedies tried were appropriate and used for a sufficient amount of time, referral for primary care assessment might occasionally be needed. In most cases of colds and flu, however, OTC treatment will be appropriate.

When to refer

Earache not settling with analgesic (see above)
In the very young

In the frail and old

In those with heart or lung disease, for example, COPD, kidney disease, diabetes, compromised immune system

With persisting fever and productive cough

With delirium

With pleuritic-type chest pain

Asthma

Colds and flu: Hygiene advice

When people seek help with symptoms of a cold or flu, it is also worth giving advice on how to prevent transmission of infection. Transmission of the common cold cannot be completely prevented, but basic good hygiene measures may help to prevent spread. These include washing hands frequently with soap and hot water when the person has symptoms of the common cold or comes into contact with someone who has symptoms, avoiding the sharing of towels, and, for children, discouraging the sharing of toys with an infected child.

Treatment timescale

Once the pharmacist has recommended treatment, patients should be advised to see their nurse or doctor in several weeks (see Box 1.1 earlier in Colds and flu) if the respiratory infection has not improved or earlier if there is a marked deterioration in symptoms. If they are unsure, they can check with the pharmacist first; sometimes all that is needed is further reassurance.

Management

The use of OTC medicines in the treatment of colds and flu is widespread, and such products are heavily advertised to the public. There is little doubt that appropriate symptomatic treatment can make the patient feel better; the placebo effect also plays an important part here. For some medicines used in the treatment of colds, particularly older medicines, there is little evidence available with which to judge effectiveness.

The pharmacist's role is to select appropriate treatment based on the patient's symptoms and available evidence, and taking into account the patient's preferences. Polypharmacy abounds in the area of cold treatments and patients should not be overtreated. The discussion of medicines that follows is based on individual constituents; the pharmacist can decide whether a combination of two or more drugs is needed.

The UK Commission on Human Medicines (CHM) made recommendations in 2009 about the safer use of cough and cold medicines for children under 12 years of age. As a result, the UK Medicines and Healthcare products and

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Regulatory Agency (MHRA) advised that the following OTC cough and cold remedies should no longer be sold for children under 6 years:

- Antitussives: Dextromethorphan and pholcodine
- Expectorants: Guaifenesin and ipecacuanha
- Nasal decongestants: Ephedrine, oxymetazoline, phenylephrine, pseudoephedrine and xylometazoline
- Antihistamines: Brompheniramine, chlorphenamine, diphenhydramine, doxylamine, promethazine and triprolidine

Children aged between 6 and 12 years can still use these preparations, but with an advice to limit treatment to 5 days or less. The MHRA rationale was that for children aged over 6 years,

the risk from these ingredients is reduced because: they suffer from cough and cold less frequently and consequently require medicines less often; with increased age and size, they tolerate the medicines better; and they can say if the medicine is working.

Simple cough remedies (such as those containing glycerine, honey or lemon) are still licensed for use in children. Alternatively, for children over the age of 1 year, a warm drink of honey and lemon could be given.

Remember that all aspirin-containing products are contraindicated in all children under the age of 16. This includes oral salicylate gels.

Decongestants

Sympathomimetics

Sympathomimetics (e.g. *pseudoephedrine*) can be effective in reducing the symptoms of nasal congestion. Nasal decongestants work by constricting the dilated blood vessels in the nasal mucosa. The nasal membranes are effectively shrunk, so drainage of mucus and circulation of air is improved, and the feeling of nasal stuffiness is relieved. These medicines can be given orally or applied topically. Tablets and syrups are available, as are nasal sprays and drops.

If nasal sprays/drops are to be recommended, the pharmacist should advise the patient not to use the product for longer than 7 days. Rebound congestion (*rhinitis medicamentosa*) can occur with topically applied, but not oral sympathomimetics. The decongestant effects of topical products containing *oxymetazoline* or *xylometazoline* are longer lasting (up to 6 h) than those of some other preparations such as *ephedrine*. The pharmacist can give useful advice about the correct way to administer nasal drops and sprays. The MHRA advises that these decongestants can be used in children between the ages of 6 and 12 years, but should not be used in children under the age of 6.

A combination topical product containing *xylometazoline* and *ipratropium* in a nasal spray is also available through pharmacy sales (P) for the symptomatic treatment of nasal congestion and rhinorrhoea (runny nose) in connection with common colds, in adults aged 18 years and above. Use should not exceed 7 days. *Ipratropium* is an anticholinergic drug that helps to reduce mucus secretion.

Problems

Ephedrine and *pseudoephedrine*, when taken orally, have the theoretical potential to keep patients awake because of their stimulating effects on the central nervous system (CNS). In general, *ephedrine* is more likely to produce this effect than *pseudoephedrine*. A systematic review found that the risk of insomnia with *pseudoephedrine* was small compared with placebo.

Sympathomimetics can cause stimulation of the heart and an increase in blood pressure and may affect diabetic control because they can increase blood glucose levels. They should be used with caution (as per current *British National Formulary* (BNF) warnings) in people with diabetes, those with heart disease or hypertension and those with hyperthyroidism. The hearts of hyperthyroid patients are more vulnerable to irregularity, so stimulation of the heart is particularly undesirable.

Sympathomimetics are most likely to cause these unwanted effects when taken by mouth and are unlikely to do so when used topically. Nasal drops and sprays containing sympathomimetics can therefore be recommended for those patients in whom the oral drugs are less suitable. Saline nasal drops, things like menthol inhalations, or sitting in a steamy room (e.g. in a bathroom with a running shower) would be other possible choices for patients in this group.

The interaction between sympathomimetics and monoamine oxidase inhibitors (MAOIs) is potentially extremely serious (although MAOIs are rarely prescribed these days); a hypertensive crisis can be induced and several deaths have occurred in such cases. This interaction can occur up to 2 weeks after a patient has stopped taking the MAOI, so the pharmacist must establish any recently discontinued medication. There is a possibility that topically applied sympathomimetics could induce such a reaction in a patient taking an MAOI. It is therefore advisable to avoid both oral and topical sympathomimetics in patients taking MAOIs.

Cautions

Diabetes

Heart disease

Hypertension

Hyperthyroidism

Interactions: Avoid in those taking

MAOIs (e.g. *phenelzine*)

Reversible inhibitors of monoamine oxidase A (e.g. *moclobemide*)

Beta-blockers

Tricyclic antidepressants (e.g. *amitriptyline*) – a theoretical interaction that appears not to be a problem in practice

Restrictions on sales of pseudoephedrine and ephedrine

In response to concerns about the possible extraction of *pseudoephedrine* and *ephedrine* from OTC products for use in the manufacture of methylamphetamine (crystal meth), restrictions were introduced in 2007. The medicines are available only in small pack sizes, with a limit of one pack per customer, and their sale has to be made by a pharmacist or by suitably trained pharmacy staff under the supervision of a pharmacist. When the MHRA reviewed these arrangements in 2015, they concluded that these measures had made an important contribution to managing the risk of misuse of pseudoephedrine and ephedrine in the United Kingdom.

Antihistamines (see also Allergic rhinitis (hay fever): Management, later in this chapter)

Antihistamines could theoretically reduce some of the symptoms of a cold: runny nose (rhinorrhoea) and sneezing. These effects are due to the anticholinergic action of antihistamines. The older drugs (e.g. *chlorphenamine* (*chlorpheniramine*), *promethazine*) have more pronounced anticholinergic actions than the non-sedating antihistamines (e.g. *loratadine*, *cetirizine*, *acrivastine*). Therefore the non-sedating antihistamines are less effective in reducing symptoms of a cold. Antihistamines are not so effective at reducing nasal congestion. Some (e.g. *diphenhydramine*) may also be included in cold remedies for their supposed antitussive action (see Cough: Management: Cough remedies – Other constituents, later in this chapter) or to help the patient to sleep (included in combination products intended to be taken at night). Evidence indicates that antihistamines alone are not of benefit in the common cold but that they may offer limited benefit for adults in combination with decongestants, analgesics and cough suppressants.

Interactions: The problem of using antihistamines, particularly the older types (e.g. *chlorphenamine*), is that they can cause drowsiness. Alcohol will increase this effect, as will drugs such as *benzodiazepines* or *phenothiazines* that have the ability to cause drowsiness or CNS depression. Antihistamines with known sedative effects should not be recommended for anyone who is driving, or in whom an impaired level of consciousness may be dangerous (e.g. operators of machinery at work).

Because of their anticholinergic activity, the older antihistamines may produce the same adverse effects as anticholinergic drugs (i.e. dry mouth, blurred vision, constipation and urinary retention). These effects are more likely if antihistamines are given concurrently with anticholinergics such as *hyoscine* or with drugs that have anticholinergic actions such as tricyclic antidepressants or bladder antispasmodics (e.g. *oxybutynin*). Anticholinergic adverse effects

are also more likely to be problematic if antihistamines are taken by people using some inhaled drugs containing anticholinergics used for COPD, such as *ipratropium* or *tiotropium*. In older and frail people, the combined effects of several drugs with anticholinergic properties can be particularly troublesome (often referred to as “anticholinergic load”) and also aggravate confusion or memory problems.

Antihistamines should be avoided in patients with a history of angle-closure glaucoma (usually this will have presented acutely) or prostatic symptoms because of possible anticholinergic side effects. In patients with angle-closure glaucoma, they may cause increased intraocular pressure. Anticholinergic drugs can occasionally precipitate acute urinary retention in predisposed patients, for example, men with prostatic problems (lower urinary tract symptoms (LUTS)) where bladder outlet obstruction causes poor urinary flow.

While the probability of such serious adverse effects is low, the pharmacist should be aware of the potential for possible adverse effects from OTC medicines.

At high doses, antihistamines can produce stimulation rather than depression of the CNS. There have been occasional reports of fits being induced at very high doses of antihistamines, and it is for this reason that it has been argued that they should be avoided in epileptic patients. However, this appears to be a theoretical rather than a practical problem.

Interactions

- Alcohol
- Hypnotics
- Sedatives
- Betahistine
- Anticholinergics

Side effects

- Drowsiness (driving, occupational hazard)
- Constipation
- Blurred vision
- Urinary symptoms
- Confusion

Cautions

- Closed-angle glaucoma
- LUTS in men
- Epilepsy
- Liver disease

Zinc

Two systematic reviews have found limited evidence that *zinc gluconate* or *acetate lozenges* may reduce continuing symptoms at 7 days compared

with placebo. It is therefore generally not recommended that people take zinc supplements for colds.

Echinacea

A systematic review of trials indicated that some echinacea preparations may be better than placebo or no treatment for the prevention and treatment of colds. However, due to variations in preparations containing echinacea, there is insufficient evidence to recommend a specific product. Echinacea has been reported to cause allergic reactions and rash.

Vitamin C

A systematic review found that high-dose vitamin C (over 1 g/day) taken prophylactically could reduce the duration of colds by a slight amount (about 8%). Although it is relatively cheap and safe, general advice is that there is not much to be gained from taking extra vitamin C for colds.

Cough remedies

For discussion of products for the treatment of cough, see the section on cough later in this chapter.

Analgesics

For details of analgesics, their uses and side effects, see Chapter 4 Painful Conditions: Management.

Products for sore throats

For discussion of products for the treatment of sore throat, see the separate section later in this chapter.

Practical points

Inhalations

Breathing in warm moist air generated by steam (with or without the addition of aromatic oils) has traditionally been used to reduce nasal congestion and soothe the air passages. The BNF warns against using boiling water because of the risk of burns. Inhalants for use on handkerchiefs, bedclothes and pillowcases are available. These usually contain aromatic ingredients such as eucalyptus or menthol. There has been a move away from recommending steam inhalations for children because of the risk of scalding, and aromatic inhalants should not be used in those 3 months or younger.

Nasal sprays or drops?

Nasal sprays are preferable for adults and children over 6 years old because the small droplets in the spray mist reach a large surface area. Drops are more easily swallowed, which increases the possibility of systemic effects.

For children under 6 years old, drops are preferred because in young children the nostrils are not sufficiently wide to allow the effective use of sprays. Paediatric versions of nasal drops should be used where appropriate. Nasal saline drops or sprays may help to reduce nasal congestion in babies and young children.

Prevention of colds and flu

Pharmacists should encourage those in at-risk groups to have an annual flu vaccination. In the United Kingdom, the health service now provides vaccinations to all patients over 65 years and those below that age who have chronic respiratory disease (including asthma), chronic heart disease, chronic renal failure, chronic neurological disease, and diabetes mellitus or immunosuppression due to disease or treatment. Pregnant women and people living in long-stay residential care are also advised to have immunisation. Recommendations are updated every year so it is important to be aware of any changes to these 'campaigns'. Community pharmacists are in a good position to use their patient medication records (PMRs) to target patients each autumn and remind them to have their vaccination. Over half of community pharmacies in England are now commissioned by the health service to provide flu vaccinations.

It is useful to be aware that flu nasal spray vaccination is also now offered routinely on the NHS annually to children aged 2, 3 and 4 years plus children in school years 1, 2 and 3. Children aged 2–17 years at a particular risk of flu (such as those with diabetes) are also eligible.

Increasing attention is being paid to ways of reducing transmission of flu, and this also applies to colds. Routine handwashing with soap and water for at least 20 seconds reduces the transmission of cold and flu viruses. Hand sanitisers have become widely used because immediate access to soap and water may be difficult in many everyday settings. Transfer of the cold or flu virus usually occurs directly from person to person when an infected individual coughs or sneezes. Droplets of respiratory secretions come into contact with the mucous membranes of the mouth and nose of another person. People should use tissues to cover their mouth and nose when coughing or sneezing and should put used tissues in a bin as soon as possible.

Ethanol-based hand sanitisers are widely used in healthcare settings and can contribute to reducing transmission of colds and flu. The influenza virus is susceptible to alcohol in formulations of 60–95% ethanol. The rationale is that the virus in droplets can survive for 24–48 h on hard, non-porous surfaces; for 8–12 h on cloth, paper and tissue; and for 5 min on hands. Touching contaminated hands, surfaces and objects can therefore transfer the virus.

Avoiding the sharing of towels is also to be recommended, and for children, discouraging the sharing of toys with an infected child is sensible advice.

A nasal spray containing a viscous gel is marketed as a medical device with claims that it prevents progression of the first signs of a cold into a full-blown infection. It is used four times a day from the time symptoms are experienced. The theoretical basis for its action is that the gel is slightly acidic (whereas viruses are said to prefer an alkaline environment) and that its viscous nature traps the viruses. There are no published trials of effectiveness.

Flu pandemic

An influenza pandemic is an epidemic of an influenza virus that spreads on a worldwide scale and infects a large proportion of the world population. There were three flu pandemics in the last century, occurring in 1918, 1957 and 1968. There was also a worldwide pandemic in 2009 with a large number of cases in the United Kingdom. Concerns about potential pandemics have arisen because of the emerging strains of influenza from animals or birds (zoonoses). In 1997, an avian H5N1 strain of influenza emerged, which has a high mortality rate. Although the virus is highly virulent, it does not spread easily between humans. Nearly all, if not all, cases have been spread from contact between humans and infected birds. The concern is that the virus may mutate, making transmission between humans more likely. As there is no natural immunity to this virus, a pandemic could follow, and if the virulence remained unchanged, then it could be extremely deadly. It is not possible to predict how likely this scenario is.

The Department of Health has issued various publications detailing the evidence base for dealing with pandemic flu for the United Kingdom as a whole, specifically making recommendations on vaccination and use of antivirals, antibiotics and face masks. See <https://www.gov.uk/guidance/pandemic-flu>

Antivirals and seasonal flu

Three antiviral products are licensed for use in seasonal flu in the United Kingdom: oseltamivir, zanamivir and amantadine. The National Institute for Health and Care Excellence (NICE) supports the use of neuraminidase inhibitors for those who are in at-risk groups in seasonal flu outbreaks if treatment is started within 36 h (for zanamivir) or within 48 h (for oseltamivir). They can also be used to prevent transmission of flu (prophylaxis) under some circumstances. Advice to use these is triggered if the incidence of flu hits a specific threshold. The incidence is monitored by a national surveillance scheme. Amantadine is generally not recommended because of its lower efficacy, its adverse effects and because rapid resistance can develop to its use.

The effectiveness of antivirals during a pandemic cannot be known until used in such a situation and can only be guessed at based on experience in seasonal influenza and in those infected with animal strains of flu. It is believed that they

are likely to reduce the chance of developing complications and the chance of dying and shorten the time taken to recover from an infection. It is possible that using antivirals for the non-infected members of a household when another member has the infection could reduce the spread of the pandemic. There is uncertainty as to how much resistance to antivirals could be present in a pandemic virus.

Surgical face masks

Some people may wish to buy surgical face masks at the pharmacy. The Department of Health and WHO have looked at the evidence concerning the use of surgical face masks in a flu pandemic. Their recommendations are that the general public can use them but are not encouraged to do so. There is insufficient evidence to support their use. They are, however, recommended in healthcare settings, and they may be of value in infected households both for the symptomatic person and non-infected members and carers and for symptomatic people outside the home. There is concern that the masks may not be used safely, (i.e. they may be worn too long and get too wet and therefore become ineffective), be worn at times around the neck, not disposed of correctly, and there may be a failure to wash hands after touching the mask. There is also concern that symptomatic people wearing masks continue to meet with people outside the home when it would be best to be isolated at home.

Antibiotics

A serious complication of flu is the development of pneumonia, and this can be either directly due to the flu virus or due to a secondary bacterial infection. In the case of a viral pneumonia or 'pneumonitis', antibiotics are of little value although clinically it is difficult to tell the difference, and antibiotics are usually given in a hospital setting with a severe illness. Avian flu outbreaks have been mainly complicated by viral pneumonia.

Most uncomplicated influenza infections in the community do not require antibiotics. They may be considered in those at risk, such as people who have pre-existing COPD, compromised immunity, diabetes or heart or lung disease. In these situations, if there is no improvement within 48 h of starting antibiotics, then the person should be reviewed by the GP (or the out-of-hours service, e.g. at the weekend).

Typical flu chest symptoms include cough, retrosternal discomfort, wheeze and phlegm (symptoms of acute bronchitis) and by themselves do not require antibiotics in a person who is not at risk. However, if these symptoms worsen with a persistent or recrudescence (recurring) fever, pleuritic-type chest pain or breathlessness, then pneumonia might be developing. In this situation, review by a doctor or nurse would be essential and either treatment with antibiotics in the community or hospital admission could follow.

Colds and flu in practice

Case 1

Mrs Allen, a regular customer in her late 60s, asks what you can recommend for her husband. He has a very bad cold; the worst symptoms are his blocked nose and sore throat. Although his throat feels sore, she tells you there is only a slight reddening (she looked this morning). He has had the symptoms since last night and is not feverish. He does not have earache but has complained of a headache. When you ask her if he is taking any medicines, she says yes, quite a few for his heart. She cannot remember what they are called. You check the PMR and find that he is taking *aspirin* 75 mg daily, *ramipril* 5 mg daily, *bisoprolol* 10 mg daily and *atorvastatin* 20 mg daily. Mrs Allen asks you if it is worth her husband taking extra vitamin C as she has heard this is good for colds. She wondered if this might be better than taking yet more medicines.

The pharmacist's view

The patient's symptoms indicate a cold rather than flu. He is concerned most with his congested nose and sore throat. He is taking a number of medications, which indicate that oral sympathomimetics would be best avoided. You could recommend that he take regular simple painkillers for his sore throat and a topical decongestant or an inhalation to clear his blocked nose. The symptoms may take about 1 week before they start to clear. You offer these alternatives to Mrs Allen to see what she thinks her husband might prefer. You explain that taking vitamin C may slightly reduce the length and severity of colds, although this is not a large effect, but that it won't do much harm. You show her some vitamin C products and tell her their cost. You also ask if Mr Allen has had a flu jab as he is in an 'at-risk' group.

The doctor's view

The advice given by the pharmacist is sensible. A simple analgesic such as *paracetamol* could help both the headache and sore throat. The development of sinusitis at such an early stage in an infection would be unlikely, but it would be wise to enquire whether his colds are usually uncomplicated and to ascertain the site of his headache. Although a lot of people believe in the benefits of vitamin C, it probably makes little difference.

The patient's view

I came to the pharmacist because we didn't want to bother the doctor. The pharmacist asked me about which symptoms were causing Pete (my husband) the biggest problem and he gave me a choice of what to use. I wanted to know what he thought about vitamin C and he told me about how it might make

the cold shorter. In the end though, I decided not to bother with it because it would have been quite expensive with the other medicines as well, especially as it was unlikely to help much. I thought I would give him some fresh orange juice instead. I decided to give him regular *paracetamol*, which I was advised is OK alongside his low-dose aspirin.

Case 2

A man comes into the pharmacy just after Christmas asking for some cough medicine for his wife. He says that the medicine needs to be sugar-free as his wife has diabetes. On listening to him further, he says she has had a dreadful cough that keeps her awake at night. Her problem came on 5 days ago when she woke in the morning, complaining of being very achy all over and then became shivery and developed a high temperature and cough by the evening. Since then her temperature has gone up and down and she has not been well enough to get out of bed for very long. She takes *glipizide* and *metformin* for her diabetes, and he has been checking her glucose readings, which have all been between 8 and 11 mmol/l – a little higher than usual. The only other treatment she is taking is *atorvastatin*; she is not on any antihypertensives. He tells you that she will be 70 next year.

The pharmacist's view

The history indicates flu. It would be best for this woman to be seen by a GP. She has been ill for 5 days and has been mostly bedbound during this time. There are several features that suggest she might be at a higher risk of complications from flu. I would suggest that her husband asks for someone at the surgery to come out to see her, as she does not sound well enough to go to the surgery. Sometimes people are reluctant to call the surgery as they feel they might be 'bothering' the doctor unnecessarily. The pharmacist's support is often helpful.

The doctor's view

The infection is likely to be flu. She is in the higher-risk group for developing complications (age and diabetes), so it would be reasonable to advise referral. Most cases of flu usually resolve within 7 days. The complications can include AOM, bacterial sinusitis, bacterial pneumonia and, less commonly, viral pneumonia and respiratory failure.

In this situation, a doctor or nurse would want to check her chest for signs of a secondary infection. A persisting or worsening fever would point to a complication developing. There would be little point in prescribing an antiviral, for example, *zanamivir*, as it is only effective if started within 2–3 days of symptom onset. One review has found it to be effective in reducing the duration of flu symptoms by about 1 day if started soon enough. It would also be advisable to

check whether or not her husband had had the flu vaccine. The incubation time for flu is 1–4 days, and adults are contagious from the day before symptoms start until 5 days after the onset of symptoms; however, the husband would almost certainly have caught the infection by now, if susceptible.

Cough

Coughing is a protective reflex action caused when the airway is being irritated or obstructed. Its purpose is to clear the airway so that breathing can continue normally. The majority of coughs presenting in the pharmacy will be caused by a viral respiratory tract infection. They will often be associated with other symptoms of a cold. The evidence to support the use of cough suppressants and expectorants is not strong, but some patients report finding them helpful.

What you need to know

Age (approximate)

Baby, child, adult

Duration

Nature

Dry or productive

Associated symptoms

Cold, sore throat and fever

Sputum production

Chest pain

Shortness of breath

Wheeze

Previous history

COPD (chronic bronchitis, emphysema, chronic obstructive airways disease)

Asthma

Diabetes

Heart disease

Gastro-oesophageal reflux (indigestion, dyspepsia)

Smoking habit

Present medication

Significance of questions and answers

Age

Establishing who the patient is – child or adult – will influence the choice of treatment and whether referral is necessary.

Duration

Most coughs are self-limiting and will get better with or without treatment. Cough can often go on for 3 weeks or more after a bad cold but usually slowly subsides over this time (see Box 1.1 earlier in this chapter in Colds and flu: Significance of questions and answers). It is useful to explain this to people as the long duration of cough symptoms is often not realised. Acute bronchitis is the term often used to describe more severe cases arising from a viral infection leading to cough and phlegm production. Even in acute bronchitis, antibiotics are not needed in people who are otherwise well. In general, a cough of longer than 2-3 weeks' duration that has showed no improvement, or is getting worse, should be referred to the GP surgery for further investigation. This is particularly so if accompanied by feelings of tiredness, malaise or fever.

Patients are often concerned when a cough has lasted for, what seems to them, a long time. They may be worried that because the cough has not resolved, it may have a serious cause.

Nature of cough

Unproductive (dry, tickly or tight)

In an unproductive cough, no sputum is produced. These coughs are usually caused by viral infection that temporarily damages and irritates the airway and are self-limiting.

Productive (chesty or loose)

Sputum is normally produced by the body and it is an oversecretion that leads to coughing. Oversecretion may be caused by irritation of the airways due to infection, allergy, etc., or when the cilia are not working properly (e.g. in smokers). Non-coloured (clear or whitish) sputum is uninfected and known as mucoid. Green sputum is not uncommon in asthma and is thought to be due to eosinophils.

Coloured sputum is common and in most cases does not signify the need for antibiotic therapy. Clinical trials in relatively healthy people with acute bronchitis indicate that antibiotics do not help overall and the colour does not predict a better response to antibiotic treatment. It may be more useful as a sign in people who have other lung complications. In people with COPD, an exacerbation of their condition with more purulent sputum (e.g. a change in colour to green or yellow) may be a sign that antibiotics are indicated. Sometimes blood may be present in the sputum (haemoptysis), with a colour ranging from pink to deep red. Blood may be an indication of a relatively minor problem such as a burst capillary following a bout of violent coughing during an acute infection but may be a warning of more serious problems. Haemoptysis is an indication for referral.

As stated, antibacterials/antibiotics are not usually indicated for previously healthy people with acute bronchitis, even if their sputum is coloured. Most

cases of acute bronchitis are caused by viral infections, so antibacterials will not help. A Cochrane systematic review of antibacterials for acute bronchitis found no benefit or only slight benefit, at the most reducing the duration of illness by about half a day. Some people who have a tendency towards asthma develop wheeziness with a respiratory viral infection. They may benefit from inhalation treatment used in asthma, or possibly a short course of oral corticosteroids. Wheeziness as a symptom usually needs referral; however, people with asthma who get increased wheeziness with a cold often know how to self-manage by increasing their inhaler treatment and the use of 'rescue therapy'.

If a person has had repeated episodes of bronchitis over the years, they might have developed COPD (defined as a chronic cough, sputum, shortness of breath on exertion, wheeze, usually with a history of long-term smoking when other causes of chronic cough have been excluded). So careful questioning is important to determine this.

It is useful to be aware of those people where there may be a reason to consider antibiotics and refer accordingly. It is better to advise that further assessment is needed, rather than say an antibiotic is indicated, which may raise expectations inappropriately. A NICE guideline says that antibacterials should be considered if the person

- Is systemically very unwell
- Is at high risk of serious complications because of a pre-existing co-morbid condition such as heart, lung, kidney, liver or neuromuscular disease, or immunosuppression
- Is older than 65 years of age with two or more of the following, or older than 80 years with one or more of the following:
 - Hospital admission in the previous year
 - Type 1 or type 2 diabetes mellitus
 - Known congestive heart failure
 - Use of oral corticosteroids

As with asthma, there may be some patients who get frequent exacerbations of COPD who have been provided with 'rescue therapy'.

In heart failure and mitral stenosis, the sputum is sometimes described as pink and frothy or can be bright red. Confirming symptoms would be breathlessness (especially in bed during the night) and swollen ankles.

Tuberculosis

Until recently thought of as a disease of the past, the number of tuberculosis (TB) cases has been rising in the United Kingdom and there is increasing concern about resistant strains. Chronic cough with haemoptysis associated with chronic fever and night sweats is a classical symptom. TB is largely a disease of poverty and more likely to present in disadvantaged communities and in people who are malnourished. In the United Kingdom, most cases of respiratory TB are seen in ethnic minority groups, especially Indians and

Africans and in immigrants from other countries with high rates of TB. Human immunodeficiency virus (HIV) infection is a significant risk factor for the development of respiratory TB.

Prolonged cough and lung cancer

Current advice is that if a cough lasts more than 3 weeks, the patient should be assessed by a clinician to consider the possibility of other lung diseases, particularly cancer. This is particularly important in people who are smokers.

Croup (acute laryngotracheitis)

Croup usually occurs in infants. The cough has a harsh barking quality. It develops 1 day or so after the onset of cold-like symptoms. It is often associated with difficulty in breathing and an inspiratory stridor (noise in throat on breathing in). Referral, particularly if the child has breathing problems, or is distressed so that it affects eating, drinking, or play, is usually necessary.

Whooping cough (pertussis)

Despite immunisation programmes, whooping cough is still seen in the United Kingdom. Whooping cough starts with catarrhal symptoms. The characteristic whoop is not present in the early stages of infection. The whoop is the sound produced when breathing in after a paroxysm of coughing. The bouts of coughing prevent normal breathing and the whoop represents the desperate attempt to get a breath. If suspected, referral is necessary.

Associated symptoms

Cold, sore throat and catarrh may be associated with a cough. Often there may be an elevated temperature and generalised muscular aches present. This would be in keeping with a viral infection and be self-limiting. Chest pain, shortness of breath and wheezing are all indications for referral (see Respiratory symptoms for direct referral, at the end of this chapter).

Postnasal drip

Postnasal drip is a common cause of coughing and may be due to sinusitis (see Colds and flu: Symptoms: Facial pain/Frontal headache, earlier in this chapter).

Previous history

Certain cough remedies are best avoided in people with diabetes and anyone with heart disease or hypertension (see Cough: Management: Cough remedies – Other constituents, later in this section).

COPD ('chronic bronchitis' or emphysema)

Questioning may reveal a history of COPD, which is being treated by the doctor with antibiotics. In this situation, further symptom relief may be possible with an appropriate cough medicine.

Asthma

A recurrent night-time cough can indicate asthma, especially in children, and should be referred. Asthma may sometimes present as a chronic cough without wheezing, usually worse first thing in the morning. A family history of eczema, hay fever and asthma is worth asking about. Patients with such a family history appear to be more prone to extended episodes of coughing following a simple respiratory tract infection.

Cardiovascular

Coughing can be a symptom of heart failure (see Respiratory symptoms for direct referral: Cardiac causes, at the end of this chapter). If there is a history of heart disease, especially with a persisting cough, then referral is advisable.

Gastro-oesophageal

Gastro-oesophageal reflux can cause coughing. Sometimes such reflux is asymptomatic apart from coughing. Some patients are aware of acid coming up into their throat at night when they are in bed. It may also be suggested by cough that is worse during or after eating, with talking and with bending.

Smoking habit

Smoking will exacerbate a cough and can cause coughing since it is irritating to the lungs. One in three long-term smokers develops a chronic cough. The cough is usually worse in the mornings. If coughing is recurrent and persistent, the pharmacist is in a good position to offer health education advice about the benefits of stopping smoking, suggesting nicotine replacement therapy when appropriate. However, on stopping, the cough may initially become worse as the cleaning action of the cilia is re-established during the first few days, and it is worth mentioning this. Smokers may assume their cough is harmless, and it is always important to ask about any change in the nature of the cough that might suggest a serious cause, particularly as they are at high risk of COPD and lung cancer (see also 'Smoking cessation' in the chapter on 'Prevention of heart disease').

Present medication

It is always essential to establish which medicines are currently being taken. This includes those prescribed by a doctor and any bought OTC, borrowed from a friend or neighbour or rediscovered in the family medicine chest. It is important to remember the possibility of interactions with cough medicine. This may also be an issue with some herbal remedies.

It is also useful to know which cough medicines have been tried already. The pharmacist may decide that an inappropriate preparation has been taken, for example, a cough suppressant for a productive cough. If one or more remedies have been tried for an appropriate length of time without success, then referral may be advisable.

Angiotensin-converting enzyme inhibitors

Chronic coughing may occur in patients, particularly women, taking angiotensin-converting enzyme (ACE) inhibitors such as *enalapril*, *captopril*, *lisinopril* and *ramipril*. Patients may develop the cough within days of starting treatment or after a period of a few weeks or even months. The exact incidence of the reaction is not known and estimates vary from 2 to 10% of patients taking ACE inhibitors. ACE inhibitors control the breakdown of bradykinin and other kinins in the lungs, which can trigger a cough. Typically, the cough is irritating, non-productive and persistent. Any ACE inhibitor may induce coughing and there seems to be little advantage to be gained in changing from one to another. The cough may resolve or may persist; in some patients, the cough is so troublesome and distressing that ACE inhibitor therapy may have to be discontinued. Any patients in whom medication is suspected as the cause of a cough, should be referred to the prescriber. Angiotensin-2 receptor antagonists, which have similar properties to ACE inhibitors and which do not affect bradykinin, can be used as an alternative preparation if cough is a problem.

When to refer

- Cough lasting 2–3 weeks or more and not improving
- Cough associated with significant fever, malaise or feeling unwell
- Distressing cough in frail, older people
- Concern about co-morbidity such as diabetes or heart disease
- Sputum (purulent sputum in COPD, rusty or bloodstained)
- Chest pain
- Shortness of breath
- Wheezing
- Whooping cough or croup
- Recurrent nocturnal cough
- Suspected adverse drug reaction
- Failed medication

After a series of questions, the pharmacist should be in a position to decide whether treatment or referral is the best option.

Treatment timescale

Depending on the length of time the patient has had the cough and once the pharmacist has recommended an appropriate treatment, patients should see

their doctor 2–3 weeks after the cough started if it has not improved or sooner if it is getting worse.

Management

Pharmacists are well aware of the debate about the clinical efficacy of the cough remedies available OTC. A systematic review concluded that ‘there is no good evidence for or against the effectiveness of OTC medicines in acute cough’. However, many people who visit the pharmacy for advice do so because they want some relief from their symptoms, and, while the clinical effectiveness of cough remedies is debatable, they can have a useful placebo effect.

The choice of treatment depends on the type of cough. Suppressants (e.g. *pholcodine*) are used to treat unproductive coughs, while expectorants such as *guaifenesin* (*guaiphenesin*) are used in the treatment of productive coughs. The pharmacist should check that the preparation contains an appropriate dose, since some products contain sub-therapeutic amounts. Demulcents like *simple linctus* that soothe the throat are particularly useful in children and pregnant women as they contain no active ingredients.

The BNF gives the following guidance:

Suppressants. When there is no identifiable cause, cough suppressants may be useful, for example, if sleep is disturbed. They may cause sputum retention and this may be harmful in patients with chronic bronchitis and bronchiectasis.

Demulcent cough preparations contain soothing substances such as syrup or glycerol and some patients believe that such preparations relieve a dry irritating cough. Preparations such as simple linctus have the advantage of being harmless and inexpensive; paediatric simple linctus is particularly useful in children.

Expectorants are claimed to promote expulsion of bronchial secretions, but there is no evidence that any drug can specifically facilitate expectoration.

Compound preparations are on sale to the public for the treatment of cough and colds but should not be used in children under 6 years old; the rationale for some is dubious. Care should be taken to give the correct dose and to not use more than one preparation at a time.

There is no logic in using expectorants (which promote coughing) and suppressants (which reduce coughing) together as they have opposing effects. Therefore, products that contain both are not therapeutically sound. The UK CHM made recommendations in 2009 about safer use of cough and cold medicines for children aged under 12 years (see Colds and flu: Management, earlier in this chapter).

Cough suppressants

Controlled trials have not confirmed any significant effect of cough suppressants over placebo on symptom reduction.

Codeine/pholcodine

Pholcodine has several advantages over *codeine* in that it produces fewer side effects (even at OTC doses, *codeine* can cause constipation and, at high doses, respiratory depression) and *pholcodine* is less liable to be misused. Both *pholcodine* and *codeine* can induce drowsiness, although in practice this does not appear to be a problem. Nevertheless, it is sensible to give an appropriate warning. *Codeine* is well known as a drug, which is misused, and many pharmacists choose not to recommend it. Sales often have to be refused because of knowledge or likelihood of misuse. The MHRA/CHM advises that codeine-containing cough suppressants should not be used for children under 18 years old. *Pholcodine* can be given at a dose of 5 mg to children over 6 years old (5 mg of *pholcodine* is contained in 5 ml of *Pholcodine Linctus BP*). Adults may take doses of up to 15 mg three or four times daily. The drug has a long half-life and may be more appropriately given as a twice-daily dose.

Dextromethorphan

Dextromethorphan is less potent than *pholcodine* and *codeine*. It is generally non-sedating and has few side effects. Occasionally, drowsiness has been reported but, as for *pholcodine*, this does not seem to be a problem in practice. *Dextromethorphan* can be given to children of age 6 years and over. *Dextromethorphan* was generally thought to have a low potential for misuse. However, there have been rare reports of mania following misuse and consumption of very large quantities, and pharmacists should be aware of this possibility if regular purchases are made.

Demulcents

Preparations such as *glycerine*, *lemon* and *honey* or *simple linctus* are popular remedies and are useful for their soothing effect. They do not contain any active ingredient and are considered to be safe in children and pregnant women. They are now the treatment recommended for children under 6 years old.

Expectorants

Two mechanisms have been proposed for expectorants. They may act directly by stimulating bronchial mucus secretion, leading to increased liquefying of sputum, making it easier to cough up. Alternatively, they may act indirectly via irritation of the gastrointestinal tract, which has a subsequent action on the respiratory system, resulting in increased mucus secretion. This latter theory has less convincing evidence than the former to support it.

Guaifenesin (guaiphenesin)

Guaifenesin is commonly found in cough remedies. In adults, the dose required to produce expectoration is 100–200 mg, so in order to have a theoretical chance of effectiveness, any product recommended should contain a sufficiently

high dose. Some OTC preparations contain sub-therapeutic doses. In the United States, *guaiifenesin* is the only FDA-approved expectorant.

Cough remedies: Other constituents

Antihistamines

Examples used in OTC products include *diphenhydramine* and *promethazine*. Theoretically, these reduce the frequency of coughing and have a drying effect on secretions, but in practice they also induce drowsiness. Combinations of antihistamines with expectorants are illogical and best avoided. A combination of an antihistamine and a cough suppressant may be useful in that antihistamines can help to dry up secretions through their anticholinergic side effects, and the combination can be given as a night-time dose if the cough is disturbing sleep. This is one of the rare occasions when a side effect may prove useful. The non-sedating antihistamines are less effective in symptomatic treatment of coughs and colds.

Interactions: Traditional antihistamines should not be used by patients who are taking *phenothiazines* and tricyclic antidepressants because of additive anti-cholinergic and sedative effects. Increased sedation will also occur with any drug that has a CNS depressant effect. Alcohol should be avoided because this will also lead to increased drowsiness. See Colds and flu: Management: Antihistamines, earlier in this chapter for more details of interactions, side effects and contraindications of antihistamines.

Sympathomimetics

Pseudoephedrine is used in cough and cold remedies (see also Colds and flu: Management: Decongestants, earlier in this chapter for information on restrictions on sales) for its bronchodilator and decongestant actions. It has a stimulant effect that may theoretically lead to a sleepless night if taken close to bedtime. It may be useful if the patient has a blocked nose as well as a cough, and an expectorant/decongestant combination can be useful in productive coughs. Sympathomimetics can cause raised blood pressure, stimulation of the heart and alterations in diabetic control. Oral sympathomimetics should be used with caution, or avoided, in patients with the following:

- Diabetes
- Coronary heart disease (e.g. angina)
- Hypertension
- Hyperthyroidism

Interactions: Avoid in those taking

- MAOIs (e.g. *phenelzine*)
- Reversible inhibitors of monoamine oxidase A (e.g. *moclobemide*)

- Beta-blockers
- Tricyclic antidepressants (e.g. *amitriptyline*) – a theoretical interaction that appears not to be a problem in practice

Theophylline

Theophylline is sometimes included in cough remedies for its bronchodilator effect. OTC medicines containing *theophylline* should not be taken at the same time as prescribed *theophylline* since toxic blood levels and side effects may occur. The action of *theophylline* can be potentiated by some drugs, for example, *cimetidine* and *erythromycin*.

Levels of *theophylline* in the blood are reduced by smoking and drugs such as *carbamazepine*, *phenytoin* and *rifampicin* that induce liver enzymes, so the metabolism of *theophylline* is increased and lower serum levels result.

Side effects include gastrointestinal irritation, nausea, palpitations, insomnia and headaches. The adult dose is typically 120 mg, three or four times daily. It is not recommended in children.

Practical points

Diabetes

In short-term acute conditions, the amount of sugar in cough medicines is relatively unimportant. Diabetic control is often upset during infections and the additional sugar is not considered to be a major problem. Nevertheless, many diabetic patients may prefer a sugar-free product, as will many other customers who wish to reduce sugar intake for themselves and their children, and many such products are now available. As part of their contribution to improving dental health, pharmacists can ensure that they stock and display a range of sugar-free medicines.

Steam inhalations

These can be useful, although a systematic review found insufficient evidence to judge whether there might be a benefit. The steam helps to liquefy lung secretions and patients find the warm moist air comforting. While there is no evidence that the addition of medications to water produces a better clinical effect than steam alone, some may prefer to add a preparation such as *menthol* and *eucalyptus* or a proprietary inhalant. One teaspoonful of inhalant should be added to a pint of hot (not boiling) water and the steam inhaled. Apart from the risk of scalding, boiling water volatilises the constituents too quickly. A cloth or towel can be put over the head to trap the steam. A change in advice is not to use this method in young children because of the risk of scalding; sitting in the bathroom with a running hot shower is a safer option.

Fluid intake

Maintaining a good fluid intake helps to hydrate the lungs, and hot drinks can have a soothing effect. For children a warm drink of honey and lemon can also be soothing. General advice to patients with coughs and colds should be to increase fluid intake.

Coughs in practice

Case 1

Mrs Patel, a woman in her early 20s, asks what you can recommend for her son's cough. On questioning, you find out that her son, Dillip, aged 4 years, has had a cough on and off for a few weeks. He gets it at night and it is disturbing his sleep, although he does not seem to be troubled during the day. She took Dillip to the doctor about 3 weeks ago, and the doctor explained that antibiotics were not needed and that the cough would get better by itself. The cough is not productive and she has given Dillip some *simple linctus* before he goes to bed, but the cough is no better. Dillip is not taking any other medicines. He has no pain on breathing or shortness of breath. He had a cold recently.

The pharmacist's view

This is a 4-year-old child who has a night-time cough of several weeks' duration. The doctor's advice was appropriate at the time Dillip saw him. However, referral back to the GP surgery would now be advisable because the cough is only present during the night. A recurrent cough in a child at night can be a symptom of asthma, even if wheezing is not present. It is possible that the cough is occurring as a result of bronchial irritation following his recent viral URTI. Such a cough is more likely to occur in those who have asthma or a family history of atopy (a predisposition to sensitivity to certain common allergens such as house dust mite, animal dander and pollen). Nevertheless, the cough has been present for several weeks without improvement and further medical advice is needed.

The doctor's view

Asthma is an obvious possibility. It would be interesting to know if anyone else in the family suffers from asthma, hay fever or eczema and whether Dillip has ever had hay fever or eczema. Any of these features would make the diagnosis more likely. Mild asthma often presents in this way in children without the more recognisable symptoms of shortness of breath and wheezing.

An alternative diagnosis could still include a viral respiratory tract infection. Most coughs are more troublesome and certainly more obvious during the night. This can falsely give the impression that the cough is only nocturnal. It should also be remembered that both diagnoses could be correct, as a viral infection often initiates an asthmatic reaction. Also, in young children with

episodic breathlessness, wheeze and cough, a likely alternative diagnosis to asthma is viral-induced wheeze. Because the diagnosis is uncertain and inhaled oral steroids may be appropriate, referral to the surgery is advisable.

The parent's view

I was hoping the pharmacist could recommend something but she seemed to think Dillip should see the doctor. She didn't really explain why though.

Case 2

A man aged about 25 years asks if you can recommend something for his cough. He sounds as if he has a bad cold and looks a bit pale. You find out that he has had the cough for a few days, with a blocked nose and a sore throat. He has no pain on breathing or shortness of breath. The cough was chesty to begin with, but he tells you it is now tickly and irritating. He has not tried any medicines and is not taking any medicines from the doctor.

The pharmacist's view

This patient has the symptoms of the common cold and none of the danger signs associated with a cough that would make referral necessary. He is not taking any medicines, so the choice of possible treatments is wide. You could recommend something to treat his congested nose as well as his cough, for example, a cough suppressant and a sympathomimetic. *Simple linctus* and a systemic or topical decongestant would also be a possible option. If a topical decongestant were to be recommended, he should be warned to use it for no longer than 1 week to avoid the possibility of rebound congestion.

The doctor's view

The action suggested by the pharmacist is very reasonable. It may be worthwhile explaining that he is suffering from a viral infection that is self-limiting and should be better within a few days. If he is a smoker then it would be an ideal time to encourage him to stop.

Sore throat

Most people with a sore throat do not consult a doctor – only about 5% do so and many will consult their pharmacist. Most sore throats that present in the pharmacy will be caused by viral infection (90%), with only 1 in 10 being due to bacterial infection. Even where there is bacterial infection, antibiotics make little difference on outcome, so treatment with antibiotics is unnecessary in most cases. Clinically it is difficult to differentiate between the two. The majority of infections are self-limiting. Sore throats are often associated with other symptoms of a cold, and determining whether cold symptoms,

particularly a cough, are present is a useful way to triage cases (it makes a throat infection less likely). It is also important to realise that in the United Kingdom (as in many other countries), sore throats are one of the main reasons for prescribing antibiotics. In many cases these prescriptions are unnecessary. Overuse of antibiotics contributes to antibiotic resistance, which is an increasing public health concern and can also cause side effects such as diarrhoea, nausea and vomiting.

Once the pharmacist has excluded more serious conditions, an appropriate OTC medicine can be recommended.

What you need to know

Age (approximate)

Baby, child, adult

Duration

Severity

Associated symptoms

Cold, congested nose and cough

Difficulty in swallowing

Hoarseness

Fever

Previous history

Smoking habit

Present medication

Significance of questions and answers

Age

Establishing who the patient is will influence the choice of treatment and whether referral is necessary. Streptococcal (bacterial) throat infections are more likely in children of school age.

Duration

Most sore throats are self-limiting and will be better within 7 days. If it has been present for longer, then the patient should be referred to the GP surgery for further advice.

Severity

If the sore throat is described as being extremely painful, especially in the absence of cold, cough and catarrhal symptoms, then referral should be recommended when there is no improvement within 24–48 h.

Associated symptoms

Cold, catarrh and cough may be associated with a sore throat. There may also be a fever and general aches and pains. These are in keeping with a minor self-limiting viral infection.

Both hoarseness of longer than 3 weeks' duration and difficulty in swallowing (dysphagia) are indications for referral. The latter is sometimes seen with tonsillitis.

Previous history

Recurrent bouts of infection such as tonsillitis in the past would mean that referral is best.

Smoking habit

Smoking will exacerbate a sore throat, and if the patient smokes, then it can be a good time to offer advice and information about quitting. Surveys indicate that two-thirds of people who smoke want to stop (see also 'Smoking cessation' in the chapter on 'Prevention of heart disease').

Present medication

The pharmacist should establish whether any medication has been tried already to treat the symptoms. If appropriate use of medicines has been tried without improvement for several days, then referral to the GP surgery may be indicated.

Current prescriptions are important and the pharmacist should question the patient carefully about them. Steroid inhalers (e.g. *beclometasone* or *budesonide*) can cause hoarseness and candidal infections of the throat and mouth. Generally, they tend to do this at high doses. Such infections can be prevented by rinsing the mouth with water after using the inhaler. It is also worthwhile checking the patient's inhaler technique. Poor technique with metred-dose inhalers can lead to large amounts of the inhaled drug being deposited at the back of the throat. If you suspect this is the problem, discuss with the GP whether a device that will help coordination, such as a spacer, or perhaps a different inhaler might be needed.

Any patient taking *carbimazole* and presenting with a sore throat should be referred immediately. A rare side effect of *carbimazole* is agranulocytosis (suppression of white cell production in the bone marrow). The same principle applies to any drug that can cause agranulocytosis, including methotrexate and azathioprine, which are commonly used as disease modifying drugs for long-term conditions. A sore throat in such patients can be the first sign of a life-threatening infection.

Symptoms for direct referral

Hoarseness

Hoarseness is caused when there is inflammation of the vocal cords in the larynx (laryngitis). Laryngitis is typically caused by a self-limiting viral infection. It is usually associated with a sore throat and a hoarse, diminished voice. Antibiotics are of no value and symptomatic advice (see 'Management' below), which includes resting the voice, should be given. The infection usually settles within a few days and referral is not necessary.

When this infection occurs in babies, infants or small children, it can cause croup (acute laryngotracheitis), and severe cases may present with difficulty in breathing and stridor (see Cough: Nature of cough: Croup). In this situation, referral is essential.

When hoarseness persists for more than 3 weeks, especially when it is not associated with an acute infection, referral to the GP surgery is necessary. There are many causes of persistent hoarseness, some of which are serious. For example, laryngeal cancer can present in this way and hoarseness may be the only early symptom. A doctor will normally refer the patient to an ear, nose and throat (ENT) specialist for accurate diagnosis.

Dysphagia

Difficulty in swallowing can occur in severe throat infection. Sometimes it is caused by pain, making swallowing very uncomfortable. It can also happen when an abscess develops in the region of the tonsils (quinsy) as a complication of tonsillitis. This will usually result in a hospital admission where an operation to drain the abscess may be necessary and high-dose parenteral antibiotics may be given.

Glandular fever (GF) (infectious mononucleosis) is one viral cause of sore throat that often produces marked discomfort and may cause dysphagia. If it is suspected, referral is necessary for an accurate diagnosis.

Most bad sore throats will cause discomfort on swallowing, but not true difficulty and do not necessarily need referral unless there are other reasons for concern. Dysphagia, when not associated with a sore throat, always needs referral (see Chapter 2 Heartburn: Significance of questions and answers: Symptoms: Dysphagia).

Appearance of throat

Tonsils often have white patches on them in healthy people. These are part of the lymphatic immune system and are sometimes called tonsillar crypts. It is commonly thought that the presence of white spots, exudates or pus on the tonsils is an indication for referral or a means of differentiating between viral and bacterial infection, but this is not so. Unfortunately, the appearance can be the same in both types of infection and sometimes the throat can appear almost

normal without exudates in a streptococcal (bacterial) infection. With a sore throat, the tonsils may swell and become red and pus may appear as white spots on the tonsils. Symptoms typically get worse over 2–3 days and then gradually go, usually within a week. Often described as tonsillitis, this does not normally require treatment. If an exudate is present, this may increase the likelihood of a bacterial infection but as an isolated finding has poor diagnostic value.

Thrush

An exception not to be forgotten is candidal (thrush) infection that produces white plaques. However, these are rarely confined to the throat alone and are most commonly seen in babies or the very elderly. It is an unusual infection in young adults and may be associated with more serious disorders that interfere with the body's immune system, for example, leukaemia, HIV and acquired immune deficiency syndrome (AIDS) or with immunosuppressive therapy (e.g. oral corticosteroids or inhaled corticosteroids). The plaques may be seen in the throat and on the gums and tongue. When they are scraped off, the surface is raw and inflamed. Referral is advised if thrush is suspected and the throat is sore and painful. See Chapter 8 Childhood Conditions: Oral thrush.

Glandular fever (infectious mononucleosis)

GF, also known as infectious mononucleosis, is a viral throat infection caused by the Epstein–Barr virus. It is well known because of its tendency to leave its victims debilitated for some months afterwards and its association with the controversial condition myalgic encephalomyelitis. It is characterised by a sore throat that grumbles on with swollen lymph glands and often also causes general malaise, fatigue, muscle aches, chills, sweats, loss of appetite and headache. The most common age group for this illness to occur is between 15 years and 25 years of age. It is sometimes known as the ‘kissing disease’. A severe sore throat may follow 1 or 2 weeks of general malaise. The throat may become very inflamed with creamy exudates present. There may be difficulty in swallowing because of the painful throat. Glands (lymph nodes) in the neck and axillae (armpits) may be enlarged and tender. The diagnosis can be confirmed with a blood test, although this may not become positive until the second week of the illness. If the test is negative and there is a strong suspicion of GF, it should be repeated after a further week. Antibiotics are of no value; in fact if *ampicillin* or *amoxicillin* is given during the infection, a measles-type rash is likely to develop in 80% of those with GF. Treatment is aimed at symptomatic relief.

When to refer

- Sore throat lasting 1 week or more
- Recurrent bouts of infection
- Hoarseness of more than 3 weeks' duration
- Difficulty in swallowing (dysphagia)

Failed medication
High temperature – $>38^{\circ}\text{C}$

Use of clinical scoring systems

In 2008 when NICE produced their clinical guideline on respiratory tract infections, they suggested that one way to determine if somebody had a throat infection that warranted an antibiotic was to assess patients using four CENTOR criteria:

- Presence of tonsillar exudate
- Presence of tender neck glands
- History of fever
- Absence of cough – the latter suggests absence of cold symptoms

Research shows that having three or four of these has some predictive value for those people most likely to have some benefit from antibiotic treatment. A recent refinement of this system, increasingly used by GPs, is the FeverPAIN score (fever in last 24 h, severely inflamed tonsils, pus on tonsils, attends within 3 days and no cough or cold symptoms). This is now advocated by NICE. This is based on research that has shown that the people who have a score of four or five are the ones most likely to benefit from antibiotic treatment. This research also showed that this was just as useful as doing near-patient testing for the presence of streptococcal infection (the bacteria most commonly associated with throat infection) using rapid antigen testing. CENTOR or FeverPAIN may be useful systems to consider when deciding who may benefit from referral to the GP surgery.

Treatment timescale

Patients should see their doctor after 1 week if the sore throat has not improved.

Management

Most sore throats are self-limiting in nature, with 90% of patients feeling better or improving within 1 week of the onset of symptoms. The pharmacist can offer a selection of treatments aimed at providing some relief from discomfort and pain until the infection subsides. Oral analgesics are first-line treatment. A systematic review found that simple analgesics (*paracetamol, aspirin* and *ibuprofen*) are very effective at reducing the pain from sore throat. Lozenges and pastilles have a soothing effect. There is some evidence that *benzydamine spray* is effective in relieving sore throat pain.

Oral analgesics

Paracetamol, aspirin and *ibuprofen* have been shown in clinical trials to provide rapid and effective relief of pain in sore throat. A systematic review showed no

benefit of adding other analgesic constituents. The patient can be advised to take the analgesic regularly to sustain pain relief. (For a discussion of doses, side effects, cautions and contraindications for simple analgesics, see Chapter 4 Painful Conditions: Management.) *Flurbiprofen lozenges* are licensed for sore throat in adults and children aged 12 years and over. They contain 8.75 mg of *flurbiprofen*, and one lozenge is sucked or dissolved in the mouth every 3–6 h as required, to a maximum of five lozenges. *Flurbiprofen lozenges* can be used for up to 3 days at a time.

Mouthwashes and sprays

Anti-inflammatory (e.g. benzydamine)

Benzydamine is an anti-inflammatory agent that is absorbed through the skin and mucosa and has been shown to be effective in reducing pain and inflammation in conditions of the mouth and throat. Side effects have occasionally been reported and include numbness and stinging of the mouth and throat. *Benzydamine spray* can be used in children of 6 years and over, whereas the mouthwash may only be recommended for children over 12 years of age.

Local anaesthetic (e.g. benzocaine)

Benzocaine and *lidocaine* are available in throat sprays.

Lozenges and pastilles

Lozenges and pastilles can be divided into three categories.

Antiseptic (e.g. *cetylpyridinium*)

Antifungal (e.g. *dequalinium*)

Local anaesthetic (e.g. *benzocaine*)

Lozenges and pastilles are commonly used OTC treatments for sore throats, and where viral infection is the cause, the main use of antibacterial and anti-fungal preparations is to soothe and moisten the throat. Lozenges containing *cetylpyridinium chloride* have been shown to have antibacterial action.

Local anaesthetic lozenges will numb the tongue and throat and can help to ease soreness and pain. *Benzocaine* can cause sensitisation and such reactions have sometimes been reported.

Caution: Iodised throat lozenges should be avoided in pregnancy because they have the potential to affect the thyroid gland of the foetus.

Practical points

Diabetes

Mouthwashes and gargles are suitable and can be recommended. Sugar-free pastilles are available, but the sugar content of such products is not considered important in short-term use.

Mouthwashes and gargles

Patients should be reminded that mouthwashes and gargles should not be swallowed. The potential toxicity of OTC products of this type is low, and it is unlikely that problems would result from swallowing small amounts. However, there is a small risk of systemic toxicity from swallowing products containing iodine. Manufacturers' recommendations about whether to use the mouthwash diluted or undiluted should be checked and appropriate advice should be given to the patient.

'Test and treat' in community pharmacies

Following a feasibility service evaluation of screening and treatment of group A streptococcal pharyngitis in community pharmacies, a 'test and treat' service has been commissioned in a larger number. Patients meeting three or all four of the CENTOR criteria are offered a throat swab test and those in whom the test was positive are offered antibiotic treatment. In the feasibility study, 40% of patients were offered a throat swab and 25% of these had a positive result (~10% of the patients that initially presented). One-third of patients presented at the weekend and two-thirds on weekdays. At the time of writing, the scheme is still in early stages and remains the subject of some controversy.

Sore throats in practice

Case 1

A woman asks your advice about her son's very sore throat. He is 15 years old and is at home in bed. She says he has a temperature and that she can see creamy white matter at the back of his throat. He seems lethargic and has not been eating very well because his throat has been so painful. The sore throat started about 5 days ago and he has been in bed since yesterday. The glands on his neck are swollen.

The pharmacist's view

It would be best for this woman's son to be seen by the doctor or nurse. The symptoms appear to be severe and he is ill enough to be in bed. GF is common in this age group and this is a possibility. In the meantime, you might consider recommending some *paracetamol* in soluble or syrup form to make it easier to swallow. The analgesic and antipyretic effects would both be useful in this case.

The doctor's view

The pharmacist is sensible in recommending referral. The description suggests a severe tonsillitis, which will be caused by either a bacterial or viral infection. If it turns out to be viral, then GF is a strong possibility. The doctor or nurse should

check out the ideas, concerns and expectations of the mother and son and then explain the likely causes and treatment. Often it is not possible to rule out a bacterial (streptococcal) infection at this stage and it may be advisable to prescribe oral *penicillin*, or if the patient is allergic to *penicillin*, *clarithromycin* (as elixir if necessary, to aid swallowing). Amoxicillin should not be used because of the risk of rash. Depending on the availability of laboratory services, the doctor may consider taking a throat swab, which would identify a bacterial infection. If the infection has gone on for over a week, then a blood test can identify infectious mononucleosis (GF). Although there is no specific treatment for GF, it is helpful for the patient to know what is going on and when to expect full recovery. If swallowing does not improve, particularly if fluids prove difficult, some patients need admission for intravenous fluids.

Case 2

A teenage girl comes into your shop with her mother. The girl has a sore throat, which started yesterday. There is slight reddening of the throat. Her mother tells you she had a slight temperature during the night. She also has a blocked nose and a tickly cough and has been feeling generally achy. She has no difficulty in swallowing and is not taking any medicines, either prescribed or OTC.

The pharmacist's view

It sounds as though this girl has a minor respiratory tract infection. The symptoms described should improve within a few days. In the meantime, it would be reasonable to recommend a systemic analgesic such as paracetamol, perhaps in combination with a decongestant.

The doctor's view

The pharmacist's assessment sounds correct. Because she has a blocked nose and tickly cough, a viral infection is most likely. Many patients attend the GP surgery with similar symptoms understandably hoping for a quick cure with antibiotics that have no place in such infections.

Case 3

A middle-aged woman comes to ask your advice about her husband's bad throat. He has had a hoarse gruff voice for about 1 month and has tried various lozenges and pastilles without success. He has been a heavy smoker (at least a pack a day) for over 20 years and works as a bus driver.

The pharmacist's view

This woman should be advised that her husband should see his doctor. The symptoms that have been described are not those of a minor throat infection.

On the basis of the long duration of the problem and of the unsuccessful use of several OTC treatments, it would be best for this man to attend the GP surgery for further investigation.

The doctor's view

A persistent alteration in voice, with hoarseness, is an indication for referral to an ENT specialist. This man should have his vocal cords examined, which requires skills and special equipment that most family doctors do not have. It is possible he may have a cancer on his vocal cords (larynx), especially as he is a smoker.

Allergic rhinitis (hay fever)

Seasonal allergic rhinitis (hay fever) affects up to 20% of people in the United Kingdom, at one time or another, and millions of patients rely on OTC medicines for treatment. The symptoms of allergic rhinitis occur after an inflammatory response involving the release of histamine, which is initiated by allergens being deposited on the nasal and respiratory tract mucosa. The allergy may also affect the eyes. Allergens responsible for seasonal allergic rhinitis include grass pollens, tree pollens and fungal mould spores. Allergic rhinitis on exposure to cats or dogs is also relatively common and sometimes horses, rabbits and rodents (such as pet guinea pigs, hamsters and rats) may trigger symptoms. Perennial allergic rhinitis occurs when symptoms are present all year round and is commonly caused by the house dust mite, animal dander and feathers. Some patients may suffer from a form of perennial rhinitis that becomes worse in the summer months (possibly aggravated by tree or grass pollen allergy).

What you need to know

Age (approximate)

Baby, child, adult

Duration

Symptoms

Rhinorrhoea (runny nose)

Nasal congestion

Nasal itching

Watery eyes

Irritated eyes

Discharge from the eyes

Sneezing

Previous history
Associated conditions
 Eczema
 Asthma
Medication

Significance of questions and answers

Age

Symptoms of allergic rhinitis may start at any age, although it is more common in children and young adults. There is frequently a family history of atopy in allergic rhinitis sufferers (the typical atopy triad is asthma, hay fever and eczema). Thus, children of allergic rhinitis sufferers are more likely to have the condition. The condition often improves or resolves as the child gets older. Adults are more likely to have perennial allergic rhinitis. The age of the patient must be taken into account if any medication is to be recommended. Young adults who may be taking examinations should avoid treatments that may cause drowsiness.

Duration

Sufferers will often present with seasonal rhinitis as soon as the pollen count becomes high. Symptoms may start in April when tree pollens appear and the hay fever season may start 1 month earlier in the south than in the north of England. Hay fever peaks between the months of May and July, when grass pollen levels are highest and spells of good weather commonly cause patients to seek the pharmacist's advice. The weather forecast gives information on pollen levels. Anyone presenting with a summer cold, perhaps of several weeks' duration, may be suffering from hay fever. Fungal spores are also a cause and are present slightly later, often until September.

People can suffer from what they think are mild cold symptoms for a long period, without knowing they have perennial rhinitis.

Allergic rhinitis can be classified as

Intermittent: Occurs less than 4 days/week or for less than 4 weeks

Persistent: Occurs more than 4 days/week and for more than 4 weeks

Mild: All of the following – normal sleep, normal daily activities, sport, leisure, normal work and school; symptoms not troublesome

Moderate: One or more of the following – abnormal sleep; impairment of daily activities, sport, leisure, problems caused at work or school and troublesome symptoms

Symptoms

Rhinorrhoea

A runny nose is a commonly experienced symptom of allergic rhinitis. The discharge is often thin, clear and watery, but can change to a thicker, coloured, purulent one. This suggests a secondary infection, although the treatment for allergic rhinitis is not altered. There is usually no need for antibiotic treatment.

Nasal congestion

The inflammatory response caused by the allergen produces vasodilation of the nasal blood vessels and so results in nasal congestion. Severe congestion may result in headache and occasionally earache. Secondary infection such as otitis media and sinusitis can occur but is rare.

Nasal itching

Nasal itching commonly occurs. Irritation is sometimes experienced on the roof of the mouth.

Eye symptoms

The eyes may be itchy and also watery; it is thought these symptoms are a result of tear duct congestion and also a direct effect of pollen grains being caught in the eye, setting off a local inflammatory response. Irritation of the nose by pollen probably contributes to eye symptoms too. People who suffer severe symptoms of allergic rhinitis may also be hypersensitive to bright light (photophobic) and find that wearing dark glasses is helpful.

Sneezing

In hay fever, the allergic response usually starts with symptoms of sneezing, then rhinorrhoea, progressing to nasal congestion. Classically, symptoms of hay fever are more severe in the morning and in the evening. This is because pollen rises during the day after being released in the morning and then settles at night. Patients may also describe a worsening of the condition on windy days as pollen is scattered, and a reduction in symptoms when it rains, or after rain, as the pollen clears. Conversely, in those allergic to fungal mould spores, the symptoms become worse in damp weather.

Previous history

There is commonly a history of hay fever going back over several years. However, it can occur at any age, so the absence of any previous history does not necessarily indicate that allergic rhinitis is not the problem. The incidence of

hay fever has risen during the last few decades. Pollution, particularly in urban areas, is thought to be at least partly responsible for the trend.

Perennial rhinitis can usually be distinguished from seasonal rhinitis by questioning about the timing and the occurrence of symptoms. People who have had hay fever before will often consult the pharmacist when symptoms are exacerbated in the summer months.

Danger symptoms/associated conditions

When associated symptoms such as tightness of the chest, wheezing, shortness of breath or coughing are present, immediate referral is advised. These symptoms may herald the onset of an asthma attack.

Wheezing

Difficulty with breathing, possibly with a cough, suggests either asthma or aggravation of asthma by pollen allergy. Some sufferers experience asthma symptoms only during the hay fever season (seasonal asthma). These episodes can be quite severe and require referral. People with seasonal asthma often do not have appropriate medication at hand as their attacks occur so infrequently, which puts them at greater risk.

Earache and facial pain

As with colds and flu (see Colds and flu: Symptoms, earlier in this chapter), allergic rhinitis can be complicated by increased fluid pressure in the middle ear or in the sinuses as mucosal swelling causes blockage of drainage of fluid caused by allergic inflammation. Secondary bacterial infection in the middle ear (otitis media) or the sinuses (sinusitis) can occur but is rare. These conditions can cause persisting severe pain.

Purulent conjunctivitis

Irritated watery eyes are a common accompaniment to allergic rhinitis. Occasionally, but rarely, allergic conjunctivitis is complicated by a secondary infection. When this occurs, the eyes become more painful (gritty sensation) and redder, and the discharge changes from being clear and watery to coloured and sticky (purulent). If this is suspected a referral may be needed.

Medication

The pharmacist must establish whether any prescription or OTC medicines are being taken by the patient. Potential interactions between prescribed medication and antihistamines can therefore be identified.

It would be useful to know if any medicines have been tried already to treat the symptoms, especially where there is a previous history of allergic rhinitis.

Some patients know that certain antihistamines cause them to become drowsy. However, the pharmacist should be also aware of the potentiation of drowsiness by some antihistamines combined with other medicines. This can lead to increased danger in certain occupations and driving.

Failed medication

If symptoms are not adequately controlled with OTC preparations, an appointment with the doctor or nurse may be worthwhile. Such an appointment is useful to explore the patient's beliefs and preconceptions about hay fever and its management. It is also an opportunity to suggest ideas and give advice on preparing for the next season.

When to refer

Diagnosis unclear
Wheezing and shortness of breath
Tightness of chest
Painful ear
Painful sinuses
Purulent conjunctivitis
Severe symptoms only partially relieved by OTC preparations
Failed medication

Treatment timescale

Improvement in symptoms should occur within a few days. If no improvement is noted after 7 days, the patient might be referred to the doctor for other therapy.

Management

Management is based on whether symptoms are intermittent or persistent and mild or moderate. Options include antihistamines, nasal corticosteroids and *sodium cromoglicate* (*sodium cromoglycate*) in formulations for the nose and eyes. Antihistamines and corticosteroid nasal sprays are generally equally effective in the treatment of allergic rhinitis. Antihistamines usually work within a day, but corticosteroid sprays may take several days to build up an effect. The choice of treatment should be rational and based on the patient's symptoms and previous history where relevant.

Many cases of hay fever can be managed with OTC treatment, and it is reasonable for the pharmacist to recommend treatment. Patients with symptoms that do not respond to OTC products can be referred to the GP surgery

at a later stage. Pharmacists also have an important role in ensuring that patients know how to use any prescribed medicines correctly (e.g. corticosteroid nasal sprays, which must be used continuously for the patient to benefit).

Antihistamines

Many pharmacists would consider these drugs to be the first-line treatment for mild-to-moderate and intermittent symptoms of allergic rhinitis. They are effective in reducing sneezing and rhinorrhoea, less so in reducing nasal congestion. Non-sedating antihistamines available OTC include *acrivastine*, *cetirizine* and *loratadine*. All are effective in reducing the troublesome symptoms of hay fever and have the advantage of causing less sedation than some of the older antihistamines.

Cetirizine and *loratadine* are taken once daily, while *acrivastine* is taken three times daily. For sale OTC, *loratadine* can be recommended for children over 2 years, *cetirizine* over 6 years and *acrivastine* over 12 years.

While drowsiness is an unlikely side effect of any of the three drugs, patients might be well advised to try the treatment for a day before driving or operating machinery as drowsiness is still sometimes seen in some people.

Acrivastine, *cetirizine* and *loratadine* may also be used for allergic skin disorders such as urticaria.

Older antihistamines such as *promethazine* and *diphenhydramine* have a greater tendency to produce sedative effects. Indeed, both drugs are available in the United Kingdom among OTC products promoted for the management of temporary sleep disorders (see Chapter 9 Insomnia). The shorter half-life of *diphenhydramine* (5–8 h compared with 8–12 h of *promethazine*) should mean less likelihood of a morning hangover/drowsiness effect.

Other older antihistamines are relatively less sedative, such as *chlorphenamine* (*chlorpheniramine*), but sedation can still be problematic. Patients may develop tolerance to their sedation effects. Anticholinergic activity is very much lower among the newer drugs compared with the older drugs.

Interactions: The potential sedative effects of older antihistamines are increased by alcohol, hypnotics, sedatives and anxiolytics. The alcohol content of some OTC medicines should be remembered.

The plasma concentration of non-sedating antihistamines may be increased by *ritonavir*; plasma concentration of *loratadine* may be increased by *amprénavir* and *cimetidine*. There is a theoretical possibility that antihistamines can antagonise the effects of *betahistine*.

Side effects: The major side effect of the older antihistamines is their potential to cause drowsiness. Their anticholinergic activity may result in a dry mouth, blurred vision, constipation and urinary retention. These effects will be increased if the patient is already taking another drug with anticholinergic effects (e.g. tricyclic antidepressants, most commonly *amitriptyline*, and neuroleptics such as *prochlorperazine*, *metoclopramide* or *haloperidol*).

At very high doses, antihistamines have CNS excitatory effects rather than depressive effects. Such effects seem to be more likely to occur in children. At toxic levels, there have been reports of fits being induced. As a result, it has been suggested that antihistamines should be used with care in epileptic patients. However, this appears to be a largely theoretical risk.

Antihistamines are best avoided by patients with narrow-(closed-) angle glaucoma, since the anticholinergic effects produced can cause an increase in intraocular pressure. They should be used with caution in patients with liver disease or prostatic hypertrophy.

Decongestants

Oral or topical decongestants may be used short term to reduce nasal congestion alone or in combination with an antihistamine. They can be useful in patients starting to use a preventer such as a nasal corticosteroid (e.g. *beclometasone*) or *sodium cromoglicate* where congestion can prevent the drug from reaching the nasal mucosa. Topical decongestants can cause rebound congestion, especially with prolonged use. They should not be used for more than 1 week. Oral decongestants are occasionally included such as *pseudoephedrine*. Their use, interactions and adverse effects are considered in the section on 'Colds and flu' (see Colds and flu: Management: Decongestants, earlier in this chapter).

Eye drops containing an antihistamine and sympathomimetic combination are available and may be of value in troublesome eye symptoms, particularly when symptoms are intermittent. The sympathomimetic acts as a vasoconstrictor, reducing irritation and redness. Some patients find that the vasoconstrictor causes painful stinging when first applied. Eye drops that contain a vasoconstrictor should not be used in patients who have glaucoma or who wear soft contact lenses.

Steroid nasal sprays

Beclometasone nasal spray (aqueous pump rather than aerosol version), *fluticasone metered nasal spray* and *mometasone nasal spray* can be used for the treatment of hay fever and are available OTC for this indication.

A corticosteroid nasal spray is the treatment of choice for moderate-to-severe nasal symptoms that are continuous. The steroid acts to reduce inflammation that has occurred as a result of the allergen's action. Regular use is essential for full benefit to be obtained and treatment should be continued throughout the hay fever season. If symptoms of hay fever are already present, the patient needs to know that it is likely to take several days before the full treatment effect is reached.

Dryness and irritation of the nose and throat as well as nosebleeds have occasionally been reported; otherwise side effects are rare. *Beclometasone*, *fluticasone* and *mometasone nasal sprays* can be provided to patients over 18 years of age for up to 3 months. They should not be recommended for pregnant women or for anyone with glaucoma.

Patients are sometimes alarmed by the term 'steroid', associating it with potent oral steroids and possible side effects. Therefore, the pharmacist needs to take account of these concerns in explanations about the drug and how it works.

Sodium cromoglicate

Sodium cromoglicate is available OTC as nasal drops or sprays and as eye drops. *Cromoglicate* can be effective as a prophylactic if used correctly. It should be started at least 1 week before the hay fever season is likely to begin and then used continuously. There seem to be no significant side effects, although nasal irritation may occasionally occur.

Cromoglicate eye drops are usually highly effective for the treatment of eye symptoms that are not controlled by antihistamines and work very quickly (within an hour). However, *cromoglicate* should be used continuously to obtain full benefit. The eye drops should be used four times a day. The eye drops contain the preservative *benzalkonium chloride*, which occasionally is associated with allergy, and also should not be used by wearers of soft contact lenses as benzalkonium can be deposited in these lenses.

Topical antihistamines

Nasal treatments

Azelastine is a nasal spray used in allergic rhinitis. The BNF suggests that treatment should begin 2–3 weeks before the start of the hay fever season. Its place in treatment is for mild and intermittent symptoms in adults and children over 5 years. Advise the patient to keep the head upright during use to prevent the liquid trickling into the throat and causing an unpleasant taste.

Barrier nasal sprays

Thixotropic gel nasal sprays are available, the theory being that a barrier is formed that prevents allergens reaching the nasal mucosa. Licensed as a medical device, there are only two small published studies and no definitive evidence of effect or lack of effect.

Further advice

1. Car windows and air vents should be kept closed while driving. Otherwise a high pollen concentration inside the car can result. Some car air conditioning units will filter out pollen.
2. When house dust mite is identified as a problem, regular cleaning of the house to maintain dust levels at a minimum can help. Special vacuum cleaners are now on sale that are claimed to be particularly effective.

Hay fever in practice

Case 1

A young man presents in late May. He asks what you can recommend for hay fever. On questioning, he tells you that he has not had hay fever before, but some of his friends have got it and he thinks he has the same thing. His eyes have been itching a little and are slightly watery, and he has been sneezing for over a week. His nose has been runny and now feels quite blocked. He will not be driving. He is a student at the local sixth-form college and has exams coming up next week. He is not taking any medicines.

The pharmacist's view

This young man is experiencing the classic symptoms of hay fever for the first time. The nasal symptoms are causing the most discomfort; he has had rhinorrhoea and now has congestion, so it would be reasonable to recommend a corticosteroid nasal spray, provided he is aged 18 years or over. If he is under 18 years, an oral or topical antihistamine could be recommended, bearing in mind that he is sitting exams soon and so any preparation that might cause drowsiness is best avoided. His eyes are slightly irritated, but the symptoms are not very troublesome. You know that he is not taking any other medicines, so you could recommend *acrivastine*, *loratadine* or *cetirizine* but advise him to try it for a few days in advance, if intending to use it at exam time. If the symptoms are not better in a week, he should see the doctor or nurse.

The doctor's view

As suggested, a corticosteroid nasal spray is likely to be more effective for his symptoms. If he cannot use the OTC product because he is under 18 years, *acrivastine*, *loratadine* or *cetirizine* would be worth a try. Even though they are generally non-sedating, they can cause drowsiness in some patients and as recommended by the pharmacist, the student should be advised not to take his first dose just before the exam. If his symptoms do not settle, then referral is appropriate. He may benefit from *sodium cromoglicate eye drops* if his eye symptoms are not fully controlled by the antihistamine. It is often worthwhile trying an older antihistamine as an alternative because some people are unaffected by the sedative properties, but this should only be done if at a time when he is not driving or operating machinery.

Case 2

A woman in her early thirties wants some advice. She tells you that she has hay fever and a blocked nose and is finding it difficult to breathe. You find out that she has had the symptoms for a few days; they have gradually got worse.

She gets hay fever every summer, and it is usually controlled by *chlorphenamine* tablets that she buys every year and that she is taking at the moment. As a child, she suffered quite badly from eczema and is still troubled by it occasionally. She tells you that she has been a little wheezy for the past day or so, but she does not have a cough, and has not coughed up any sputum. She is not taking any other medicines.

The pharmacist's view

This woman has a previous history of hay fever, which has, until now, been dealt adequately with *chlorphenamine* tablets. Her symptoms have worsened over a period of a few days and she is now wheezing. It seems unlikely that she has a chest infection, which could have been a possible cause of the symptoms. She should be referred to the GP surgery quickly since her symptoms suggest a more serious condition such as asthma.

The doctor's view

This woman should be referred to her doctor's surgery to be seen urgently as she has shortness of breath. She almost certainly has seasonal asthma. In addition to the hay fever treatment recommended by her pharmacist, it is likely that she would benefit from a corticosteroid inhaler such as *beclometasone*. She would be prescribed a beta-2-agonist, such as a *salbutamol inhaler*, as well to use for shortness of breath and wheeze. This consultation may be a complex one to manage in the usual 10 min available in view of the time required for information-giving, explanation about the nature of the problem, the rationale for the treatments and the technique of using inhalers. Many nurses in primary care specialise in asthma so seeing the nurse initially might be a good option.

Respiratory symptoms for direct referral

Chest pain

Respiratory causes

A localised knifelike pain aggravated by breathing or coughing is characteristic of pleurisy. It is usually caused by a respiratory infection and may be associated with an underlying pneumonia. Less commonly, it may be caused by a pulmonary embolus (a blood clot that has lodged in a pulmonary artery after separating from a clot elsewhere in the circulation), and there may be a history of a swollen leg or immobility.

A pain similar to that experienced with pleurisy may arise from straining the muscles between the ribs following coughing. It may also occur with cracked or fractured ribs following injury or violent coughing. Another less common

cause of pain is due to a pneumothorax where a small leak develops in the lung causing its collapse.

The area beneath the upper front part of the chest may be very uncomfortable in the early stages of acute viral infections that cause inflammation of the trachea (tracheitis). Viral flu-like infections can be associated with non-specific muscular pain (myalgia).

Non-respiratory causes

Heartburn

Heartburn occurs when the acid contents of the stomach leak backwards into the oesophagus (gullet). The pain is described as a burning sensation, which spreads upwards towards the throat. Occasionally, it can be so severe as to mimic cardiac pain.

Cardiac pain

Cardiac pain typically presents as a tight, gripping, vicelike, dull pain that is felt centrally across the front of the chest. The pain may seem to move down one or both arms. Sometimes the pain spreads to the neck. When angina is present, the pain is brought on by exercise and relieved by rest. When a coronary event such as a heart attack (myocardial infarction) occurs, the pain is similar but more severe and prolonged. It may come on at rest. Usually, but not always, the patient feels very unwell with sweating, nausea and vomiting, and there may be shortness of breath.

Anxiety

Anxiety is a commonly seen cause of chest pain in general practice. The pain probably arises as a result of hyperventilation. Diagnosis can be difficult as the hyperventilation may not be obvious.

Shortness of breath

Shortness of breath may be a symptom of a cardiac or respiratory disorder. Differential diagnosis can be difficult. It is usually a sign of a serious condition, although it can be due to anxiety.

Respiratory causes

Asthma

Occasionally, asthma may develop in later life, but it is most commonly seen in young children or young adults. The breathlessness is typically associated with a wheeze that gets worse with exercise or can be precipitated by exercise,

although in mild cases the only symptom may be a recurrent nocturnal cough. Most people with asthma have normal breathing between attacks. The attacks are often precipitated by viral infections such as colds. Some are worse in the hay fever season, while others are aggravated by animal fur or dust. The breathlessness is often worse at night.

COPD (chronic bronchitis or emphysema)

COPD (chronic bronchitis or emphysema) is usually caused by years of cigarette smoking and gives rise to shortness of breath, especially on exertion, with a productive cough. The damage causing breathlessness is irreversible. When it is very severe the patient may be breathless at rest. The breathing often worsens when an infective episode develops. At such times there is also an increase in sputum production and the sputum may be coloured or purulent (like pus). If there is a sudden deterioration in symptoms, or an infective exacerbation is suspected, referral is appropriate.

Cardiac causes

Heart failure

Heart failure may develop gradually or present acutely as an emergency (usually in the middle of the night). The former (congestive cardiac failure) may cause breathlessness on exertion. It is often associated with ankle swelling (oedema) and is most common in the elderly. The more sudden type is called acute left ventricular failure. The victim is woken by severe shortness of breath and has to sit upright. There is often a cough present with clear frothy sputum (sometimes bloodstained). In such cases, the patient is very unwell and distressed.

Other causes

Hyperventilation syndrome

Hyperventilation syndrome occurs when the rate of breathing is too high for the bodily requirements. Paradoxically, the subjective experience is that of breathlessness. The sufferer complains of difficulty in taking in a deep breath. The experience is frightening but usually harmless. It may be associated with other symptoms such as tingling in the hands and feet, numbness around the mouth, dizziness and various muscular aches. In many cases it is caused by anxiety.

Wheezing

Wheezing is a high pitched whistling sound that occurs during breathing, often described as 'musical'. Wheezing sounds may be heard in the throat region in respiratory tract infections because of mucus in the large airways and are

of little consequence. They are to be differentiated from wheezing emanating from the lungs where smaller airways contract and inflammation causes more narrowing and impaired airflow. In this latter situation, there is usually some difficulty in breathing.

Viral-induced wheeze in children

Wheezing often occurs in infants with viral respiratory infections and may go on for several weeks. This is called viral-induced wheeze (in the past it was often called wheezy bronchitis). The infection is usually self-limiting, but the condition requires accurate diagnosis to exclude asthma. It may also be confused with croup (laryngotracheitis) or bronchiolitis. It often occurs again when there is a further viral respiratory infection; the main distinctions from asthma are that symptoms settle completely between episodes, there is no wheeze on exercise and wheeze is not triggered by other things such as allergy to pets. Some children who have a history of recurrent viral-induced wheeze develop asthma in the future but most will stop wheezing as they get older.

Asthma

Wheezing is a common feature of asthma and accompanies the shortness of breath. However, in very mild asthma it is not obvious and may present with just a cough. At the other extreme, an asthma attack can be so severe that so little air moves in and out of the lungs, there is no audible wheeze.

Cardiac

Wheezing may be a symptom associated with shortness of breath in heart failure.

Sputum

Sputum may be described as thick or thin and clear or coloured. It is a substance coughed up from the lungs and is not to be confused with saliva or nasal secretions. It may have a green tinge in people with asthma, but this does not signify infection.

COPD

Clear, thick sputum may be coughed up in COPD or by regular cigarette smokers. It may have a mucoid (jelly-like) nature and may be described as white, grey or clear with black particles. People with COPD are prone to recurrent infective exacerbations during which sputum production increases and turns yellow or green, or purulent (pus-like).

Pneumonia

Coloured mucoid (jelly-like) sputum may be present in other lung infections such as pneumonia. Rust-coloured sputum is a characteristic of pneumococcal (lobar) pneumonia. Usually it is associated with severely ill people who have a high fever and sweats.

Cardiac

Clear, thin (serous) sputum may be a feature of heart failure (left ventricular failure). The sputum forms as a result of pulmonary oedema, which characteristically awakens the patient in the night with shortness of breath. In such cases it may have a red-tinge or be blood stained.

Haemoptysis

The presence of blood in sputum is always alarming. Small traces of blood can result from a broken capillary caused by coughing and is harmless. The most common cause is respiratory tract infection, which is usually self-limiting, but it can be a symptom of serious disease such as lung cancer or pulmonary TB and should always be referred for further investigation. Occasionally, blood is coughed up after a nosebleed and is of no consequence. Haemoptysis is rare in children and often only presents where bleeding is substantial, as children tend to swallow rather than expectorate their sputum.

Chapter 2

Gastrointestinal Tract Problems

Mouth ulcers

Mouth ulcers are common, with recurrent aphthous ulcers affecting as many as one in five of the population. They are classified as aphthous (minor or major) or herpetiform ulcers. Most cases (more than three-quarters) are minor aphthous ulcers, which are self-limiting; they are not associated with systemic diseases and their cause is unknown. Other types of ulcer may be due to a variety of causes including infection, trauma and drug allergy. However, occasionally mouth ulcers appear as a symptom of serious disease such as carcinoma. The pharmacist should be aware of the signs and characteristics that indicate more serious conditions.

What you need to know

Age

Child, adult

Nature of the ulcers

Size, appearance, location, number

Duration

Previous history

Other symptoms

Medication

Significance of questions and answers

Age

Patients with aphthous ulcers may describe a history of recurrent ulceration, which began in childhood and has continued ever since. Minor aphthous ulcers are more common in women and occur most often between the ages of 10 and 40 years.

Nature of the ulcers

Minor aphthous ulcers usually occur in crops of one to five. The lesions may be up to 5 mm in diameter and appear as a white or yellowish centre with an inflamed red outer edge. They are painful, clearly defined, round or ovoid, shallow ulcers confined to the mouth. Common sites are the tongue margin and inside the lips and cheeks. The ulcers tend to last from 5 to 14 days.

Major aphthous ulcers are an uncommon severe variant of the minor ones. The ulcers that may be as large as 30 mm in diameter can occur in crops of up to 10. Sites involved are the lips, cheeks, tongue, pharynx and palate. They are more common in sufferers of ulcerative colitis.

Herpetiform ulcers are a variant of aphthous ulcers that present as multiple pinhead-sized ulcers that may fuse to form much larger, irregular-shaped ulcers and are very painful. In addition to the sites involved with aphthous ulcers, they may affect the floor of the mouth and the gums. These ulcers are called 'herpetiform' because the clinical appearance suggests a viral cause, but they are not caused by viral infection. They usually last 10–14 days. Table 2.1 summarises the features of the three main types of aphthous ulcers.

Aphthous ulcers should not be confused with cold sores, caused by herpes zoster virus, which are small blisters that usually develop on the skin and lips

Table 2.1 The three main types of aphthous ulcers

Minor	Major	Herpetiform
80% of patients	10–12% of patients	8–10% of patients
2–10 mm in diameter (usually 5–6 mm)	Usually over 10 mm in diameter; may be smaller	Pinhead sized
Round or oval	Round or oval	Round or oval; coalesce to form irregular shape as they enlarge
Uncomfortable but eating not affected	Prolonged and painful ulceration; may present patient with great problems – eating may become difficult	May be very painful

around the mouth (see Chapter 3 Skin Conditions: Cold sores). Cold sores often begin with a tingling, itching or burning sensation.

Systemic conditions such as Behçet's syndrome and erythema multiforme may produce mouth ulcers, but other symptoms would generally be present (see below).

Duration

Minor aphthous ulcers usually heal in less than 1 week; major aphthous ulcers take longer (10–30 days). Where herpetiform ulcers occur, fresh crops of ulcers tend to appear before the original crop has healed, which may lead patients to think that the ulceration is continuous.

Oral cancer

Any mouth ulcer that has persisted for longer than 3 weeks requires immediate referral to the dentist or doctor because an ulcer of such long duration may indicate serious pathology, such as carcinoma. Most oral cancers are squamous cell carcinomas, of which one in three affects the lip and one in four affects the tongue, often the undersurface. The development of a cancer may be preceded by a premalignant lesion, including erythroplasia (red) and leucoplakia (white) or a speckled leucoplakia. Squamous cell carcinoma may present as a single ulcer with a raised and indurated (firm or hardened) border. They may be painless initially. Common locations include the lateral border of the tongue, lips, floor of the mouth and gingiva. The key point to raise suspicion would be a lesion that has lasted for several weeks or longer. Oral cancer is much more common in smokers than non-smokers.

Previous history

There is often a family history of mouth ulcers (estimated to be present in one in three cases). Minor aphthous ulcers often recur, with the same characteristic features of size, numbers, appearance and duration before healing. The appearance of these ulcers may appear to follow trauma to the inside of the mouth or tongue, such as biting the inside of the cheek while chewing food. Episodes of ulceration generally recur after 1–4 months. However, trauma is not always a feature of the history, and the cause of minor aphthous ulcers remains unclear despite extensive investigation.

Ill-fitting dentures may produce ulceration, and, if this is a suspected cause, the patient should be referred back to the dentist so that the dentures can be refitted. Another problem that can occur in relation to dentures is candidal infection (thrush). Often this also involves redness, fissuring and soreness at the angle of the mouth (cheilitis). If this is suspected, *miconazole gel* can be used (or oral *fluconazole*) to treat the infection (see Chapter 8 Childhood Conditions: Oral thrush). Advise hygiene measures that involve leaving the dentures

out for at least 6 h in each 24 h period to promote healing of the gums. Sometimes longer is needed. The dentures should be cleaned and then soaked in a disinfectant solution, for example, *chlorhexidine*, overnight. The dentures can be soaked in any solution marketed to sterilise baby's bottles (providing the dentures contain no metal).

In women, minor aphthous ulcers often precede the start of the menstrual period. The occurrence of ulcers may cease after pregnancy, suggesting hormonal involvement. Stress and emotional factors at work or home may precipitate a recurrence or a delay in healing but do not seem to be causative.

Deficiency of iron, folate, zinc or vitamin B₁₂ may be a contributory factor in aphthous ulcers and may also lead to glossitis (a condition where the tongue becomes sore, red and smooth) and angular stomatitis (where the corners of the mouth become sore, cracked and red).

Food allergy is occasionally the causative factor, and it is worth enquiring whether the appearance of ulcers is associated with particular foods.

Other symptoms

The severe pain associated with major aphthous or herpetiform ulcers may mean that the patient finds it difficult to eat and, as a consequence, weight loss may occur. Weight loss would therefore be an indication for referral.

In most cases of recurrent aphthous mouth ulcers, the disease eventually burns itself out over a period of several years. Occasionally, as in Behcet's syndrome, there is progression with involvement of sites other than the mouth. Most commonly, the vulva, vagina and eyes are affected, with genital ulceration and iritis.

Behcet's syndrome can be confused with erythema multiforme, although in the latter there is usually a distinctive rash present on the skin. Erythema multiforme is sometimes precipitated by an infection or drugs (sulphonamides being the most common).

Mouth ulcers may be associated with inflammatory bowel disorders or with coeliac disease. Therefore, if persistent or recurrent diarrhoea is present, referral is essential. Patients reporting any of these symptoms should be referred to their GP surgery.

Rarely, ulcers may be associated with disorders of the blood including anaemia, abnormally low white cell count or leukaemia. It would be expected that in these situations there would be other signs of illness present and the sufferer would present directly to the doctor.

Medication

The pharmacist should establish the identity of any current medication, since mouth ulcers may be produced as a side effect of drug therapy. Drugs that have been reported to cause the problem include *aspirin* and other non-steroidal

anti-inflammatory drugs (NSAIDs), cytotoxic drugs, *nicorandil*, *beta-blockers* and *sulphasalazine* (sulfasalazine). Radiotherapy may also induce mouth ulcers. It is worth asking about herbal medicines because *feverfew* (used for migraine) has been known to cause mouth ulcers.

It would also be useful to ask the patient about any treatments tried either previously or on this occasion, and the degree of relief obtained. The pharmacist can then recommend an alternative product where appropriate.

When to refer

Duration of longer than 3 weeks
Associated weight loss
Ulcer suggestive of cancer
Involvement of other mucous membranes or eyes
Rash
Suspected adverse drug reaction
Diarrhoea

Treatment timescale

If there is no improvement after 1 week, the patient should see the doctor.

Management

Symptomatic treatment for aphthous ulcers can relieve pain and may reduce healing time. Active ingredients include antiseptics, corticosteroids and local anaesthetics. There is evidence from clinical trials to support use of topical corticosteroids and *chlorhexidine mouthwash*. Gels and liquids may be more accurately applied using a cotton bud or cotton wool, provided the ulcer is readily accessible. Mouthwashes can be useful where ulcers are difficult to reach.

Chlorhexidine gluconate mouthwash

There is some evidence that *chlorhexidine mouthwash* reduces duration and severity of ulceration. The rationale for the use of antibacterial agents in the treatment of mouth ulcers is that secondary bacterial infection frequently occurs. Such infection can increase discomfort and delay healing. *Chlorhexidine* helps to prevent secondary bacterial infection, but it does not prevent recurrence. It has a bitter taste and is available in peppermint as well as

standard flavour. Regular use can stain teeth brown – an effect that is not usually permanent. Advising the patient to brush the teeth before using the mouthwash can reduce staining. The mouth should then be well rinsed with water as *chlorhexidine* can be inactivated by some toothpaste ingredients. The mouthwash should be used twice a day, rinsing 10 ml in the mouth for 1 min, and continued for 48 h after symptoms have gone.

Topical corticosteroids

Hydrocortisone acts locally on the ulcer to reduce inflammation and pain and is thought to shorten healing time (although evidence is weak). It is available as muco-adhesive tablets (2.5 mg) for use by adults and children over 12. A tablet is held in close proximity to the ulcer until dissolved. This can be difficult when the ulcer is in an inaccessible spot. One tablet is used four times a day. Explain that the tablet should not be sucked, but dissolved in contact with the ulcer. Advise that the treatment is best used as early as possible. Before an ulcer appears, the affected area feels sensitive and tingling – the prodromal phase – and treatment should start then. Corticosteroids have no effect on recurrence.

Local analgesics

Benzydamine mouthwash or *spray* and *choline salicylate dental gel* are short acting but can be useful in very painful ulcers. The mouthwash is used by rinsing 15 ml in the mouth three times a day.

Numbness, tingling and stinging can occur with *benzydamine*. Diluting the mouthwash with the same amount of water before use can reduce stinging. The mouthwash is not licensed for use in children under 12. *Benzydamine spray* is used as four sprays onto the affected area three times a day. Choline salicylate gel is contra-indicated in children under 16 years of age because of possible links with Reye's syndrome.

Local anaesthetics (e.g. lidocaine [lignocaine] and benzocaine)

Local anaesthetic gels are often requested by patients. Although they are effective in producing temporary pain relief, maintenance of gels and liquids in contact with the ulcer surface is difficult. Reapplication of the preparation may be done when necessary. Tablets and pastilles can be kept in contact with the ulcer by the tongue and can be of value when just one or two ulcers are present. Any preparation containing a local anaesthetic becomes difficult to use when the lesions are located in inaccessible parts of the mouth.

Both *lidocaine* and *benzocaine* have been reported to produce sensitisation, but cross-sensitivity seems to be rare, probably because the two agents are from

different chemical groupings. Thus, if a patient has experienced a reaction to one agent in the past, the alternative can be tried.

Mouth ulcers in practice

Case 1

A man in his early 50s asks you to recommend something for painful mouth ulcers. On questioning, he tells you that he has two ulcers at the moment and has occasionally suffered from the problem over many years. Usually he gets one or two ulcers inside the cheek or lips, and they last for about 1 week. He is not taking any medicines and has no other symptoms. You ask to see the lesions and note that there are two small white patches, each with an angry-looking red border. One ulcer is located on the edge of the tongue and the other inside the cheek. The patient cannot remember any trauma or injury to the mouth and has had the ulcers for a couple of days. He tells you that he has used painkilling gels in the past and they have provided some relief.

The pharmacist's view

From what he has told you, it would be reasonable to assume that this patient suffers from recurrent minor aphthous ulcers. Treatment with *hydrocortisone muco-adhesive tablets* (one tablet dissolved in contact with the ulcers four times a day), or with a local anaesthetic or analgesic gel applied when needed, would help to relieve the discomfort until the ulcers healed. He should see his doctor if the ulcers have not healed within 3 weeks.

The doctor's view

This patient is most likely suffering from recurrent aphthous ulceration. As always, it is worthwhile enquiring about his general health, checking, in particular, that he does not have a recurrent bowel upset or weight loss. It may be a good opportunity to discuss smoking, and giving up, if this is relevant. These ulcers can be helped by a topical steroid preparation.

Case 2

One of your counter assistants asks you to recommend a strong treatment for mouth ulcers for a woman who has already tried several treatments. The woman tells you that she has a troublesome ulcer under her tongue that has persisted for a few weeks. She has used some pastilles containing a local anaesthetic and an antiseptic mouthwash but with no improvement. She smokes 20 cigarettes per day.

The pharmacist's view

This woman should be advised to see her doctor for further investigation. The ulcer has been present for several weeks, with no sign of improvement, suggesting the possibility of a serious cause.

The doctor's view

Referral is correct. It is likely that the doctor will refer her to an oral and maxillofacial surgeon for further assessment and probable biopsy as the ulcer could be malignant. Cancer of the mouth accounts for approximately 2% of all cancers of the body in Britain. It is most common after the sixth decade and is two times more common in men than women. It is frequently associated with smoking, including in pipe or cigar smokers. Chewing tobacco is also a risk factor. Cancer of the mouth is most often found on the tongue or lower lip. It may be painless initially.

Heartburn

Heartburn is a form of indigestion, or dyspepsia, also more formally known as gastro-oesophageal reflux disease (GORD). Symptoms of heartburn are caused when there is reflux of gastric contents, particularly acid, into the oesophagus, which irritate the sensitive mucosal surface (oesophagitis). Patients will often describe the symptoms of heartburn – typically a burning discomfort/pain felt in the stomach, passing upwards behind the breastbone (retrosternally). By careful questioning, the pharmacist can distinguish conditions that are potentially more serious.

What you need to know

Age

Adult, child

Symptoms

Heartburn

Difficulty in swallowing

Flatulence

Associated factors

Pregnancy

Precipitating factors

Relieving factors

Weight

Smoking habit

Eating

Medication

Medicines tried already
Other medicines being taken

Significance of questions and answers

Age

The symptoms of reflux and oesophagitis occur more commonly in patients aged over 55 years. Heartburn is not a condition normally experienced in childhood, although symptoms can occur in young adults and particularly in pregnant women (see Chapter 5 Women's Health: Common symptoms in pregnancy). Children with symptoms of heartburn should therefore be referred to their doctor.

Symptoms/associated factors

A burning discomfort is experienced in the upper part of the stomach in the midline (epigastrium), and the burning feeling tends to move upwards behind the breastbone (retrosternally). The pain may be felt only in the lower retrosternal area or on occasion right up to the throat, sometimes associated with an acid taste in the mouth.

Deciding whether or not someone is suffering from heartburn can be helped by enquiring about precipitating or aggravating factors. Heartburn is often brought on by bending or lying down. It is more likely to occur in those who are overweight and can be aggravated by a recent increase in weight. It is also more likely to occur after a large meal.

Alcohol and smoking are known to cause or aggravate heartburn. Stress is also a factor in the condition.

A large number of medicines are commonly associated with heartburn and people may notice symptoms shortly after starting these treatments. The main culprits are calcium channel blockers, anticholinergics (particularly those with more pronounced anticholinergic effects such as *amitriptyline*), *theophylline* and nitrates. The phosphodiesterase inhibitors, such as *sildenafil* and *tadalafil*, used to treat erectile dysfunction, are increasingly seen as a cause of heartburn or reflux symptoms in men.

The reason for this is that these types of drugs cause relaxation of the lower end of the oesophagus. This normally acts as a sphincter, allowing food into the stomach, but stopping the acid contents of the stomach going up into the oesophagus when the stomach contracts. The lining of the stomach is resistant to the irritant effects of acid, whereas the lining of the oesophagus is readily irritated by acid. Caffeine in coffee, tea or soft drinks such as cola, and in some analgesics and cold remedies, also relaxes the lower oesophageal sphincter and is also commonly implicated in heartburn.

NSAIDs will make the inflammation in oesophagitis worse. *Aspirin* or oral corticosteroids (e.g. *prednisolone*) can also aggravate oesophagitis.

Bisphosphonates (*alendronate* and *risedronate*, for example), taken for osteoporosis, can cause severe oesophagitis, and this is the reason it is important that people drink water and stay upright after taking them.

Severe pain

Sometimes the pain can come on suddenly and severely and even radiate to the back and arms. In this situation differentiation of symptoms is difficult as the pain can mimic a heart attack and urgent medical referral is essential. Sometimes patients who have been admitted to hospital apparently suffering a heart attack are found to have oesophagitis instead. For further discussion about causes of chest pain, see Chapter 1 Respiratory symptoms for direct referral: Chest pain.

Difficulty in swallowing (dysphagia)

Difficulty in swallowing, or dysphagia, must always be regarded as a serious symptom. The difficulty may be either discomfort as food or drink is swallowed or a sensation of food or liquids sticking in the gullet. Both require referral (see 'When to refer' below). It is possible that the swallowing discomfort may be secondary to inflammation of the oesophagus (oesophagitis) due to acid reflux, especially when it occurs while swallowing hot drinks or irritant fluids (e.g. alcohol or fruit juice). A history of a sensation that food sticks as it is swallowed or that it does not seem to pass directly into the stomach is an indication for immediate referral. It may be due to obstruction of the oesophagus, for example, by a tumour, or can result from severe oesophagitis with inflammation and narrowing (see below).

Regurgitation

Regurgitation can be associated with difficulty in swallowing. It occurs when recently eaten food sticks in the oesophagus and is regurgitated without passing into the stomach. This is due to a mechanical blockage in the oesophagus. This can be caused by a cancer as well as by less serious conditions such as an oesophageal stricture. A stricture is caused by long-standing acid reflux with oesophagitis. The continual inflammation of the oesophagus causes scarring. Scars contract and can therefore cause narrowing of the oesophagus. This can be treated by dilatation using a fibre-optic endoscope. However, medical examination and further investigations are necessary to determine the cause of regurgitation.

Pregnancy

It has been estimated that as many as half of all pregnant women suffer from heartburn. This is covered in more detail in the section on Common symptoms in pregnancy (Chapter 5 Women's Health). Pregnant women aged over

30 years are more likely to suffer from the problem. The symptoms are caused by an increase in intra-abdominal pressure and incompetence of the lower oesophageal sphincter. It is thought that hormonal influences, particularly progesterone, are important in the lowering of sphincter pressure. Heartburn often begins in mid-to-late pregnancy but may occur at any stage. The problem may sometimes be associated with stress.

Medication

The pharmacist should establish the identity of any medication that has been tried to treat the symptoms.

Any other medication being taken by the patient should also be identified to identify drugs that cause or aggravate the symptoms of heartburn (for example, calcium channel blockers, anticholinergics, *theophylline*, nitrates, caffeine and phosphodiesterase inhibitors, as discussed earlier). NSAIDs such as *ibuprofen*, *aspirin* and oral corticosteroids (e.g. *prednisolone*) will aggravate indigestion and any oesophagitis caused by reflux. Also, bisphosphonates can cause severe oesophagitis. If necessary, the patient should be advised to discuss these treatments with the prescriber.

Failure to respond to antacids and pain radiating to the arms could mean that the pain is not caused by acid reflux. Although acid reflux is still a possibility, other causes such as ischaemic heart disease (IHD) and gall bladder disease may have to be considered.

When to refer

Failure to respond to antacids
Related to prescribed medication
Pain radiating to arms
Difficulty in swallowing
Regurgitation
Long duration
Increasing severity
Children

Treatment timescale

If symptoms have not responded to treatment after 1 week, the patient should see a doctor.

Management

The symptoms of heartburn respond well to treatments that are available over-the-counter (OTC), and there is also a role for the pharmacist to offer practical

advice about measures to prevent recurrence of the problem. Pharmacists will use their professional judgement to decide whether to offer antacids/alginate, H₂ antagonists (*ranitidine*) or a proton pump inhibitor (PPI) (*esomeprazole*, *omeprazole*, *pantoprazole* or *rabeprazole*) as first-line treatment. The decision will also take into account customer preference.

Antacids

Antacids can be effective in controlling the symptoms of heartburn and reflux, more so in combination with an alginate. Choice of antacid can be made by the pharmacist using the same guidelines as in the section on Indigestion later in this chapter. Preparations that are high in sodium should be avoided by those who are pregnant and anyone on a sodium-restricted diet (e.g. those with heart failure or kidney or liver problems).

Algicates

Algicates form a raft that sits on the surface of the stomach contents and prevents reflux. Some alginate-based products contain *sodium bicarbonate*, which, in addition to its antacid action, causes the release of carbon dioxide in the stomach, enabling the raft to float on top of the stomach contents. If a preparation low in sodium is required, the pharmacist can recommend one containing *potassium bicarbonate* instead. Alginate products with low sodium content are useful for the treatment of heartburn in patients on a restricted sodium diet.

H₂ antagonists (*ranitidine*)

Ranitidine can be used for the short-term treatment of dyspepsia, hyperacidity and heartburn in adults and children over 16 (see also the section on Indigestion later in this chapter). The treatment limit is intended to ensure that patients do not continuously self-medicate for long periods. Pharmacists and their staff can ask whether use has been continuous or intermittent when a repeat purchase request is made.

Ranitidine has both a longer duration of action (up to 8–9 h) and a longer onset of action than antacids. It works by blocking the action of histamine at the histamine H₂ receptors of the parietal cells in the stomach. This decreases the production of stomach acid. The suppression is not as profound as the effect seen with PPIs.

Where food is known to precipitate symptoms, *ranitidine* should be taken an hour before food. H₂ antagonists are also effective for prophylaxis of nocturnal heartburn. Headache, dizziness, diarrhoea and skin rashes have been reported as adverse effects, but they are not common.

Ranitidine is licensed for OTC use in a dose of 75 mg with a maximum daily dose of 300 mg. It can be used for up to 2 weeks. Manufacturers state that patients should not take OTC *ranitidine* without checking with their doctor if they are taking other prescribed medicines.

Cimetidine, famotidine and *nizatidine* were approved for P use in the 1990s, but are not currently marketed as OTC products.

Proton pump inhibitors

Esomeprazole, omeprazole, pantoprazole and *rabeprazole* can be used for the relief of heartburn symptoms associated with reflux in adults. PPIs are generally accepted as being among the most effective medicines for the relief of heartburn. It may take a day or so for them to start being fully effective. During this period a patient with ongoing symptoms may need to take a concomitant antacid. PPIs work by suppressing gastric acid secretion in the stomach. They inhibit the final stage of gastric hydrochloric acid production by blocking the hydrogen–potassium ATPase enzyme in the parietal cells of the stomach wall (also known as the proton pump). A single treatment can last up to 24 h, or more.

Omeprazole and *rabeprazole* are licensed OTC as 10 mg tablets and *esomeprazole* and *pantoprazole* as 20 mg tablets, and their doses are shown in the table.

Strength and doses of OTC PPIs		
	Strength (mg)	Daily dose (mg)
Esomeprazole	20	20
Omeprazole	10	20
Pantoprazole	20	20
Rabeprazole	10	10

Patients taking a PPI should be advised not to take H₂ antagonists at the same time. The tablets should be swallowed whole with plenty of liquid prior to a meal. It is important that the tablets are not crushed or chewed. Alcohol and food do not affect the absorption of PPIs.

If no relief is obtained within 2 weeks, the patient should be referred to the GP surgery. PPIs should not be taken during pregnancy or while breastfeeding. Drowsiness has been reported but rarely. Treatment with PPIs may cause a false negative result in the ‘breath test’ for *Helicobacter*.

Practical points

Obesity

If the patient is overweight, weight reduction should be advised (see Chapter 10 Prevention of Heart Disease: Weight management). There is some evidence that weight loss reduces symptoms of heartburn.

Food

Small meals, eaten frequently, are better than large meals, as reducing the amount of food in the stomach reduces gastric distension, which helps to prevent reflux. Gastric emptying is slowed when there is a large volume of food in the stomach; this can also aggravate symptoms. High-fat meals delay gastric emptying. The evening meal is best taken several hours before going to bed.

Posture

Bending, stooping and even slumping in an armchair can provoke symptoms and should be avoided when possible. It is better to squat rather than bend down. Since the symptoms are often worse when the patient lies down, there is evidence that raising the head of the bed can reduce both acid clearance and the number of reflux episodes. Using extra pillows is often recommended, but this is not as effective as raising the head of the bed (for example, with bricks under the bed). The reason for this is that using extra pillows raises only the upper part of the body, with bending at the waist, which can result in increased pressure on the stomach contents.

Clothing

Tight, constricting clothing, especially waistbands and belts, can be an aggravating factor and should be avoided.

Other aggravating factors

Smoking, alcohol, caffeine and chocolate have a direct effect by making the lower oesophageal sphincter less competent by reducing its pressure and therefore contribute to symptoms. The pharmacist is in a good position to offer advice about how to stop smoking, offering a smoking cessation product where appropriate (see Chapter 10 Prevention of Heart Disease). The knowledge that the discomfort of heartburn will be reduced can be a motivating factor in giving up cigarettes.

Heartburn in practice

Patient perspectives

I've been having trouble with heartburn. In fact, it is one of the reasons I wanted to lose weight. I used to get it every once in a while, but then it started to get more frequent. It used to be only during the night, but then it started happening in the middle of the day. A burning feeling in my chest and acid coming up into my throat. Leaving a horrible taste in the back of

my throat. Because I started getting it during the day, I had to start carrying antacid tablets around in my handbag. I haven't been to a doctor. I found that getting my weight down to a certain level (out of the overweight range), and doing more walking, got rid of my heartburn. It seems it doesn't take much extra weight before it starts again. Exercise certainly helps.

Case 1

Mrs Amy Beston is a woman aged about 50 years who wants some advice about a stomach problem. On questioning, you find out that sometimes she gets a burning sensation just above the breastbone and feels the burning in her throat, often with a bitter taste, as if some food has been brought back up. The discomfort is worse when in bed at night and when bending over while gardening. She has been having the problem for 1 or 2 weeks and has not yet tried to treat it. Mrs Beston is not taking any medicines from the doctor. To your experienced eye, this lady is at least 7–8 kg overweight. You ask Mrs Beston if the symptoms are worse at any particular time, and she says they are worst shortly after going to bed at night.

The pharmacist's view

This woman has many of the classic symptoms of heartburn: pain in the retrosternal region and reflux. The problem is worse at night after going to bed, as is common in heartburn. Mrs Beston has been experiencing the symptoms for about 2 weeks and is not taking any medicines from the doctor.

It would be reasonable to advise the use of an alginate/antacid product about 1 h after meals, and before going to bed an H₂ antagonist or a PPI. Practical advice could include the tactful suggestion that Mrs Beston's symptoms would be improved if she lost weight. If your pharmacy provides a weight management service, you could ask if Mrs Beston is interested in participating. Alternatively, advice on healthy eating and contact with a local weight management group could be given. Mrs Beston could also try cutting down on tea, coffee, alcohol and, if she smokes, stopping. This is a long list of potential lifestyle changes. It might be a good idea to explain the contributory factors to Mrs Beston and negotiate with her as to which one she will begin with. Success is more likely to be achieved and sustained if changes are introduced one at a time.

Women going through the menopause are more prone to heartburn, and weight gain at the time of menopause will exacerbate the problem.

The doctor's view

The advice given by the pharmacist is sensible. Acid reflux is the most likely explanation for her symptoms. It is not clear from the presentation whether she was seeking medication or simply asking for an opinion about the cause of her symptoms or both. It is always helpful to explore a patient's expectations

in order to produce an effective outcome to a consultation. In this instance the interchange between the pharmacist and Mrs Beston is complex as a large amount of information needs to be given, both explaining the cause of the symptoms (providing an understandable description of oesophagus, stomach, acid reflux and oesophagitis) and advising about treatment and lifestyle. It is often sensible to offer a follow-up discussion to check on progress and reinforce advice. If her heartburn was not improving, it would provide an opportunity to recommend referral to her GP surgery.

The doctor's next step would be very much dependent on this information. If a clear story of heartburn caused by acid reflux were obtained, then reinforcement of the pharmacist's advice concerning posture, weight, diet, smoking and alcohol would be appropriate. If medication was requested, antacids or alginates could be tried. If the symptoms were severe, an H₂ antagonist or PPI would be treatment options. In the case of persistent symptoms or diagnostic uncertainty, referral for endoscopy would be necessary. *Helicobacter pylori* eradication is not thought to play a role in the management of heartburn.

Case 2

You have been asked to recommend a 'strong' mixture for heartburn for Harry Groves, a local man in his late 50s who works in a nearby warehouse. Mr Groves tells you that he has been getting terrible heartburn for which his doctor prescribed some mixture about 1 week ago. You remember dispensing a prescription for a liquid alginate preparation. The bottle is now empty, and the problem is no better. When asked if he can point to where the pain is, Mr Groves gestures across his chest and clenches his fist when describing the pain, which he says feels heavy. You ask whether the pain ever moves, and Mr Groves tells you that sometimes it goes to his neck and jaw. Mr Groves is a smoker and is not taking any other medicines. When asked if the pain worsens when bending or lying down, Mr Groves says it does not, but he tells you he usually gets the pain when he is at work, especially on busy days.

The pharmacist's view

This man should see his doctor immediately. The symptoms he has described are not those that would be typical of heartburn. In addition, he has been taking an alginate preparation, which has been ineffective. Mr Groves' symptoms give cause for concern; the heartburn is associated with effort at work, and its location and radiation suggest a more serious cause, possibly cardiac.

The doctor's view

Mr Groves' story is suggestive of angina. He should be advised to discuss with his doctor (or the out-of-hours service) immediately. The doctor would require more details about the pain, such as duration and whether or not the pain can

come on without any exertion. The doctor would want to know if the symptoms have been getting worse over the last week (as suggested by his excessive antacid use) as this indicates ‘unstable angina’. If the symptoms have been getting progressively worse over the previous week or if periods of pain were frequent, prolonged and unrelieved by rest, it would be usual to arrange immediate hospital admission as the picture sounds like unstable angina or acute coronary syndrome.

These days nearly all cases of suspected cardiac chest pain or angina are investigated urgently at a hospital (some hospitals run a same-day chest pain clinic). Fuller assessment would usually include an examination, electrocardiogram (ECG), urine analysis and blood test followed by ‘treadmill’ testing (exercise cardiogram) and coronary angiography. The latter allows visualisation of the blood vessels supplying the heart muscle and assessment of whether surgery or stenting would be advisable. If coronary artery disease is confirmed, this would lead to medication, for example, *aspirin* or *clopidogrel*, and *glyceryl trinitrate* (GTN), and possibly a beta-blocker, or a rate-limiting calcium channel blocker being prescribed. As this is ‘secondary prevention’, for established disease, a statin (usually *atorvastatin* 80 mg daily) is also indicated. Mr Groves would be strongly advised to stop smoking and cessation advice provided, with possibly a referral to the stop smoking clinic.

Indigestion

Indigestion (dyspepsia) is upper abdominal discomfort or pain that may be described as a burning sensation, heaviness or an ache. It is often related to eating and may be accompanied by symptoms such as nausea, fullness in the upper abdomen or belching. It is commonly presented in community pharmacies and is often self-diagnosed by patients, who use the term indigestion to include anything from pain in the chest and upper abdomen to lower abdominal symptoms. Many patients use the terms indigestion and heartburn interchangeably and there may be an overlap in symptoms. The pharmacist must establish whether such a self-diagnosis is correct and exclude the possibility of serious disease.

What you need to know

Symptoms

Age

Adult, child

Duration of symptoms

Previous history

Details of pain

Where is the pain?

What is its nature?

- Is it associated with food?
- Is the pain constant or spasmodic?
- Are there any aggravating or relieving factors?
- Does the pain move to anywhere else?

Associated symptoms

- Loss of appetite
- Weight loss
- Nausea/vomiting
- Alteration in bowel habit

Diet

- Any recent change of diet?
- Alcohol consumption
- Smoking habit
- Medication
- Medicines already tried
- Other medicines being taken

Significance of questions and answers

Symptoms

The symptoms of typical indigestion include poorly localised upper abdominal (the area between the belly button and the breastbone) discomfort that may be a burning, heaviness or ache, which may be brought on by particular foods, excess food, alcohol or medication (e.g. NSAIDS or *aspirin*).

Age

Indigestion is rare in children. Abdominal pain is a common symptom in children and is often associated with an infection. OTC treatment is not appropriate for abdominal pain of unknown cause in children, and referral to the GP surgery would be advisable.

Be cautious when dealing with first-time indigestion in older people and refer them to the GP for a diagnosis; NICE recommend an age threshold of 55 years. This concern is based on the risk of gastric cancer, which, while rare in young patients, is more likely to occur in those aged 55 years and over. Careful history taking is therefore of paramount importance here.

Duration/previous history

Indigestion that is persistent or recurrent should be referred to the doctor, after considering the information gained from questioning. Any patient with a previous history of the symptom that has not responded to treatment, or that has got worse, should be referred.

Details of pain/associated symptoms

If the pharmacist can obtain a good description of the pain, then the decision whether to advise treatment or referral is much easier. A few medical conditions that may present as indigestion but require referral are described below.

Ulcer

Ulcers may occur in the stomach (gastric ulcer) or in the first part of the small intestine leading from the stomach (duodenal ulcer). Duodenal ulcers are more common and have different symptoms from gastric ulcers. They are much rarer than they used to be, possibly because of reduced prevalence of *H. pylori*, which is the main cause.

In the past it was said that the diagnoses could be made clinically based on symptoms and examination, but it is now thought that this differentiation is less clear-cut (possibly related to the reduced prevalence and to the widespread use of PPIs). Typically, the pain of a duodenal ulcer is said to be localised to the upper abdomen, slightly to the right of the midline. Patients can point to the site of pain with a single finger. The pain is gnawing in nature and is most likely to occur when the stomach is empty, especially at night. It is relieved by food (although it may be aggravated by fatty foods) and antacids. The pain of a gastric ulcer is in the same area but less well localised. It is often aggravated by food and may be associated with nausea and vomiting. Appetite is usually reduced, and the symptoms of gastric ulcer are persistent and severe. On examination, there is tenderness in the upper abdomen. Both types of ulcers are associated with *H. pylori* infection and may be exacerbated or precipitated by smoking and NSAIDs. Gastric ulcer is worrying because of the associated risk of cancer.

Gallstones

Single or multiple stones can form in the gall bladder, which is situated beneath the liver. The gall bladder stores bile. It periodically contracts to squirt bile through a narrow tube (bile duct) into the duodenum to aid the digestion of food, especially fat. Stones can become temporarily stuck in the opening to the bile duct as the gall bladder contracts. This causes severe episodic pain (biliary colic) in the upper abdomen below the right rib margin. Biliary colic may be precipitated by a fatty meal. Because the secretion of bile is impaired, the gall bladder can become distended and persistently painful and is prone to infection (cholecystitis). Sometimes these pains can be confused with that of a duodenal ulcer.

Gastro-oesophageal reflux

Many patients use the terms heartburn and indigestion interchangeably, and sometimes the two conditions cannot be differentiated. Heartburn is a pain

arising in the upper abdomen passing upwards behind the breastbone (retrosternal) towards the throat. It is often precipitated by a large meal or by bending and lying down. Heartburn can often be treated by the pharmacist but sometimes requires referral (see previous section in this chapter).

Irritable bowel syndrome

Irritable bowel syndrome (IBS) is a common, non-serious but troublesome condition in which symptoms are thought to be caused by bowel spasm (see also separate section on IBS later in this chapter). The cause is unknown, but it is commonly associated with anxiety and stress. There is usually an alteration in bowel habit, sometimes with alternating constipation and diarrhoea. Pain is usually present and a common feature is that this is often relieved by defaecation. It is usually lower abdominal (below the umbilicus), but it may sometimes be upper abdominal and therefore confused with indigestion. People with recurrent indigestion for which no cause can be found may have a form of IBS, and there can be a distinct overlap with lower abdominal symptoms. Any persistent alteration in normal bowel habit is an indication for referral.

Atypical angina

Angina is usually experienced as a tight, painful constricting band across the middle of the chest, sometimes with radiation to the neck and/or arms. Atypical angina pain may be felt in the lower chest or upper abdomen. It is likely to be precipitated by exercise or exertion. If this occurs or is suspected, urgent referral is necessary.

More serious disorders

Persisting upper abdominal pain, especially when associated with anorexia and unexplained weight loss, may herald an underlying cancer of the stomach or pancreas. Ulcers sometimes start bleeding, which may present with blood in the vomit (haematemesis) or in the stool (melaena). In the latter, the stool becomes tarry and black. See Alarm symptoms (Box 2.1). Urgent referral is necessary.

Diet

Fatty foods, or excessive consumption, can cause indigestion, aggravate ulcers and may precipitate biliary colic if there is gall bladder abnormality. Alcohol, particularly large amounts, can cause indigestion symptoms.

Smoking habit

Smoking predisposes to, and may cause, indigestion and ulcers. Ulcers heal more slowly and relapse more often during treatment in people who smoke.

Box 2.1 Alarm symptoms and indigestion: Reasons for referral

There's usually no need for medical advice for indigestion as it's often mild and infrequent. Pharmacists can usually help with advice on lifestyle and treatment.

Refer to the GP if there is recurring indigestion and any of the following apply:

- 55 years of age or over
- Unexplained weight loss (without meaning to)
- Difficulty swallowing (dysphagia)
- Persistent or recurrent nausea or vomiting
- Iron deficiency anaemia (however this diagnosis will require a blood test)
- Patient concerned by a lump or mass in the stomach
- Blood in the vomit or blood in the stools (which may be black and tarry – melaena)
- Persistent abdominal pain, particularly if severe or unrelated to meals
- No response to H₂ antagonists or PPI

These symptoms may be a sign of a more serious underlying health problem, such as a stomach ulcer or stomach cancer.

Source: Adapted from NHS Choices – Indigestion: When to see a GP, and NICE Cancer Referral Guidelines – NG12.

The pharmacist is in a good position to offer advice on smoking cessation, perhaps with a recommendation to use nicotine replacement therapy.

Medication

Medicines already tried

Anyone who has tried one or more appropriate treatments without improvement or whose initial improvement in symptoms is not maintained should see the doctor.

Other medicines being taken

Gastrointestinal (GI) side effects can be caused by many drugs, so it is important for the pharmacist to ascertain any medication that the patient is taking.

NSAIDs and aspirin have been implicated in the causation of ulcers and bleeding ulcers, and there are differences in toxicity related to increased doses and to the nature of individual drugs. They inhibit prostaglandin synthesis in the gut lining, reducing the production of alkaline mucus that protects against stomach acid and thereby increasing the risk of ulceration in the stomach and duodenum. These drugs commonly cause indigestion. Clopidogrel is an antiplatelet agent that also increases risk of GI bleeding. Elderly patients are particularly prone to such problems, and pharmacists should bear this in mind. Severe or prolonged indigestion in any patient taking an NSAID or aspirin is an indication for referral. Standard practice is now to co-prescribe a PPI with an NSAID as 'gastropreservation' in people over 65 years (the PPI prevents acid

from damaging the gastro-duodenal lining). Particular care is needed in older people, for whom referral is always advisable if NSAID-associated indigestion is suspected. GI bleeding results in around 50–70 000 hospital admissions per year in the United Kingdom and is associated with about 2500 deaths. Many of these admissions and deaths are caused by the use of NSAIDs, clopidogrel and aspirin in older people.

OTC medicines also require consideration: *aspirin*, *ibuprofen* and *iron* are among those that may produce symptoms of indigestion. Some drugs may interact with antacids (see 'Interactions with antacids' below).

When to refer (see also Box 2.1)

Age over 55 years, if symptoms develop for first time.

Associated with prescription of NSAID or aspirin.

Symptoms are persistent (longer than 5 days) or recurrent.

Pain is severe.

Blood in vomit or stool.

Pain gets worse on effort.

Persistent nausea or vomiting.

Treatment has failed.

Adverse drug reaction is suspected.

Associated weight loss.

Children.

Treatment timescale

If symptoms have not improved within 5 days, the patient should see the doctor.

Management

Once the pharmacist has excluded serious disease, treatment of dyspepsia with antacids or an H₂ antagonist may be recommended and is likely to be effective. PPIs are available OTC, specifically for heartburn and reflux symptoms (see previous section on Heartburn). The preparation should be selected on the basis of the individual patient's symptoms. Smoking, alcohol and fatty meals can all aggravate symptoms, so the pharmacist can advise appropriately.

Antacids

In general, liquids are more effective antacids than are solids; they are easier to take, work more quickly and have a greater neutralising capacity. The liquid allows a large surface area to be in contact with the gastric contents. Some patients find tablets more convenient, and these should be well chewed before swallowing for the best effect. It might be appropriate for the patient to

have both; the liquid could be taken before and after working hours, while the tablets could be taken during the day for convenience. Antacids are best taken about 1 h after a meal because the rate of gastric emptying has then slowed and the antacid will therefore remain in the stomach for longer. Taken at this time antacids may act for up to 3 h compared with only 30 min–1 h if taken before meals. Repeated doses may be needed for full effect.

Sodium bicarbonate

Sodium bicarbonate is water soluble, acts quickly, is an effective neutraliser of acid and has a short duration of action. It should not be used alone for the relief of indigestion, but it is present as an ingredient in many indigestion remedies. It is often included in OTC formulations in order to give a fast-acting effect, in combination with longer-acting agents. However, antacids containing *sodium bicarbonate* should be avoided in patients if sodium intake should be restricted (e.g. in patients with congestive heart failure). It increases excretion of *lithium*, leading to reduced plasma levels. The contents of OTC products should therefore be carefully scrutinised. The relative sodium contents of different antacids can be found in the *British National Formulary (BNF)*. In addition, long-term use of *sodium bicarbonate* may lead to systemic alkalosis and renal damage. In short-term use, mixed with other ingredients, however, it can be a valuable and effective antacid. Its use is more appropriate in acute rather than chronic dyspepsia.

Aluminium and magnesium salts (e.g. aluminium hydroxide and magnesium trisilicate)

Aluminium-based antacids are effective, but they tend to be constipating. The use of aluminium antacids is best avoided in anyone who is constipated and in elderly patients who have a tendency to constipation. Magnesium salts are more potent acid neutralisers than aluminium salts. They tend to cause osmotic diarrhoea as a result of the formation of insoluble magnesium salts and are useful in patients who are constipated or prone to constipation. Combination products containing aluminium and magnesium salts may cause less bowel disturbance and are therefore valuable preparations for recommendation by the pharmacist.

Calcium carbonate

Calcium carbonate is commonly included in OTC formulations. It acts quickly, has a prolonged action and is a potent neutraliser of acid. It can cause acid rebound and, if taken over long periods at high doses, can cause hypercalcaemia and so should not be recommended for long-term use. *Calcium carbonate* and *sodium bicarbonate* can, if taken in large quantities with a high intake of milk, result in the milk-alkali syndrome. This involves hypercalcaemia, metabolic

alkalosis and renal insufficiency; its symptoms are nausea, vomiting, anorexia, headache and mental confusion.

Dimeticone (dimethicone)

Dimeticone is sometimes added to antacid formulations for its defoaming properties. Theoretically, it reduces surface tension and allows easier elimination of gas from the gut by passing flatus or eructation (belching). Evidence of benefit is uncertain.

Interactions with antacids

The BNF advises that antacids should preferably not be taken at the same time as other drugs since they may impair absorption. Antacids may also damage enteric tablet coatings designed to prevent break down in the stomach. The consequences of this may be that release of the drug is unpredictable; also adverse effects may occur if the drug is released earlier than intended, in the stomach. Taking the doses of antacids and other drugs at least 1 h apart should minimise interactions.

Antacids may reduce the absorption of some antibiotics and antifungals (tetracyclines, *azithromycin*, *itraconazole*, *ketoconazole*, *ciprofloxacin*, *norfloxacin*, *rifampicin*). Absorption of angiotensin-converting enzyme (ACE) inhibitors, phenothiazines, *gabapentin* and *phenytoin* may also be reduced (see the BNF for a full current list).

Sodium bicarbonate may increase the excretion of *lithium* and lower the plasma level, so a reduction in lithium's therapeutic effect may occur. Antacids containing *sodium bicarbonate* should not therefore be recommended for any patient on lithium therapy.

The changes in pH that occur after antacid administration can result in a decrease in iron absorption if iron is taken at the same time. The effect is caused by the formation of insoluble iron salts due to the changed pH. Taking iron and antacids at different times should prevent the problem (see the BNF for a detailed listing of interactions with antacids).

Ranitidine

Ranitidine can be used for the short-term treatment of dyspepsia and heartburn (see also Heartburn: Management, earlier in this chapter). Treatment with *ranitidine* is limited to a maximum of 2 weeks.

Indigestion in practice

Case 1

Mrs Johnson, a woman in her 70s, complains of indigestion and an upset stomach. On questioning, you find out she has had the problem for a few days; the

pain is epigastric and does not seem to be related to food. She has been feeling slightly nauseated. You ask about her diet; she has not changed her diet recently and has not been overdoing it. She tells you that she is taking four lots of tablets: for her heart, her waterworks and some new ones for her bad hip (*naproxen* 250 mg two twice daily). She has been taking them after meals, as advised, and has not tried any medicines yet to treat her symptoms. Before the *naproxen* she was taking *paracetamol* for the pain. She normally uses *paracetamol* as a general painkiller at home; she tells you that she cannot take *aspirin* because it upsets her stomach.

The pharmacist's view

It sounds as though this woman is suffering GI symptoms as a result of her NSAID. Such effects are more common in elderly patients and are potentially more serious. She has been taking the medicine after food, which should have minimised any GI effects, and the best course of action would be advise her to stop the *naproxen* and to refer her back to the doctor. It would be worth asking Mrs Johnson about the dose and frequency with which she took the *paracetamol* to see whether she took enough for it to be effective.

The doctor's view

Referral back to her doctor is the correct course of action. Almost certainly her symptoms have been caused by the *naproxen*. These days any older person prescribed a NSAID should also be co-prescribed a PPI, and this has not happened for some reason. Another important consideration given her 'heart problems' is the cardiovascular risk from taking NSAIDs, although this is relatively low with *naproxen* compared with some others.

She should be advised to stop the *naproxen*. A blood test for *H. pylori* may be helpful, and while awaiting the results she could be started on a PPI. If the *H. pylori* test came back positive, she may also benefit from *H. pylori* eradication therapy.

Control of her primary symptom (hip pain) will then be a problem. Ideally NSAIDs should be avoided. It may be possible to change the *paracetamol* to a compound preparation containing *paracetamol* and *codeine* or *dihydrocodeine*. If this is not enough, the *naproxen* could be reintroduced cautiously, initially at a lower dose, while taking a PPI, if her indigestion symptoms have settled after a few weeks. Failure to control hip pain due to osteoarthritis (OA) may require referral to an orthopaedic surgeon to consider a hip replacement.

Case 2

A man in his early 50s comes in to ask your advice about his stomach trouble. He tells you that he has been having the problem for a couple of months, but it seems to have got worse. The pain is in his stomach, quite high up; he had

similar pain a few months ago, but it got better and has now come back again. The pain seems to get better after a meal; sometimes it wakes him during the night. He has been taking Rennies to treat his symptoms; they did the trick but do not seem to be working now, even though he takes a lot of them. He has also been taking some OTC *ranitidine* tablets. He is not taking any other medicines.

The pharmacist's view

This patient has a history of epigastric pain, which remitted and has now returned. At one stage, his symptoms responded to an antacid, but they no longer do so, despite his increasing the dose. This long history, the worsening symptoms and the failure of acid suppression medication warrant referral to the doctor.

The doctor's view

It would be sensible to recommend referral to his doctor as the information obtained so far does not permit diagnosis. It is possible that he has a peptic ulcer in his stomach or duodenum, acid reflux or even stomach cancer, but further information is required. An appropriate examination and investigation will be necessary.

The doctor would need to listen carefully, first by asking open questions and then by asking more direct, closed questions to find out more information; for example, how does the pain affect him? What is the nature of the pain (burning, sharp, dull, tight or constricting)? Does it radiate (to back or chest, down arms, up to neck/mouth)? Are there any associated symptoms (nausea, difficulty in swallowing, loss of appetite, weight loss or shortness of breath)? Are there any other problems (constipation or flatulence)? What are the aggravating/relieving factors? How is his general health? What is his diet like? How are things going for him generally (personally/professionally)? Does he smoke? How much alcohol does he drink? What does he think might be wrong with him? What are his expectations for treatment/management?

The doctor is likely to test for *H. pylori* and to arrange endoscopy. Ideally the doctor will not prescribe a PPI or H₂ antagonist (and advise not to take these OTC) if the endoscopy can be arranged swiftly, as use of these drugs can make diagnosis problematic. However, if the patient's symptoms are severe, these treatments may have to be used.

Nausea and vomiting

Nausea and vomiting are symptoms that have many possible causes. From the pharmacist's point of view, while there are treatments available to prevent nausea and vomiting, there is no effective OTC treatment once vomiting

is established. For that reason, this section will deal briefly with some of the causes of these symptoms and then continue in the next section to consider the prevention of motion sickness, where the pharmacist can recommend effective treatments to help prevent the problem.

What you need to know

Age

Infant, child, adult, elderly

Pregnancy

Duration

Associated symptoms

Has vomiting started?

Abdominal pain

Diarrhoea

Constipation

Fever

Alcohol intake

Medication

Prescribed

OTC

Previous history

Dizziness/vertigo

Significance of questions and answers

Age

The very young and the elderly are most at risk of dehydration as a result of vomiting. Vomiting of milk in infants less than 1 year old may be due to infection or feeding problems or, rarely, an obstruction such as pyloric stenosis.

In pyloric stenosis, there is thickening of the muscular wall around the outlet of the stomach, which causes a blockage. It typically occurs, for unknown reasons, in the first few weeks of life in a first-born male. In some babies, early exposure to oral erythromycin has been implicated as a risk factor. The vomiting is frequently projectile in that the vomit is forcibly expelled a considerable distance. The condition can be cured by an operation under general anaesthetic lasting about half an hour called a pyloromyotomy. The pharmacist must distinguish, by questioning, between vomiting (the forced expulsion of gastric contents through the mouth) and regurgitation (where food is effortlessly brought up from the throat and stomach).

Regurgitation sometimes occurs in babies, where it is known as possetting and is a normal occurrence. When regurgitation occurs in adults, it is associated with oesophageal disease with difficulty in swallowing and requires referral

(see earlier in this chapter, Heartburn: Symptoms: Difficulty in swallowing). Nausea is associated with vomiting but rarely with regurgitation, and this can be employed as a distinguishing feature during questioning.

Pregnancy

Nausea and vomiting are very common in pregnancy, usually beginning after the first missed period and occurring early in the morning. Pregnancy should be considered as a possible cause of nausea and vomiting in any woman of child-bearing age who presents at the pharmacy complaining of nausea and vomiting. Nausea and vomiting are more common in the first pregnancy than in subsequent ones. (See Chapter 5 Women's Health: Common symptoms in pregnancy, for more detail.)

Duration

Generally, adults should be referred to the GP surgery if vomiting has been present for longer than 2 days. Children under 2 years should be referred, whatever the duration, because of the risks from dehydration. Anyone presenting with chronic vomiting should be referred to the doctor since such symptoms may indicate the presence of a peptic ulcer or gastric cancer.

Associated symptoms

An acute infection (gastroenteritis) is often responsible for vomiting, and, in these cases, diarrhoea (see section on Diarrhoea, later in this chapter) may also be present. Careful questioning about food intake during the previous 2 days may give a clue as to the cause. In young children, rotavirus is the most common cause of gastroenteritis; this is highly infectious and so it is not unusual for more than one child in the family to be affected. In such situations, there are usually associated cold symptoms. Vomiting without other symptoms, in the very young, can be caused by serious infection such as meningitis and is an indication for immediate referral.

The vomiting of blood may indicate serious disease and is an indication for urgent referral, since it may be caused by haemorrhage from a peptic ulcer or gastric cancer. Sometimes the trauma of vomiting can cause a small bleed, or blood streaking of vomit, due to a tear in the gut lining. Vomit with a faecal smell means that the GI tract may be obstructed and requires urgent referral.

Nausea and vomiting may be associated with a migraine. Any history of dizziness or vertigo should be noted as it may point to inner ear disease, for example, labyrinthitis or Meniere's disease as a cause of the nausea.

Alcohol intake

People who drink large quantities of alcohol may vomit, often in the morning. This may be due to occasional binge drinking or chronic ingestion of alcohol.

People with problem drinking and alcohol dependence often feel nauseous and retch in the morning. The questioning of patients about their intake of alcohol is a sensitive area and should be approached with tact. Asking about smoking habits might be a good way of introducing other social habits.

Medication

Prescribed and OTC medicines may make patients feel sick, and it is therefore important to determine which medicines the patient is currently taking. *Aspirin* and NSAIDs are common causes. Some antibiotics may cause nausea and vomiting, for example, *erythromycin* (which stimulates stomach contraction). Oestrogens, corticosteroids and opioid analgesics may also produce these symptoms. Symptoms can sometimes be improved by taking the medication with food, but if they continue, the patient should see the doctor. Opioid-induced nausea and vomiting is very common, and some people are particularly susceptible to this; when initiating strong opioids such as *morphine*, an anti-emetic should always be co-prescribed. *Digoxin* toxicity may show itself by producing nausea and vomiting, and such symptoms in a patient who is taking *digoxin*, especially an older person, should prompt immediate referral where questioning has not produced an apparent cause for the symptoms. Vomiting, with loss of fluids and possible electrolyte imbalances, may cause problems in older people taking *digoxin* and diuretics.

Previous history

Any history that suggests chronic nausea and vomiting would indicate referral.

Management

Patients who are vomiting should be referred to the doctor, who will be able to prescribe an anti-emetic if needed. The pharmacist can initiate rehydration therapy in the meantime.

Motion sickness and its prevention

Motion sickness is thought to be caused by a conflict of messages to the brain, where the vomiting centre receives information from the eyes, the GI tract and the vestibular system in the ear. Symptoms of motion sickness include nausea and sometimes vomiting, pallor and cold sweats. Parents commonly seek advice about how to prevent motion sickness in children, in whom the problem is most common. Any form of travel can produce symptoms, including air, sea and road. Effective prophylactic treatments are available OTC and can be selected to match the patient's needs.

What you need to know

Age

Infant, child, adult

Previous history

Mode of travel: car, bus, air, ferry, etc.

Length of journey

Medication

Significance of questions and answers

Age

Motion sickness is common in young children. Babies and very young children up to 2 years seem to only rarely suffer from the problem and therefore do not usually require treatment. The incidence of motion sickness seems to greatly reduce with age, although some adults still experience symptoms, and seasickness remains a problem for many. The minimum age at which products designed to prevent motion sickness can be given varies, so for a family with several children careful product selection can provide one medicine to treat all cases.

Previous history

The pharmacist should ascertain which members of the family have previously experienced motion sickness and for whom treatment will be needed.

Mode of travel/length of journey

Details of the journey to be undertaken are useful. The estimated length of time to be spent travelling will help the pharmacist in the selection of prophylactic treatment, since the length of action of available drugs varies.

Once vomiting starts, there is little that can be done, so any medicine recommended by the pharmacist must be taken in good time before the journey if it is to be effective. The fact that it is important that the symptoms are prevented before they can gain a hold should be emphasised to the parents. If it is a long journey, it may be necessary to repeat the dose while travelling, and the recommended dosage interval should be stressed.

The pharmacist can also offer useful general advice about reducing motion sickness according to the method of transport to be used. For example, keeping still, if possible by choosing a cabin or seat in the middle of a boat or plane, and using a pillow or headrest to help keep the head as still as possible. Children are less likely to feel or be sick if they can see out of the car, so appropriate

seats can be used to elevate the seating position of small children. This seems to be effective in practice and is thought to be because it allows the child to see relatively still objects outside the car. This ability to focus on such objects may help to settle the brain's receipt of conflicting messages.

For any method of travel, children are less likely to experience symptoms if they are kept calm and relaxed as much as possible. They can be kept occupied by listening to music or playing games as they are therefore concentrating on something else. However, again, it seems that looking outside at still objects remains helpful and that a simple game, for example, 'I spy', is better than reading in this respect. In fact, for many travel sickness sufferers, reading or watching a movie exacerbates the feeling of nausea.

Medication

In addition to checking any prescription or OTC medicines currently being taken, the pharmacist should also enquire about any treatments used in the past for motion sickness and their level of success or failure.

Management

Prophylactic treatments for motion sickness, which can be bought OTC, are effective, and there is usually no need to refer patients to the doctor.

Anticholinergic activity is thought to prevent motion sickness and forms the basis of treatment by anticholinergic agents (e.g. *hyoscine*) and antihistamines, which have anticholinergic actions (e.g. *cinnarizine* and *promethazine*).

Antihistamines

Antihistamines include *cinnarizine*, *meclozine* and *promethazine*. Anticholinergic effects are thought to be responsible for the effectiveness of antihistamines in the prophylaxis of motion sickness. All have the potential to cause drowsiness, and *promethazine* appears to be the most sedative. *Meclozine* and *promethazine theoclare* have long durations of action and are useful for long journeys since they need to be taken only once daily. *Cinnarizine* and *promethazine theoclare* are not recommended for children younger than 5 years, whereas *meclozine* can be given to those over 2 years. The manufacturers of products containing these drugs advise that they are best avoided during pregnancy.

Anticholinergic agents

The only anticholinergic used widely in the prevention of motion sickness is *hyoscine hydrobromide*, which can be given to children over 3 years.

Anticholinergic drugs can cause drowsiness, blurred vision, dry mouth, constipation and urinary retention as side effects, although they are probably unlikely to do so at the doses used in OTC formulations for motion sickness. Children could be given sweets to suck to counteract any drying of the mouth.

Hyoscine has a short duration of action (from 1 to 3 h). It is therefore suitable for shorter journeys and should be given 20 min before the start of the journey. *Hyoscine* patches last much longer (up to 3 days) and may be useful for long journeys; they need to be applied 5–6 h before travelling for best effect. Anticholinergic drugs and antihistamines with anticholinergic effects are best avoided in men with lower urinary tract symptoms because of the possibility of urinary retention, and in people with glaucoma because the intraocular pressure might be increased.

Pharmacists should remember that side effects from anticholinergic agents are additive and may be increased in patients already taking drugs with anticholinergic effects, such as *oxybutynin* and other drugs used for urinary symptoms, tricyclic antidepressants (e.g. *amitriptyline*), butyrophenones (e.g. *haloperidol*) and phenothiazines (e.g. *chlorpromazine*). It is therefore important for the pharmacist to determine the identity of any medicines currently being taken by the patient. Table 2.2 summarises recommended doses and length of action for the treatments discussed.

Table 2.2 Treatments for motion sickness

Ingredient	Minimum age for use (year)	Children's dose	Adult dose	Timing of first dose in relation to journey	Recommended dose interval (h)
<i>Cinnarizine</i>	5	15 mg	30 mg	2 h before	8
<i>Hyoscine Hydrobromide</i>	3	3–4 years 75 µg 4–7 years 150 µg 7–12 years 150–300 µg	300 µg	20 min before	6
<i>Meclozine</i>	2	2–12 years 12.5 mg	25 mg	Previous evening or 1 h before	24
<i>Promethazine thecate</i>	5	5–10 years 12.5 mg Over 10 years 25 mg	25 mg	Previous evening or 1 h before	24

Alternative approaches to motion sickness

Ginger

Ginger has been used for many years for travel sickness. Clinical trials have produced conflicting findings in travel sickness. No mechanism of action has been identified, but it has been suggested that ginger acts on the GI tract itself rather than on the vomiting centre in the brain or on the vestibular system. No official dosage level has been suggested, but several proprietary products containing ginger are available. It can also be eaten in a biscuit, as crystallised ginger or drunk as tea. Ginger may be worth trying for a driver who suffers from motion sickness, since it does not cause drowsiness and might be worth considering for use in pregnant women, for whom other anti-emetics such as anticholinergics and antihistamines are not recommended. Ginger has been shown to be effective in some small trials in nausea and vomiting associated with pregnancy (see Chapter 5 Women's Health: Common symptoms in pregnancy).

Acupressure wristbands

Elasticated wristbands that apply pressure to a defined point on the inside of the wrists are available. Evidence of effectiveness is equivocal, but it is unlikely they would cause harm. Such wristbands might be worth trying for drivers or pregnant women.

Constipation

Constipation is a condition that is difficult to define and is often self-diagnosed by patients. Generally, it is characterised by the unsatisfactory passage of hard, dry stools less frequently than by the person's normal pattern; it may be uncomfortable, and there is a sense that passage of stools is incomplete. It is important for the pharmacist to find out what the patient means by constipation and to establish what (if any) change in bowel habit has occurred and over what period of time. Obviously, this is a sensitive issue that can cause embarrassment; consultations to establish concerns should take place in privacy.

What you need to know

Details of bowel habit

Frequency and nature of bowel actions now

When was the last bowel movement?

What is the usual bowel habit?

When did the problem start?

Is there a previous history?

Associated symptoms

Abdominal pain/discomfort/bloating/distension

Nausea and vomiting
Blood in the stool

Diet

Any recent change in diet?
Is the usual diet rich in fibre?

Medication

Present medication
Any recent change in medication
Previous use of laxatives

Significance of questions and answers

Details of bowel habit

Many people believe that a daily bowel movement is necessary for good health and laxatives are often taken and overused as a result. In fact, the normal range may vary from three movements in 1 day to three in 1 week. Therefore, an important health education role for the pharmacist may be to reassure patients that their frequency of bowel movement is normal. Patients who are constipated will usually complain of hard stools that are difficult to pass, may be uncomfortable and are less frequent than usual.

The determination of any change in bowel habit is essential, particularly any prolonged change. A change of ‘bowel habit’ (from a pattern of going to the toilet over months or years), which has lasted for 2 weeks or longer, would be an indication for referral.

Associated symptoms

Constipation is often associated with abdominal discomfort, bloating and nausea. In some cases, constipation can be so severe as to obstruct the bowel. This obstruction or blockage usually becomes evident by causing colicky abdominal pain, abdominal distension and vomiting. When symptoms suggestive of obstruction are present, urgent referral is necessary as hospital admission is the usual course of action. Constipation is only one of many possible causes of obstruction. Other causes, such as bowel tumours or twisted bowels (volvulus), require urgent surgical intervention.

Blood in the stool

The presence of blood in the stool can be associated with constipation and, although alarming, is not necessarily serious, but does require medical referral for diagnosis. In such situations, blood may arise from piles (haemorrhoids) or a small crack in the skin on the edge of the anus (anal fissure). Both these conditions can be caused by a diet low in fibre that tends to produce constipation. The bleeding is characteristically noted on toilet paper after defaecation. The bright red blood may be present on the surface of the motion (not mixed in with the stool) and splashed around the toilet pan. If piles

are present, there is often discomfort on defaecation. The piles may drop down (prolapse) and protrude through the anus. A fissure tends to cause less bleeding but causes much more severe pain on defaecation. Medical referral is advisable as there are other more serious causes of bloody stools, especially where the blood is mixed in with the motion.

Bowel cancer

Large bowel, or colorectal, cancer may also present with a persisting change in bowel habit (see Box 2.2). It is common and 41 000 people get diagnosed each year in the United Kingdom. With the introduction of national screening, using faecal occult blood tests in those aged between 60 and 74 years, around a quarter of these cases are detected by screening. This condition kills about 16 000 people each year and it is hoped screening will reduce this mortality rate as early diagnosis and intervention can dramatically improve the prognosis. The incidence of large bowel cancer rises significantly with age, and it is uncommon in people under 50 years. It is more common among those living in northern Europe and North America compared with southern Europe and Asia. It is most often seen in older people; 44% of bowel cancer cases in the United Kingdom each year are diagnosed in people aged 75 and over, and the peak age for incidence is in people aged 85–89.

Box 2.2 Common Symptoms of Bowel Cancer (adapted from NHS Choices and NICE)

The symptoms of bowel cancer can be subtle and don't necessarily make people feel ill.

More than 90% of people with bowel cancer have one or more of the following three main symptoms:

A persistent change in bowel habit – usually going more often, with looser stools and sometimes abdominal pain

Blood in the stools without other symptoms such as piles (haemorrhoids)

Abdominal pain, discomfort or bloating brought on by eating – sometimes resulting in a reduction in the amount of food eaten and unintentional weight loss

Constipation is rarely caused by serious bowel conditions.

Diet

Insufficient dietary fibre is a common cause of constipation. An impression of the fibre content of the diet can be gained by asking what would normally be eaten during a day, looking particularly for the presence of wholemeal cereals, brown bread, fresh fruit and vegetables. Changes in diet and lifestyle, for example, following a job change, loss of work, retirement or travel, may result in constipation. Inadequate intake of food and fluids, for example, in someone who has been ill, may also be responsible for constipation. Lack of exercise or reduced mobility is also implicated, and regular exercise has a role to play in managing constipation.

It is thought that an inadequate fluid intake is a common cause of constipation. Research shows that by increasing fluid intake in someone who is not well hydrated the frequency of bowel actions is increased. It is particularly effective when it is increased alongside an increase in dietary fibre. This can be difficult for some people, such as the frail and elderly. Caffeine in coffee, tea and some soft drinks can aggravate constipation by contributing to dehydration.

Medication

One or more laxatives may have already been taken in an attempt to treat the symptoms. Failure of such medication may indicate that referral to the GP surgery is the best option. Previous history of the use of laxatives is relevant. Continuous use, especially of stimulant laxatives, can result in a vicious circle where the contents of the gut are expelled, causing a subsequent cessation of bowel actions for 1 or 2 days. This then leads to the false conclusion that constipation has recurred and more laxatives are taken and so on.

Chronic overuse of stimulant laxatives can result in loss of muscular activity in the bowel wall (an atonic colon) and thus further constipation.

Many drugs can induce constipation; some examples are listed in Table 2.3. The details of prescribed and OTC medications being taken should be established.

Table 2.3 Drugs that may cause constipation

Drug group	Drug
Analgesics and opiates	Dihydrocodeine, codeine
Antacids	Aluminium salts
Anticholinergics	Hyoscine, oxybutynin
Anticonvulsants	Phenytoin
Antidepressants	Tricyclics, selective serotonin reuptake inhibitors
Antihistamines	Chlorphenamine, promethazine
Anti-Parkinson agents	Levodopa
Calcium channel blockers	Verapamil
Calcium supplements	
Diuretics	Bendroflumethiazide
Iron	
Laxative abuse	
Monoamine oxidase inhibitors	
Antipsychotics	Chlorpromazine

When to refer

Change in bowel habit of 2 weeks or longer
Presence of abdominal pain, vomiting, bloating
Weight loss
Blood in stools
Prescribed medication suspected of causing symptoms
Failure of OTC medication

Treatment timescale

If 1 week's use of treatment does not produce relief of symptoms, the patient should see the doctor. If the pharmacist feels that it is necessary to give only dietary advice, then it would be reasonable to leave it for about 2 weeks to see if the symptoms settle.

Management

Constipation that is not caused by serious pathology will usually respond to simple measures, which can be recommended by the pharmacist: increasing the amount of dietary fibre, maintaining fluid consumption and doing regular exercise. In the short term, a laxative may be recommended to ease the immediate problem.

Stimulant laxatives (e.g. sennosides and bisacodyl)

Stimulant laxatives work by increasing peristalsis. All stimulant laxatives can produce griping/cramping pains. It is advisable to start at the lower end of the recommended dosage range, increasing the dose if needed. The intensity of the laxative effect is related to the dose taken. Stimulant laxatives work within 6–12 h when taken orally. They should be used for a maximum of 1 week. *Bisacodyl* tablets are enteric coated and should be swallowed whole because *bisacodyl* is irritant to the stomach. If it is given as a suppository, the effect usually occurs within 1 h and sometimes as soon as 15 min after insertion.

Docusate sodium appears to have both stimulant and stool-softening effects and acts within 1–2 days.

Bulking agents (e.g. bran, ispaghula husk, methylcellulose and sterculia)

Bulk-forming preparations are those that most closely copy the normal physiological mechanisms involved in bowel evacuation and are considered by many to be the laxatives of choice. They work by swelling in the gut and increasing faecal mass so that peristalsis is stimulated. The laxative effect can take several days to develop.

Unprocessed wheat bran, taken with food or fruit juice, is an effective bulk-forming preparation and can be helpful for many people. Oat bran can also be used. Finely ground bran can be given as bran bread or biscuits, but these are less effective than unprocessed bran. Bran should be introduced gradually to reduce symptoms of flatulence and bloating. Fluid intake should be increased. Continued long-term use should be regarded as a necessary change in lifestyle.

Ispaghula husk, *methylcellulose* and *sterculia* are especially useful where patients have difficulty in increasing their intake of dietary fibre using fruit, vegetables and bran. The sodium content of some of these bulk laxatives (as *sodium bicarbonate*) should be considered in those requiring a restricted sodium intake. They may be better tolerated than bran.

When recommending the use of a bulk laxative, the pharmacist should advise that an increase in fluid intake is necessary. In the form of granules or powder, the preparation should be mixed with a full glass of liquid (e.g. fruit juice or water) before taking and ideally followed by a further glass of liquid. Fruit juice can mask the bland taste of the preparation. Intestinal obstruction may result from inadequate fluid intake in patients taking bulk laxatives, particularly those whose gut is not functioning properly as a result of abuse of stimulant laxatives. Bulk laxatives are usually considered unsuitable for opioid induced constipation as the problem relates to decreased motility of the gut; bulk laxatives may cause discomfort by distension of the bowel, or obstruction.

Osmotic laxatives (e.g. lactulose, macrogol)

Macrogol and *lactulose* work by maintaining the volume of fluid in the bowel and may take 1–2 days to work. *Lactulose* is a liquid medicine. *Macrogol* is available as sachets of powder that are dissolved in water before use. *Lactitol* is chemically related to *lactulose* and is available as sachets. The contents of the sachet are sprinkled on food or taken with liquid. One or two glasses of fluid should be taken with the daily dose. *Lactulose* and *lactitol* can cause flatulence, cramps and abdominal discomfort.

Epsom salts (magnesium sulphate) is a traditional remedy that, while no longer recommended, is still requested by some older customers. It acts by drawing water into the gut; the increased pressure results in increased intestinal motility. A dose usually produces a bowel movement within a few hours. Repeated use can lead to dehydration.

Glycerine suppositories have both osmotic and irritant effects and usually act within 1 h. They are licensed for occasional use only and should not be regarded as a ‘standard therapy’. They may cause rectal discomfort. Moistening the suppository before use will make insertion easier. Some people find them undignified and unpleasant to use.

Constipation in children

Parents sometimes ask for laxatives for their children. Fixed ideas about regular bowel habits are often responsible for such requests. Numerous factors can

cause constipation in children, including a change in diet and emotional causes. Simple advice about sufficient dietary fibre and fluid intake may be all that is needed. Referral to the doctor would be best if these measures are unsuccessful.

Several laxatives and suppositories are available OTC to treat constipation in children. An OTC *docusate* preparation is available to prevent and treat chronic constipation in children 6 months and older. It is sensible not to recommend use of these interventions unless children have first been assessed by the health visitor or doctor, for example, in the treatment of recurrence of constipation.

Constipation in pregnancy

Constipation commonly occurs during pregnancy; hormonal changes are responsible, and it has been estimated that one in three pregnant women suffer from constipation. Dietary advice concerning the intake of plenty of high-fibre foods and fluids can help. Oral *iron*, often prescribed for pregnant women, may contribute to the problem.

Stimulant laxatives are best avoided during pregnancy; bulk-forming laxatives are preferable, although they may cause some abdominal discomfort to women when used late in pregnancy (see Chapter 5 Women's Health: Common symptoms in pregnancy).

Constipation in older people

Constipation is a common problem in older people for several reasons; they are less likely to be physically active; they may have poor natural teeth or false teeth and avoid high-fibre foods that are more difficult to chew; other medical conditions, including frailty, may predispose to constipation, and associated multidrug regimens are more likely to cause drug-induced constipation. Ideas about what constitutes a normal bowel habit may be different in older patients than in younger people and a careful history is required. If medication is a suspected cause, this should be discussed with the prescriber. If a bulk laxative is to be recommended for an elderly patient, it is important that the pharmacist gives advice about maintaining fluid intake to prevent the possible development of intestinal obstruction.

Laxative overuse

There are two main groups of patients who are likely to overuse laxatives: those with chronic constipation who get into a vicious circle by using stimulant laxatives which eventually results in damage to the nerve plexus in the colon, and those who take laxatives in the belief that they will control weight, for example, those who are dieting or, more seriously, people with eating disorders (*anorexia nervosa* or *bulimia*), who take very large quantities of laxatives. The pharmacist is in a position to monitor purchases of laxative products and counsel patients as appropriate. Any patient who is ingesting large amounts of laxative agents should be sensitively advised that they should seek medical help.

Constipation in practice

Case 1

Mr Dabrowski is a middle-aged man who occasionally visits your pharmacy. Today he complains of constipation, which he has had for several weeks. He has had a bowel movement every few days; normally they are every day or every other day. His motions are hard and painful to pass. He has not tried any medicines as he thought the problem would go away of its own accord. He has never had problems with constipation in the past. He has been taking *atenolol* tablets 50 mg once a day for several years. He does not have any other symptoms, except a slight feeling of abdominal discomfort. You ask him about his diet; he tells you that since he was made redundant from his job at a local factory 3 months ago when it closed, he has tended to eat less than usual; his dietary intake sounds as if it is low in fibre. He tells you that he has been applying for jobs, with no success so far. He says he feels really down and is starting to think that he may never get another job.

The pharmacist's view

Mr Dabrowski's symptoms are almost certainly due to the change in his lifestyle and eating pattern. Now that he is not working, he is likely to be less physically active and his eating pattern has probably changed. From what he has said, it sounds as if he is becoming depressed because of his lack of success in finding work. Constipation seems to be associated with depression, separately from the constipating effect of some antidepressant drugs.

It would be worth asking Mr Dabrowski if he is sleeping well (signs of clinical depression include disturbed sleep: either difficulty in getting to sleep or in waking early and not being able to get back to sleep). Weight can change either way in depression; some patients eat for comfort, while others find their appetite is reduced. Depending on his response, you might consider whether referral to his doctor is needed to enable assessment for depression.

To address the dietary problems, he could be advised to start the day with a wholegrain cereal and to eat at least four slices of wholemeal bread each day. Baked beans are a cheap, good source of fibre. Fresh vegetables and fruit are also fibre rich. A high-fibre diet means patients should increase their fibre intake until they pass soft stools regularly; the amount of fibre needed to produce this effect will vary markedly between patients. The introduction of dietary fibre should be gradual; too rapid an increase can cause griping and wind. Mr Dabrowski also needs to make sure he has a good fluid intake. All types of drinks count, but caffeine may aggravate constipation. He should be encouraged to take regular exercise, and this may also help with his low mood.

To provide relief from the discomfort, a suppository of *glycerine* or *bisacodyl* could be recommended to produce a bowel evacuation quickly, or an oral stimulant laxative taken at bedtime should produce a bowel movement the next day; in the longer term, dietary changes provide the key. He should see

the doctor if the suppository does not produce an effect; if it works but the dietary changes have not been effective after 2 weeks, he should go to his doctor. Mr Dabrowski's medication is unlikely to be responsible for his constipation because, although beta-blockers can sometimes cause constipation, he has been taking the drug for over 1 year with no previous problems.

The doctor's view

The advice given by the pharmacist is sensible. It is likely that Mr Dabrowski's physical and mental health have been affected by the impact of a significant change in his life. The loss of his job and the uncertainty of future employment will be a major and continuing source of stress. The fact that the pharmacist has taken time to check out how he has been affected will in itself be therapeutic. It also gives the pharmacist the opportunity to refer to the doctor if necessary; many people are reluctant to take problems with low mood to their doctor, but a recommendation from the pharmacist might make the process easier. Hopefully, the advice given for constipation will at least improve one aspect of his life. It seems like sound advice. If the constipation does not resolve within 2 weeks, he should see his doctor.

Case 2

The counter assistant asks the pharmacist to have a word with a young woman who is in the shop. She was recognised by the assistant as a regular purchaser of stimulant laxatives. The pharmacist explains to the woman that she needs to ask a few questions because regular use of laxatives may mean an underlying problem, which is not improving. The pharmacist suggests moving to the consulting room, which is quiet and private. In answer to questions she tells the pharmacist that she diets almost constantly and always suffers from constipation. Her weight appears to be within the range for her height. The pharmacist shows her a body mass index (BMI) chart and works out with her where she is on the chart, which confirms initial concerns as her BMI is relatively low. However, the patient is reluctant to accept advice, saying that she definitely needs to lose some more weight. The pharmacist asks about diet, and she says that she has tried all sorts of approaches, most of which involve eating very little.

The pharmacist's view

Unfortunately this scenario is all too common in community pharmacy, with many women who seek to achieve weight below the recommended range. The pharmacist can explain that constipation often occurs during dieting simply because insufficient bulk and fibre is being eaten to allow the gut to work normally. Perhaps the pharmacist might suggest that she join a local weight management group, or if the pharmacy provides this service, offer it. If her weight

is normal, or lower than normal, laxative misuse may be a sign of an eating disorder, and tactfully suggesting seeking medical advice may be required. Despite the pharmacist's advice, many customers will still wish to purchase laxatives, and the pharmacist will need to consider how to handle refusal of sales. Offering stimulant laxatives for sale by self-selection can only exacerbate the problems and make it more difficult to monitor sales and refuse them when necessary.

The doctor's view

This is obviously a difficult problem. It is inappropriate for the young woman to continue taking laxatives, and she could benefit from counselling. However, a challenge from the pharmacist could result in her simply buying the laxatives elsewhere. If, as is likely, she has an eating disorder, she may have very low self-esteem and be denying her problem. Both these factors make it more difficult for the pharmacist to intervene most effectively. An ideal outcome would be appropriate referral, which would depend on local resources but which might initially be to the doctor, or she could be advised about the Beating Eating Disorders website (www.b-eat.co.uk).

If she is seen by the doctor, an empathic approach is necessary. The most important thing is to give her full opportunity to say what she thinks about the problem, how it makes her feel and how it affects her life. Establishing a supportive relationship with resultant trust between patient and doctor is the major aim of the initial consultation. Once this has been achieved, further therapeutic opportunities can be discussed and decided on together.

Case 3

A man comes into the pharmacy and asks for some good laxative tablets. Further questioning by the pharmacist reveals that the medicine is for his dad who is aged 72 years. He does not know many details except that his dad has been complaining of increasing constipation over the last 2–3 months and has tried senna tablets without any benefit.

The pharmacist's view

Third-party or proxy consultations are often challenging because the person making the request may not have all the relevant information. However, in this case the decision is quite clear. The patient needs to be referred to the doctor because of the recently developed history of the complaint and the unsuccessful use of a stimulant laxative. This man is of an age to be at risk of bowel cancer.

The doctor's view

Referral to the GP should be recommended in this situation. A *glycerine suppository* may be a safe treatment to use in the meantime. Clearly, more

information is needed to make an opinion and diagnosis. A prolonged and progressive change in bowel habit is an indication for referral to hospital for further investigations as the father could have a colorectal cancer. The GP would need to gather more information about his symptoms and would perform an examination that would include abdominal palpation and a digital rectal examination. This latter examination is necessary to exclude a rectal or anal tumour. It is likely that an urgent referral would then be made for further investigations as an outpatient. At hospital, the investigations would usually be a colonoscopy. In colonoscopy, a flexible fibre-optic tube is passed through the anus and then up and around the whole of the large bowel to the caecum. An interesting new development is the use of CT colonography, which can give good pictures of the bowel lining and is less invasive than a colonoscopy. Barium enema X-rays are now less commonly performed.

Diarrhoea

Community pharmacists may be asked by patients about treatment for diarrhoea or to offer advice on what course of action to take should diarrhoea occur, for example, when on holiday. It is also useful to advise patients on preventing 'travellers' diarrhoea. Diarrhoea is defined as an increased frequency of bowel evacuation, with the passage of abnormally soft or watery faeces. The basis of treatment is electrolyte and fluid replacement; in addition, antidiarrhoeals may be useful in some adults and older children.

What you need to know

Age

Infant, child, adult, older person

Duration

Severity

Symptoms, associated symptoms

Nausea/vomiting

Fever

Abdominal cramps

Flatulence

Blood

Other family members affected?

Previous history

Recent travel abroad?

Causative factors

Medication

Medicines already tried

Other medicines being taken
Antibiotic use?

Significance of questions and answers

Age

Particular care is needed in the very young and the very old. Infants (younger than 1 year) and older people are especially at risk of becoming dehydrated.

Duration

Most cases of diarrhoea will be acute and self-limiting. Because of the dangers of dehydration, it would be wise to refer infants with diarrhoea of longer than 1 day's duration to the doctor.

Severity

The degree of severity of diarrhoea is related to the nature and frequency of stools. Both these aspects are important, since misunderstandings can arise, especially in self-diagnosed complaints. Older people who complain of diarrhoea may, in fact, be suffering from faecal impaction with passage of liquid around the solid stool; they may pass liquid motions but only once or twice a day.

Symptoms

Acute diarrhoea arising from infection is rapid in onset and produces watery stools that are passed frequently. Abdominal cramps, flatulence and weakness or malaise may also occur. Nausea and vomiting may be associated with diarrhoea, as may fever. The pharmacist should always ask about vomiting and fever in infants; both will increase the likelihood that severe dehydration will develop. Another important question to ask about diarrhoea in infants is whether the baby has been taking milk feeds and other drinks as normal. Reduced fluid intake predisposes to dehydration.

The pharmacist should question the patient about food intake and also about whether other family members or friends are suffering from the same symptoms, since acute diarrhoea is usually due to an infection. Often there are localised minor outbreaks of gastroenteritis, and the pharmacist may be asked several times for advice and treatment by different patients during a short period of time. Types of infective diarrhoea are discussed later in this chapter.

The presence of blood or mucus in the stools is an indication for referral. Diarrhoea with severe vomiting or with a high fever would also require medical advice.

Previous history

A previous history of diarrhoea or a prolonged change in bowel habit would warrant referral for further investigation, and it is important that the pharmacist distinguish among acute, persistent and chronic conditions. Persistent diarrhoea (of more than 2 weeks' duration) may be caused by bowel conditions such as Crohn's disease, irritable bowel syndrome or ulcerative colitis and requires medical advice. Chronic diarrhoea is diarrhoea that goes on for 5 weeks or longer.

Recent travel abroad

Diarrhoea in a patient who has recently travelled abroad requires referral since it might be infective in origin. Giardiasis should be considered in travellers recently returned from South America or the Far East.

Causes of diarrhoea

Infections

Most cases of diarrhoea are short lived, the bowel habit being normal before and after. In these situations, the cause is likely to be infective (viral or bacterial).

Viral

Viruses are often responsible for gastroenteritis. The two main viruses are rotavirus and norovirus:

Rotavirus: In infants, the virus mainly gains entry via the faecal–oral route or sometimes through the air from sneezing and coughing. The infection starts abruptly and fever and vomiting often precedes diarrhoea. The acute phase is usually over within 2–3 days, although diarrhoea may persist for up to a week. While the majority of infections are usually not too severe and are self-limiting, it should be remembered that rotavirus infection can cause severe illness and death; it is one of the main causes of death in children in developing countries. Severe illness in the United Kingdom is most likely in those infants who have other illnesses, or who are malnourished or living in poor social circumstances; it is less common in those that are breastfed. For these reasons, oral rotavirus immunisation has recently been introduced for young babies, so infection is now much less common.

Norovirus (<http://www.patient.info/health/norovirus-leaflet>) is another common cause of viral gastroenteritis in people of all ages. It can occur in clusters or 'mini' epidemics such as on hospital wards or in schools and is more common in winter. It is sometimes called 'the winter vomiting bug'. In the United Kingdom, up to one million people are affected each year. The virus is readily spread by contact with another person, through contaminated food, or

surfaces contaminated with vomit. After an incubation of up to 48 h, the illness begins suddenly with profuse vomiting, diarrhoea and flu-like symptoms. It usually settles in 2–3 days and treatment includes the usual advice on fluid replacement. As with all cases of gastroenteritis, prevention of spread is very important and careful handwashing procedures, and hygiene measures are essential. Norovirus rarely causes significant harm except in those who are very old or frail.

Bacterial

These mostly take the form of food-borne infections, previously known as food poisoning. There are several different types of bacteria that can cause such infections: *Staphylococcus*, *Campylobacter*, *Salmonella*, *Shigella*, pathogenic *Escherichia coli*, *Bacillus cereus* and *Listeria monocytogenes*. The typical symptoms include severe diarrhoea and/or vomiting, with or without abdominal pain. They often occur in clusters following catered events or BBQs where food has become contaminated or has been inadequately cooked. If these infections are diagnosed or suspected, patients should be advised to see their doctor; they are ‘notifiable’ diseases, and the local health protection unit should be informed about them by the GP surgery.

The two most commonly seen infections are *Campylobacter* and *Salmonella*, which are often associated with contaminated poultry, although other meats have been implicated. Contaminated eggs have also been found to be a source of *Salmonella*. Kitchen hygiene and thorough cooking are of great importance in preventing infection.

Table 2.4 summarises the typical features of some of the following infections:

Bacillary dysentery is caused by *Shigella*. It can occur in outbreaks where there are people living in close proximity and may occur in travellers to Africa or Asia.

B. cereus is usually associated with cooked rice, especially if it has been kept warm or has been reheated.

Table 2.4 Features of some infections causing diarrhoea

Infection	Incubation	Duration	Symptoms
<i>Staphylococcus</i>	2–6 h	6–24 h	Severe, short lived; especially vomiting
<i>Salmonella</i>	12–24 h	1–7 days	Mainly diarrhoea
<i>Campylobacter</i>	2–7 days	2–7 days	Diarrhoea with abdominal colic
<i>B. cereus</i>	1–5 h	6–24 h	Vomiting
<i>B. cereus</i>	8–16 h	12–24 h	Diarrhoea
<i>L. monocytogenes</i>	3–70 days		Flu-like, diarrhoea

E. coli infections are less common but can be severe with toxins being released into the body, which can cause kidney failure.

L. monocytogenes can cause gastroenteritis or a flu-like illness. On occasion it can be more severe and cause septicaemia or meningitis, with a significant mortality rate. Pregnant women are more susceptible to it, but it is still a rare infection occurring in 1 in 20 000 pregnancies. Infection during pregnancy can cause miscarriage, stillbirth or an infection of the newborn. Foods to be avoided during pregnancy include unpasteurised cheese, soft ripe cheeses, blue-veined cheeses, pates, cold cuts of meat and smoked fish. Care needs to be taken with the storage and handling of chilled ready-to-eat food in the home. Pregnant women with diarrhoea or fever should be referred immediately to their midwife or GP.

Antibiotics are generally unnecessary to treat infectious diarrhoea as most food-borne infections resolve spontaneously. The most important treatment is adequate fluid replacement. Antibiotics are used for *Shigella* infections and sometimes the more severe or persistent *Salmonella* or *Campylobacter* ones. *Ciprofloxacin* has often been used in such circumstances, although increasing antibiotic resistance is a concern and other treatments may be needed.

Protozoan infections are uncommon in Western Europe but may occur in travellers from further afield. Examples include *Entamoeba histolytica* (amoebic dysentery) and *Giardia lamblia* (giardiasis). Diagnosis is made by sending stool samples to the laboratory. Treatment is usually with metronidazole.

Persistent or chronic diarrhoea

Persistent, chronic or recurrent diarrhoea may be due to an irritable bowel or, more seriously, a bowel tumour, an inflammation of the bowel (e.g. ulcerative colitis or Crohn's disease), an inability to digest or absorb food (malabsorption, e.g. coeliac disease) or diverticular disease of the colon.

Antibiotics and *Clostridium difficile*

Diarrhoea is commonly seen with antibiotics, occurring in around 10% of people. It is usually more of a nuisance than anything but, if severe, may require the course of antibiotics to be stopped. Of more importance is that about a quarter of cases of antibiotic-associated diarrhoea are due to *Clostridium difficile*. Many people carry small amounts of this bacteria in their gut, and as it is resistant to many antibiotics, the antibiotic kills off other flora in the gut and allows the *C. difficile* to flourish. Some strains of *C. difficile* produce a toxin that damages the large bowel lining, which results in profuse watery diarrhoea. These strains can get passed to other patients if scrupulous handwashing and careful hygiene practice is not followed. In hospitals this is called nosocomial spread.

People who are most susceptible to *C. difficile* are those who are already weakened by age or illness. Factors that increase the risk of *C. difficile*

infection include advanced age and underlying morbidity such as abdominal surgery, cancer and chronic renal disease. Recently it has been recognised that an important risk factor is use of PPIs in these people. In fitter, mobile people, the infection causes protracted unpleasant diarrhoea lasting a few weeks, but in debilitated people the complications of *C. difficile* infection can be more severe and include dehydration, perforation of the colon, sepsis and death. Usually it can be treated by careful attention to rehydration. Antidiarrhoeal medication such as *loperamide* should not be used as this can aggravate the condition. If the diagnosis is confirmed using a stool sample to test for *C. difficile* toxin, an antibiotic such as *metronidazole*, which *C. difficile* is sensitive to, may be used.

If pharmacists see a case of persistent diarrhoea following a course of antibiotics, they should ask the patient to get in touch with the GP surgery. Initially telephone advice should be sought as it is better if the potential infection is kept away from the surgery. Another thing to watch out for is people who have a recurrence of diarrhoea after treatment for *C. difficile*; unfortunately, this is common and may need further treatment. PPIs should be avoided in people who have had *C. difficile* infection as it can trigger recurrence.

Irritable bowel syndrome (see also next section in this chapter, IBS)

Irritable bowel syndrome is a non-serious but troublesome condition and is one of the more common causes of recurrent bowel dysfunction. There is no blood present within the motion in irritable bowel syndrome. Bloody diarrhoea may be a result of an inflammation or tumour of the bowel and always requires urgent referral. The latter is more likely with increasing age (from middle age onwards) and is likely to be associated with a prolonged change in bowel habit; in this case, diarrhoea might sometimes alternate with constipation.

Medication

Medicines already tried

The pharmacist should establish the identity of any medication that has already been taken to treat the symptoms in order to assess its appropriateness.

Other medicines being taken

Details of any other medication being taken (both OTC and prescribed) are also needed, as the diarrhoea may be drug induced (Table 2.5). OTC medicines should be considered; commonly used medicines such as magnesium-containing antacids and iron preparations are examples of medicines that may induce diarrhoea (although iron also commonly causes constipation). Laxative abuse/overuse should be considered as a possible cause.

Table 2.5 Some drugs that commonly cause diarrhoea

Antacids: <i>magnesium salts</i>
Antibiotics
<i>Colchicine</i>
Cytotoxic drugs: <i>methotrexate, chemotherapy</i>
<i>Digoxin (toxic levels)</i>
Diuretics (<i>furosemide</i>)
<i>Iron preparations</i>
Laxatives
<i>H₂ antagonists</i>
<i>Misoprostol</i>
Non-steroidal anti-inflammatory drugs
Proton pump inhibitors
Selective serotonin reuptake inhibitors

When to refer

- Diarrhoea of greater than
 - 1 day's duration in children younger than 1 year
 - 2 days' duration in children under 3 years and elderly patients
 - 3 days' duration in older children and adults
- Persistent diarrhoea after course of antibiotics
- Association with severe vomiting
- Feverish, high temperature
- Suspected outbreak of 'food poisoning'
- Recent travel abroad
- Suspected drug-induced reaction to prescribed medicine
- History of change in bowel habit
- Presence of blood or mucus in the stools
- Pregnancy

Treatment timescale

1 day in children; otherwise 2 days.

Management

Oral rehydration therapy

The risk of dehydration from diarrhoea is greatest in babies, and rehydration therapy is considered to be the standard treatment for acute diarrhoea in babies and young children. *Oral rehydration sachets* may be used with antidiarrhoeals in older children and adults.

Rehydration may still be initiated even if referral to the doctor is advised. Factors associated with high risk of dehydration, and where referral should be considered, are the following:

- Children younger than 1 year of age, particularly younger than 6 months
- Infants who were of low birth weight
- Children who have passed more than five diarrhoeal stools in the previous 24 h
- Children who have vomited more than twice in the previous 24 h
- Children who have not been offered, or have not been able to tolerate, supplementary fluids before presentation
- Infants who have stopped breastfeeding during their illness
- Children with signs of malnutrition

Sachets of powder for reconstitution are available; these contain sodium as chloride and bicarbonate, along with glucose and potassium. The absorption of sodium is facilitated in the presence of glucose. A variety of flavours are available.

It is essential that appropriate advice be given by the pharmacist about how the powder should be reconstituted. Patients should be reminded that only water should be used to make the solution (never fruit or carbonated drinks) and that boiled and cooled water should be used for children younger than 1 year. Boiling water should not be used, as it would cause the liberation of carbon dioxide. The solution can be kept for 24 h if stored in a refrigerator. Fizzy, sugary drinks should never be used to make rehydration fluids, as they will produce a hyperosmolar solution that may exacerbate the problem. The sodium content of such drinks, as well as the glucose content, may be high.

Home-made salt and sugar solutions should not be recommended, since the accuracy of electrolyte content cannot be guaranteed, and this accuracy is essential, especially in infants, young children and elderly patients. Special measuring spoons are available; their correct use would produce a more acceptable solution, but their use should be reserved for the treatment of adults, where electrolyte concentration is less crucial. They are commonly used in developing countries where access to preformulated products is limited.

Table 2.6 Amount of rehydration solution to be offered to patients

Age	Quantity of solution (per watery stool)
Under 1 year	50 ml (quarter of a glass)
1–5 years	100 ml (half a glass)
6–12 years	200 ml (one glass)
Adult	400 ml (two glasses)

Quantities

Parents sometimes ask how much rehydration fluid should be given to children. The following simple rules can be used for guidance; the amount of solution offered to the patient is based on the number of watery stools that are passed. Table 2.6 provides the volumes required per watery stool.

Other therapies

Loperamide

Loperamide is an effective antidiarrhoeal treatment for use in older children and adults. When recommending *loperamide*, the pharmacist should remind patients to drink plenty of extra fluids. Oral rehydration sachets may be recommended, in addition. *Loperamide* is not recommended for use in children under 12 years. It is not licensed for this use.

Diphenoxylate/atropine (co-phenotrope)

Co-phenotrope can be used as an adjunct to rehydration to treat diarrhoea in those aged 16 years and over.

Kaolin

Kaolin has been used as a traditional remedy for diarrhoea for many years. Its use was justified on the theoretical grounds that it would absorb water in the GI tract and would absorb toxins and bacteria onto its surface, thus removing them from the gut. The latter has not been shown to be true and the usefulness of the former is questionable. The use of *kaolin*-based preparations has largely been superseded by oral rehydration therapy, although patients continue to ask for various products containing *kaolin*.

Morphine

Morphine, in various forms, has been included in antidiarrhoeal remedies for many years. The theoretical basis for its inclusion is that *morphine*,

together with other opioid drugs such as *codeine*, is known to slow the action of the GI tract; indeed, constipation is a well-recognised side effect of these drugs. However, at the doses included in most OTC preparations, it is unlikely that such an effect would be produced. *Kaolin* and *morphine* mixture remains a popular choice for some patients, despite the lack of evidence of its effectiveness.

Probiotics

A systematic review concluded that, when used with rehydration, probiotics appear to reduce stool frequency and shorten the duration of infectious diarrhoea. Many of the studies were in otherwise healthy people, and the researchers also concluded that more research is needed before recommendations could be made to guide the use of probiotics. There is some evidence that specific strains of probiotics (*Lactobacillus rhamnosus* or *Saccharomyces boulardii*) can help prevent diarrhoea caused by antibiotics, and some people advocate particular types of probiotics to prevent *C. difficile*.

Practical points

1. Patients with diarrhoea should be advised to drink plenty of clear, non-milky fluids, such as water and diluted squash. If the diarrhoea is severe, ORS may be useful.
2. ORS should be considered in people who are 60 years of age or older, frail, or with comorbidities such as cardiovascular disease or thrombotic tendencies (for example, history of deep vein thrombosis).
3. The patient can be advised to continue their usual diet, but fatty foods and foods with a high sugar content might be best avoided as they may not be well tolerated. Light soup is a good compromise.
4. Breast- or bottle-feeding should be continued in infants. This should be supplemented with ORS. The severity and duration of diarrhoea are not affected by whether milk feeds are continued.
5. Hygiene is essential with diarrhoea. Advise family members to wash hands thoroughly with soap and warm water after going to the toilet and before eating or preparing food. Clean the toilet, including the handle and the seat, with disinfectant, and avoid sharing towels, flannels, cutlery or utensils with others. It is a good idea to keep away from work or school for at least 48 h after diarrhoea has settled.
6. Patients often ask about what they can take on holiday with them in case of diarrhoea. *Loperamide* and ORS are useful first-aid items. Advice should be given about drinking bottled water if the quality of tap water is unknown and avoiding ‘street food’. Useful information on travelling abroad and avoiding ‘travellers’ diarrhoea can be found at <http://www.fitfortravel.nhs.uk/advice/disease-prevention-advice/travellers-diarrhoea.aspx>.

Diarrhoea in practice

Case 1

Mrs Robinson asks what you can recommend for diarrhoea. Her son David, aged 11 years, has diarrhoea, and she is worried that her other two children, Natalie, aged 4 years, and Tom, aged just over 1 year, may also get it. David's diarrhoea started yesterday; he went to the toilet about five times and was sick once, but has not been sick since. He has griping pains but is generally well and quite lively. Yesterday he had a pie his friend gave him during his lunch break at school. The pie had been in his locker for a few days! No one else in the family ate the same food. Mrs Robinson has not given him any medicine.

The pharmacist's view

It sounds as if David has a bout of acute diarrhoea, possibly caused by the food he ate yesterday during lunchtime. He has vomited once, but now the diarrhoea is the problem. The child is otherwise well. He is 11 years old, so the best plan would be to start oral rehydration with some proprietary sachets, with advice to his mother about how they should be reconstituted. If either or both the other children get diarrhoea, they can also be given some rehydration solution. David should see the doctor the day after tomorrow if his condition has not improved.

The doctor's view

David's diarrhoea could well be due to food poisoning. Oral rehydration is the correct treatment. He should also be told to avoid spicy or fatty food for 24 h or so until the diarrhoea has settled; a light soup might be best. If he wants to drink other fluids in addition to the electrolyte mixture, he should be told to avoid milk because of the fat content. He should be given advice about storing food in a fridge!

His symptoms should settle down over the next few hours. If they persist or he complains of worsening abdominal pain, particularly in the lower right side of the abdomen, his mother should contact the doctor. An atypical acute appendicitis may sometimes present with symptoms of gastroenteritis.

Case 2

Mrs Choudry is collecting her regular repeat prescription for antihypertensive treatment. You ask how she and the family are, and she tells you that several members of the family have been suffering with diarrhoea on and off. You know that the family recently returned from a trip to India where they had been visiting relatives to attend a family wedding. In answer to your questions, Mrs Choudry tells you that the problem with the diarrhoea started shortly after they returned.

The pharmacist's view

Referral to the GP is needed here as the diarrhoea may be related to the recent travel.

The doctor's view

Referral is a sensible course of action. Clearly, more information is required, for example, the date of onset of symptoms and the date of return to the United Kingdom. It does not sound as if any of the family are acutely ill, but it would be necessary to ensure that no one is dehydrated. If the diarrhoea is still present, it would be helpful to send stool samples to the microbiology laboratory for analysis. If a cause for the infection is found, the local health protection unit should be notified. It is possible that they may be suffering from giardiasis, which can be treated with *metronidazole*. Sometimes stool samples come back showing no signs of infection, in which case the diarrhoea is considered as being due to postinfection irritability of the bowel. This usually resolves spontaneously with no specific treatment.

Case 3

Mrs Jean Berry wants to stock up on some medicines before her family sets off on their first holiday abroad; they will be going to Morocco next week. Mrs Berry tells you that she has heard of people whose holidays have been ruined by holiday diarrhoea, and she wants you to recommend a good treatment. On questioning, you find out that Mr and Mrs Berry and their two boys aged 10 and 14 years will be going on the holiday.

The pharmacist's view

Holiday diarrhoea can often easily be dealt with. Mrs Berry could be advised to buy some *loperamide* capsules, which would be suitable treatment for her, Mr Berry and their 14-year-old son (but not the 10-year-old). In addition, she should purchase some oral rehydration sachets for the younger son. The sachets could also be used by other family members, if needed.

The pharmacist could give some valuable advice about the avoidance of potential problems by the Berry family on their first foreign holiday. Fresh fruit should be peeled before eating, and hot food should not be eaten other than in restaurants; roadside snack stalls are best avoided. The question of the quality of drinking water often crops up. Good advice to travellers would be to check with the tour company representative as to the advisability of drinking local water. If in doubt, bottled mineral water can be drunk; such water (still rather than sparkling) should also be used to reconstitute rehydration sachets. Ice in drinks may be best avoided, depending on the water supply.

Holiday diarrhoea is common but is usually self-limiting. If it is still present after several days, medical advice should be sought. If the diarrhoea persists or is recurrent after returning home, the doctor should be seen. Finally, patients

would be well advised to be wary of buying OTC medicines abroad. In some countries, a large range of drugs including oral steroids and antibiotics can be purchased OTC. Each year, patients return to Britain with serious adverse effects following the use of oral *chloramphenicol*, for example, which has been prescribed or purchased.

The doctor's view

The pharmacist has covered all the important points. The most likely cause of diarrhoea would be contaminated food or water. The best treatment of acute diarrhoea is to stop eating (until appetite returns) and to drink bottled water (with or without electrolyte reconstitution powders). It would be sensible to take an antidiarrhoeal such as *loperamide*.

Case 4

Mr Radcliffe is an elderly man who lives alone. Today, his home help asks what you can recommend for diarrhoea, from which Mr Radcliffe has been suffering for 3 days. He has been passing watery stools quite frequently and feels rather tired and weak. He has sent the home help because he dare not leave the house and go out of reach of the toilet. You check your patient medication records (PMRs), which confirm your memory that he takes several different medicines: *digoxin*, *furosemide* and *paracetamol*. Ten days ago you dispensed a prescription for a course of *amoxicillin*. The home help tells you that he has been eating his usual diet and there does not seem to be a link between food and his symptoms.

The pharmacist's view

Mr Radcliffe's diarrhoea may be due to the *amoxicillin* as it sounds as if this has caused a *C. difficile* infection. It would be best to call the patient's doctor to discuss the appropriate course of action because Mr Radcliffe's other drug therapy means that fluid loss and dehydration may cause electrolyte imbalance and put him at further risk. He will probably need a home visit as he can't get out.

The doctor's view

Although antibiotics can cause diarrhoea when they are being taken, this is rarely severe and stops when the course of treatment ceases. It is more likely that the *amoxicillin* has triggered a *C. difficile* infection. The most important consideration in management is to ensure adequate fluid and electrolyte replacement. This is particularly so as older people (and babies) are not as resilient to the effects of dehydration. In Mr Radcliffe's case, things are further complicated by his other medication: *furosemide* and *digoxin*. He is not on any potassium supplement or a potassium-sparing diuretic. Although there may be good reason for this, diuretics such as *furosemide* can lower the plasma potassium

level and make *digoxin* potentially toxic. Unfortunately, potassium can also be lost in diarrhoea, further aggravating this problem. He needs an urgent assessment and a home visit is warranted; this is also a good idea in any case to keep *C. difficile* ‘away from the surgery’. He needs a blood test for renal function and potassium and an urgent stool test to look for the *C. difficile* toxin. If he seems very ill, or dehydrated, he will need admitting to hospital. A further problem is that such an admission may need to be to an isolation ward.

Antibiotics upset the normal bowel flora allowing *C. difficile* to flourish. *C. difficile* releases a toxin into the large bowel that damages the bowel lining and causes fluid leakage. This condition can be caused by most antibiotics, but has been reported more often with *clindamycin*, *amoxicillin* and the cephalosporins. The condition is more likely to occur in those over the age of 65 years. It is often seen in hospitals where it is thought that the infection can be spread by health workers. However, a third of new cases arise in the community.

The diarrhoea of *C. difficile* infection can range from mild self-limiting symptoms to severe protracted or recurrent episodes and can sometimes be fatal; this is most common in people already debilitated by illness. There is often a low-grade fever, and abdominal pain/cramps may occur. The symptoms usually begin within 1 week of starting antibiotic treatment but may start up to 6 weeks after a course of antibiotics. It is sometimes necessary to treat severe cases with fluid replacement and *metronidazole*, *fidaxomicin* or *vancomycin*. Even if treated, recurrence is common, particularly if further antibiotics are used.

Irritable bowel syndrome

Irritable bowel syndrome (IBS) is defined as a chronic functional bowel disorder in which abdominal pain is associated with intermittent diarrhoea, sometimes alternating with constipation and a feeling of abdominal distension. In many the discomfort is associated with, or relieved by, defaecation. An important feature is that no abnormality is found when symptoms are investigated. IBS is estimated to affect 20% of adults in the industrialised world, most of whom (up to three-quarters) do not consult a doctor. More women with IBS consult a health professional than men, and the incidence of the condition appears to be higher in women. The cause is unknown. IBS can sometimes develop after a bout of gastroenteritis. It often seems to be triggered by stress, and many IBS sufferers have symptoms of anxiety and depression. Some sufferers may have food intolerance that triggers their symptoms.

What you need to know

Age

Child, adult

Symptoms

Gastrointestinal abdominal pain
Abdominal distension/bloating
Disturbed bowel habit; diarrhoea and/or constipation
Nausea
Other symptoms
Urinary symptoms, especially frequency
Dyspareunia (pain during intercourse)

Significance of questions and answers

Age

Because of the difficulties in diagnosis of abdominal pain in children, it is best to refer.

IBS usually develops in young adult life. It is most common in people between the ages of 20 and 30 and affects twice as many women as men. If an older adult presents for the first time with no previous history of bowel problems, a referral should be made.

Symptoms

IBS has three key symptoms: abdominal pain (which may ease following a bowel movement), abdominal distension/bloating and disturbance of bowel habit.

Abdominal pain

The pain can occur anywhere in the abdomen. It is often central or left sided and can be severe. When pain occurs in the upper abdomen, it can be confused with peptic ulcer or gall bladder pain. The site of pain can vary from person to person and even for an individual. Sometimes the pain comes on after eating, and a period of relief follows defaecation.

Bloating

A sensation of bloating is commonly reported. Sometimes it is so severe that clothes have to be loosened.

Bowel habit

Diarrhoea and constipation may occur; sometimes they alternate. A morning rush is common, where the patient feels an urgent desire to defaecate several times after getting up in the morning and following breakfast, after which the bowels may settle. There may be a feeling of incomplete emptying after

a bowel movement. The motion is often described as loose and semi-formed rather than watery. Sometimes it is like pellets or rabbit droppings or pencil shaped. There may be mucus present but not blood.

Other symptoms

Nausea sometimes occurs; vomiting is less common.

Patients may also complain of apparently unrelated symptoms such as back-ache, feeling lethargic and tired. Some patients get upper abdominal discomfort and indigestion; this is sometimes known as ‘functional dyspepsia’. Urinary symptoms may be associated with IBS, for example, frequency, urgency and nocturia (the need to pass urine during the night). Some women report dyspareunia.

Duration

Patients may present when the first symptoms occur or may describe a pattern of symptoms, which has been going on for months or even years. If an older person is presenting for the first time, referral is most appropriate.

Previous history

You need to know whether the patient has consulted his/her doctor about the symptoms and, if so, what they were told. There will be some patients who have had a lot of investigations in the past. A history of travel abroad and gastroenteritis sometimes appears to trigger an irritable bowel. Referral may be necessary to exclude an unresolved infection. Any history of previous bowel surgery would suggest a need for referral.

Aggravating factors

Stress appears to play an important role and can precipitate and exacerbate symptoms.

Caffeine often worsens symptoms, and its stimulant effect on the bowel and irritant effect on the stomach are well known.

The sweeteners sorbitol and fructose have also been reported to aggravate IBS. Other foods that have been implicated are milk and dairy products, chocolate, onions, garlic, chives and leeks.

Medication

The patient may already have tried prescribed or OTC medicines to treat the condition. You need to know what has been tried and whether it produced any improvement. It is also important to know what other medicines the patient

is taking. In many patients, IBS is associated with anxiety and depression, but it is not known whether this is cause or effect.

When to refer

Children

Older person with no previous history of IBS

Pregnant women

Blood in stools

Unexplained weight loss

Caution in patients aged over 55 years with changed bowel habit

Symptoms/signs of bowel obstruction

Unresponsive to appropriate treatment

Treatment timescale

Symptoms should start to improve within 1 week.

Management

Antispasmodics

Antispasmodics are the mainstay of OTC treatment of IBS, and research trials show some improvement in abdominal pain with smooth muscle relaxants. Many of these trials also show a pronounced effect with placebo. Smooth muscle relaxants *alverine citrate*, *peppermint* and *mebeverine* and the antimuscarinic *hyoscine* are used. They work by a direct effect on the smooth muscle of the gut, causing relaxation and thus reducing abdominal pain. Reviews of evidence have found that there does not appear to be a difference in efficacy between antimuscarinics and smooth muscle relaxants.

The patient should see an improvement within a few days of starting treatment and should be asked to return to you in 1 week, so you can monitor progress. It is worth trying a different antispasmodic if the first has not worked. Side effects from antispasmodics are rare. *Mebeverine* and *alverine* have some selectivity for smooth intestinal muscle and have relatively few adverse effects, whereas antimuscarinics (anticholinergics) such as *hyoscine butylbromide* are poorly selective and are likely to cause antimuscarinic adverse effects (dry mouth, urinary symptoms, blurred vision, etc.).

All antispasmodics are contraindicated in paralytic ileus, a serious condition that fortunately occurs only rarely (e.g. after abdominal operations and in peritonitis). Here the gut is not functioning and is obstructed. The symptoms would be severe pain, no bowel movements and possibly vomiting of partly digested food. Immediate referral is needed.

Alverine citrate

Alverine citrate is given in a dose of 60–120 mg (one or two capsules) up to three times a day. Remind the patient to take the capsules with water and not to chew them. Side effects are rare, but nausea, dizziness, pruritus, rash and headache have occasionally been reported. The drug should not be recommended for pregnant or breastfeeding women or for children. *Alverine citrate* is also available in a combination product with *sterculia* (see ‘Bulking agents’ below).

Peppermint oil

Peppermint oil has been used for many years as an aid to digestion and has an antispasmodic effect. In a systematic review, which identified nine studies evaluating 726 patients, *peppermint oil* was found to be significantly superior to placebo in improvement of IBS symptoms.

Capsules containing 0.2 ml of the oil are taken in a dose of one or two capsules three times a day, 15–30 min before meals. They are enteric coated, with the intention that the *peppermint oil* is delivered beyond the stomach and upper small bowel. Patients should be reminded not to chew the capsules as not only will this render the treatment ineffective, but it will also cause irritation of the mouth and oesophagus.

This treatment should not be recommended for children. Occasionally, *peppermint oil* causes heartburn and so is best avoided in patients who already suffer from this problem. Perianal irritation may occasionally occur with *peppermint oil*. Allergic reactions can occur and are rare; rash, headache and muscle tremor have been reported.

Mebeverine hydrochloride

Mebeverine hydrochloride is used at a dose of 135 mg three times a day. The dose should be taken 20 min before meals. The drug should not be recommended for pregnant or breastfeeding women, for children under 10 or for patients with porphyria (which is very rare).

Hyoscine

Hyoscine butylbromide 10 mg tablets can be used in adults and children aged over 6. On starting treatment, adults should take one tablet three times a day, increasing if necessary to two tablets four times a day. The anticholinergic effects of *hyoscine* may intensify those of other anticholinergics by increasing anticholinergic load.

Bulking agents

Traditionally, patients with IBS were told to eat a diet high in fibre, and raw wheat bran was often recommended as a way of increasing the fibre intake. Bran, which is an insoluble fibre, is no longer recommended in IBS (see

'Practical points: Diet'). Oats are more soluble than wheat bran and can be better tolerated. Bulking agents such as *ispaghula husk* containing soluble fibre can help some patients. It may take a few weeks of experimentation to find the dose that suits the individual patient. Remind the patient to increase fluid intake to take account of the additional fibre. Bulking agents are also available in combination with antispasmodics. The evidence for benefit is not strong, as studies have involved small numbers of patients. Possible positive benefit has been shown for *ispaghula husk*.

Antidiarrhoeals

Patients who complain of diarrhoea may describe a frequent urge to pass stools that may be loose and formed rather than watery. Use of OTC antidiarrhoeals such as *loperamide* is appropriate only on an occasional, short-term basis to reduce diarrhoea or urgency of defaecation. An obvious side effect is constipation. In some small studies *loperamide* improved diarrhoea, including frequency of bowel movements, but not abdominal pain or distension.

Practical points

Diet

Patients with IBS should follow the recommendations for a healthy (low-fat, low-sugar, high-fibre) diet. NICE give further specific guidance on diet (see Table 2.7). Dietary supplementation with wheat bran is no longer recommended because it can make symptoms worse.

Table 2.7 Guidance from NICE – Irritable bowel syndrome in adults

Diet and nutrition should be assessed for people with IBS and the following general advice given:

- Have regular meals and take time to eat
- Avoid missing meals or leaving long gaps between eating
- Drink at least eight cups of fluid per day, especially water or other non-caffeinated drinks, for example, herbal teas
- Restrict tea and coffee to three cups per day
- Reduce intake of alcohol and fizzy drinks
- It may be helpful to limit intake of high-fibre food (such as wholemeal or high-fibre flour and breads, cereals high in bran and wholegrains such as brown rice)
- Reduce intake of 'resistant starch' (starch that resists digestion in the small intestine and reaches the colon intact), which is often found in processed or re-cooked foods
- Limit fresh fruit to three portions per day (a portion should be ~80 g)
- People with diarrhoea should avoid sorbitol, an artificial sweetener found in sugar-free sweets (including chewing gum) and drinks and in some diabetic and slimming products
- People with wind and bloating may find it helpful to eat oats (such as oat-based breakfast cereal or porridge) and linseeds (up to one tablespoon per day)

Source: NICE Clinical Guideline 61 (CG61) (February 2008, Updated: February 2015).

Some patients find that excluding foods that they know exacerbate their symptoms is helpful (see ‘Aggravating factors’ above). The sweeteners sorbitol and fructose can make symptoms worse and they are found in many foods. The patient should check labels at the supermarket. A recent review found that there was insufficient evidence to make a definitive recommendation about caffeine intake; reducing or cutting out caffeine may be worth trying if symptoms appear to be related. Remind patients that caffeine is included in many soft drinks, and so they should check labels.

There is some evidence that a diet low in FODMAPs (fermentable oligosaccharides, disaccharides, monosaccharides and polyols) can help some people with IBS. FODMAPs are poorly absorbed simple and complex sugars that are found in some fruits and vegetables, milk and wheat. They are fermented by bacteria in the colon, releasing gas that it is thought stretches the bowel causing bloating, wind and pain in those susceptible to IBS. Awareness of FODMAPs can enable patients with IBS to consider making some modifications to their diet by reducing their consumption. However, NICE do advise that advice on this diet should only be given by a healthcare professional with expertise in dietary management; if patients wish to pursue this, they should discuss with their doctor who may consider referral to a dietician.

Exercise

There is limited evidence that increased physical activity improves IBS, but it will increase overall health and may act as a distraction; it is certainly useful for stress. It is worth advising people on healthy activities, such as regular walking and increasing the amount of exercise they get.

Complementary therapies

Some patients find relaxation techniques helpful. Videos and audio tapes are available to teach complementary therapies.

Studies have shown that hypnotherapy may be of benefit in IBS. If patients want to try this, they should consult a registered hypnotherapist. Others may benefit from traditional acupuncture, reflexology, aromatherapy or homoeopathy.

Irritable bowel syndrome in practice

Case 1

Joanna Mathers is a 29-year-old woman who asks to speak to the pharmacist. She has seen an advertisement for an antispasmodic for IBS and wonders whether she should try it. On questioning, she tells you that she has been getting stomach pains and bowel symptoms for several months, two or three times

a month. She thinks her symptoms seem to be associated with business lunches and dinners at important meetings and include abdominal pain, a feeling of abdominal fullness, diarrhoea, nausea and sometimes vomiting. In answer to your specific question about morning symptoms, Joanna says that sometimes she feels the need to go to the toilet first thing in the morning and may have to go several times. Sometimes she has been late for work because she felt she could not leave the house due to the diarrhoea. Joanna tells you that she works as a marketing executive and that her job is pressurised and stressful when there are big deadlines or client meetings. Joanna drinks six or seven cups of coffee a day and says her diet is ‘whatever I can get at work and something from the freezer when I get home’. She is not taking any other medicines and has not been to the doctor about her problems as she did not want to bother him.

The pharmacist's view

The picture that has emerged indicates IBS. She has the key symptoms and there is a link to stress at work. It might be worth advising her on exercise and relaxation exercises and trying to reduce her work stress. It would be worth trying an antispasmodic (*peppermint oil* or *mebeverine*) for 1 week and asking Joanna to come back at the end of that time. She also needs a careful explanation of aggravating factors for IBS and might want to try a gradual reduction in her intake of coffee over the next few days. If there is no improvement, a different antispasmodic could be tried for a further week, with referral then if needed.

The doctor's view

Joanna gives a clear history of IBS. Her symptoms are likely to settle with the pharmacist's advice and treatment. With antispasmodics, there is up to a 60% placebo response rate in IBS sufferers, so it would be surprising if she did not improve when next reviewed. If there were no improvement, then a referral would be sensible. A referral would give her doctor an opportunity to deal with her concerns about what was wrong, confirm the diagnosis and give her further advice on IBS. The doctor would want to give some time to consider her work pressures and advise on how these might be addressed. Some employers provide access to occupational health services who can advise on reducing stress in the workplace. Plenty of information on IBS (and stress) is available on the web, which she could be advised to look at, for example, NHS Choices.

Case 2

Jane Dawson asks to see the pharmacist. She is in her early 20s and says she has been getting some upper abdominal pain after eating food. She wants to try a stomach medicine. On further questioning, she says that she has had an irritable bowel before, but this is different, although she does admit that her bowels have been troublesome recently and she has noticed some urinary frequency.

Jane says that she has been constipated and felt bloated. She says that she went to her doctor last year and was told she had IBS. The doctor said it was all due to stress, which had upset her. Over the last year, she has started a new job and moved into new accommodation. She eats a healthy diet and exercises regularly.

The pharmacist's view

The history here is not straightforward, and although Jane's symptoms are indicative of IBS, which she says she has had before, the symptoms are different on this occasion. The best course of action is to refer her to the doctor for further investigation.

The doctor's view

Jane probably has IBS, but there is insufficient information so far to make that diagnosis. It is not uncommon to have upper abdominal pain with IBS, but other possibilities need to be considered. It sounds as though Jane thinks it is coming from her stomach. She may fear that she has an ulcer. She also mentions urinary frequency, which may well be associated with IBS but could be a urinary infection. A referral to her doctor is sensible to make a complete assessment of her symptoms. It is likely that the assessment would just involve listening to her description of her problem, gathering more information and a brief examination of her abdomen. A urine sample would help to see if there is a urinary infection. If there was still doubt about the diagnosis, a referral to a gastroenterologist at the local hospital could be made. Between 20 and 50% of referrals to gastroenterologists turn out to be due to IBS. The main purpose of referral is to exclude other causes of bowel symptoms and for reassurance.

If the doctor thinks Jane has IBS, an explanation of the syndrome would be helpful in addition to dealing with her concerns about a stomach ulcer. Whether or not psychological factors cause IBS, there is no doubt that the stresses of life can aggravate symptoms. It therefore makes sense to help sufferers to make this connection, so they can consider different ways of dealing with stress.

Often the above approach is an effective treatment in itself. However, if Jane did want some medication, a bulking agent such as *ispaghula husk* to help her constipation plus some antispasmodic tablets would be of value.

Haemorrhoids

Haemorrhoids (commonly known as piles) can produce symptoms of itching, burning, pain, swelling and discomfort in the perianal area and anal canal and rectal bleeding. They are swollen vascular cushions, which protrude into the anal canal (internal piles). They may swell so much that they hang down outside

the anus (external piles). They are often caused or exacerbated by inadequate dietary fibre or fluid intake. The pharmacist must, by careful questioning, differentiate between this minor condition and others that may be potentially more serious. It is an embarrassing subject and consultations require privacy.

What you need to know

Duration and previous history

Symptoms

Itching, burning

Soreness

Swelling

Pain

Blood in stools

Constipation

Bowel habit

Pregnancy

Other symptoms

Abdominal pain/vomiting

Weight loss

Medication

Significance of questions and answers

Duration and previous history

As an arbitrary guide, the pharmacist might consider treating haemorrhoids of up to 3 weeks' duration. It would be useful to establish whether the patient has a previous history of haemorrhoids and if the doctor has been seen about the problem. A recent examination by the doctor that has excluded serious symptoms would indicate that treatment of symptoms by the pharmacist would be appropriate.

Symptoms

The term haemorrhoids includes internal and external piles, which can be further classified as (i) those that are confined to the anal canal and cannot be seen, (ii) those that prolapse through the anal sphincter on defaecation and then reduce by themselves or are pushed back through the sphincter after defaecation by the patient and (iii) those that remain persistently prolapsed and outside the anal canal. These three types are sometimes referred to as first, second and third degree, respectively. Predisposing factors for haemorrhoids include diet, sedentary occupation and pregnancy, and there is thought to be a genetic element.

Pain

Pain is not always present; if it is, it may take the form of a dull ache and may be worse when the patient is having a bowel movement. Severe pain hints at other associated causes.

A severe sharp pain on defaecation may indicate the presence of an associated anal fissure, which may be accompanied by a sentinel pile (a small skin tag at the posterior margin of the anus) and requires referral. A fissure is a minute tear in the skin of the anal canal. It is usually caused by constipation and can often be managed conservatively by correcting this and using a local anaesthetic-containing cream or gel. Sometimes a vasodilatation ointment is prescribed, such as *glyceryl trinitrate (GTN) rectal ointment*, which causes anal muscle relaxation. In severe cases a minor operation is sometimes necessary.

One complication of external haemorrhoids is that they can ‘strangulate’ (the blood supply to the haemorrhoid can be cut off). This can be intensely painful. Another possible complication is a blood clot (thrombosis) that can form within the vascular anal cushion, and this also causes intense pain if it occurs. The pain of these usually peaks after 48–72 h and then gradually goes away over 7–10 days. Sometimes they are incised by the doctor to relieve pain.

Irritation

The most troublesome symptom for many patients is itching and irritation of the perianal area rather than pain. Persistent or recurrent irritation, which does not improve, is sometimes associated with rectal cancer and should be referred.

Bleeding

Blood may be deposited onto the stool from internal haemorrhoids as the stool passes through the anal canal. This fresh blood will appear bright red. It is typically described as being splashed around the toilet pan and may be seen on the surface of the stool or on the toilet paper. If blood is mixed with the stool, it will probably have come from higher up the GI tract and may be dark in colour (altered blood). If ‘new’ rectal bleeding is described, the pharmacist should suggest that the patient see the doctor so that an examination can be performed to exclude more serious pathology such as tumour or polyps.

Colorectal cancer can cause rectal bleeding. The disease is unusual in patients under 55, and the pharmacist should be alert for the older patients with rectal bleeding. This is particularly so if there has been a significant and sustained alteration in bowel habit.

In patients with recurrent bleeding from piles, the blood loss can mount up, and occasionally it can be the cause of iron deficiency anaemia.

Constipation

Constipation is a common causatory or exacerbatory factor in haemorrhoids. Straining at stool will occur; this increases the pressure in the highly vascular tissue cushions in the anal canal, and haemorrhoids may result. If piles are painful, the patient may try to avoid defaecation, and ignoring the call to open the bowels will make the constipation worse.

Insufficient dietary fibre and inadequate fluid intake may be involved, and the pharmacist should also consider the possibility of drug-induced constipation (see earlier in this chapter, Constipation: Significance of questions and answers: Medication).

Bowel habit

A persisting change in bowel habit is an indication for referral, as it may be caused by a bowel cancer. Seepage of faecal material through the anal sphincter (one form of faecal incontinence) can produce irritation and itching of the perianal area and may be caused by the presence of a tumour.

Pregnancy

Pregnant women have a higher incidence of haemorrhoids than non-pregnant women. This is thought to be due to pressure on the vascular anal cushions due to the gravid uterus. Constipation in pregnancy is also a common problem because raised progesterone levels mean that the gut muscles tend to be more relaxed. Such constipation can exacerbate symptoms of haemorrhoids. Appropriate dietary advice can be offered by the pharmacist (see Chapter 5 Women's Health: Common symptoms in pregnancy).

Other symptoms

Symptoms of haemorrhoids remain local to the anus. They do not cause abdominal pain, abdominal distension or vomiting. Any of these more widespread symptoms suggest other problems and require referral.

Tenesmus (the desire to defaecate when there is no stool present in the rectum) sometimes occurs when there is a tumour in the anus or rectum. The patient may describe a feeling of often wanting to pass a motion but no faeces being present. This symptom requires urgent referral.

Medication

Patients may already have tried one or more proprietary preparations to treat their symptoms. Some of these products are advertised widely, and as haemorrhoids are potentially embarrassing, patients often ask for the product rather than describe their symptoms. It is therefore important for the pharmacist to identify the exact nature of the symptoms being experienced and details of any

products used already. If the patient is constipated, the use of any laxatives should be established.

Present medication

Haemorrhoids may be exacerbated by drug-induced constipation, and the patient should be carefully questioned about current medication, including prescription and OTC medicines. A list of drugs that may cause constipation can be found earlier in this chapter in the section on Constipation. Rectal bleeding in a patient taking *warfarin* or another anticoagulant is an indication for referral.

When to refer

Duration of longer than 3 weeks

Presence of blood in the stools

Significant pain

Change in bowel habit (persisting alteration from normal bowel habit)

Suspected drug-induced constipation

Associated abdominal pain/vomiting

Malaise, fever or weight loss

Treatment timescale

If symptoms have not improved after 1 week, patients should see their doctor.

Management

Symptomatic treatment of haemorrhoids can provide relief from discomfort, but, if present, the underlying cause of constipation must also be addressed. The pharmacist is in a good position to offer dietary advice, in addition to treatment, to prevent the recurrence of symptoms in the future.

In severe or persistent cases, there may be a need for surgical intervention, following assessment at the GP surgery. Various options include rubber band ligation, sclerotherapy injections and haemorrhoidectomy.

Local anaesthetics (e.g. benzocaine and lidocaine [lignocaine])

Local anaesthetics can help to reduce the pain and itching associated with haemorrhoids. There is a possibility that local anaesthetics may cause sensitisation, and their use is best limited to a maximum of 2 weeks.

Skin protectors

Many antihaemorrhoidal products are bland soothing preparations containing skin protectors (e.g. *zinc oxide* and *kaolin*). *White petroleum jelly* can be used

for the same purpose. These products have emollient and protective properties. Protection of the perianal skin is important, because the presence of faecal matter can cause symptoms such as irritation and itching. Protecting agents form a barrier on the skin surface, helping to prevent irritation and loss of moisture from the skin.

Topical steroids

Ointment and suppositories containing *hydrocortisone* with skin protectors are available. The steroid reduces inflammation and swelling to give relief from itching and pain. The treatment should be used each morning and at night and after a bowel movement. The use of such products is restricted to those over 18. Treatment should not be used continuously for longer than 7 days.

Astringents

Astringents such as *zinc oxide*, hamamelis (witch hazel) and *bismuth salts* are included in many products designed for piles on the theoretical basis that they will cause precipitation of proteins when applied to mucous membranes or skin that is broken or damaged. A protective layer is then thought to be formed, helping to relieve irritation and inflammation. Some astringents also have a protective and mild antiseptic action (e.g. *bismuth*).

Antiseptics

These are among the ingredients of many antihaemorrhoidal products, including medicated toilet tissues. They do not have a specific action in the treatment of haemorrhoids. *Resorcinol* has antiseptic, antipruritic and exfoliative properties. The exfoliative action is thought to be useful by removing the top layer of skin cells and aiding penetration of medicaments into the skin. *Resorcinol* can be absorbed systemically via broken skin if there is prolonged use and theoretically its antithyroid action can lead to the development of myxoedema (hypothyroidism); this is very rare.

Counterirritants

Counterirritants such as *menthol* are sometimes included in antihaemorrhoidal products on the basis that their stimulation of nerve endings gives a sensation of cooling and tingling, which distracts from the sensation of discomfort. *Menthol* and *phenol* also have antipruritic actions.

Shark liver oil/live yeast

These agents are said to promote healing and tissue repair, but there is no scientific evidence to support such claims.

Laxatives

The short-term use of a laxative to relieve constipation is advisable. Bulk laxatives make stools softer and easier to pass. A stimulant laxative (e.g. senna) could be supplied for 1 or 2 days to help deal with the immediate problem, while dietary fibre and fluids are being increased. For patients who cannot or choose not to adapt their diet, bulk laxatives may be used long term.

Practical points

Self-diagnosis

Patients may say that they have piles, or think they have piles, but careful questioning by the pharmacist is needed to check whether this self-diagnosis is correct. If there is any doubt, referral is the best course of action.

Hygiene

The itching of haemorrhoids can often be improved by good anal hygiene, since the presence of small amounts of faecal matter can cause itching. The perianal area should be washed with warm water as frequently as is practicable, ideally after each bowel movement. Soap will tend to dry the skin and could make itching worse, but a mild soap could be tried if the patient wishes to do so. Moist toilet tissues are available, and these can be very useful where washing is not practical, for example, at work during the daytime, and some patients prefer them. These tissues are better used with a patting rather than a rubbing motion, which might aggravate symptoms. Many people with haemorrhoids find that a warm bath soothes their discomfort.

An increased intake of dietary fibre will increase bowel frequency, so patients should be advised to take care in wiping the perianal area and to use soft toilet paper to avoid soreness after wiping.

How to use OTC products

Ointments and creams can be used for internal and external haemorrhoids and should be applied in the morning, at night and after each bowel movement. An applicator is included in some packs of ointments and creams, and patients should be advised to take care in use to avoid any further damage to the perianal skin.

Suppositories can be recommended for internal haemorrhoids. After removing the foil or plastic packaging (patients have been known to try and insert them with the packaging left on), a suppository should be inserted in the morning, at night and after bowel movements. Insertion is easier if the patient is crouching or lying down.

Haemorrhoids in practice

Case 1

Tom Harris, a customer whom you know quite well, asks if you can recommend something for his usual problem. You ask him to tell you more about it: Mr Harris suffers from piles occasionally; you have dispensed prescriptions for *Anusol HC* and similar products in the past and have previously advised him about dietary fibre and fluid intake. He has been away on holiday for 2 weeks and says he has not been eating the same foods he does when at home. His symptoms are itching and irritation of the perianal area but no pain, and he has a small swelling, which hangs down from the anus after he has passed a motion, but which he is able to push back in again. He is a little constipated, but he is not taking any medicines.

The pharmacist's view

Mr Harris has a previous history of haemorrhoids, which have been diagnosed and treated by his doctor. It is likely that his holiday and temporary change in diet have caused a recurrence of the problem, so he now has a second-degree pile, and it would be reasonable to suggest symptomatic treatment for a few days. You could recommend the use of an ointment preparation containing *hydrocortisone* and skin protectors for up to 1 week and remind Mr Harris that the area should be kept clean and dry. You might consider recommending a laxative to ease the constipation until Mr Harris's diet gets back to normal (you advise that he return to his usual high-fibre diet) and makes sure his daily fluid intake is sufficient; a small supply of a stimulant laxative (perhaps a stimulant/stool softener such as *docusate sodium*) would be reasonable. He should see his doctor after 1 week if the problem has not cleared up.

The doctor's view

The treatment suggested by the pharmacist should settle Mr Harris's symptoms within 1 week. The treatment is symptomatic. Keeping his motions loose and avoiding constipation in the long term should keep the problem at bay. If he continues to suffer from frequent problems, referral should be considered. His doctor could advise whether or not to refer him to hospital for injection, rubber band ligation or removal of the piles (some GPs will do rubber band ligation and injections in the surgery).

Case 2

Mr Briggs is a local shopkeeper in his late 50s who wants you to recommend something for his piles. He tells you that he has had them for quite a while – a

couple of months. He has tried several different ointments and suppositories, all to no avail. The main problem now is bleeding, which has become worse. In fact he tells you, somewhat embarrassed, that he has been buying sanitary towels because this is the only way he can prevent his clothes from becoming stained. He is not constipated and has no pain.

The pharmacist's view

Mr Briggs should be referred to his doctor at once. His symptoms have a history of 2 months, and there must be quite profuse rectal bleeding, which may well be due to a more serious disease. Anaemia should also be considered. He has already tried some OTC treatments, with no success. His age and the description of his symptoms mean that further investigation is needed.

The doctor's view

Mr Briggs should be advised to see his doctor. This is not a typical presentation of piles. He will need a more detailed assessment by his doctor who will need to look for a cancer of the colon or rectum. Piles can bleed at times other than when defaecating, but this is uncommon. The doctor would gather more information by questioning and from an examination. The examination would usually include a digital rectal assessment to determine whether or not a rectal tumour is present. A blood test will be needed to determine if he has become anaemic and possibly look for other pathology. It is quite likely that this man would require urgent outpatient hospital referral for further investigations, which would involve sigmoidoscopy and possibly more extensive colonoscopy.

Case 3

Caroline Andrews is a young woman in her mid-20s, who works as a graphic designer in a local art studio. She asks your advice about an embarrassing problem: she is finding it very painful to pass motions. On questioning, she tells you that she has had the problem for a few days and has been constipated for about 2 weeks. She eats a diet that sounds relatively low in fibre and has been eating less than usual because she has been very busy at work. Caroline says she seldom takes any exercise. She takes the contraceptive pill but is not taking any medicines and has no other symptoms such as rectal bleeding.

The pharmacist's view

Caroline would probably be best advised to see her doctor, since the symptoms and pain that she has described might be due to an anal fissure, though they may be caused by a thrombosed pile.

The doctor's view

An anal fissure would be the most likely cause of Caroline's problem. Sometimes a thrombosed pile or a blood clot in the perianal area (perianal haematoma) can cause similar symptoms. An examination by her doctor should quickly confirm which of these is the cause. Correction of the constipation and future preventative dietary advice may well solve the problem. The discomfort could be helped by a local anaesthetic-containing cream or gel. If this is applied prior to a bowel action, the discomfort would be less. Thrombosed piles or perianal haematomata usually heal up after a few days, but sometimes incision to remove the clot is indicated. In severe cases of anal fissure that are not settling, referral to a specialist surgeon is necessary in order to release one of the muscles in spasm for rapid relief of pain. Topical GTN ointment is licensed to treat anal fissure.

Chapter 3

Skin Conditions

Eczema/dermatitis

Eczema is a term used synonymously with dermatitis. The latter is more commonly used when an external precipitating factor is present (contact dermatitis). The rashes produced have similar features, but the distribution on the body varies and can be diagnostic. Atopic eczema is a chronic, relapsing, itchy skin condition; it affects up to 20% of children, in many of whom it disappears or greatly improves with age such that 2–10% of adults are affected. Atopy is a term that is used to describe a group of three conditions, eczema, asthma and hay fever, which commonly coexist in an affected individual and which run in families.

The rash of eczema typically presents as dry flaky skin that may be inflamed and have small red spots (Figure 3.1). The skin may be cracked and weepy and sometimes becomes thickened. The rash is irritating and can be extremely itchy. If it isn't itchy, it is unlikely to be eczema. Many cases of mild-to-moderate eczema can be managed by the patient with support from the pharmacist.

What you need to know

- Age
- Distribution of rash
- Occupation/contact
- Previous history
- History of hay fever/asthma
- Aggravating factors
- Medication



Figure 3.1 Typical eczema dermatitis rash. Source: Graham-Brown and Burns (2007). Reproduced with permission of Wiley Blackwell.

Significance of questions and answers

Age/distribution

The distribution of the rash of atopic eczema tends to vary with age. During infancy, atopic eczema primarily involves the face, the scalp and the extensor surfaces of the limbs (Figure 3.2). The nappy area is usually spared.

In white older children, the rash is most marked in the flexures: behind the knees, on the inside of the elbow joints and around the wrists, as well as the hands, ankles, neck and around the eyes. In black and Asian children, the rash is often on the extensor surface of the joints and may have a more follicular or 'rougher' appearance.

In adults, the neck, the backs of the hands, the flexures of the elbows and knees and ankles and the feet are the most common sites for atopic eczema. This is often associated with generalised dryness and itching.

The symptoms can overlap with contact dermatitis as people with eczema are more prone to allergies and often become sensitised to substances used in lotions or creams, as part of the treatment. People who have had childhood eczema often have dry skin for the rest of their life.

Contact dermatitis most commonly affects the hands. It can occur at other sites depending on what triggers the skin reaction. For example, people with contact sensitivity to chromates in leather may get a rash on their feet; people with sensitivity to nickel may get a rash where their metallic belt buckle, or bra strap clasp, touches the skin.



Figure 3.2 Atopic eczema.

These are different from the rash of intertrigo that is caused by a fungal infection and is found in skinfolds or occluded areas such as under the breasts in women and in the groin or armpits.

Occupation/contact

Contact dermatitis may be caused by substances that irritate the skin or spark off an allergic reaction. Irritant contact dermatitis is most commonly caused by prolonged exposure to water (wet work), alongside soaps or detergents, which remove the natural fatty protective barrier from the skin. Typical occupations include cleaning, hairdressing, food processing, fishing and metal engineering. Other substances that can irritate the skin include alkaline cleansing agents, degreasing agents, solvents and oils. Such substances either cause direct and rapid damage to the skin or, in the case of weaker irritants, exert their irritant effect after continued exposure. Nappy rash (napkin dermatitis) is an example of irritant dermatitis and can be complicated by infection, for example, thrush.

In other cases, the contact dermatitis is caused by an allergic response to substances that include chromates (present in cement and rust-preventive paint), nickel (present in buckles, clasps and costume jewellery and as plating on scissors), rubber and resins (two-part glues and the resin colophony in adhesive plasters), dyes, certain plants (e.g. primula), oxidising and reducing agents (as used by hairdressers when perming hair) and medications (including topical corticosteroids, *lanolin*, *neomycin* and *cetyl stearyl alcohol*). Eye make-up and hair dyes can also cause allergic contact dermatitis.

Clues as to whether or not a contact problem is present can be gleaned from knowledge of site of rash, details of job and hobbies, onset of rash and agents handled and improvement of rash when away from work or on holiday.

Previous history

Patients may ask the pharmacist to recommend treatment for eczema that has been previously diagnosed by the doctor. In cases of mild-to-moderate eczema, it would be reasonable for the pharmacist to recommend the use of emollients and to advise on skin care. Mild or moderate strength corticosteroids such as *topical hydrocortisone*, *clobetasone* and *alclometasone* preparations can be recommended and supplied for the treatment of mild-to-moderate eczema. However, where severe or infected exacerbations of eczema have occurred, the patient is best referred to the surgery. Pharmacists use their professional judgement regarding individual cases.

Pharmacists are sometimes asked for over-the-counter (OTC) *topical hydrocortisone*, *clobetasone* or *alclometasone* by patients on the recommendation of their doctor or nurse. It can be difficult to explain to a patient why such a sale cannot legally be made if the product is for use on the face or anogenital area or for severe eczema. Pharmacists can minimise such problems by ensuring that local family doctors (especially those in training) are aware of the restrictions that apply to the sale of *hydrocortisone* and *clobetasone* OTC.

History of hay fever/asthma

Many atopic eczema sufferers have associated hay fever and/or asthma. In adults, most will have developed their first symptoms of eczema in the first 1–2 years of life (this is regarded as a diagnostic feature). There is often a family history (in about 80% of cases) of eczema, hay fever or asthma. The pharmacist can enquire about the family history of these conditions.

Aggravating factors

Atopic eczema may be worse during the hay fever season and aggravated by house dust or animal danders. Emotional factors, stress and worry can sometimes exacerbate eczema. Hormonal changes in women are recognised aggravating factors or triggers. Premenstrual flares of atopic eczema occur in 30% of women, and pregnancy can adversely affect eczema in up to 50% of women. Factors that dry the skin such as soaps or detergents and cold wind can aggravate the condition. Certain clothing such as woollen material can irritate the skin. In a small minority of sufferers (< 5%), cow's milk, eggs and food colouring (tartrazine) have been implicated. Antiseptic solutions applied directly to the skin or added to the bathwater can irritate the skin.

Medication

Both atopic eczema and contact dermatitis may be caused or made worse by sensitisation to topical medicaments. The pharmacist should ask which treatments have already been used. Topically applied local anaesthetics,

antihistamines, antibiotics and antiseptics can all aggravate eczema or provoke contact dermatitis. Some preservatives may cause sensitisation. Lanolin or lanolin derivatives also sometimes cause sensitisation, and if this is suspected, the product should be changed (newer hypoallergenic formulations of lanolin are less problematic). Information about different preparations and their formulations can be obtained from the Summary of Product Characteristics or from the manufacturer of the product. The *British National Formulary (BNF)* is also a good source of information on this subject, with a list of additives for each topical product and excipients that may be associated with sensitisation.

If the patient has used a preparation that the pharmacist considers appropriate for the condition correctly but there has been no improvement or the condition has got worse, the patient should see the doctor.

When to refer

Evidence of infection (weeping, crusting, spreading)

Severe condition: badly fissured/cracked skin, bleeding

Failed medication

No identifiable cause (unless previously diagnosed as eczema)

No improvement after 1 week with topical corticosteroids

Treatment timescale

Most cases of mild-to-moderate atopic eczema, irritant and allergic dermatitis should respond to skin care and treatment with OTC products. If no improvement has been noted after 1 week, referral to the GP surgery is advisable.

Management

Skin rashes tend, quite understandably, to cause anxiety. There is also a social stigma associated with skin disease. Many patients will therefore have been seen by their doctor. Pharmacists are most likely to be involved when the diagnosis has already been made or when the condition first presents but is very mild.

However, with increasing recognition that patients can self-treat mild-to-moderate eczema, and as much of the management involves advice and the continued use of emollients, the pharmacist is in a good position to help, with short-term use of OTC topical corticosteroids where needed. Where the pharmacist is able to identify a cause of irritant or allergic dermatitis, alongside removing or avoiding the cause, an OTC topical corticosteroid may be recommended.

Emollients

Emollients are the key to managing eczema and are medically inert creams and ointments that can be used to soothe the skin, reduce irritation, prevent the skin from drying, act as a protective layer and be used as a soap substitute. They may be applied directly to the skin or added to the bathwater.

There are many different types of emollient preparations that vary in their degree of greasiness. In some areas of the United Kingdom, there are locally agreed guidelines on which emollients to provide. The greasy preparations such as *white soft paraffin* are often the most effective, especially with very dry skin, but have the disadvantage of being messy and unpleasant to use. Patient preference is very important and plays a major part in compliance with emollient treatments. Patients will understandably not use a preparation they find unacceptable. Patients may need to try several different emollients before they find one that suits them, and they may need to have several different products (e.g. for use as a moisturiser, for use in the bath or shower and for use as a soap substitute when washing or showering). Emollient preparations contained in tubs should be removed with a clean spoon or spatula to reduce bacterial contamination. For lotions and creams, products with a pump dispenser are preferable to reduce the risk of bacterial contamination. These preparations should be used as often as needed to keep the skin hydrated and moist. Several and frequent applications each day may be required to achieve this.

Standard soaps, shampoos and shower gels have a drying effect on the skin and can make eczema worse. Emollients can be used instead of soap; either cream applied directly, or ointments dissolved in hot water make suitable soap substitutes. Bath additives and shower products are an option for people with extensive areas of dry skin. In 2013 the Medicines and Healthcare Products Regulatory Agency (MHRA) warned that *aqueous cream* may cause local skin reactions, such as stinging, burning, itching and redness, when it is used as a leave-on emollient, especially in children with atopic eczema, and it is probably less suitable. If using *emulsifying ointment*, it should first be mixed with water (one or two tablespoonfuls of ointment in a bowl of hot water) before being added to the bath to ensure distribution in the bathwater. Patients, parents or carers should be warned to take care because the bath will be slippery! Some patients with eczema believe, incorrectly, that bathing will make their eczema worse. This is not the case, provided appropriate emollient products are used and standard soaps and perfumed bath products are avoided, bathing to remove skin debris and crusts may in fact be beneficial.

Advice

This could include the identification of possible aggravating or precipitating factors. If the history is suggestive of an occupationally associated contact dermatitis, then referral is advisable. The doctor may in turn feel that referral to

a dermatologist is appropriate. It is sometimes necessary for a specialist to perform patch testing to identify the cause of contact dermatitis.

Further advice could be given regarding the use of ordinary soaps and detergents that tend to dry the skin and their alternatives (soap substitutes). If corticosteroid creams have been prescribed and emollients are to be used, the pharmacist is in a good position to check that the patient understands the way in which they should be used and to ensure adequate quantities are available. For many people, in order to stop eczema flaring up or returning, emollients should be thought of as indefinite treatment.

Topical corticosteroids

Hydrocortisone cream and ointment, *alclometasone* 0.05% and *clobetasone* 0.05% can be sold OTC for a limited range of indications. Their steroid potency is classed as mild (*hydrocortisone*) or moderate (*alclometasone* and *clobetasone*). *Topical hydrocortisone* OTC is licensed for the treatment of irritant and allergic dermatitis, insect bites and mild-to-moderate eczema. OTC *hydrocortisone* is contraindicated where the skin is infected (e.g. athlete's foot or cold sores), in acne and on the face and anogenital areas. Children aged over 10 years and adults can be treated, and any course must not be longer than 1 week. Only OTC brands of *topical hydrocortisone* can be used; dispensing packs may not be sold.

Topical alclometasone 0.05% and *clobetasone* 0.05% can be sold OTC for the short-term treatment and control of patches of eczema and dermatitis in people aged 12 years and over (used for < 7 days). The indications include atopic eczema and primary irritant or allergic dermatitis and exclude seborrhoeic dermatitis.

OTC topical corticosteroids should not be used on the groin, breastfold, genitals, or between the toes because these are common sites of fungal infections; nor on the face as they can cause perioral dermatitis and acneiform pustules (see Figure 3.3).

All should be used sparingly and explaining to patients the use of fingertip units is helpful. A fingertip unit is the amount of cream you can squeeze on to your fingertip from the tip to the first crease. Half a fingertip unit will cover a patch of skin the same size as the palm of the hand.

Antipruritics

Antipruritic preparations are sometimes helpful, although evidence of effectiveness is lacking. The itch of eczema is not histamine related, so the use of anti-histamines is not indicated. Topical antihistamines should not be used as these can cause sensitisation that will aggravate eczema. *Calamine* or *crotamiton* can be used in cream or lotion. A combination product containing *crotamiton* with *hydrocortisone* is available. Indications for use are the same as those for *topical hydrocortisone* for contact dermatitis (irritant or allergic), insect bites or stings



Figure 3.3 A perioral dermatitis following withdrawal of the potent topical steroid that had been wrongly used to treat seborrhoeic eczema. Source: Weller et al. (2014). Reproduced with permission of Wiley Blackwell.

and mild-to-moderate eczema. The same restrictions apply on use (see ‘Topical corticosteroids’ above).

Support for patients

The National Eczema Society provides information and support through its website www.eczema.org, a telephone helpline and written information.

Eczema and dermatitis in practice

Patient perspectives

I have lived with eczema all my life. I am now 33. My father had eczema and asthma. And the youngest of my three children also suffers with eczema. I know the heartache of this disease well. I have learned to control my eczema through my lifetime, but it takes quite a lot of trial and error to find the things that work and to avoid the things that set it off. Parents of kids with eczema need to listen to them and be patient with them because they are probably miserable, like I was as a child.

By the time I was about 18 or 19 my eczema had practically gone. My skin is still very sensitive and quite dry but is mostly OK. I go through phases where eczema breaks out behind my knees, on my forearms, on the back of my neck and on my lower back. When this happens, extra moisturiser and an OTC steroid bring it under control again.

Managing atopic dermatitis is like taking care of the family car. When the car breaks down, you take it to the mechanic and get it fixed. That’s like managing a flare-up of eczema with topical steroids ... but the maintenance

is still needed. Your car may be mended, but you still have to put oil in it regularly or the engine will seize up – so regular emollients or ‘moisturisers’ are required. And, like your car, you can do everything right – change the oil when you’re supposed to – and it can still break down on you.

Case 1

Samixa Shah asks your advice about her 4-year-old daughter Aisha whose eczema has worsened recently. She tells you that she has been using Chinese herbs, which have proved very helpful until the last week or so. The eczema has flared up especially on her arms and legs. She would like to use a safe cream but not a steroid cream as she has heard about its side effects. Aisha is not with her mother.

The pharmacist's view

Chinese herbal treatments have become popular for eczema and are preferred by some patients who perceive them as more ‘natural’. Their exact contents and the amounts of their constituent active ingredients are difficult to identify. Ironically, analysis of some of these herbal treatments has shown them to contain active ingredients with corticosteroid effects. Aisha should be seen at the GP surgery as the eczema has flared up, and without seeing the child it is difficult to assess severity. However, the mother’s comments and the history indicate that medical assessment would be helpful.

The doctor's view

The flare-up of her eczema could be due to an infection. The dry flaky skin can be an ideal site for infections to thrive. If that happens, the eczema is further worsened. It would be advisable for Aisha to be referred to her GP surgery. Some practices have access to nurses who specialise in skin conditions such as eczema. The GP or nurse might take a skin swab to determine the cause of infection and start oral antibiotics with a corticosteroid cream. In this case, it would be necessary to check out Mrs Shah’s concerns about corticosteroid creams. With appropriate information she may well be persuaded to try one. Usually they are only used for short bursts of a week or two alongside long-term emollient use and avoidance of soaps and bubble baths. Used in this way they are very safe. Advise her that Chinese herbs may not be subject to quality control and regulation and have been associated with liver toxicity.

Case 2

Ray Timpson is a local man in his mid-30s and a regular customer. Today, he wants to buy some *clobetasone* cream for his eczema, which has got worse. He has had eczema for many years and usually obtains his cream on a repeat

prescription from his doctor. As a child, Mr Timpson has asthma, and both asthma and hay fever are present in some members of his family. He has just seen an advert for *clobetasone* and says he would prefer to buy his supplies from you in the future to save both himself and the doctor some time. The eczema affects his ankles, shins and hands; the skin on his hands is cracked and weeping.

The pharmacist's view

Mr Timpson needs to see his doctor because the eczema on his hands is infected. Topical steroids, including *clobetasone*, should not be used on infected skin unless the infection is being treated.

The doctor's view

The description given suggests widespread atopic eczema with an area of infection on his hands. Although he has had this problem for many years, it would make sense for him to be referred back to the GP surgery, especially in view of the likely infection. It would be helpful for the doctor to gain an understanding of Mr Timson's ideas, concerns and expectations about his eczema and its management. It would be useful to identify any aggravating factors, for example, pets, soaps, washing powders, working environment and stress. It would be helpful to enquire which emollients have been used and how helpful they have been. Has he continued with their use? It may be useful to take a swab to establish the cause of infection, which is most likely due to *Staphylococcus aureus*. In this situation, a 10-day course of *flucloxacillin*, or *clarithromycin* if the patient is *penicillin* sensitive, is indicated. If he is subject to repeated infection, he could try an antiseptic bath oil and emollient. It might be appropriate for him to use a prescribed potent topical corticosteroid, for example, *betamethasone* 0.1% for a short period to control symptoms, rather than persist with a weaker one in the long term. Once his symptoms are under control, he could use an OTC corticosteroid for short-term management of episodes of 'flare-up' plus continued use of his usual emollients. He should be advised that emollients are the mainstay of therapy and are intended for long-term daily use.

Case 3

Romiz Miah, a young adult, asks your advice about his hands, which are sore, dry and itchy. The skin is flaky but not broken, and there is no sign of secondary infection such as weeping or pus. He says the problem is spreading and now affecting his lower arms as well. He has occasionally had the problem before, but not as severely. On further questioning, you discover that he has recently started working in his family's restaurant and has been doing a lot of washing up and cleaning.

The pharmacist's view

The most likely cause is an irritant dermatitis caused by increased recent exposure to water and detergents. There are no signs of infection, and it would be reasonable to recommend treatment with *topical hydrocortisone*, *alclometasone* or *clobetasone*. The skin is dry, so an ointment formulation would be helpful. Wearing 'washing-up' gloves to protect the skin would help. He should put a moisturiser or a barrier cream on his skin after washing his hands, preferably with an emollient soap substitute. Regular and frequent use of an emollient will be helpful.

The doctor's view

If his skin does not settle with the pharmacist's advice over the next week or two, it would be appropriate to suggest attending the GP surgery. In the consultation at the surgery, it would be useful to find out what his understanding of the problem is, how he thinks it is caused and what concerns he may have. He might, for example, think that it is caused solely by an infection and be contagious. Similarly, his expectations of what can be done to help need to be explored. He might, for instance, be expecting a complete cure; some people expect oral medication rather than topical creams. Exploration of his ideas, concerns and expectations will lead to a more satisfactory outcome. He will be more likely to adhere to the advice and treatment.

In this case, he might benefit from short-term use of a stronger corticosteroid cream (0.1% *betamethasone*) and a change of emollient. The most important aspect for the future would be prevention by protection from frequent contact with detergents.

Case 4

You are asked to speak to a patient on the phone about some cream she purchased at your pharmacy earlier today. The patient says she bought some *clobetasone* eczema and dermatitis cream for a rash caused by a new deodorant. However, when she got back home and read the patient information leaflet (PIL), she discovered that it should not be used by breastfeeding mothers without medical advice. She had her first baby 4 months ago and is breastfeeding.

The pharmacist's view

I didn't realise that the PIL said this about breastfeeding, so this phone call put me on the spot. I thought about the possible risk and decided it was very small. The treatment was going to be used only for a few days, and the amount of steroid that might be absorbed through the skin would be absolutely tiny. However, I didn't want to undermine her confidence. I was also a bit worried about where I stood if I gave advice that was different from the PIL. But in the

end I decided to use my own judgement. I told her that I would explain why the warning is in the leaflet, would give her my opinion and then see what she wanted to do. I said that if she would prefer it, she could use a simple soothing cream on the rash. I also said that if it was inconvenient for her to come back to the pharmacy, I could arrange for the other cream to be delivered by our prescription delivery van.

The patient's view

I was really worried when I got home and read the leaflet. You don't expect that putting something on a rash might mean you can't breastfeed. I thought maybe something in the cream could be dangerous to my baby. The pharmacist spent time talking it through with me, and in the end I decided to go for the soothing cream instead, to be on the safe side.

The doctor's view

It is unlikely that the *corticosteroid* would cause any problems for the baby, especially as the treatment is going to be very short term. The advice given about corticosteroids and breastfeeding in the BNF states that 'maternal doses of up to 40-mg *prednisolone* daily by mouth are unlikely to cause any systemic effects in infants'. As so little of this topical moderate-potency steroid is likely to be absorbed, the chances of any problems are unlikely. It is possible that the warning is included in the PIL because there is no research evidence available in this situation.

Acne

Acne (or acne vulgaris) is a common skin condition in which blockage or inflammation of the hair follicles and accompanying sebaceous glands occurs. The incidence of acne in teenagers is high, and it has been estimated that over half of all adolescents will experience some degree of acne. Most acne sufferers self-treat, at least initially. Mild-to-moderate acne often responds well to correctly used OTC treatments. Acne has profound effects on patients, and pharmacists should remember that even mild acne is seen as stigmatising for teenagers and moderate-to-severe acne can be a major problem and a source of depression for some. A sympathetic response to requests for help, together with an invitation to return and report progress, can be as important as the treatment selected.

What you need to know

Age

Description

Severity
Affected areas
Duration
Medication

Significance of questions and answers

Age

Acne commonly occurs during the teenage years and its onset is usually at puberty. Acne can persist for anything from a few months to several years; with onset at puberty, acne may continue until the late teens or early 20s.

Acne is extremely rare in young children and babies, and any such cases should be referred to the doctor for investigation since an androgen-secreting (hormone-producing) tumour may be responsible.

Sometimes acne is seen later in life. Approximately 5% of women and 1% of men 25–40 years of age either continue to get acne lesions or develop acne (late-onset acne) after adolescence. Acne worsens just before or during menstruation in some women; this is thought to be due to changes in progesterone levels. For patients in whom acne begins later than the teenage years, other causes should be considered, including hyperandrogenism in women, drug therapy (such as combined hormonal contraception) and occupational factors. Oils and greases used at work can precipitate acne, and it would be worth asking whether the patient comes into contact with such agents.

Description

The hormonal changes that occur during puberty, especially the production of androgens, are involved in the causation of acne in teenagers. Increased keratin and sebum production during adolescence are important contributory factors; the increased amount of keratin leads to blockages of the follicles and the formation of microcomedones. A microcomedone can develop into a non-inflammatory lesion (comedone), which may be open (blackhead) or closed (whitehead), or into an inflammatory lesion (papule, pustule or nodule; see Figure 3.4).

It is thought that excess sebum causes an overgrowth of bacteria, particularly *Propionibacterium acnes*, which sets off an inflammatory reaction and is involved in the development of inflammatory lesions. Acne can thus be non-inflammatory or inflammatory in nature.

Severity

Mild acne predominantly consists of non-inflammatory comedones. *Moderate acne* consists of a mixture of non-inflammatory comedones and inflammatory papules and pustules. *Severe acne* is characterised by the presence of widespread



Figure 3.4 The seborrhoea, comedones and scattered inflammatory papules of teenage acne. Source: Weller et al. (2014). Reproduced with permission of Wiley Blackwell.

nodules and cysts, as well as a preponderance of inflammatory papules and pustules.

OTC treatment may be recommended for mild-to-moderate acne. Comedones may be open or closed; the sebum in closed comedones cannot reach the surface of the skin. The plug of keratin, which is at the entrance to the follicle in a comedone, is initially white (a whitehead), later becoming darker coloured because of the accumulation of melanin (a blackhead). However, sebum is still produced, so swelling occurs and the comedone eventually ruptures, discharging its contents under the skin's surface. The released sebum causes an inflammatory response; if the response is not too severe, small red papules appear.

In more severe acne, nodules (deep pustular lesions) and cysts may occur, which may also be very red and inflamed. Scarring can result from these deep lesions, although sometimes superficial lesions can also cause scarring. If the acne is particularly inflamed, cystic or nodular and there may be a risk of scarring, referral to the doctor for alternative forms of treatment such as topical or systemic antibiotics is needed. Patients who are particularly distressed by what appears to be mild acne may also need referral for reassurance.

Affected areas

Acne principally affects the face (99% of people with acne), the upper back and shoulders (60%) and the chest (15%). These are all areas with large numbers of sebaceous glands. It is important to ask people who come to the pharmacy with acne on the face whether they also have it in these areas; this may be embarrassing and tends to remain 'hidden' but can be effectively treated.

Rosacea is a chronic, inflammatory skin condition that is sometimes confused with acne that occurs in young and middle-aged adults and sometimes in older people (Figure 3.5). Only the face is affected. It can affect the cheeks, nose, eyes, chin and forehead. Rosacea has characteristic features of reddening, papules



Figure 3.5 Rosacea.

and pustules. It may be associated with recurrent episodes of facial flushing and telangiectasia (broken capillaries).

Duration

The information gained here should be considered in conjunction with facts about medication (prescribed or OTC) tried already and other medicines being taken. Persistence with daily treatment over several months is usually required for beneficial effect. Acne of long duration where several OTC preparations have been correctly used without success warrants referral to the GP surgery.

Medication

The pharmacist should establish the identity of any treatment tried already and its method of use. Inappropriate use of medication, for example, infrequent application or short duration of use, could affect the chances of success.

Information about current therapy is important, since acne can sometimes be drug induced. *Lithium*, *phenytoin* and the progestogens *levonorgestrel* and

norethisterone (e.g. in the combined oral contraceptive pill) may be culprits. If acne is suspected as a result of drug therapy, patients should be advised to discuss this with their doctor.

When to refer

Severe acne
Failed medication
Suspected drug-induced acne
Considerable distress

Treatment timescale

A patient with mild-to-moderate acne that has not responded to treatment within 8 weeks should be referred to the doctor.

Management

Dozens of products are marketed for the treatment of acne. The pharmacist can make a logical selection based on knowledge of likely efficacy. The general aims of therapy are to remove follicular plugs so that sebum can escape and to reduce the number of bacteria on the skin. Treatment should therefore reduce comedone formation. The most useful formulations are lotions, creams and gels. Gels with an alcoholic base dry quickly but can be irritating. Those with an aqueous base dry slower but are less likely to irritate the skin. A non-comedogenic moisturiser can help if the skin becomes dry as a result of treatment.

Benzoyl peroxide

Benzoyl peroxide has both antibacterial and anticomедogenic actions and is the first-line OTC treatment for inflammatory and non-inflammatory acne. It can be highly effective but requires patience and careful, gradual increase in duration of use and product strength. Anti-inflammatory action occurs at all strengths. It has a keratolytic action, which increases the turnover of skin cells, helping the skin to peel. Regular application can result in improvement for most people with acne of all severities. At first, *benzoyl peroxide* is very likely to produce reddening and soreness of the skin, and patients should be warned of this. Treatment should start with a 2.5 or 5% product, moving gradually to the 10% strength if needed. Gels can be helpful for people with oily skin and creams for those with dry skin. Washing the skin with a mild soap or cleansing product rinsed off with water and allowing it to dry fully before applying *benzoyl peroxide* can help by reducing the amount of sebum on the skin.

Benzoyl peroxide prevents new lesions forming rather than shrinking existing ones. Therefore, it needs to be applied to the whole of the affected area, not just to individual comedones, and is best applied to skin following washing.

During the first few days of use, the skin is likely to redden and may feel slightly sore. Stinging, drying and peeling are likely. Warning should be given that this irritant effect is likely to occur; otherwise treatment may be abandoned inappropriately.

One approach to minimise reddening and skin soreness is to begin with the lowest strength preparation and to apply the cream, lotion or gel sparingly and infrequently during the first week of treatment. Wash off the application of benzoyl peroxide after 15 min initially, and increase exposure in increments of 15 min until the drug can be tolerated for 2 h or more. Application is once or twice a day (once daily is usually sufficient). After 2 or 3 weeks, a higher strength preparation may be introduced. If irritant effects are severe and persist despite low strength and short exposure time, use of the product should be discontinued.

Sensitisation

Occasionally, sensitisation to *benzoyl peroxide* may occur. The skin becomes reddened, inflamed and sore, and treatment should be discontinued.

Bleaching

Warning should be given that *benzoyl peroxide* can bleach clothing and bedding. If it is applied at night, white sheets and pillowcases are best used and patients can be advised to wear an old T-shirt or shirt to minimise damage to good clothes. Contact between *benzoyl peroxide* and the eyes, mouth and other mucous membranes should be avoided.

Other keratolytics

Other keratolytics include *potassium hydroxyquinoline sulphate* and *salicylic acid*. They are second-line treatments.

Nicotinamide

Topical *nicotinamide gel* has a mild anti-inflammatory action and is applied twice daily. There is limited evidence of effectiveness. Side effects may include skin dryness and/or irritation. Several weeks' treatment may be needed to see the full effects.

Antiseptic agents

Skin washes and soaps containing antiseptic agents such as *chlorhexidine* are available. Such products may be useful in acne by degreasing the skin and reducing the skin flora. There is limited evidence of effectiveness.

Various topical antibacterial agents such as *erythromycin* and *clindamycin*, in a variety of formulations, are available on prescription (POM).

Practical points

Information on acne for teenagers

The website www.teenagehealthfreak.org is a useful source of practical information for teenagers with health concerns including acne. As well as explaining what acne is and what can be used to treat it, site users can read other teenagers' queries about acne.

Diet

There is no evidence to link diet with acne, despite a common belief that chocolate and fatty foods cause acne or make it worse.

Sunlight

It is commonly believed that there are beneficial effects of sunlight on acne, thought to be due to its peeling effect, which helps to unblock follicles, and its drying or degreasing effect. A systematic review found that 'convincing direct evidence for a positive effect of sunlight exposure on acne is lacking'.

Antibiotics

The pharmacist is in a good position to ensure that acne treatments are used correctly. Oral antibiotic therapy, available on prescription (POM), usually consists of tetracyclines. *Doxycycline* and *lymecycline* are often used as a once-daily dose is more convenient, and they can be taken with food. Photosensitivity is reported to be a particular problem with *doxycycline*, so sunscreen may be advised. If taking *oxytetracycline* or *tetracycline* patients should be reminded not to eat or drink dairy products up to 1 h before or after as they chelate with these drugs and reduce absorption. *Minocycline* is no longer recommended because of potentially severe adverse effects. Oral tetracyclines should be avoided in pregnant or breastfeeding women and in children younger than 12 years of age as they can affect developing bone and teeth.

Erythromycin is also used in acne but tends to be used second line. Bacterial resistance to *erythromycin* is now high, so it may not be effective.

Topical antibiotics are used as an alternative to oral antibiotics but may not be as effective. They are particularly useful in inflammatory acne. Topical *erythromycin* combined with *benzoyl peroxide* or *zinc* may induce less bacterial resistance than oral therapy alone.

Retinoids

Tretinooin, *isotretinooin* and *adapalene* are topical retinoids that are commonly prescribed by the doctor or skin specialist (POM). It is worthwhile being aware

that they can cause skin irritation, particularly in people with eczema, but most importantly that they are contraindicated in pregnancy. Retinoids are teratogenic and can damage the developing baby.

Continuous treatment

Acne is notoriously slow to respond to treatment and a period of up to 6 months may be required for maximum benefit. It is generally agreed that keratolytics such as *benzoyl peroxide* require a minimum of 6–8 weeks' treatment for benefits to show. Patients should therefore be encouraged to persevere with treatment, whether with OTC or prescription products, and told not to feel discouraged if results are not immediate. Research has shown that many teenagers have unrealistic expectations of the time needed for improvement to be seen, perhaps created by the advertising for some treatments. The patient also needs to understand that acne is a chronic condition and continuous treatment is needed to keep the problem under control.

Skin hygiene

Acne is not caused by poor hygiene or failure to wash the skin sufficiently often. This is a myth worth dispelling. Regular washing of the skin with soap and warm water or with an antibacterial soap or skin wash can be helpful as it degreases the skin and reduces the number of bacteria present. However, the evidence for face cleansing in the management of acne is mostly from poor-quality studies.

Since personal hygiene is a sensitive area, an initial enquiry about the kind of soap or wash currently being used might be a tactful way to introduce the subject. Dermabrasion with facial scrubs removes the outer layer of dead skin and must be done gently. There is no evidence of effectiveness of this approach in acne.

OTC topical corticosteroids and acne

The use of *topical hydrocortisone*, *alclometasone* or *clobetasone* is contraindicated in acne because steroids can potentiate the effects of androgenic hormones on the sebaceous glands, hence making acne worse.

Make-up

Heavy, greasy make-up is highly likely to exacerbate acne. If make-up is to be worn, water-based rather than oily foundations are best, and they should be removed thoroughly at the end of the day.

Box 3.1 Common myths about acne that are worth dispelling

From NHS Choices: <http://www.nhs.uk/Conditions/Acne/Pages/Causes.aspx>

1. 'Acne is caused by a poor diet'

So far, research hasn't found any foods that cause acne. Eating a healthy, balanced diet is recommended because it's good for your heart and your health in general.

2. 'Acne is caused by having dirty skin and poor hygiene'

Most of the biological reactions that trigger acne occur beneath the skin, not on the surface, so the cleanliness of your skin has no effect on your acne. Washing your face more than twice a day could just aggravate your skin.

3. 'Squeezing blackheads, whiteheads and spots is the best way to get rid of acne'

This could actually make symptoms worse and may leave you with scarring.

4. 'Sexual activity can influence acne'

Having sex or masturbating won't make acne any better or worse.

5. 'Sunbathing, sunbeds and sunlamps help improve the symptoms of acne'

There's no conclusive evidence that prolonged exposure to sunlight or using sunbeds or sunlamps can improve acne. Many medications used to treat acne can make your skin more sensitive to light, so exposure could cause painful damage to your skin and also increase your risk of skin cancer.

6. 'Acne is infectious'

You can't pass acne on to other people.

Common fungal infections

Athlete's foot

Athlete's foot (or tinea pedis) is a superficial fungal skin infection of the feet and toes. The incidence of athlete's foot is not, as its name might suggest, limited to those of an athletic disposition. It is very common, and at any one time, around 15–25% of people are likely to have athlete's foot. The fungus that causes the disease thrives in warm, moist conditions. The spaces between the toes can provide a good growth environment and the infection therefore has a high incidence. The problem is more common in men than in women and responds well to OTC treatment.

What you need to know

Duration

Appearance

Severity

Broken skin

Soreness

Secondary infection

Location

Previous history
Medication

Significance of questions and answers

Duration

Considered together with its severity, a long-standing condition may make the pharmacist decide to refer the patient. However, most cases of athlete's foot are minor in nature and can be treated effectively by providing advice and with OTC products.

Appearance

Athlete's foot usually presents as itchy, flaky skin in the web spaces between the toes. The flakes or scales of skin become white and macerated and begin to peel off. Underneath the scales, the skin is usually reddened and may be itchy and sore. The skin may be dry and scaly or moist and weeping (see Figure 3.6). Less commonly a 'moccasin type' occurs as well, which is characterised by a more



Figure 3.6 Athlete's foot. Source: Graham-Brown and Burns (2007). Reproduced with permission of Wiley Blackwell.

diffuse scaling of skin involving the entire sole and side of the foot; sometimes this is associated with vesicles (blistering).

Severity

Athlete's foot is usually a mild fungal infection causing itching, but occasionally the skin between the toes becomes more macerated and broken, and deeper and painful fissures may develop. The skin may then become inflamed and sore. Once the skin is broken, there is the potential for secondary bacterial infection to develop. If there are indications of bacterial involvement, such as weeping, pus or yellow crusts, then referral to the doctor is needed.

Location

Classically, the toes are involved, the web space between the fourth and fifth toes being the most commonly affected. In the moccasin type the infection may spread to the sole of the foot and to the sides and upper surface in some cases. This spread can alter the appearance of the condition and such cases are probably best referred to the GP surgery for further investigation. When other areas of the foot are involved, it can be confused with allergic dermatitis. However, in eczema or dermatitis, the spaces between the toes are usually spared, in contrast to athlete's foot.

If the toenails appear to be involved, referral to the GP surgery may be necessary depending on how many toenails are affected and severity. Systemic antifungal treatment may be required to deal with infection of the nail bed where OTC treatment is not appropriate.

Previous history

Many people get recurrent athlete's foot. The pharmacist should ask about previous bouts and about the action taken in response. Any patient with diabetes who presents with athlete's foot is best referred to the doctor. People with diabetes may have impaired circulation or nerve supply to the feet and are more prone to secondary infections in addition to poorer healing of open wounds.

Medication

One or more topical treatments may have already been tried before the patient seeks advice from the pharmacist. The identity of any treatment and the method of use should be established. Treatment failure may occur simply because it was not continued for sufficiently long enough. However, if an appropriate antifungal product has been used correctly without remission of symptoms, the patient is best referred to the doctor, especially if the problem is of long duration (several weeks).

When to refer

- Severe, affecting other parts of the foot
- Signs of bacterial infection
- Unresponsive to appropriate treatment
- Patients with diabetes
- Involvement of toenails

Treatment timescale

If athlete's foot has not responded to treatment within 2 weeks, patients should see their doctor.

Management

People with fungal infection of the foot should be advised on measures to reduce the risk of transmission (e.g. not scratching affected skin and not going barefoot in public places) and good foot hygiene (e.g. keeping feet cool and dry, wearing cotton socks and washing socks regularly). It is not necessary to keep children away from school.

Many OTC topical preparations are available for the treatment of athlete's foot. Formulations include creams, powders, solutions, sprays and paints. A systematic review of clinical evidence for fungal foot and skin infections compared topical allylamines (e.g. *terbinafine*), imidazoles (e.g. *clotrimazole*, *miconazole*, *econazole*, *ketoconazole* and *bifonazole*), *undecenoic acid* and *tolnaftate*. All are more effective than placebo. Topical allylamines have been tested against topical azoles; cure rates were the same. However, *terbinafine* was more effective in preventing recurrence ('sustained cure'). *Terbinafine* and *ketoconazole* have a 1-week treatment period, which some patients may prefer.

Pharmacists should instruct patients on how to use the treatment correctly and on other measures that can help to prevent recurrence (see 'Practical points' below). Regular application of the recommended product to clean, dry feet is essential, and treatment must be continued after symptoms have gone to ensure eradication of the fungus. Individual products state the length of treatment and generally advise use for 1–2 weeks after the disappearance of all signs of infection, as fungal spores may linger.

Imidazoles (e.g. clotrimazole, miconazole, econazole)

Topical imidazoles can be used to treat many topical fungal infections, including athlete's foot. They have a wide spectrum of action and have been shown

to have both antifungal and some antibacterial activity. (The latter is useful as secondary infection can occur.) The treatment should be applied two or three times daily. Formulations include creams, powders and sprays. *Miconazole*, *clotrimazole* and *ketoconazole* have occasionally been reported to cause mild irritation of the skin. *Ketoconazole* is for adults only.

Terbinafine (adults only)

Terbinafine is available in cream, solution, spray and gel formulations for adults only (not for use in children under 16 years). Their licensed indications and treatment schedules are shown in the table that follows. There is evidence that *terbinafine* is better than the azoles in preventing recurrence, so it will be useful where frequent bouts of athlete's foot are a problem. *Terbinafine* can cause redness, itching and stinging of the skin; contact with the eyes should be avoided.

Terbinafine preparations	Cream (16 and over)	Spray (16 and over)	Solution (18 and over)	Gel (16 and over)
Athlete's foot	Apply once or twice daily for 1 week	Apply once daily for 1 week	Apply once between the toes and to the soles and sides of the feet. Leave in contact for 24 h.	Apply once daily for 1 week
Dhobi itch ('jock itch')	Apply once or twice daily for 1–2 weeks	Apply once daily for 1 week	—	Apply once daily for 1 week
Ringworm	—	Apply once daily for 1 week	—	Apply once daily for 1 week

Griseofulvin

Griseofulvin 1% spray is used once a day and the maximum treatment period is 4 weeks.

Tolnaftate

Tolnaftate is available in powder, cream, aerosol and solution formulations and is effective against athlete's foot. It has antifungal, but not antibacterial, action, but evidence of efficacy is limited. It should be applied twice daily, and treatment should be continued for up to 6 weeks. *Tolnaftate* may sting slightly when applied to infected skin.

Undecenoates (e.g. zinc undecenoate, undecenoic acid and methyl and propyl undecenylate)

Undecenoic acid is an antifungal agent, sometimes formulated with zinc salt to give additional astringent properties. There is some limited evidence that it is more effective than placebo for treating athlete's foot. Treatment should be continued for 4 weeks.

Topical corticosteroids and combination products

Hydrocortisone may be sold OTC for allergic and irritant dermatitis, insect bites or stings and mild-to-moderate eczema. *Alclometasone* and *clobetasone* skin preparations can be sold OTC for eczema and dermatitis. People often put these topical corticosteroids on athlete's foot to treat itch, but this is a bad idea; on their own they cannot be recommended for athlete's foot because, although they reduce inflammation, they do not deal with the fungal infection and might make it worse.

Some combination products containing *hydrocortisone* together with an antifungal agent are available OTC for use in athlete's foot and candidal intertrigo (described as 'sweat rash' on some product packaging and information). These help relieve itch while treating infection. Treatment is limited to 7 days.

Practical points

Footwear

Sweating of the feet can produce the kind of hot, moist environment in which the fungus is able to grow. Shoes that are too tight and that are made of synthetic materials make it impossible for moisture to evaporate. Wearing leather shoes allows the skin to breathe. In summer, open-toed sandals can be helpful, and shoes should be left off where possible. The wearing of cotton socks can facilitate the evaporation of moisture, whereas nylon socks will prevent this.

Foot hygiene

The feet should be washed and carefully and thoroughly dried, especially between the toes, before the antifungal preparation is applied.

Transmission of athlete's foot

Athlete's foot is easily transmitted and is thought to be acquired by walking barefoot, for example, on changing room floors in workplaces, schools and sports clubs. There is no need to avoid sports, but wearing some form of footwear, such as rubber sandals, is advisable.

Prevention of reinfection

Care should be taken to ensure that shoes and socks are kept free of fungus. Socks should be changed and washed regularly. Shoes can be dusted with a fungicidal powder to eradicate the fungus. The use of a fungicidal dusting powder on the feet and in the shoes can be a useful prophylactic measure and can also help to absorb moisture and prevent maceration. Patients should be reminded to treat all shoes, since fungal spores may be present.

Ringworm (tinea)

Ringworm of the body (tinea corporis) is a fungal infection that occurs as a circular lesion that gradually spreads after beginning as a small red papule. Often there is only one lesion, and the characteristic appearance is of a central cleared area with a red circular advancing edge – hence the name ringworm (Figure 3.7). They are usually acquired through direct contact with an infected person or animal (for example, dogs, cats, guinea pigs and cattle) although indirect contact, such as through clothing, sometimes occurs. Advice should be given to wash towels, clothes and bed linen frequently to eradicate the fungus. Topical imidazoles such as *miconazole* are effective treatments for ringworm.



Figure 3.7 Tinea corporis.



Figure 3.8 Tinea capitis. Source: Graham-Brown and Burns (2007). Reproduced with permission of Wiley Blackwell.

Ringworm of the groin (*tinea cruris*) presents as an itchy red area in the genital region and often spreads to the inside of the thighs. It is thought to be caused by an individual transferring infection from feet (athlete's foot) or nails, by scratching. The problem is seen more in men than in women and is commonly known as 'jock itch' in the United States. People with the infection should be advised not to share towels and to wash them frequently. Wearing loose-fitting clothes made of cotton or a material designed to keep moisture away from the skin, and let things dry out, will also help. Treatment consists of topical antifungals; the use of powder formulations can be particularly valuable because they absorb perspiration.

Ringworm of the scalp (*tinea capitis*) is most common in preadolescent children, although it can occur in adolescents and adults. It is important to refer suspected cases to the GP surgery. It is relatively rare but in the past used to occur in epidemics in urban areas. There may be associated hair loss and affected hairs come out easily (see Figure 3.8) (see also 'Hair loss'). Children are usually referred to a specialist by the GP. Confirmation of the diagnosis is normally required by microscopy and culture of skin scrapings and hair before treatment. Treatment is with oral antifungals. Advice should be to discard or disinfect things that might spread fungal spores to others (for example, hats, combs, pillows, blankets and scissors).

Fungal nail infections (onychomycosis)

Fungal nail infection (onychomycosis) is a common cause of deformed nails. It can involve any part of the nail: the nail plate, the nail bed or the root of the nail. The infection evolves slowly. As it evolves, the nail unit discolours,

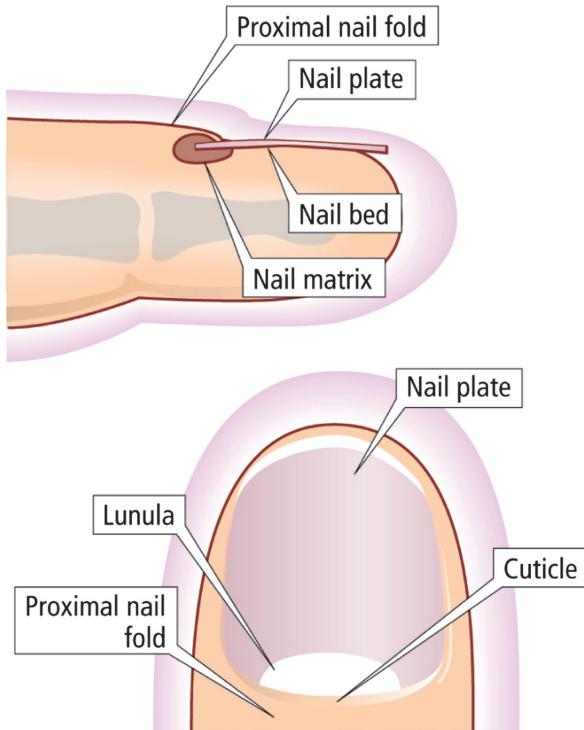


Figure 3.9 The nail. Source: Graham-Brown and Burns (2007). Reproduced with permission of Wiley Blackwell.

the nail plate distorts and the nail bed and adjacent tissue may thicken (see Figure 3.9). Figure 3.10 shows an onychomycotic nail. No treatment other than nail trimming may be appropriate for some people who are not bothered by the infected nail or who wish to avoid the possible adverse effects of drug treatment. However, others may be very distressed by the appearance of the nail or get discomfort.

An OTC nail lacquer containing 5% *amorolfine* can be used for the treatment of mild infection involving one or two nails in people aged over 18 years. The lacquer should be applied to the affected finger or toenails once weekly. Treatment length is 6 months for fingernails and 9–12 months for toenails. *Amorolfine* should not be used by pregnant or breastfeeding women. Reported adverse effects include nail discolouration and broken or brittle nails. (These can also be effects of the infection itself.) A burning sensation of the skin is rarely experienced, as is contact dermatitis from *amorolfine*.

Refer if the infection seems severe and if walking is uncomfortable or if the abnormal-looking nails are causing significant psychological distress. Also refer where there is a predisposing condition such as diabetes, peripheral circulatory



Figure 3.10 Tinea of a fingernail. Source: Graham-Brown and Burns (2007). Reproduced with permission of Wiley Blackwell.

problems and immunosuppression. In these instances, oral treatment may be indicated (usually terbinafine).

Intertrigo (candidal skin crease infections)

Intertrigo (sometimes known as ‘sweat rash’) is an infection of the skinfolds in which the fungus, candida, is usually implicated. These infections are more likely when skin rubs on skin (such as between skinfolds in an obese person) and where heat and moisture lead to maceration and inflammation. The diagnosis is usually made from characteristic features of a rash with soreness and itching in skin flexures such as the groin, under the breasts, axillae and buttock folds. The affected skin is typically red and moist. As the condition develops, an irregular edge and blistering or papular satellite lesions may be present.

Apart from obesity as a factor, it is important to consider an underlying cause if candidal infection of the skin is widespread or recurrent and referral to the GP surgery for investigations and treatment may be required. Perhaps the most common association is with diabetes, particularly if glycaemic control is poor. Other commonly associated factors are the use of systemic corticosteroids or

antibiotic treatment and diseases in which the barrier function of the skin is disturbed (such as psoriasis and eczema). Also consider the possibility of immunocompromise (such as HIV infection, chemotherapy and the use of immunosuppressive drugs). Iron deficiency anaemia is also associated with this condition.

Offer advice about weight loss if obesity is a contributing factor. Advise the person to minimise skin occlusion where possible (for example, avoid tight clothing and non-breathable fabrics). Patients should wash skin regularly with soap substitute (for example, *emulsifying ointment*) and ensure skin is dried adequately afterwards, especially in the skinfolds. If infection is not widespread, the pharmacist can treat adults with a topical imidazole cream (*clotrimazole*, *econazole*, *miconazole* or *ketoconazole*) or *terbinafine*. Children can be treated with topical *clotrimazole*, *econazole* or *miconazole*. If inflammation or itch is particularly problematic, consider prescribing *hydrocortisone 1%* combined with an imidazole. Do not give a corticosteroid preparation alone.

If there is no improvement after 7 days, patients should be referred to the GP surgery.

Fungal infections in practice

Case 1

John Chen, the local plumber, is in his early twenties and captains the local football team on Sunday mornings. Today he wants to buy something for his athlete's foot, which he says he just can't get rid of. His girlfriend bought him some cream a few days ago, but it doesn't seem to be having any effect. The skin between the third and fourth toes and between the second and third toes is affected. John tells you that the skin is itchy and that it looks flaky. He tells you that he has had athlete's foot before and that it keeps coming back again. He wears trainers most of the time (he has them on now) and has used the cream his girlfriend bought on most days.

The pharmacist's view

From the answers he has given, it sounds as though John does have athlete's foot. Once you have ascertained the identity of the cream he has been using, it might be appropriate to suggest the use of one of the azoles or *terbinafine*. Advice is also needed about foot hygiene and footwear and about regular and persistent use of treatment. Possibly airing his feet by wearing sandals when not at work might help. If the problem has not cleared up after 2 weeks, John should see his doctor.

The doctor's view

He probably does have athlete's foot (*tinea pedis*), although it is unusual for the skin not to be affected between the fourth and fifth toes. Athlete's foot usually

starts with the skin being affected in this area. The advice from the pharmacist and suggested treatment is appropriate. If his symptoms don't settle with the pharmacist's suggested treatment and management, then he should see his GP. The GP could confirm the diagnosis. It would be helpful to know whether he has a history of other skin problems such as eczema or dermatitis, and it would be important to examine his foot. If the diagnosis was in doubt, a swab or scraping could be taken to identify whether or not it was a fungal infection.

Case 2

Linda Green asks if you can recommend anything for athlete's foot. She tells you that it affects her toes and the soles and top of her feet and is extremely itchy. When asked about the skin between her toes, she tells you she does not think the rash is between the toes. She says the skin is dry and red and has been like this for several days. Ms Green has not tried any medication to treat it.

The pharmacist's view

The symptoms that Linda Green has described do not sound like those of athlete's foot. The skin between the toes is not affected, so eczema or dermatitis is a possibility. Rather than recommend a product without being able to identify the cause of the problem, it would be better to refer Ms Green to her doctor.

The doctor's view

The description that the pharmacist has obtained does not sound like athlete's foot, which usually involves the cleft between the fourth and fifth toes. Referral to the GP surgery for diagnosis would be sensible. It is possible she may have pompholyx and/or eczema. It would be helpful to know if she suffers, or has suffered, from any skin problems elsewhere on the body, for example, psoriasis or eczema. Pompholyx is also known as vesicular or dyshidrotic eczema and typically affects the hands and/or feet (when the term podopompholyx is also often used). An early feature of pompholyx is the development of tiny blisters deep in the skin of the fingers, palms or toes. This can progress to scaling, cracking or crusting. About half of sufferers have a history of allergy or eczema. It appears more common in conditions that lead to increased sweating, such as a hot, humid climate and stress. The condition tends to come and go and is often not a problem for long periods of time. Treatment is similar to that for ordinary eczema and may include emollients, topical corticosteroids and, if the pompholyx has become infected, topical or systemic antibiotics.

Psoriasis can also affect the soles of the feet and cause thickened dry skin associated with deep painful cracks. The differential diagnosis is made easier if there are signs of psoriasis present elsewhere, such as thickened, reddened skin around the knee caps and elbows.

Cold sores

Cold sores (herpes labialis) are caused by the herpes simplex virus (HSV). It is usually a painful, self-limiting infection of the lips, cheeks or nose or oropharyngeal mucosa (gingivostomatitis). The virus has two main subtypes. HSV type 1 is the cause of cold sores in more than 90% of cases. Rarely, infections may be caused by HSV type 2, which more commonly causes genital herpes infections.

What you need to know

Age

Duration

Symptoms and appearance

Tingling

Pain

Location (current and previous)

Precipitating factors

Sunlight

Infection

Stress

Previous history

Medication

Significance of questions and answers

Age

Although the initial or ‘primary’ infection, which is usually subclinical and goes unnoticed, occurs in childhood, cold sores are most commonly seen in adolescents and young adults. Following the primary attack, the virus is not completely eradicated and virus particles lie dormant in nerve roots until they are reactivated at a later stage to cause ‘secondary’ symptoms. Although primary herpes infection is almost universal in childhood, not all those affected later experience cold sores, and the reason for this is not fully understood. Recurrent cold sores occur in up to 25% of all adults and the frequency declines with age, although cold sores can occur in patients of all ages. The incidence of cold sores is slightly higher in women than in men.

Many children have minimal symptoms with their primary infection. In those with active primary herpes infection of childhood, the typical picture is of a febrile child with a painful ulcerated mouth and enlarged lymph nodes. The herpetic lesions last for 3–6 days and can involve the outer skin surface as well as the inside of the mouth (gingivostomatitis). Such patients should be referred to the doctor.

Duration

The duration of the symptoms is important as treatment with *aciclovir* (*acyclovir*) is of most value if started early in the course of the infection (during the prodromal phase). Usually the infection is resolved within 1–2 weeks. Any lesions that have persisted longer need medical referral.

Symptoms and appearance

The symptoms of discomfort, tingling or irritation (prodromal phase) may occur in the skin for 6–24 h before the appearance of the cold sore. The cold sore starts with the development of minute blisters on top of inflamed, red, raised skin. The blisters may be filled with white matter. They quickly break down to produce a raw area with exudation and crusting by about the fourth day after their appearance. By around 1 week, most lesions will have healed.

Cold sores are extremely painful and this is one of the critical diagnostic factors. Oral cancer can sometimes present a similar appearance to a cold sore. However, cancerous lesions are often painless, and their long duration differentiates them from cold sores. Another cause of a painless ulcer is that of a primary oral chancre of syphilis. Chancres normally occur in the genital area but can be found on the lips. The incidence of syphilis has been increasing in the United Kingdom for several years.

When a cold sore occurs for the first time, it can be confused with a small patch of impetigo. Impetigo is usually more widespread, does not start with blisters and has a honey-coloured crust. It tends to spread out to form further ‘satellite’ patches and does not necessarily start close to the lips. It is less common than cold sores and tends to affect children. Since impetigo requires either topical or oral antibiotic treatment, the condition cannot be treated by the pharmacist. If there is any doubt about the cause of the symptoms, the patient should be referred.

Location

Cold sores occur most often on the lips or face. Lesions inside the mouth or close to or affecting the eye need medical referral.

Precipitating factors

Most people with recurrent cold sores recognise things that trigger it off. Cold sores can be precipitated by sunlight, wind, fever (during infections such as colds and flu) and menstruation, being rundown and local trauma to the skin. Physical and emotional stress can also be triggers. While it is often not possible to avoid these factors completely, advising the patient on potential triggers may be helpful for the sufferer.

Previous history

The fact that the cold sore is recurrent is helpful diagnostically. If a sore keeps on returning in the same place in a similar way, then it is likely to be a cold sore.

Most sufferers experience one to three attacks each year. Cold sores occur throughout the year, with a slightly increased incidence during the winter months. Information about the frequency and severity of the cold sore is helpful when recommending referral to the doctor, although the condition can usually be treated by the pharmacist.

In patients with atopic eczema, herpes infections can become severe and widespread as the virus spreads in affected skin. This can be severe and life threatening. If this is suspected, such patients must be referred to their doctor. Immunocompromised patients, for example, those undergoing cytotoxic chemotherapy or with HIV, are also at risk of serious infection and should always be referred to the GP surgery.

Patients who are pregnant, particularly near term, should be advised to see the doctor or midwife.

Medication

It is helpful to enquire what creams and lotions have been used so far, what was used in previous episodes and what, if anything, helped last time.

As stated before, patients on chemotherapy for cancer, or drugs for HIV, should be advised to seek a medical opinion. This also applies to people on oral corticosteroids as they may be susceptible to more severe infection.

When to refer

Babies and young children
Failure of an established sore to resolve
Severe or worsening sore
History of frequent cold sores
Sore lasting longer than 2 weeks
Painless sore
Patients with atopic eczema
Eye affected
Uncertain diagnosis
Immunocompromised patient
Pregnancy

Management

Aciclovir and penciclovir

Aciclovir cream and *penciclovir creams* are antivirals that reduce time to healing by 0.5 to 1 day and reduce pain experienced from the lesion. Treatment should be started as soon as symptoms are felt and before the lesion appears. Once the lesion has appeared, evidence of effectiveness is less convincing. The treatments are therefore a helpful recommendation for patients who suffer repeated attacks and know when a cold sore is going to appear. Such patients

can be told that they should use treatment as soon as they feel the characteristic tingling or itching that precedes the appearance of a cold sore.

Aciclovir cream can be used by adults and children and should be applied four hourly during waking hours (approximately five times a day) to the affected area for 5 days. If healing is not complete, treatment can be continued for up to 5 more days, after which medical advice should be sought if the cold sore has not resolved.

Penciclovir cream can be used by those aged 12 years and over and is applied two hourly during waking hours (approximately eight times a day) for 4 days. Some patients experience a transient stinging or burning sensation after applying the creams. The affected skin may become dry and flaky.

Patients with severe infection, or who are immunocompromised, are usually prescribed oral antiviral therapy by a doctor. Some patients who get frequent, severe cold sores either take oral antivirals long term (prophylaxis) or are given a supply to start at the onset of symptoms.

Analgesia and bland creams

Paracetamol or *ibuprofen* may help with discomfort and pain. Keeping the cold sore moist (e.g. with lip balm or *white soft paraffin*) will prevent drying and cracking, which can predispose to secondary bacterial infection. For the patient who suffers only an occasional cold sore, a simple cream, perhaps containing an antiseptic agent, can help to reduce discomfort.

Hydrocolloid gel patch

This patch is applied as soon as symptoms start and replaced as needed. The thin hydrocolloid gel patch is used for its wound healing properties. There is limited evidence of efficacy in cold sores.

Complementary therapies

Balm mint extract and tea tree oil applied topically may have an effect on pain, dryness and itching. There is insufficient evidence to assess whether they have an effect on healing, time to crusting, severity of an attack or rate of recurrence. Low-energy, non-thermal narrow-waveband light within the infrared spectrum may have an effect on cold sores, although there is insufficient evidence currently.

Practical points

Preventing cross infection

Patients should be aware that HSV1 is contagious and transmitted by direct contact. Tell patients to wash their hands after applying treatment to the cold sore. Women should be careful in applying eye make-up when they have a cold

sore to prevent infection affecting the eye. It is sensible not to share cutlery, towels, toothbrushes or face flannels or to kiss people until the cold sore has cleared up. Oral sex with someone who has a cold sore means a risk of genital herpes and should be avoided until the cold sore has gone. This latter advice is probably best imparted via a PIL.

Use of sunscreens

Sunscreen creams (SPF 15 or above) applied to and around the lips when patients are subject to increased sun exposure (e.g. during skiing and beach holidays) can be a useful preventive measure if the patient recognises sunlight as a trigger.

Stress

Sources of stress in life could be looked at to see if changes are possible. It might be worthwhile to recommend a discussion with the doctor about this.

Eczema herpeticum (Kaposi's varicelliform eruption)

Patients with atopic eczema are very susceptible to herpetic infection and show an abnormal response to the virus with widespread lesions and sometimes involvement of the central nervous system. These patients should avoid contact with anyone who has an active cold sore. If this severe infection is suspected, immediate referral to the doctor or out-of-hours service is required.

Impetigo

In some parts of the United Kingdom, pharmacists now assess and treat impetigo with *flucloxacillin* or *clarithromycin* using a patient group direction (PGD). Localised crusted impetigo is usually treated with topical *fusidic acid*. Washing the hands with soap and water after applying treatment and not sharing face cloths and towels can help to prevent spread.

Warts and verrucae

Cutaneous warts are small, rough growths that are caused by infection of skin cells with certain strains of the human papillomavirus (HPV). They can appear anywhere on the skin but are most commonly seen on the hands and feet. A veruca (also known as a plantar wart) is a wart on the sole of the foot. They have a high incidence in children. Once immunity to the infecting virus is sufficiently high, the lesions will disappear, but many patients and parents prefer active treatment. Many preparations are available OTC, and correct use is required to break down hard skin and to prevent damage to surrounding skin.

What you need to know

Age

Adult, child

Appearance and number of lesions

Location

Duration and history

Medication

Significance of questions and answers

Age

Warts can occur in children and adults; they are more common in children, and the peak incidence is found between the ages of 12 and 16 years. The peak incidence is thought to be due to higher exposure to the virus in schools and sports facilities. Warts and verrucae are caused by the same virus, but the appearance of the infection is altered by the location.

Appearance

Warts appear as raised fleshy lesions on the skin with a roughened surface (Figure 3.11); the most common type is said to resemble a cauliflower. The appearance can vary, mostly related to where they occur on the body. Verrucae occur on the weight-bearing areas of the sole and heel and have a different appearance from warts because the pressure from the body's weight pushes



Figure 3.11 Typical common warts on the fingers. Source: Weller et al. (2014). Reproduced with permission of Wiley Blackwell.

the lesion inwards, sometimes producing pain when weight is applied during walking. Warts have a network of capillaries, and, if pared, thrombosed, blackened capillaries or bleeding points will be seen. The presence of these capillaries provides a useful distinguishing feature between callouses and verrucae on the feet: if a corn or callous is pared, no such dark points will be seen; instead layers of white keratin will be present. The thrombosed capillaries are sometimes thought, incorrectly, to be the root of the verruca by the patient. The pharmacist can correct this misconception when explaining the purpose and method of treatment (discussed below).

Multiple warts

Warts may occur singly or as several lesions. If they are multiple, they can be quite unsightly and cause distress.

Molluscum contagiosum is a condition in which the lesions may resemble warts, but another type of virus is the cause (a pox virus). They are mostly seen in infants and preschool children. The lesions are pinkish or pearly white papules with a central dimple and are up to 5 mm in diameter (see Figure 3.12). They are said to resemble small sea shells stuck on the skin, and the infection easily passes from child to child – contagious (hence the name). The location of molluscum tends to differ from that of warts – the eyelids, face, armpits and trunk may be involved. The lesions are harmless and usually resolve in a few months without scarring. They are best left untreated, but if parents are



Figure 3.12 An umbilicus surrounded by umbilicated papules of molluscum contagiosum. Source: Weller et al. (2014). Reproduced with permission of Wiley Blackwell.

concerned, they should be referred to the GP surgery for reassurance (and to be dissuaded from treatment). Very rarely molluscum can be a severe problem in people with HIV or immunosuppression.

Location

The palms or backs of the hands are common sites for warts, as is the area around the fingernails. People who bite or pick their nails are more susceptible to warts around them as this causes inoculation of the skin with the virus. Warts sometimes occur on the face and referral to the doctor is the best option in such cases. Since treatment with OTC products is destructive in nature, self-treatment of facial warts can lead to scarring and should never be attempted.

Parts of the skin that are subject to regular trauma or friction are more likely to be affected, since damage to the skin facilitates entry of the virus. Verrucae on the sole of the foot may be present singly or as several lesions. Sometime pain on weight bearing draws attention to the lesion.

Anogenital

Anogenital warts are caused by a different type of HPV and require medical referral for examination, diagnosis and treatment. They are sexually transmitted and patients can self-refer to their local genitourinary clinic. Anogenital warts in children raises concerns about sexual abuse and all cases must be referred to the GP surgery.

Duration and history

It is known that most warts will disappear spontaneously within a period of 6 months to 2 years. The younger the patient, the more quickly the lesions are likely to remit as immunity to the virus develops more rapidly.

Any unusual change in the appearance of a wart should be treated with suspicion and referral to the doctor is advised. Skin cancers are sometimes mistakenly thought to be warts by patients, and the pharmacist can establish how long the lesion has been present and any changes that have occurred. Signs related to skin cancer are described in 'Practical points' below.

Medication

People with diabetes should not use OTC products to treat warts or verrucae without advice from a nurse or doctor since impaired circulation, if present, can lead to delayed healing, ulceration or even gangrene. Also, peripheral neuropathy may mean that even extensive damage to the skin will not provoke a sensation of pain.

Warts can be a major problem if the immune system is suppressed by either disease (e.g. HIV infection and lymphoma) or drugs (e.g. *ciclosporin* to prevent rejection of a transplant).

The pharmacist should ask whether any treatment has been attempted already and, if so, its identity and the method of use. A common problem is that treatments are not used for a sufficiently long period of time because patients tend to expect a fast cure.

When to refer

Changed appearance of lesions: size and colour

Bleeding

Itching

Genital warts

Facial warts

Immunocompromised patients

Treatment timescale

Treatment with OTC preparations should produce a successful outcome within 3 months; if not, referral may be necessary.

Management

Many warts are best left alone and will go away of their own accord and an old adage is that ‘the best treatment is no treatment’. If patients are distressed by the appearance or are getting pain from a verruca, it is reasonable to attempt treatment. Many patients insist on doing something. Treatment of warts and verrucae aims to reduce the size of the lesion by gradual destruction of the skin. Continuous application of the selected preparation for several weeks or months is needed, and it is important to explain this to the patient for any benefit to be achieved. Surrounding healthy skin may need to be protected during treatment (see ‘Practical points’ below).

To reiterate, it is important not to use OTC wart products on the face. They should also not be used on skinfolds (such as the groin or axillae). They must not be used on moles or birthmarks, or lesions with red edges, or an unusual colour. They must not be used on open wounds, on irritated or reddened skin or any area that appears to be infected.

Salicylic acid

Salicylic acid may be considered to be the treatment of choice for warts; it acts by softening and destroying the lesion by chemically burning, thus mechanically

removing affected tissue. Preparations are available in a variety of strengths, sometimes in collodion-type bases or paints that help to retain the *salicylic acid* in contact with the wart. *Lactic acid* is included in some preparations with the aim of enhancing availability of the *salicylic acid*. Ointments, gels and plasters containing *salicylic acid* provide a selection of methods of application. Preparations should be kept well away from the eyes and applied with an orange stick or other applicator, not with the fingers.

Cryotherapy

Dimethyl ether propane can be used to freeze warts and is available in an application system for home use for adults and children over 4. There is little evidence from which to judge its effectiveness in home use rather than when applied by a doctor. The treatment should not be used by people with diabetes or by pregnant women. It should not be used on warts that are adjacent to finger nails (periungual). The wart should fall off about 10 days after application.

Practical points

Application of treatments

Treatments containing *salicylic acid* should be applied once a day, usually at night. The treatment is helped by prior soaking of the affected hand or foot in warm water for 5–10 min to soften and hydrate the skin, increasing the action of the *salicylic acid*. The main reason for using it on a verruca is to soften and remove the hard overgrowth of keratin that causes symptoms by digging into the foot when weight bearing. Removal of the dead skin from the surface of the wart by gentle rubbing with a pumice stone or emery board after it has been applied helps to achieve this and also helps the next application get to work on the layer underneath. Occlusion of the wart using an adhesive plaster helps to keep the skin soft, maximising the effectiveness of *salicylic acid*.

The main risk with *salicylic acid* preparations is in causing chemical burns and irritation of the unaffected skin. Protection of the surrounding skin can be achieved by applying a layer of *petroleum jelly* to prevent the treatment from making contact with healthy skin. Application of the liquid or gel using an orange stick will help to confine the substance to the lesion itself.

Podiatrists (chiropodists) frequently see patients with verrucae and can give advice to patients and provide treatment, if indicated.

Warts and skin cancer

Premalignant and malignant lesions can sometimes be thought to be warts by the patient. There are different types of skin cancer. All cases of suspected cancer

should be referred to the GP surgery. They can be divided into two categories: non-pigmented (i.e. skin coloured) and pigmented (i.e. brown).

Non-pigmented. In this group, which is more likely to occur in the elderly, the signs might include a persisting small ulcer or sore that slowly enlarges but never seems to heal. Sometimes a crust forms but when it falls off, the lesion is still present. The main type, squamous cell carcinoma, usually appears on the head and neck or the back of the hand, and is related to long-term sun damage. In the case of a basal cell carcinoma (rodent ulcer), the lesion typically starts off as a nodule that ulcerates and then has a circular, raised and rolled edge.

Pigmented. Pigmented lesions or moles can turn malignant. These can occur in patients of a much younger age than the first group. They can be difficult to differentiate from benign moles, which are common. A NICE guideline (NG12, 2015) gives guidance on the nature or appearance of pigmented skin lesions that warrant referral for further urgent investigation using a 7-point checklist score of three or more.

Major features of the lesions (scoring 2 points each) are:

- Change in size
- Irregular shape
- Irregular colour

Minor features of the lesions (scoring 1 point each) are:

- Largest diameter 7 mm or more
- Inflammation
- Oozing
- Change in sensation

Another useful way to recall ‘danger signs’ is using the mnemonic ABCDE:

- A – Asymmetrical moles – irregular in shape
- B – Border of a mole – blurred or has jagged edges
- C – Colour of a mole – if a mole has more than one colour
- D – Diameter (width) – irregular moles are usually larger than 7 mm
- E – Evolving – melanoma moles often change (evolve)

Figures 3.13 and 3.14 show a melanoma and a superficial spreading melanoma.

Length of treatment required

Continuous treatment is usually needed for up to 3 months for both warts and verrucae. Patients need to know that a long period of treatment will be required and that they should not expect instant or rapid success. An invitation to come back to see the pharmacist and report progress can help the pharmacist monitor the treatment. These days the patient can easily take a digital photo to monitor progress, if they wish.



Figure 3.13 Malignant melanoma.

If treatment has not been successful after 3 months and the wart is causing symptoms or upset, referral for consideration of removal using cauterity, curetting or liquid nitrogen may be required. Some podiatrists provide these treatments for verrucae. Not all GP surgeries provide cryotherapy.



Figure 3.14 Superficial spreading melanoma. Source: Graham-Brown and Burns (2007). Reproduced with permission of Wiley Blackwell.

Verrucae and swimming pools

Viruses are able to penetrate moist skin more easily than dry skin, and it has been suggested that the high level of use of swimming pools has contributed to the high incidence of verrucae. Theoretically, walking barefoot on abrasive surfaces by the pool or changing area can lead to infected material from the verruca being rubbed into the flooring. There has been controversy about whether wearing rubber socks can protect against the spread of verrucae. Also, the wearing of this conspicuous article might in itself create stigma for the child involved. The Amateur Swimming Association gives further guidance on this at <http://www.swimming.org/learntoswim/swimming-and-verrucas-the-facts/>.

Their view is that the use of devices such as plastic socks should be discouraged and that the use of a waterproof plaster is sufficient to cover the verruca during swimming.

Scabies

Scabies is an intensely itchy skin infestation caused by the human parasite *Sarcoptes scabiei*. The itch of scabies can be severe, particularly at night, and scratching can lead to changes in the appearance of the skin. It is therefore necessary to take a careful history. Scabies goes through peaks and troughs of prevalence, with a peak occurring every 15–20 years, and pharmacists need to be aware when a peak is occurring.

What you need to know

Age

Infant, child, adult

Symptoms

Itching, rash

Presence of burrows

History

Signs of infection

Medication

Significance of questions and answers

Age

Scabies infestation can occur at any age from infancy onwards. Recently, scabies has become more frequent in the elderly in residential and nursing home environments. The pharmacist may feel it best to refer infants and young

children to the doctor if scabies is suspected. If a school or nursing home outbreak is suspected, the pharmacist should inform local GP surgeries or the public health/health protection department.

Symptoms

The scabies mite burrows down into the skin and lives under the surface. The presence of the mites sets up an allergic reaction, thought to be due to the insect's coat and exudates, resulting in intense itching. A characteristic feature of scabies is that itching is worse at night and can lead to loss of sleep.

Burrows can sometimes be seen as small threadlike grey lines. The lines are raised, wavy and about 5–10 mm long. Commonly infested sites include the web space of the fingers and toes, wrists, armpits, around nipples, buttocks and the genital area. The presence of itchy papules and nodules on the penis and scrotum are usually indicative of sexually acquired scabies. Patients may have a rash that does not always correspond to the areas of infestation. The rash may be patchy and diffuse or dense and erythematous. It is more commonly found around the midriff, underarms, buttocks, inside the thighs and around the ankles.

In adults, scabies rarely affects the scalp and face, but in children aged 2 years or under and in the elderly, involvement of the head is more common, especially in the area behind the ear (postauricular fold).

Burrows may be indistinct or may have been disguised by scratching that has broken and excoriated the skin. Scabies can mimic other skin conditions and may not present with the classic features. The itch tends to be generalised rather than in specific areas. In immunocompromised or debilitated patients (e.g. the elderly), scabies presents differently. The affected skin can become thickened and crusted and resembles psoriasis; this is called crusted or Norwegian scabies. It is a 'hyperinfestation' with millions of mites, thought to be due to the poor immune response. Mites survive under the crust and any sections that become dislodged are infectious to others because of the many living creatures they contain.

History

The itch of scabies can take several (6–8) weeks to develop in someone who has not been infested previously. The scabies mite is transmitted by close personal contact, so patients can be asked whether anyone else they know is affected by the same symptoms, for example, other family members, boyfriends and girlfriends.

If the scabies has been caught from a sexual contact, or this is suspected because of genital lesions, it is usually advisable for the person to be directed to a sexual health clinic for treatment so that other sexually transmitted diseases can be excluded.

Signs of infection

Scratching can lead to excoriation, so secondary infections such as impetigo can occur. The presence of a weeping yellow discharge or yellow crusts would be indications for referral to the GP surgery for treatment.

Medication

It is important for the pharmacist to establish whether any treatment has been tried already and, if so, its identity. The patient should be asked about how any treatment has been used, since incorrect use can result in treatment failure. The itch of scabies may continue for several days or even weeks after successful treatment, so the fact that itching has not subsided does not necessarily mean that treatment has been unsuccessful.

When to refer

Babies and young children
Crusted scabies
Scabies outbreak in institutions (schools, nursing homes)
Acquired through sexual contact
Infected skin
Treatment failure
Unclear diagnosis

Management

There is evidence from a systematic review of clinical trials of scabies treatments that *permethrin* is highly effective. The evidence for *malathion* is less robust. *Permethrin cream* is used first line and *malathion* can be used where *permethrin* is not suitable. Aqueous lotions are used in preference to alcohol-based versions because the latter sting and irritate excoriated skin.

The treatments are applied to the entire body including the neck, face, scalp and ears in adults. Particular attention should be paid to the webs of fingers, toes and soles of the feet and under the ends of the fingernails and toenails. *Permethrin* is usually applied in the evening and left on overnight (*malathion* is left on for 24 h). Two treatments are recommended, 7 days apart. Treat all members of the household, close contacts and sexual contacts with the topical insecticide/acaricide (even in the absence of symptoms).

Machine-wash (at 50°C or above) all clothes, towels and bed linen on the day of application of the first treatment.

Permethrin

The cream formulation is used in the treatment of scabies. For a single application in an adult, 30–60 g of cream (one to two 30-g tubes) is needed. The cream

is applied to the whole body and left on for 8–12 h before being washed off. If the hands are washed with soap and water within 8 h of application, cream should be reapplied to the hands. Medical supervision is required for its use in children under 2 years and in elderly patients (aged 70 years and over). *Permethrin* can itself cause itching and reddening of the skin.

Malathion

Malathion is effective for the treatment of scabies and pediculosis (head lice). For one application in an adult, 100 ml of lotion should be sufficient. The aqueous lotion should be used in scabies. The lotion is applied to the whole body. The lotion can be poured into a bowl and then applied on cool, dry skin using a clean, broad paintbrush or cotton wool. The lotion should be left on for 24 h, without bathing, after which it is washed off. If the hands are washed with soap and water during the 24 h, *malathion* should be reapplied to the hands. Skin irritation may sometimes occur. Medical supervision is needed for children under 6 months.

Practical points

1. The itch will continue and may become worse in the first few days after treatment. The reason for this is thought to be the release of allergen from dead mites. Patients need to be told that the itch will not stop straight away after treatment. *Crotamiton cream* or lotion could be used to relieve the symptoms, provided the skin is not badly excoriated. A sedating oral anti-histamine may be considered if the itch is severe.
2. Although acaricides have traditionally been applied after a hot bath, this is not necessary and there is even evidence that a hot bath may increase absorption into the blood, removing them from their site of action on the skin. Therefore, the treatment should be applied to cool, dry skin. Good advice would be to apply the treatment immediately before bedtime (leaving time for the cream to be absorbed or the lotion to dry). Because the hands are likely to be affected by scabies, it is important not to wash the hands after application of the treatment and to reapply the preparation if the hands are washed within the treatment period.
3. All members of the family or household should be treated, preferably on the same day, whether they have symptoms or not. Because the itch of scabies may take several weeks to develop, people may be infested but symptomless. People may not develop symptoms for up to 8 weeks after infestation. The incubation period of the scabies mite is 3 weeks, so reinfection may occur from other family or household members.
4. The scabies mite can live only for around 1 day after leaving its host and transmission is almost always caused by close personal contact. It is possible that reinfection could occur from bedclothes or clothing and this can be

prevented by washing them at a minimum temperature of 50°C after the first treatment.

Fleas

Another cause of possible infestation is fleas from pets. These are common, and patients may present with small, reddened swellings, often on the lower legs and around the ankles where the flea jumps on, usually from the floor or carpets. Questioning may reveal that a pet cat or dog has recently been acquired or that a pet has not been treated with insecticide for some time. Regular checks of pets for fleas and use of insecticides will prevent the problem occurring in the future. A range of proprietary products is available to treat either the pet or bedding and carpets. Vets can give useful advice on fleas in the house and on pets. A second treatment should be applied 2 weeks after the first to eradicate any fleas that have hatched since the first application. Pet flea bites can be treated with topical *hydrocortisone* in anyone over 10 years. Alternatively, an antipruritic such as *crotamiton* (with or without *hydrocortisone*) or *calamine cream* can be recommended.

Dandruff

Dandruff is a chronic relapsing condition of the scalp, which responds to treatment but often returns when treatment is stopped. The condition usually appears during puberty and reaches a peak in early adulthood. Dandruff has been estimated to affect 1 in 2 people aged between 20 and 30 years and up to 4 in 10 of those aged between 30 and 40 years. It is considered to be a mild form of seborrhoeic dermatitis, associated with an overgrowth of the yeast *Malassezia furfur*. Diagnosis is straightforward and effective treatments are available OTC.

What you need to know

- Appearance
- Presence of scales
- Colour and texture of scales
- Location: scalp, eyebrows, paranasal clefts and others
- Severity
- Previous history
 - Psoriasis
 - Seborrhoeic dermatitis
- Aggravating factors
- Medication

Significance of questions and answers

Appearance

Dandruff is characterised by greyish-white flakes or scales on the scalp and an itchy scalp as a result of excessive scaling. It may also affect beards. In dandruff the epidermal cell turnover is at twice the rate of those without the condition. A differential diagnosis for severe dandruff could be psoriasis where there is also rapid cell turnover. In the latter condition, both the appearance and the location are usually different. In more severe cases of seborrhoeic dermatitis, the scales are yellowish and greasy looking, and there is usually some inflammation with reddening and crusting of the affected skin (Figure 3.15). In psoriasis the scales are silvery white and associated with red, patchy plaques and inflammation (Figure 3.16).

Location

In dandruff the scalp (and sometimes beard) is the only area affected. More widespread seborrhoeic dermatitis affects the areas where there is greatest sebaceous gland activity, so it can affect eyebrows, eyelashes, beard and moustache, paranasal clefts, behind the ears, nape of neck, forehead and chest.

In infants seborrhoeic dermatitis is common and occurs as cradle cap, appearing in the first 12 weeks of life.

Psoriasis can affect the scalp, but other areas are also usually involved. The knees and elbows are common sites, but the face is rarely affected. This latter



Figure 3.15 Seborrhoeic dermatitis. Source: Graham-Brown and Burns (2007). Reproduced with permission of Wiley Blackwell.



Figure 3.16 Psoriasis vulgaris.

point distinguishes psoriasis from seborrhoeic dermatitis, where the face is often affected.

Another condition that may look similar to dandruff is dermatitis of the scalp caused by things like allergy to a shampoo constituent or to hair dye.

Severity

Dandruff is generally a mild condition. However, the itching scalp may lead to scratching, which may break the skin, causing soreness and the possibility of infection. If the scalp is very sore or there are signs of infection (crusting or weeping), referral would be indicated.

Previous history

Since dandruff is a chronic relapsing condition, there will usually be a previous history of fluctuating symptoms. There is a seasonal variation in symptoms, which generally improve in summer in response to UVB light. *M. furfur* is unaffected by UVA light.

Aggravating factors

Hair dyes and perms can irritate the scalp. Inadequate rinsing after shampooing the hair can leave traces of shampoo, causing irritation and itching.

Medication

Various treatments may already have been tried. It is important to identify what has been tried and how it was used. Most dandruff treatments need to be applied to the scalp and be left for 5 min for full effect. However, if an appropriate treatment has been correctly used with no improvement, referral should be considered.

When to refer

Suspected psoriasis

Severe cases: seborrhoeic dermatitis

Signs of infection

Unresponsive to appropriate treatment

Treatment timescale

Dandruff should start to improve within 1 to 2 weeks of beginning treatment.

Management

The aim of the treatment is to reduce the level of *M. furfur* on the scalp; therefore, agents with antifungal action are effective. *Ketoconazole*, *selenium sulphide*, *zinc pyrithione* and *coal tar* are all effective. The results from studies on seborrhoeic dermatitis suggest that *ketoconazole* is the most effective and *coal tar* is the least effective of these choices. Most treatments need to be left on the scalp (and beard where relevant) for 5 min for full effect (see instructions with individual products).

Ketoconazole

Ketoconazole 2% shampoo is used twice a week for 2–4 weeks, after which usage should reduce to weekly or fortnightly as needed to prevent recurrence. It is considered first line in moderate-to-severe dandruff.

The shampoo can also be used in seborrhoeic dermatitis. While shampooing the lather can be applied to the other affected areas and left before rinsing.

Ketoconazole is not absorbed through the scalp and side effects are extremely rare. There have been occasional reports of allergic reactions.

Zinc pyrithione

Zinc pyrithione is an active ingredient in several ‘antidandruff shampoos’ and is effective against dandruff. It should be used twice weekly for the first 2 weeks and then once weekly as required.

Selenium sulphide 2.5%

Selenium sulphide has been shown to be effective. Twice-weekly use for the first 2 weeks is followed by weekly use for the next 2 weeks; then it can be used as needed. It is advised to massage it into the scalp and leave on for 2–3 min. It can cause a burning sensation (and rarely, blistering) if left on for longer. Jewellery should be removed as this can be discoloured by selenium. The hair and scalp should be thoroughly rinsed after using *selenium sulphide* shampoo; otherwise, discolouration of blond, grey or dyed hair can result. Products containing *selenium sulphide* should not be used within 48 h of colouring or perming the hair. Contact dermatitis has occasionally been reported. *Selenium sulphide* should not be applied to inflamed or broken skin.

Coal tar

Findings from research studies indicate that *coal tar* is the least effective of the agents for seborrhoeic dermatitis. It may be useful in dandruff, which is a less severe condition, and individual response and preference may determine if patients choose to use it. Modern formulations are pleasanter than the traditional ones, but some people still find the smell of *coal tar* unacceptable. *Coal tar* can cause skin sensitisation and is a photosensitiser.

Practical points

Continuing treatment

Patients need to understand that the treatment is unlikely to cure their dandruff permanently and that it will be sensible to use the treatment on a less frequent basis in the longer term to prevent their dandruff from coming back.

Treating the scalp

It is the scalp that needs to be treated rather than the hair. The treatment should be applied to the scalp and massaged gently. All products need to be left on the scalp for up to 5 min (2–3 min with *selenium*) before rinsing for the full effect to be gained.

Standard shampoos

There is debate among experts as to whether dandruff is caused or aggravated by infrequent hairwashing. However, it is generally agreed that frequent

washing (at least three times a week) is an important part of managing dandruff. Between applications of their treatment, the patients can continue to use their normal shampoo. Some may wish to wash their hair with their normal shampoo before using the dandruff treatment shampoo.

Hair products

Gel, mousse and hairspray can still be used and will not adversely affect treatment for dandruff.

Psoriasis

Psoriasis is a chronic inflammatory disease with predominantly skin manifestations. It is characterised by scaly skin lesions, which can be in the form of patches, papules or plaques. Arthritis is also sometimes seen with the disease and may be under-recognised. Itch is often a feature.

Psoriasis occurs worldwide with variation in incidence between different ethnic groups. The incidence for white Europeans is about 2%. Although there is a genetic influence, environmental factors are also thought to be important.

People with psoriasis usually present to the doctor rather than the pharmacist. At the time of first presentation, the doctor is the most appropriate first line of help, and pharmacists should always refer cases of suspected but undiagnosed psoriasis or suspected related arthritis. The diagnosis is not always easy and needs confirming. In the situation of a confirmed diagnosis in a relatively chronic situation, the pharmacist can offer continuation of the treatment where products are available OTC; this now includes *calcipotriol ointment*.

Many patients learn to manage their psoriasis themselves but will seek help from time to time. In this situation, continued support and monitoring by the pharmacist is reasonable, with referral back to the doctor or specialist nurse when there is an exacerbation, or for periodic review. Jointly agreed guidelines between pharmacist and doctors are valuable here.

What you need to know

Appearance

Psychological factors

Diagnosis

Arthritis

Medication

Significance of questions and answers

Appearance

In its most common form, there are raised, large, red, scaly plaques over the extensor surfaces of the elbow and knee (Figure 3.16). Silvery scales usually cover the plaques. The plaques are usually symmetrical, and sometimes there is a patch present over the lower back area. The scalp is often involved (see Figure 3.17). Psoriasis can affect the soles of the feet and the palms of the hand. Nail changes with pitting and lifting are also frequently seen.

Psychological factors

In some people the plaques are very long standing and show little change and in some they come and go. With others, the skin changes worsen and spread to other parts of the body, sometimes in response to a stressful event. This is particularly distressing for the person involved who then has to cope with the stress of having a relapse of psoriasis as well as the precipitating event.

The psychological impact of having a chronic skin disorder such as psoriasis must not be underestimated. There is still a significant stigma connected with



Figure 3.17 Scalp psoriasis. Source: Graham-Brown and Burns (2007). Reproduced with permission of Wiley Blackwell.

skin disease. There can be a mistaken belief that the rash is contagious. People with the condition are reluctant to go the gym, swim or sunbathe. There is a cultural pressure to have a perfect body as defined by the fashion industry and media. Dealing with the shedding skin scales and their appearance on clothing can also be embarrassing and stigmatising.

In these ways, psoriasis can cause loss of self-esteem, embarrassment and depression. However, each person will react differently, with some being psychologically affected by relatively minor patches, while others are untroubled by a more widespread rash. In the United Kingdom further information and support can be accessed at <https://www.psoriasis-association.org.uk/>.

Diagnosis

The diagnosis of psoriasis can be confusing. In the typical situation described above, it is straightforward. In addition to affecting the extensor surfaces, psoriasis typically involves the scalp (also see Dandruff, located in the previous section of this chapter). Often the fingernails show signs of pitting, which can be a useful diagnostic sign. However, psoriasis can present with differing patterns that can be confused with other skin disorders. In guttate psoriasis a widespread rash of small, scaly patches develops abruptly, affecting large areas of the body. This most typically occurs in children or young adults and may be triggered by a streptococcal sore throat. In general practice the most common differential diagnosis to guttate psoriasis is pityriasis rosea. This latter condition is self-limiting and usually settles down within 8 weeks.

Psoriasis can sometimes also involve the flexor surfaces, the groin area, palms, soles and nails. The most common alternative diagnostic possibilities in these situations include eczema or fungal infections. Psoriasis of the flexural creases can be very difficult to treat and often requires input from a dermatologist.

Arthritis

For some people who have psoriasis, there is an associated painful arthritis, which most commonly affects the hands, feet, knees, neck, spine and elbows. The disease can be similar to rheumatoid arthritis but tends to be less symmetrical. Arthritis of the fingers can cause a ‘sausage-like’ swelling in the fingers or toes. Sometimes only a few joints are affected in an asymmetric fashion that causes diagnostic uncertainty. There is also a variant that causes severe back pain and stiffness. There is a concern that these types of arthritis symptoms are poorly recognised in people with psoriasis and that there should be greater awareness and vigilance.

Medication

It is worthwhile enquiring about medication. Drugs such as *lithium*, beta-blockers, non-steroidal anti-inflammatory drugs and antimalarials can exacerbate psoriasis.

Management

Management is dependent on many factors, for example, nature and severity of psoriasis, past experience, understanding the aims of the treatment, ability to apply creams and whether the person is pregnant. (Some treatments are teratogenic.) It is particularly important to deal with the person's ideas, concerns and expectations to appreciate how the person's life is affected by the condition to give a relevant, understandable explanation and to mutually agree whether to treat or not, and if so, how.

Topical treatments

The doctor or specialist nurse is likely to prescribe topical treatment, usually an emollient in conjunction with active therapy. Emollients are very important in psoriasis; this point may not be widely appreciated and they may be underused. They soften the skin, reduce cracking and dryness, prevent itching and help to remove scales. There is also some evidence that they can suppress psoriasis and in many people with psoriasis should be used long term, as in eczema. The pharmacist can ask the patient when and how they are being used and emphasise their importance. They can also help the patient find an emollient that suits them best.

Calcipotriol, calcitriol or tacalcitol

Topical vitamin D preparations – *calcipotriol*, *calcitriol* or *tacalcitol* – are available as ointments, gels, scalp solutions and lotions on prescription. *Calcipotriol ointment* is licensed for OTC use under certain circumstances as a P medicine. These products do not smell or stain, are easy to use and have become the mainstay of treatment in mild-to-moderate plaque psoriasis as they can effectively clear the lesions. The main problem is that many people experience irritation of the skin with them; this includes burning, pruritus, oedema, peeling, dryness and redness. Excess sun sensitivity has also been reported. If overused, there is a risk of causing hypercalcaemia.

Calcipotriol

Calcipotriol 50 µg/g ointment is currently the only topical vitamin D preparation licensed as a P medicine. Under the supervision of a pharmacist, OTC *calcipotriol* can be sold to be used for the treatment of mild-to-moderate plaque psoriasis that has been previously diagnosed by a doctor in adults aged 18 years and over. Plaque psoriasis involves well-defined, thickened, scaly, red lesions on the trunk and/or limbs (see Figure 3.16). It is considered to be 'mild to moderate' when the skin area affected does not exceed 10% of body surface area. As an illustration of scale, the surface area of an arm is approximately 9%.

The OTC product is for application once daily, with maximum duration of use of 12 weeks and maximum pack size of 60 g of ointment. It should not be

used on the face, scalp, genitals or skin flexures (folds), for example, the armpits or under the breasts. It can cause harm if used on these areas. Care should be taken to avoid excessive exposure to either natural or artificial sunlight or the use of UV lamps (e.g. a sunbed) during treatment. *Calcipotriol ointment* can be used concurrently with emollients.

The pharmacist can advise the patient about how to judge how well the treatment is working for them. If the condition does not start to improve within 4 weeks or becomes worse at any time during treatment, referral to the general practice (or specialist nurse) is recommended. If the condition has cleared or is substantially improved and the patient is satisfied with the outcome within a 12-week period, the treatment can be stopped. The treatment can be restarted if psoriasis reappears. A ‘satisfactory’ treatment outcome can be considered as more than 50% reduction in psoriasis by 12 weeks.

When to refer

More extensive skin involvement

Nail involvement

Joint pains and/or swelling of joints

No improvement within 4 weeks

Less than 50% reduction in psoriasis within 12 weeks

Reports of hypercalcaemia as a side effect are classed as ‘rare’ ($\geq 1/10\,000$ to $<1/1\,000$ patients). It is worth noting that reports are more frequent among patients who used large amounts of *calcipotriol ointment*; the manufacturers advise that no more than 100 g should be used in a week (when supplied on prescription). The risk is higher in children and adolescents; hence OTC use is only for adults aged 18 and over. The preparation should not be used if the patient is taking calcium or vitamin D supplements, or drugs that enhance the systemic availability of calcium. Covering the treated skin with occlusive bandages increases the risk and patients should be advised against this.

If the patient’s psoriasis is already being managed with other psoriasis treatments including other topical products containing *calcipotriol*, topical corticosteroids, topical retinoids, calcineurin inhibitors or systemic anti-psoriatic therapies, OTC *calcipotriol ointment* should not be used without medical advice.

Topical corticosteroids

Topical corticosteroids alone should generally be restricted to use in the flexures or on the scalp or for small patches of localised psoriasis. They are available on prescription for this purpose and should not be supplied OTC. They can thin or remove plaques and reduce skin inflammation. An important concern is that when used alone they can destabilise the disease and this can result in a severe flare-up of psoriasis. Also an exacerbation of psoriasis is common when

they are stopped. Large amounts of high potency corticosteroids can result in severe steroid side effects (striae, skin atrophy and adrenocortical suppression). Pharmacists should be alert to patients who may be using only the corticosteroid (for example, on repeat prescription), and if they have concerns, advise the patient to attend the GP surgery.

Combining corticosteroid with vitamin D preparations

It is now advised that the best solution for plaque psoriasis is to either use a combination product of topical vitamin D with corticosteroid or to use the individual products alternately (each once a day, at different times). In their 2012 guideline on psoriasis, NICE advised that the latter is the preferred option as first-line treatment. The rationale for this is to use the corticosteroid to suppress the irritation caused by the vitamin D preparation and in turn the vitamin D preparation suppresses potential aggravation of psoriasis associated with the corticosteroid. The intent of this use is to clear the plaques.

Coal tar preparations

Coal tar preparations have been used to treat psoriasis for over 100 years and they can be reasonably effective. There are many *coal tar preparations* available and most of these can be provided OTC; these include ointments, shampoos and bath additives. Various preparations are combined with other topical treatments for psoriasis, for example, *salicylic acid*, which helps to break down keratin. There is no good trial evidence to indicate that any one is more effective than another. The choice of preparation therefore depends on licensed indications and the person's preference. Non-branded *coal tar preparations* contain crude coal tar (*coal tar* BP) and are smellier and messier to use than branded products. NICE advises the use of *coal tar preparations* for plaque psoriasis if vitamin D-based topical therapy does not result in clearance of psoriasis or satisfactory control.

Dithranol

Dithranol has been a traditional, effective and safe treatment for psoriasis for many years and is available in proprietary creams and ointments (0.1–2.0%) that can be used for one short contact (30 min) period each day and removed using an emollient or washing off in a bath or shower. Some can be provided OTC. The NICE guideline advises *dithranol* for treatment-resistant psoriasis. Some people are very sensitive to *dithranol* as it can cause a quite severe skin irritation. It is usual to start with the lowest concentration and build up slowly to the strongest that can be tolerated. Users should wash their hands after application. A major drawback is that it causes a yellowy-brown stain on skin, hair, sheets and clothing; patients should be advised to wear old clothing and use old

bed linen when using *dithranol*. It should not be applied to the face, flexures or genitalia. There are some people who are unable to tolerate it at all.

Second-line treatment

Referral by a doctor or specialist nurse to a dermatologist may be necessary when there is diagnostic uncertainty, when the treatment fails or in severe cases. Second-line treatment may include phototherapy (PUVA) or systemic therapy with *methotrexate*, *acitretin* or *ciclosporin*. Unfortunately, all of these have potentially serious side effects. *Methotrexate* has been shown to be effective in trials but relapse usually occurs within 6 months of discontinuation. Long-term *methotrexate* treatment carries the risk of liver damage. It is particularly useful when arthritis is also a problem. Those not responding to PUVA or systemic therapy may be prescribed biologics (for example, *etanercept*, *adalimumab*, *infliximab* or *ustekinumab*), which block part of the immune system involved in causing inflammation.

Chapter 4

Painful Conditions

Headache

Headache is a common symptom. The most common types of headache that the community pharmacist is likely to encounter are tension headache and migraine. Headache symptoms are also commonly seen with sinusitis. Another type of headache that pharmacists should be wary of are those related to medication overuse. Careful questioning can distinguish causes that are potentially more serious, so that referral to the doctor can be advised.

What you need to know

Age

Adult, child

Duration

Nature and site of pain

Frequency and timing

Previous history

Fits, faints, blackouts and migraine

Associated symptoms

Nausea, vomiting and photophobia

Precipitating factors

Foods, alcohol, stress and hormonal

Recent trauma or injury

Falls

Recent eye test
Medication

Significance of questions and answers

Age

The pharmacist would be well advised to refer any child with a headache to the GP surgery or out-of-hours service, especially if there is an associated history of injury or trauma to the head, for example, from a fall. Children with severe pain across the back of the head and neck rigidity should be referred immediately. Elderly patients sometimes suffer a headache a few days after a fall involving a bang to the head. Such cases may be the result of a slow bleed into the brain, causing a subdural haematoma, and require immediate referral.

It is unusual for patients to present with their first migraine episode over the age of 40 years, and these patients should be referred. The mean age of onset of migraine in women is 18 years and in men is 14 years. Prevalence of migraine rises through early adult life and declines in the late 40s and early 50s.

Duration

Any headache that does not respond to over-the-counter (OTC) analgesics within a day requires referral.

Nature and site of pain

Tension headaches are the most common form. The pain is often described as being around the base of the skull and the upper part of the neck and is the same on both sides. Sometimes the pain extends up and over the top of the head to above the eyes. It is not associated with any neck stiffness. The muscles at the back of the neck and head can feel tender to touch. The pain may be described as being like a band around the head. The pain is usually of a dull nature rather than the pounding or throbbing sensation associated with migraines. However, the nature of the pain alone is not sufficient evidence on which to decide whether the headache is likely to be from a minor or more serious cause.

A steady, dull pain that is deep seated, severe and aggravated by lying down requires referral, since it may be due to raised intracranial pressure from a brain tumour, infection or other cause. This is rare and usually there would be other associated symptoms such as altered consciousness, unsteadiness, poor coordination and, in the case of an infection, a raised temperature.

Migraine with aura (classic migraine) is usually unilateral, affecting one side of the head, especially over the forehead.

Rarely, a sudden severe pain with a rapid time to peak headache intensity (i.e. from a few seconds to 5 min) may signify a subarachnoid haemorrhage (SAH).

The incidence rate for SAH in the general population is six cases per 100 000 person-years. It occurs when a blood vessel in the brain leaks blood into brain tissue or cerebrospinal fluid surrounding the brain. It may be associated with raised blood pressure. Emergency medical referral is essential. Sometimes sudden headaches are related to exercise (exertional headaches) or to sexual intercourse ('coital cephalgia'). These are not dangerous but may need differentiation from haemorrhagic ones by hospital investigations.

Frequency and timing of symptoms

Pharmacists should regard a headache that is worse in the morning and improves during the day as potentially serious, since this may be a sign of raised intracranial pressure. Another type of headache, cluster headaches, typically happen daily (at roughly the same time of day or night) for 2–3 months and each episode of pain can last up to 3 h (see Headache: Associated symptoms: Cluster headache, later in this chapter). A person who has headaches of increasing frequency or severity should be referred.

Previous history

It is always reassuring to know that the headache experienced is the usual type for that person. In other words, it has similar characteristics in nature and site, but not necessarily in severity to headaches experienced over previous years. This fact makes it much less likely to be from a serious cause, whereas new or different headaches (especially in people over 45 years) may be a warning sign of a more serious condition. Migraine patients typically suffer from recurrent episodes of headaches. In some cases, the headaches occur in clusters. The pain may be present daily for 2–3 weeks and then be absent for months or years.

Associated symptoms

Children and adults with unsteadiness and clumsiness associated with a headache should be referred immediately.

Migraine

Migraine is commonly seen, and a survey of over 4000 people in England showed that 7.6% of males and 18.3% of females had experienced migraine of some type within the last year. There are two common types of migraine: *migraine without aura* (previously known as common migraine), which occurs in 75% cases, and *migraine with aura* (previously known as classic migraine).

Migraine with aura is often associated with alterations in vision before an attack starts, the so-called prodromal phase. Patients may describe seeing flashing lights or zigzag lines (photopsia). During the prodromal phase, patients may also experience tingling or numbness on one side of the body, in the lips, fingers, face or hands and occasionally have difficulty in speaking (dysphasia).

The prodromal phase rarely lasts more than an hour and the headache follows. In *migraine without aura*, there is no prodromal phase (no aura).

All types of migraines are commonly associated with nausea and sometimes vomiting. The headache in migraine is often severe and pulsating in nature and aggravated by physical activity. Patients often get relief from lying in a darkened room and say that bright light hurts their eyes during an attack of migraine. The headache can last for several hours; rarely it lasts for up to 72 h.

Migraine with aura is three times more common in women than in men, and this is thought to be due to oestrogen, as migraine occurring 1–2 days before, and up to 3 days after menstruation is common. Women who get migraine with aura, or particularly severe migraine without aura, should not take the combined contraceptive pill, patch or ring, because of an increased risk of stroke. If a woman on combined contraception develops a severe prolonged headache or migraine, the contraception should be stopped, and the patient should be assessed at a GP surgery or sexual health/family planning clinic urgently.

International Headache Society's diagnostic pointers for migraine

Migraine without aura (common migraine)

Headache attacks lasting 4–72 h (untreated or unsuccessfully treated)

Headache has at least two of the following four characteristics:

1. Unilateral location
2. Pulsating quality
3. Moderate or severe pain intensity
4. Aggravation by, or causing avoidance of, routine physical activity (e.g. walking or climbing stairs)

During headache at least one of the following symptoms:

1. Nausea and/or vomiting
2. Photophobia (aversion to light) and phonophobia (aversion to noise)

Migraine with aura (classic migraine)

One or more of the following fully reversible aura symptoms:

1. Visual
2. Sensory
3. Speech and/or language
4. Motor
5. Brainstem
6. Retinal

At least two of the following four characteristics:

1. At least one aura symptom spreads gradually over ≥ 5 min, and/or two or more symptoms occur in succession.
2. Each individual aura symptom lasts 5–60 min.
3. At least one aura symptom is unilateral.
4. The aura is accompanied, or followed within 60 min, by headache.

Source: Adapted from The International Classification of Headache Disorders 3rd edition, 2018. <https://www.ichd-3.org/> (accessed 28 February 2018).

Tension-type headache

The most common type of headache is episodes of tension-type headache, and it is estimated that frequent tension headaches affect a third of adults; they are also fairly common in children. These headaches are most often related to upset or stress. They are characterised by recurrent episodes of headache that are usually bilateral and have a pressing or tightening quality (non-pulsating) that is mild to moderate in intensity. The pain is often felt to arise from the neck and is sometimes associated with musculoskeletal neck problems. Important features that help in differentiation from more serious problems are that the headache is not aggravated by routine physical activity such as walking or climbing stairs and is not associated with nausea or vomiting or photophobia or phonophobia (but stressed people may find incessant noise or flashing lights stresses them further).

Chronic tension-type headache and chronic daily headache

Some types of 'benign' headache can occur frequently and can be very troublesome. The term chronic tension-type headache is used if the headache occurs on 15 days or more per month, on average, and lasts for more than 3 months at a time. A variant of this is chronic daily headache (CDH) that can be daily and unremitting. These types of headache are usually seen in adults (mean age of 40 years), but they are also sometimes seen in children and in the very old. In some cases, it is possible that frequent use of simple analgesics, migraine treatments or combinations containing codeine are causing or aggravating chronic headache. Any frequent headache needs referral to the GP surgery for assessment.

Medication overuse headache

It is important to recognise medication overuse headache because people rarely respond to treatment while overusing acute medications and the condition will be perpetuated. Medication overuse headache is a chronic headache (occurring on more than 15 days each month) that develops or worsens with frequent use of any drug treatment for pain in people who have tension-type headache or migraine. It has also been identified in people taking analgesics for other painful conditions. It is most commonly seen when triptans, opioids, ergots or combination analgesia have been taken for 10 days per month or more and is sometimes seen if *paracetamol*, *aspirin* or a non-steroidal anti-inflammatory drug (NSAID), either alone or in any combination, are taken on 15 days per month or more. The symptoms resemble chronic tension-type headache or in people with migraine, chronic migraine. The main treatment is stopping the analgesia, in tandem with careful support and encouragement. It may take 2 months to

resolve, although the ‘original’ headache may still occur. If it is migraine, an alternative to frequent analgesia might be migraine prophylaxis. If medication overuse headache is suspected, it is important to determine what medication has been taken for headaches, in what dose and with what frequency, particularly in those regularly purchasing OTC products. If the diagnosis seems likely, the patient should be advised to discuss the problem at the GP surgery.

The NICE guideline (CG150) ‘Headaches: diagnosis and management of headaches in young people and adults’ states

Advise people to stop taking all overused acute headache medications for at least one month and to stop abruptly rather than gradually. Advise people that headache symptoms are likely to get worse in the short term before they improve and that there may be associated withdrawal symptoms, and provide them with close follow-up and support according to their needs.

Cluster headaches (previously called migrainous neuralgia)

Cluster headaches involve, as their name suggests, a number of headaches one after the other. A typical pattern would be daily episodes of pain over 2–3 months, after which there is a remission for anything up to 2 years. The pain can be excruciating and often comes on very quickly. In typical cases the headache commonly wakes the person from sleep within 2 h of going to sleep but may also occur at other times. Each episode of pain can last from 15 min to 3 h, and the pain is usually experienced on one side of the head, in the eye, cheek or temple. A cluster headache is often accompanied by a painful, watering eye and a watering or blocked nostril on the same side as the pain. Any recurrent, persistent or severe headache of this type needs referral to the GP surgery for a diagnosis.

Sinusitis

Sinusitis may complicate a respiratory viral infection (e.g. cold) or allergy (e.g. hay fever), which causes inflammation and swelling of the mucosal lining of the sinuses (see Chapter 1 Respiratory Problems: Symptoms: Facial pain/Frontal headache). The increased mucus produced within the sinus cannot drain, and pressure builds up, causing pain. Rarely a secondary bacterial infection can complicate the problem. The pain may be felt behind and around the eye, or over the cheek, with radiation over the forehead and often only one side is affected. The headache may be associated with rhinorrhoea or nasal congestion. The affected sinus often feels tender when pressure is applied. It is typically worse on bending forwards or lying down.

Temporal arteritis

Temporal arteritis (also known as giant cell arteritis) usually occurs in people over the age of 60 when the arteries that run through the temples become inflamed. The arteries may appear red and are painful and thickened to

the touch. However only about a half of patients have scalp tenderness, and these signs are not always present. It is a condition closely related to polymyalgia rheumatica, where inflammation of arteries causes both upper arms to be stiff and ache with associated tenderness and the thighs and pelvic area may be similarly affected. Any older person presenting with a frontal or temporal headache that persists and is often associated with a general feeling of being unwell (and sometimes with fever, fatigue, anorexia, weight loss and depression) should be referred immediately as damage to the retinal blood supply can cause blindness. Sometimes vision disturbance is an early sign. Upper arm or thigh symptoms may also be a pointer. Temporal arteritis is a curable disease and it is important to avoid delay in diagnosis and treatment. Treatment usually involves high-dose oral corticosteroids and is highly effective, provided the diagnosis is made sufficiently early.

Precipitating factors

Tension headache and migraines are often precipitated by stress, for example, pressure at work or a family argument. Some migraine sufferers experience their attacks when relaxing after a period of stress, for example, when on holiday or at weekends (so-called weekend migraine). Certain foods have been reported to precipitate migraine attacks, for example, chocolate and cheese. Migraine headaches may also be triggered by hormonal changes. Migraine attacks may be associated with the menstrual cycle or with combined hormonal contraception (pill, patch or ring) (see Headache: Associated symptoms: Migraine, earlier in this chapter).

Recent trauma or injury

Any patient presenting with a headache who has had a recent head injury or trauma to the head should be referred to the doctor immediately because bruising or haemorrhage may occur, causing a rise in intracranial pressure. The pharmacist should look out for drowsiness or any sign of impaired consciousness. Persistent vomiting after the injury is also a sign of raised intracranial pressure.

Recent eye test

Headaches associated with periods of reading, writing or other close work may be due to deteriorating eyesight and a sight test may be worth recommending to see whether spectacles are needed.

Medication

The nature of any prescribed medication should be established, since the headache might be a side effect of medication, for example, nitrates used in the treatment of angina.

Headaches can occur because of medication overuse (see Headache: Associated symptoms: Medication overuse headache, earlier in this chapter).

It is therefore important to determine what medication has been taken for headaches, in what dose and with what frequency.

Other things to consider

Any woman taking the combined **hormonal contraception** (pill, patch or ring) and reporting severe prolonged headache or migraine headaches, either for the first time or as an exacerbation of existing migraine, should be referred to the GP surgery or sexual health/ family planning clinic urgently since this may be an early warning of cerebrovascular abnormality with risk of stroke. The contraception should be stopped until the cause of the headache has been determined.

Occasionally, a headache is caused by **hypertension** but, contrary to popular opinion, such headaches are not common and occur only when the blood pressure is extremely high. Nevertheless, the pharmacist should consider the patient's medication carefully. In drug interactions that have led to a rise in blood pressure, for example, between a sympathomimetic such as pseudoephedrine and a monoamine oxidase inhibitor (rarely prescribed these days), a headache is likely to occur as a symptom.

The patient may already be taking a NSAID or other analgesic on prescription and duplication of treatments should be avoided, since toxicity may result. If OTC treatment has already been tried without improvement, referral is advisable.

When to refer

- Headache associated with injury/trauma
- Headache associated with high temperature ($> 38^{\circ}\text{C}$)
- Severe headache of more than 4 h duration
- Suspected adverse drug reaction
- Headache in children under 12 years
- Severe occipital headache (across the back of the head)
- Headache that is worse in the morning and then improves
- Associated drowsiness, unsteadiness, visual disturbances or vomiting
- Neck stiffness
- Frequent migraines suggesting need for prophylactic treatment
- Frequent and persistent headaches

Treatment timescale

If the headache does not respond to OTC analgesics within a day, referral is advisable.

Management

The pharmacist's choice of oral analgesic comprises three main agents: *paracetamol*, *ibuprofen* or *aspirin*. *Aspirin* is now rarely used for analgesia and should not be used at all in children under the age of 16 years. These medications may be combined with other constituents such as *codeine*, *dihydrocodeine*, *doxylamine* and *caffeine*. OTC analgesics are available in a variety of dosage forms, and, in addition to traditional tablets and capsules, syrups, soluble tablets and sustained release dosage forms are available for some products. The peak blood levels of analgesics are achieved 30 min after taking dispersible dosage forms; after traditional *aspirin* tablets, it may take up to 2 h for peak levels to be reached. The timing of doses is important in migraine where the analgesic should be taken at the first sign of an attack, preferably in soluble form, since gastrointestinal (GI) motility is slowed during an attack and absorption of analgesics delayed. Combination therapy may sometimes be useful, for example, an analgesic and decongestant (systemic or topical) in sinusitis.

Sumatriptan 50 mg tablets can be used for acute relief of migraine with or without aura and where there is a 'clear diagnosis of migraine'.

Paracetamol

Paracetamol has analgesic and antipyretic effects but little or no anti-inflammatory action. The exact way in which *paracetamol* exerts its analgesic effect remains unclear, despite extensive research. However, the drug is undoubtedly effective in reducing both pain and fever. It is less irritating to the stomach than is *aspirin* and can therefore be recommended for those patients who are unable to take *aspirin*. *Paracetamol* can be given to children from 2 to 3 months old, depending on the product licence. Check the individual packs for doses, related to the child's age. A range of paediatric formulations, including sugar-free syrups, is available. Evidence for the effectiveness of *paracetamol* in the management of migraine is limited.

Liver toxicity

At high doses, *paracetamol* can cause liver toxicity and damage may not be apparent until a few days later. All overdoses of *paracetamol* should be taken seriously and the patient referred to a hospital accident and emergency department.

Ibuprofen

Ibuprofen has analgesic, anti-inflammatory and antipyretic activities and causes less irritation and damage to the stomach than does *aspirin*. The dose required for analgesic activity is 200–400 mg and that for anti-inflammatory action 300–600 mg (total daily dose of 1600–2400 mg). The maximum daily

dose allowable for OTC use is 1200 mg and *ibuprofen* tablets or capsules should not be given to children under 12 years. *Ibuprofen* suspension 100 mg in 5 ml is available OTC. Differences in product licences mean that some *ibuprofen* suspensions can be used in children aged 3 months and over. Check individual product details for doses.

Indigestion

Ibuprofen, like other NSAIDs, can be irritating to the stomach, causing indigestion, nausea and diarrhoea but less so than *aspirin*. GI bleeding can also occur. For these reasons, it is best to advise patients to take NSAIDs with or after food, and they should be avoided in anyone with a peptic ulcer or a history of peptic ulcer. They can also impair renal function. Elderly patients seem to be particularly prone to these effects. NSAIDs can increase the bleeding time due to an effect on platelets. This effect is reversible within 24 h of stopping the drug (whereas reversibility may take several days after stopping *aspirin*).

Ibuprofen seems to have little or no effect on whole blood clotting or prothrombin time, but it is still not advised for patients taking anticoagulant medication (as bleeding risk is high) for whom *paracetamol* would be a better choice.

Hypersensitivity

Cross-sensitivity between *aspirin* and NSAIDs occurs, so it would be wise for the pharmacist not to recommend *ibuprofen* and other NSAIDs for anyone with a previous sensitivity reaction to *aspirin*. Since asthmatic patients are more likely to have such a reaction, the use of NSAIDs in asthmatic patients should be with caution.

Contraindications

Sodium and water retention may be caused by *ibuprofen* and other NSAIDs, and they are therefore best avoided in patients with congestive heart failure or renal impairment. They should be avoided in pregnancy, particularly during the third trimester. Breastfeeding mothers may safely take *ibuprofen*, since it is excreted in only tiny amounts in breast milk.

Interactions

There is evidence of an interaction between *ibuprofen* and other NSAIDs and *lithium*. NSAIDs may inhibit prostaglandin synthesis in the kidneys and reduce *lithium* clearance. Serum levels of *lithium* are thus raised with the possibility of toxic effects. *Lithium* toxicity manifests itself as GI symptoms, polyuria, muscle weakness, lethargy and tremor.

NSAIDs can aggravate renal dysfunction when people are also taking ACE inhibitors or angiotensin-receptor blockers (ARBs) and greater care is needed

in such patients. If a diuretic is also being taken, the combination of all three can be particularly hazardous for the kidneys – the so-called triple whammy. These problems are most problematic at times of intercurrent illness and can lead to acute kidney injury (AKI).

Caution

NSAIDs are best avoided in *aspirin*-sensitive patients and should be used with caution in people with asthma. Adverse effects, such as GI bleeding and renal impairment, are more likely to occur in the elderly, and *paracetamol* may be a better choice in these cases.

Aspirin

Aspirin is analgesic, antipyretic and also anti-inflammatory if given in doses of 600–900 mg three to four times daily in adults. Its use as an analgesic has diminished because it causes more gastric irritation than *paracetamol* or *ibuprofen* and also affects blood clotting. About half of migraine sufferers show significant improvement in their headache 2 h after taking *aspirin*. It should not be given to children under 16 years old because of its suspected link with Reye's syndrome. It should not be used for gout or where there is history of gout. Reports indicate that some parents are still unaware of the contraindication in children under 16 years old. Analgesics are often purchased for family use, and it is worth reminding parents of the minimum age for the use of *aspirin*. It has been suggested that in addition to its use in the symptomatic treatment of headaches, doses of *aspirin* on alternate days may be effective in the prophylaxis of migraine, but evidence is limited.

Indigestion

Gastric irritation (indigestion, heartburn, nausea and vomiting) is sometimes experienced by patients after taking *aspirin*, and for this reason the drug is best taken with or after food. When taken as dispersible tablets, *aspirin* is less likely to cause gastric irritation. The local use of *aspirin*, for example, dissolving a soluble tablet near an aching tooth, is best avoided, since ulceration of the gums may result.

Bleeding

Aspirin can cause GI bleeding and should not be recommended for any patient who either currently has or has a history of peptic ulcer. *Aspirin* affects the platelets and clotting function, so bleeding time is increased, and it has been suggested that it should not be recommended for toothache likely to lead to tooth extraction or for pain after tooth extraction for this reason. These anti-platelet effects can last for several days after taking *aspirin*.

The effects of anticoagulant drugs are potentiated by *aspirin*, so it should never be recommended OTC for patients taking these drugs.

Alcohol

Alcohol increases the irritant effect of *aspirin* on the stomach and also its effects on bleeding time. Concurrent administration is therefore best avoided.

Pregnancy

Aspirin should be avoided in pregnancy.

Hypersensitivity

Hypersensitivity to *aspirin* occurs in some people; it has been estimated that 4% of asthmatic patients have this problem and *aspirin* should usually be avoided in any patient with a history of asthma. When such patients take *aspirin*, they may experience skin reactions (rashes and urticaria) or sometimes shortness of breath, bronchospasm and even asthma attacks.

Codeine

Codeine is a narcotic analgesic; a systematic review of evidence from clinical trials showed that a dose of at least 15 mg is required for analgesic effect. *Codeine* is commonly found in combination products with *aspirin*, *paracetamol* or both. Constipation is a well recognised side effect and is more likely in older people and others prone to constipation. *Codeine* can also cause drowsiness and respiratory depression, and in some people causes nausea and vomiting, although this may be unlikely at OTC doses. *Codeine*-containing medicines should only be used in children over 12 years old to treat acute moderate pain, and only if it cannot be relieved by *paracetamol* or *ibuprofen*. *Codeine* should also not be used by breastfeeding mothers because it can pass to the baby through breast milk and potentially cause harm.

Dihydrocodeine

Dihydrocodeine is related to *codeine* and has similar analgesic efficacy. A combination product containing *paracetamol* and *dihydrocodeine* is available with a dose per tablet of 7.46 mg *dihydrocodeine*. The product is restricted to use in adults and children over 12 years old. Side effects include constipation, drowsiness, nausea and vomiting. Like *codeine*, the drug may cause respiratory depression at high doses.

Caffeine

Caffeine is included in some combination analgesic products to produce wakefulness and increased mental activity. It is probable that doses of at least 100 mg

are needed to produce such an effect; OTC analgesics contain 30–50 mg per tablet. A cup of tea or coffee is likely to have the same action. Products containing *caffeine* are best avoided near bedtime because of their stimulant and diuretic effect. It has been claimed that *caffeine* increases the effectiveness of analgesics, but the evidence for such claims is not definitive. *Caffeine* may have an irritant effect on the stomach.

Doxylamine succinate

Doxylamine is an antihistamine whose sedative and relaxing effects are probably responsible for its usefulness in treating tension headaches. It is an ingredient in some OTC combination products. Like other older antihistamines, *doxylamine* can cause drowsiness, and patients should be warned about this. *Doxylamine* containing products should not be recommended for children under 12 years old.

Buclizine

Buclizine is an antihistamine and is included in an OTC compound analgesic for migraine because of its antiemetic action.

Sumatriptan

Sumatriptan 50 mg tablets can be used OTC for acute relief of migraine with or without aura and where there is a ‘clear diagnosis of migraine’. It can be used by people aged between 18 and 65 years. A 50 mg tablet is taken as soon as possible after the migraine headache starts. A second dose can be taken at least 2 h after the first if symptoms come back. A second dose should be taken only if the headache responded to the first dose.

Practice guidance from the Royal Pharmaceutical Society (RPS) suggests that if the patient has previously received *sumatriptan* on prescription and the pharmacy holds their patient medication record, then OTC supplies can be made, provided there has been no change in the condition. If the person has not used *sumatriptan* before, the pharmacist needs to determine their suitability for the treatment. They must have an established pattern of migraine, and the pharmacist needs to identify any other symptoms or relevant medical conditions as well as any medication.

The following patients should be referred for medical assessment:

- Those aged under 18 years or over 65 years.
- Those aged 50 years or over and experiencing migraine attacks for the first time. If a doctor confirms a diagnosis of migraine, they can be considered for OTC *sumatriptan*.
- Patients who had their first ever migraine attack within the previous 12 months.
- Patients who have had fewer than five migraine attacks in the past.

- Patients who experience four or more attacks per month. The patient is potentially suitable for OTC *sumatriptan* but should be referred to a doctor for further evaluation and management.
- If migraine headache lasts for longer than 24 h, the patient is potentially suitable for OTC *sumatriptan* but should be referred to a doctor for further evaluation and management.
- Patients who do not respond to treatment.
- Patients who have a headache (of any type) on 10 or more days per month.
- Women with migraine who take the combined hormonal contraception have an increased risk of stroke, so should be referred if the onset of migraine is within the previous 3 months, or if migraine attacks are worsening, or if they have a migraine with aura.
- Patients who do not recover fully between attacks.
- Pregnant or breastfeeding migraine sufferers.
- Patients with three or more cardiovascular risk factors.

Source: Practice Guidance – OTC Sumatriptan. RPSGB (2006).

Cautions

People with three or more of the following cardiovascular risk factors are not suitable for OTC *sumatriptan*: men aged over 40 years; post-menopausal women; people with hypercholesterolaemia; regular smokers (10 or more daily); obese people with body mass index of more than 30 kg/m^2 ; those with diabetes; or those with a family history of early heart disease – either father or brother had a heart attack or angina before the age of 55 years or mother or sister had a heart attack or angina before the age of 65 years.

Contraindications

OTC *sumatriptan* must not be used prophylactically and not in people with known hypertension, previous myocardial infarction, ischaemic heart disease, peripheral vascular disease, coronary vasospasm/Prinzmetal's angina, cardiac arrhythmias (including Wolff–Parkinson–White syndrome), hepatic or renal impairment, epilepsy, a history of seizures and cerebrovascular accident or transient ischaemic attack.

Adverse effects. Common adverse effects include nausea and vomiting, disturbances of sensation (including tingling), dizziness, drowsiness, flushing, warm sensation, feeling of weakness and fatigue and feelings of heaviness, pain or pressure in any part of the body.

Interactions

These include monoamine oxidase inhibitors (either current or within the last 2 weeks), ergot and *St John's wort* (may increase serotonin levels). It has

been suggested that an interaction between *sumatriptan* and selective serotonin reuptake inhibitors or serotonin noradrenaline reuptake inhibitors may occur, causing ‘serotonin syndrome’, and a small number of cases have been reported in the United States.

Feverfew

Feverfew is a herb that has been used in the prophylaxis of migraine. Some clinical trials have been conducted to examine its effectiveness, but results have been conflicting. Adverse effects that have been reported from the use of feverfew include mouth ulceration involving the oral mucosa and tongue (which seems to occur in about 10% of patients), abdominal colic, heartburn and skin rashes. These effects occur both with feverfew leaves and when the herb is formulated in capsules. The herb has a bitter taste, which some patients cannot tolerate. Feverfew was used in the past as an abortifacient, and it should not be recommended for pregnant women with migraine.

Topical headache treatments

These have a cooling action and can be used in children over 12 years and adults. They can be applied to the forehead, back of the neck and temples.

Headaches in practice

Patient perspectives

I have suffered from migraine for about 14 years now. At the beginning I didn't get much advice or medical help, but since then I've actively sought to find out what triggers my attacks. I have found that I have to eat at regular intervals; skipping meals can often trigger an attack. I need to drink at least 1.5 l of water a day and in the summer often much more. Caffeine was a trigger for me and I have stopped drinking coffee and tea now although I enjoy herbal teas. It is really worth experimenting with these as you will find one to your taste, eventually! I cut various things (cheese, red wine) out of my diet for a while to see if they were a problem, but luckily it was only cheese that could trigger a migraine. Other things that I know will set off an attack are lack of sleep and strong perfume.

Most people, when hearing the word ‘migraine’ think of headache. But people who get migraines know that these are not ordinary headaches. The pain and other symptoms associated with migraine can be debilitating, even disabling – but a lot of people, including healthcare professionals, still don't understand. Sometimes I wish people who think migraines are just a bad headache would have a migraine themselves, so they'd know how mistaken they are – just one migraine for every doctor and pharmacist who will ever treat a migraine patient.

Case 1

For several years Sandra Brown, a young mother, has purchased combination analgesics for migraine from your pharmacy every few months. She has suffered from migraine headaches since she was a child. Today she asks if you have anything stronger; the tablets do not seem to work like they used to and her migraine is more frequent. She is not taking any medicines on prescription. (You check whether she is taking the contraceptive pill or other hormonal contraceptive preparations and she is not.) Sandra tells you that she now suffers from migraines two or three times a month, and they are making her life a misery. Nothing seems to trigger them, and the pain is not more severe than before. She has read about feverfew and wonders whether she should give it a try.

The pharmacist's view

This woman has successfully used an OTC product to treat her migraines for a long time. Many patients who suffer migraines report that they get relief from OTC analgesics. Sandra's migraines have become more frequent for no apparent reason. Referral to the doctor is needed to exclude any serious cause of her headaches before considering further treatments. Also, she may benefit from medication to prevent her migraine occurring (prophylaxis).

The doctor's view

It makes sense for her to be reviewed by her GP as the headaches are so frequent and making her life a misery. It would be helpful to get more details of her experience of headaches and associated symptoms, for example, any preceding visual symptoms, nature and site of headache and duration; other useful information would include her understanding of migraine, any specific concerns she may have and what sort of treatment she would be prepared to try. There is some evidence that headaches improve more quickly if patients' expectations and concerns are addressed adequately in the consultation. It would also be useful to explore what level of stress she was experiencing. A limited examination would be usual, for example, blood pressure and eye fundoscopy to look for signs of raised intracranial pressure.

Prophylactic treatments (e.g. *propranolol* and *topiramate*) for migraine are available and are worth considering in patients who report attacks more than four times a month. Although prophylactic treatments may reduce the frequency of migraine attacks, their adverse effects can make them unacceptable to some people. *Topiramate* is associated with a risk of foetal malformations and can impair the effectiveness of hormonal contraceptives. There is inconclusive evidence supporting the use of feverfew as a migraine prophylaxis. Both *amitriptyline* and *sodium valproate* have reasonable evidence of efficacy in migraine prophylaxis but are not licensed for this indication. *Sodium valproate* is strongly contraindicated in women of childbearing potential because of very high risks of teratogenicity and neurodevelopment effects on children exposed in utero. The MHRA has a toolkit to ensure female patients are informed about

the risks of taking valproate medicines during pregnancy – the ‘Valproate guide for patients’ can be accessed on the Gov.uk website.

5HT₁ agonists or ‘triptans’, for example, *sumatriptan*, *zolmitriptan*, *eletripitan*, *rizatriptan* and *naratriptan*, are effective acute treatments for migraine, producing relief from a headache within an hour for many patients. They are contraindicated in those with ischaemic heart disease or poorly controlled hypertension (OTC restrictions on *sumatriptan* are for all people with hypertension). Research evidence shows that about one of every three patients treated with oral *sumatriptan* will have his or her headache rapidly improved. Different triptans and different preparations can be tried to find what suits the individual most; for example, a nasal spray or subcutaneous injection might help those where vomiting is a problem.

Case 2

Wei Lin, a woman aged about 30 years, has asked to speak to you. She tells you that she would like you to recommend something for the headaches that she has been getting recently. You ask her to describe the headache and she explains that the pain is across her forehead and around the back of the head, equally on both sides. The headaches usually occur during the daytime and have been occurring several times a week, for several weeks. There are no associated GI symptoms and there is no nasal congestion. No medicines are being taken, apart from a compound OTC product containing *aspirin*, which she has been taking for her headaches. On questioning her about recent changes in lifestyle, she tells you that she has recently moved to the area and started a new job last month. In the past, she has suffered from occasional headache, but not regularly. This lady does not wear glasses and says she has not had trouble with her eyesight in the past. She confides that she has been worried that the headaches might be due to something serious.

The pharmacist's view

From the information obtained, it sounds as though this woman is suffering from tension headaches. The location of the pain and lack of associated symptoms lead towards this conclusion. The timing of the headaches indicates that this woman’s recent move and change of employment are probably responsible for the problem. The pharmacist should obtain information about the current headaches in relation to the patient’s past experience. This patient is worried that the headaches may signal a serious problem, but the evidence indicates that this would be unlikely. The pharmacist could recommend the use of *paracetamol* or *ibuprofen*. If the headaches do not improve within 1 week, she should see her doctor.

The doctor's view

The pharmacist’s assessment makes sense. A tension headache is the most likely explanation. If her symptoms do not settle within 1 week, it would be very

reasonable to be reviewed by her GP. The most important aspect of the GP's assessment would be to determine what her concerns about the headache were; for example, many people with headaches become concerned that they might have a brain tumour or are worried about high blood pressure. Hopefully, examining her and providing appropriate information and explanation will assist her in understanding and managing her headache.

Case 3

Monowarar Ahmed is a regular visitor to your shop. She is a young mother, aged about 25 years, and today she seeks your advice about headaches that have been troubling her recently. The headaches are of a migraine type, quite severe and affecting one side of the head. Mrs Ahmed had her second child a few months ago, and when you ask if she is taking any medicines she tells you that she recently started to take the combined oral contraception (COC) pill, prescribed at the doctor's surgery. In the past, she has suffered from migraine-type headaches, but only occasionally and never as severe as the ones she has been experiencing during the past weeks. The headaches have been occurring once or twice a week for about 2 weeks. *Paracetamol* has given some relief, but Mrs Ahmed would like to try something stronger.

The pharmacist's view

Mrs Ahmed should be referred to her GP surgery immediately. Her history of migraine headaches associated with the COC is a cause for concern; in addition, you have established that she has suffered from migraine headaches in the past.

The doctor's view

The pharmacist is quite right and should recommend urgent referral to the surgery. She should not take any more COC pills; someone who develops a first migraine attack while taking the pill should be told to discontinue it. If there is a previous history of migraine, the pill may sometimes be used, but if the frequency, severity or nature (especially onset of focal neurological symptoms) of the migraines worsens on the pill, then once again the pill should be discontinued. The reason for this advice is that the migraine could herald a cerebrovascular accident (stroke), which could be prevented by stopping the pill.

Case 4

Ben Jones, a 35-year-old man, comes in asking whether he could have something stronger for his migraines. He tells you that he has had migraines since he was a teenager. The attacks are not that frequent but are quite disabling when they come on. He is particularly concerned that he travels a lot in his job as an IT consultant and cannot afford to be laid up when he is working away from home. Last year he saw his GP who encouraged him to continue with soluble *paracetamol* and also prescribed *domperidone* to reduce his nausea. The GP

mentioned that he might benefit from a 'tripitan' for his migraine if this was not helping him enough.

Ben explains that his migraine starts with a small area of wavy vision in the centre of his visual field, which is then followed about half an hour later by a throbbing headache above his left eye with nausea and vomiting. He says he feels so bad that he has to lie down in a darkened room. He goes on to say that he usually falls asleep after an hour or so and then sleeps fitfully until the next day when he is better.

He is otherwise fit and well, plays regular sports, is a non-smoker and does not take any other medication.

He goes on to say, 'Can I buy the triptan or do I need to go back to the doctor?'.

The pharmacist's view

This patient's history of migraines shows an established pattern and falls within the indications for OTC provision of *sumatriptan*. Since he does not have any indication for referral to the GP, it would be reasonable for him to try *sumatriptan*. I would ask him to come back and let me know how the treatment went.

The doctor's view

The pharmacist's recommendation is reasonable since Ben is fit and healthy and has a long-established pattern of migraine previously diagnosed by his GP.

Musculoskeletal problems

Pharmacists are frequently asked for advice about muscular injuries, sprains and strains. Simple practical advice combined with topical or oral OTC treatment can be valuable. Sometimes patients who are already taking prescribed medicines for musculoskeletal problems will ask for advice. Here a careful assessment of adherence with prescribed medicines and the need for referral is important.

What you need to know

Age

Child, adult, older people

Symptoms

Pain, swelling, site and duration

History

Injury

Medical conditions

Medication

Significance of questions and answers

Age

Age will influence the pharmacist's choice of treatment, but other reasons make consideration of the patient's age important. In older people, a fall is more likely to result in a fracture; older women are particularly at risk because of osteoporosis. Referral to the local accident and emergency department for X-rays may be the best course of action in such cases.

Symptoms and history

Injuries commonly occur as a result of a fall or other trauma and during physical activity such as lifting heavy loads or taking part in sport. Exact details of how the injury occurred should be established by the pharmacist.

Sprains and strains

Sprains. A sprain injury involves the overstretching of ligaments and/or the joint capsule, sometimes with tearing. The most common sprain involves the lateral ankle ligament. Referral is the best course of action, so that the clinician in the GP surgery, out-of-hours service or the Emergency Department (ED) can examine the affected area and consider whether a complete tearing of ligaments has occurred, particularly for knee and ankle injuries. With a partial tear, the joint is often swollen and the patient experiences severe pain on movement. A complete tear of a knee ligament may involve the tearing of the capsule itself. If this occurs, any blood or fluid can leak out into the surrounding tissues, so the knee may not appear swollen.

Strains. Strains are injuries where the muscle fibres are damaged by overstretching and tearing. Sometimes the fibres within the muscle sheath are torn; sometimes the muscle sheath itself ruptures and bleeding occurs. Strains are most common in muscles that work over two joints, for example, the hamstring. When the strain heals, fibrosis can occur, and the muscle becomes shortened. The muscle is then vulnerable to further damage.

Early mobilisation, strengthening exercises and coordination exercises are all important after both sprains and strains. The return to full activity must occur gradually.

Muscle pain

Stiff and painful muscles may occur simply as a result of strenuous and unaccustomed work, such as gardening, decorating or exercise, and the resulting discomfort can be reduced by treatment with OTC medicines.

Bruising

Bruising as a result of injury is common and some products that minimise bruising are available OTC. The presence of bruising without apparent injury, or a description by the patient of a history of bruising more easily than usual, should alert the pharmacist to the possibility of a more serious condition. Spontaneous bruising may be symptomatic of an underlying blood disorder, for example, thrombocytopenia (lack of platelets) or leukaemia, or may result from an adverse drug reaction or other cause.

Head injury

Pain occurring as a result of head injury should always be viewed with suspicion and such patients, particularly children, are best referred for further investigation.

Bursitis

Other musculoskeletal problems about which the pharmacist's advice might be sought include bursitis, which is inflammation of a bursa. (This is the name given to a sac of tissue where skin moves over joints or where bones move over one another. The function of a bursa is to reduce friction during movement.) Examples of bursitis are housemaid's knee and student's elbow.

Fibromyalgia

Fibromyalgia refers to chronic widespread pain affecting the muscles but not the joints. Tender spots can be discovered in the muscles and the condition can be associated with a sleep disturbance. Brain wave studies often show a loss of deep sleep. This condition may be precipitated by psychological distress and physical trauma. The symptoms can be similar to those of chronic fatigue syndrome (also known as myalgic encephalitis or encephalomyelitis). Referral to a GP for assessment would be advisable. An empathetic approach is important as many patients have felt rejected or that their problems have not been taken seriously by health professionals. Medication (e.g. tricyclics, NSAIDs and *gabapentin*) is of limited benefit in these situations, and often 'talking therapies' like cognitive behavioural therapy have more to offer.

Frozen shoulder

Frozen shoulder is a common condition where the shoulder is stiff and painful. It is more prevalent in older patients. The shoulder pain sometimes radiates to the arm and is often worse at night. Patients can sometimes relate the problem to injury, exertion or exposure to cold, but frozen shoulder may occur without apparent cause. It is more common in those with diabetes. The pain and

limitation of movement are usually severe and referral to the GP surgery for accurate assessment and to arrange treatment (e.g. physiotherapy) is advisable.

Painful joints

Pain arising in joints (arthralgia) may be due to arthritis, for which there are many causes. The pain may be associated with swelling, overlying inflammation, stiffness, limitation of movement and deformity of the joint. A common cause of arthritis is osteoarthritis (OA), which is not only due to degeneration of a joint, sometimes from wear and tear, but also associated with genetic predisposition. This often affects the knees and hips, especially in the older population. Another form of arthritis is rheumatoid arthritis (RA), which is a more generalised illness caused by the body turning its defences on itself and where there is inflammation and swelling of the synovium of joints, particularly of the hands and feet. Other forms of arthritis can be caused by gout or infection, usually with signs of overlying inflammation and swelling. A joint infection is rare but serious and occasionally fatal. It is often difficult to distinguish between the different causes, and it is therefore necessary to refer to the doctor all except mild cases.

Rheumatoid arthritis (RA)

It is important to be aware of the symptoms of RA and refer quickly to the GP surgery if this condition is suspected. Unfortunately, people with RA often delay seeking medical help and increasingly, it is recognised that delay in receiving disease modifying anti-arthritis drugs (DMARDs) can result in permanent joint damage and disability. It is a common condition affecting more women than men and affecting 1% of the population. It most commonly arises in people in their 30s and 40s but sometimes appears for the first time in older people. It can come on quickly over a few days.

Suspect RA in anyone with joint swelling. It typically causes symmetrical joint inflammation (synovitis) of the small joints of the hands and feet, although other joints may be affected. Clinical features of synovitis include pain, swelling and heat in affected joints that is worse at rest or during periods of inactivity. Because of swelling, the joint (not the bone) gives a ‘boggy’ feel on palpation and this is tender. Stiffness is most noticeable in the morning and after inactivity and usually lasts more than 30 min.

People with these symptoms for the first time, and people with a past history of RA who develop these symptoms (a ‘flare up’) should be referred to the GP surgery for urgent assessment. If this diagnosis is confirmed, early use of DMARDs, along with analgesics and NSAIDs, is required.

Low back pain

Lower back pain affects 60–80% of people at some stage in their lives and is often recurrent. Non-serious acute back problems need to be treated early, with mobilisation and exercise thought to be particularly important in the

prevention of chronic low back pain. Acute back pain is generally regarded as lasting less than 6 weeks, subacute for 6–12 weeks and chronic longer than 12 weeks. The main cause is a strain of the muscles or other soft structures (e.g. ligaments and tendons) connected to the vertebrae. Sometimes it is the cushion between the bones (intervertebral disc) that is strained and that bulges out (herniates) and presses on the nearby nerves (as in sciatica). Lower back pain that is not too severe or debilitating and comes on after gardening, awkward lifting or bending may be due to muscular strain (lumbago), and appropriate advice may be given by the pharmacist.

Although advocated in the past, bed rest is not recommended for simple low back pain and is to be avoided. The emphasis should be on mobilising and maintaining activity, supported by pain relief. There is evidence from randomised controlled trials that advice to stay active results in faster recovery, reduced pain, reduced disability and reduced time off work compared with advice to rest. If having given advice of this nature, there is no improvement within 1 week, referral is advisable.

Pain that is more severe, causing difficulty with mobility or radiating from the back down one or both legs, is an indication for referral for assessment at the GP surgery. A slipped disc can press on the sciatic nerve (hence sciatica) causing pain and sometimes pins and needles and numbness in the leg. Low back pain associated with any altered sensation in the anal or genital area or bladder symptoms requires urgent referral to the practice or out-of-hours service, as this suggests damage to the nerves controlling the bowels or bladder.

Back pain that is felt in the middle to upper part of the back is less common, and if it has been present for several days, it is best referred to the doctor. Kidney pain can be felt in the back, to either side of the middle part of the back just below the ribcage (loin area). If the back pain in the loin area is associated with any abnormality of passing urine (discolouration of urine, pain on passing urine or frequency), then a kidney problem is more likely.

Prevention of recurrent back pain

Good posture, lifting correctly, a good mattress and losing excess weight can help. Paying attention to posture and body awareness is important, and classes to relearn good posture may help some patients (e.g. using the Alexander technique). NICE suggests that group exercise programmes (biomechanical, aerobic, mind–body or a combination of approaches) may help and many NHS physiotherapy departments run ‘back classes’ to provide these. The additional pressure on the spine caused by excess weight may lead to structural compromise and damage (e.g. injury and sciatica) so weight loss should be advised. The lower back is particularly vulnerable to the effects of obesity, and lack of exercise leads to poor flexibility and weak back muscles.

Repetitive strain disorder

Repetitive strain disorder covers several arm conditions, mainly affecting the forearm. Tenosynovitis is the term that has been used to refer to conditions

around the wrist, which sometimes occur in computer keyboard operators. The condition presents as swelling on the back of the forearm. There may be crepitus (a creaking, grating sound) when the wrist is moved. Sometimes the symptoms disappear on stopping the job, but they may return when the work is restarted.

Whiplash injuries

Neck pain following a car accident is common. Acute whiplash injury follows sudden or excessive bending, or rotation of the neck, and can also follow things like a diving injury. The symptoms usually last for a few weeks, but rarely they can last for a longer period – over 2 years in some cases. Encouraging an early return to usual activities and early mobilisation are important to speed recovery, and sometimes this needs input from physiotherapy. The use of *paracetamol* or NSAIDs may also help. In most cases it is best to discourage rest, immobilisation, and use of soft collars. If patients come to the pharmacy with whiplash injury, they should be referred to the GP surgery for assessment in the first instance, and in many cases people require a report for insurance purposes if they have been in a car accident. Those with long-term symptoms are difficult to manage, and their management often comes under the care of specialists and pain clinics. This is often associated with anxiety and depression.

Medication

Prescribed medication

People with RA, osteoarthritis or chronic back pain are likely to be taking painkillers or NSAIDs prescribed by their doctor. Although the recommendation of a topical analgesic would produce no problems in terms of drug interactions, if the patient is in considerable and regular pain despite prescribed medication, or the pain has become worse, referral back to the surgery might be appropriate.

Side effects. In older people, it should be remembered that injuries caused by falling, and the risk of falls, is sometimes the result of drug therapy. Medicines can cause postural hypotension, dizziness, unsteadiness or confusion as part of this risk. Any older person reporting injuries due to falling, or having had an unexplained fall, should be carefully questioned about current medication, and the pharmacist should contact the doctor if an adverse reaction is suspected or if there is a risk of further falls. This is particularly important in frail people.

Self-medication

The pharmacist should also enquire about any preparations used in self-treatment of the condition and their degree of effectiveness.

When to refer

Suspected fracture
Possible adverse drug reaction: falls or bruising
Head injury
Whiplash injuries
Medication failure
Suspected arthritis
Severe or prolonged back pain
Back pain (and/or pins and needles/numbness) radiating to leg
Back pain in the middle/upper back (especially in the older patient)

Treatment timescale

Musculoskeletal conditions should respond to treatment within a few days. A maximum of 5 days treatment should be recommended, after which patients should see their doctor.

Management

A wide range of preparations containing systemic and topical analgesics is available (see Headache: Management, earlier in this chapter for a discussion of systemic analgesics). The oral analgesics used would usually be *paracetamol* or *ibuprofen*, provided there were no contraindications. Recently it has been suggested that *paracetamol* is relatively ineffective for low back pain. Taking the analgesic regularly is important to obtain full effect and the patient needs to know this. Topical formulations include creams, ointments, lotions, sticks and sprays.

Topical analgesics

There is a high placebo response to topical analgesic products. This is probably because the act of massaging the formulation into the affected area will increase blood flow and stimulate the nerves, leading to a reduction in the sensation of pain.

Counterirritants and rubefacients

Counterirritants and rubefacients cause vasodilatation, inducing a feeling of warmth over the area of application. Counterirritants produce mild skin irritation, and the term rubefacient refers to the reddening and warming of the skin. The theory behind the use of topical analgesics is that they bombard the

nervous system with sensations other than pain (warmth and irritation), and this is thought to distract attention from the pain felt. Simply rubbing or massaging the affected area produces sensations of warmth and pressure and can reduce pain. Massage is known to relax muscles, and it may be that massage may disperse some of the chemicals that are responsible for producing pain and inflammation by increasing the blood flow. The mode of action of topical analgesics is therefore twofold: one effect relying on absorption of the agent through the skin, while the other on the benefit of the massage. There is little published evidence on the effectiveness on counterirritants and rubefacients. This is not surprising as many of the active ingredients and formulations have been available for many years.

There are many proprietary formulations available, often incorporating a mixture of ingredients with different properties. Most pharmacists and customers have their own favourite product. For customers who live alone, a spray formulation, which does not require massage, can be recommended for areas such as the back and shoulders. Generally, patients can be advised to use topical analgesic products up to four times a day, as required.

Methyl salicylate

Methyl salicylate is one of the most widely used counterirritants. Wintergreen is its naturally occurring form; synthetic versions are also available. A systematic review concluded that salicylates may be effective in acute pain but that the clinical trials were not of good quality. The agent is generally used in concentrations between 10 and 60% in topical analgesic formulations.

Nicotinates

Nicotinates (e.g. *ethyl nicotinate* and *hexyl nicotinate*) are absorbed through the skin and produce reddening of the skin and an increase in blood flow and temperature. *Methyl nicotinate* is used at concentrations of 0.25–1% to produce its counterirritant and rubefacient effects. There have been occasional reports of systemic adverse effects following absorption of *nicotinates*, such as dizziness or feelings of faintness, which are due to a drop in blood pressure following vasodilatation. However, systemic adverse effects are rare, seem to occur only in susceptible people and are usually due to use of the product over a large surface area.

Menthol

Menthol has a cooling effect when applied to the skin and acts as a mild counterirritant. Used in topical formulations in concentrations of up to 1%, *menthol* has antipruritic actions, but at higher concentrations it has a counterirritant effect. When applied to the skin in a topical analgesic formulation, *menthol* gives a feeling of coolness, followed by a sensation of warmth.

Capsaicin/capsicum

The sensation of hotness from eating peppers is caused by the excitation of nerve endings in the skin, body organs and airways by a chemical called *capsaicin*. Capsicum preparations, for example, *capsaicin capsicum* and *capsicum oleoresin*, produce a feeling of warmth when applied to the skin. They do not cause reddening because they do not act on capillary or other blood vessels. *Capsaicin* (available on prescription) has been the subject of research in clinical trials as an analgesic for post-herpetic pain and has shown some benefit. Studies in patients with arthritis have also shown some efficacy. A small amount needs to be rubbed well into the affected area. Patients should always wash their hands after use; otherwise they may inadvertently transfer the substance to the eyes, causing burning and stinging.

Irritant effect of topical analgesics

Preparations containing topical analgesics should always be kept well away from the eyes, mouth and mucous membranes and should not be applied on broken skin. Intense pain and irritant effects can occur following such contact. This is due to the ready penetration of the irritant topical analgesics through both mucosal surfaces and direct access via the broken skin. When preparations are applied to thinner and more sensitive areas of the skin, irritant effects will be increased and hence, there are restrictions on the use of topical analgesics in young children as recommended by some manufacturers for their products. Therefore, the manufacturer's instructions and recommendations should be checked. Sensitisation to counterirritants can occur; if blistering or intense irritation of the skin results after application, the patient should discontinue use of the product.

Topical anti-inflammatory agents

Topical gels, creams and ointments containing NSAIDs are widely used in the United Kingdom. Clinical trials have shown them to have some benefits in relieving musculoskeletal pain, mostly compared with placebo. There have been few comparative trials with counterirritants and rubefacients.

Topical NSAIDs, such as *ibuprofen*, *diclofenac*, *felbinac*, *ketoprofen*, *piroxicam* and *benzydamine*, are available in a range of cream and gel formulations. Because there is some absorption with systemic effects, topical NSAIDs should not be used by patients who experience adverse reactions to *aspirin*, such as asthma, rhinitis or urticaria. As there is higher likelihood of *aspirin* sensitivity in patients with asthma, caution should be exercised when considering recommending a topical NSAID. Several reports of bronchospasm have been received following the use of these products. Rarely, GI side effects have occurred, mainly dyspepsia, nausea and diarrhoea.

Heparinoid and hyaluronidase

Heparinoid and *hyaluronidase* are enzymes that may help to disperse oedema-tous fluid in swollen areas. A reduction in swelling and bruising may therefore be achieved. Products containing *heparinoid* or *hyaluronidase* are used in the treatment of bruises, strains and sprains.

Glucosamine and chondroitin

There is some limited evidence that the ‘nutriceuticals’, *glucosamine sulphate* and *chondroitin*, improve the symptoms of OA in the knee and that *glu-cosamine* may have a beneficial structural effect on joints. However, the quality of much of the research is poor. Adverse effects are uncommon and include abdominal discomfort and tenderness, heartburn, diarrhoea and nausea. There is insufficient information about pharmaceutical quality and actual content of *glucosamine* to enable pharmacists to make informed choices between available products. Some are produced from natural sources (the shells of crabs and other crustaceans), while others are synthesised from glutamic acid and glucose. Having originally suggested that patients wanting to try these products should see if they get pain relief in their 2007 guidance, the 2014 NICE guideline on osteoarthritis now advises, ‘Do not offer glucosamine or chondroitin products for the management of osteoarthritis’.

Acupuncture

Acupuncture has been used for many years for a variety of musculoskeletal conditions, including osteoarthritis and lower back pain. The evidence from clinical trials is difficult to interpret as there is a strong placebo effect and it is difficult to ‘blind’ treatments within control arms of clinical trials for comparison (sometimes ‘sham acupuncture’ is used). NICE no longer recommends its use for osteoarthritis or for low back pain. Acupuncture is unlikely to do harm but following this advice it is usually not available on the NHS.

Practical points

First-aid treatment of sprains and strains

The priority in treating sprains and soft tissue injuries is to apply compression, cooling and elevation immediately, and this combination should be maintained for at least 48 h. The aim of the treatment is to prevent swelling. If swelling is not minimised, the resulting pain and pressure will limit movement and can lead to muscle wasting in the long term or cause pain and delay recovery. Ice packs by themselves will reduce metabolic needs of the tissues, reduce blood flow and result in less tissue damage and swelling, but will not prevent haemorrhage.

Proprietary cold packs are available, but in emergencies various items have been brought into service. For example, a bag of frozen peas is an excellent cold pack for the knee or ankle because it can be easily applied and wrapped around the affected joint.

If possible, after applying a simple elastic bandage or elasticated tubular bandage, which should be snug but not tight, to help control swelling and support the injury, the affected limb should be elevated to reduce blood flow into the damaged area by the effect of gravity. This will, in turn, reduce the amount of swelling caused by oedema. Finally, the injured limb should be rested to facilitate recovery.

The acronym PRICE is a useful aide-memoire for the treatment of sprains and strains.

P – Protection

R – Rest

I – Ice/cooling

C – Compression

E – Elevation

Heat

The application of heat can be effective in reducing pain. However, heat should never be applied immediately after an injury has occurred, because heat application at the acute stage will dilate blood vessels and increase blood flow into the affected area – the opposite effect to what is needed. After the acute phase is over (1 or 2 days after the injury), heat can be useful. The application of heat can be both comforting and effective on chronic conditions such as back pain.

Patients can use a hot water bottle, a proprietary heat pack or an infrared lamp on the affected area. Heat packs contain a mixture of chemicals that give off heat and the packs are disposable. Keeping the joints and muscles warm can also be helpful, and wearing warm clothing, particularly in thin layers that can retain heat, is valuable.

Extract from Clinical Knowledge Summary – Sprains and strains (<https://cks.nice.org.uk/sprains-and-strains>)

How should I manage a sprain or strain in primary care?

Advise the person:

- To manage their injury using the PRICE measures:
 - Protection – protect from further injury (for example, by using a support or high-top, lace-up shoes).
 - Rest – avoid activity for the first 48–72 h following injury.

- Ice – apply ice wrapped in a damp towel for 15–20 min every 2–3 h during the day for the first 48–72 h following the injury. This should not be left on while the person is asleep.
- Compression – with a simple elastic bandage or elasticated tubular bandage, which should be snug but not tight, to help control swelling and support the injury. This should be removed before going to sleep.
- Elevation – keep the injured area elevated and supported on a pillow until the swelling is controlled. If the leg is injured, prolonged periods with the leg not elevated should be avoided.
- To avoid HARM in the first 72 h after the injury:
 - Heat – for example, hot baths, saunas and heat packs
 - Alcohol – increases bleeding and swelling and decreases healing
 - Running – or any other form of exercise that may cause further damage
 - Massage – may increase bleeding and swelling

Musculoskeletal problems in practice

Case 1

Charan Gogna, a regular customer in his late 20s, comes into your pharmacy. He asks what you would recommend for a painful lower back following his weekend football game; he thinks he must have pulled a muscle and says he has had similar problems before. On questioning, you find out that he has not taken any painkillers or used any treatment. He is not taking any other medicines.

The pharmacist's view

Mr Gogna could take an oral analgesic regularly until the discomfort subsides. A topical analgesic could also be useful if gently massaged into the affected area. Since the back is hard to reach, a spray formulation might be easier than a rub. Evidence shows that bed rest does not speed up recovery and may cause more harm than good, so Mr Gogna should be advised to continue his usual daily routine.

The doctor's view

This is a very common story. His low back pain should settle in a few days. As he has had recurrent bouts of pain, he could be reviewed by a sports physiotherapist (if he has access to one) or at his GP surgery. A more detailed history of his problem describing his occupation may be useful with an examination of his back. His posture and way of moving might be less than ideal and might be putting him at risk of future problems. Consideration should be given to means of preventing further events; physiotherapists and osteopaths can help with this or he could attend an NHS 'back class'.

Case 2

A middle-aged man comes into your shop. He is wearing a tracksuit and training shoes and asks what you can recommend for an aching back. On questioning, you find out that the product is, in fact, required for his wife, who was doing some gardening yesterday because the weather was fine and who now feels stiff and aching. The pain is in the lower back and is worse on movement. His wife is not taking any medicines on a regular basis but took two *paracetamol* tablets last night, which helped to reduce the pain.

The pharmacist's view

In this case it would have been very easy for the pharmacist to assume that the man in the shop was the patient whereas, in fact, he was making a request on his wife's behalf. This emphasises the importance of establishing the identity of the patient. The history described is of a common problem: muscle stiffness following unaccustomed or strenuous activity – in this case, gardening. The pharmacist might recommend a combination of systemic and topical therapy. If there were an adequate supply of *paracetamol* tablets at home, the woman could continue to take a maximum of two tablets four times daily until the pain resolved. Alternatively, an oral or topical NSAID or a topical rub or spray containing counterirritants could be advised. The woman should see her doctor if the symptoms have not improved within 5 days.

The doctor's view

The story is suggestive of simple muscle strain, which should settle with the pharmacist's advice within a few days. It would be helpful to enquire whether or not she has had backaches before and, if so, what happened. It would also be worth checking that she did not have pain or pins and needles radiating down her legs. If these symptoms were present, then this might suggest a slipped disc and referral to her GP surgery would be advisable for assessment. However, pain or nerve symptoms down the leg can also occur as a result of muscle spasm with associated nerve root irritation and often resolves quickly.

Case 3

An older female customer who regularly visits your pharmacy asks what would be the best thing for 'rheumatic' pain, which is worse now that the weather is getting colder. The pain is in the joints, particularly of the fingers and knees. On further questioning, you find out that she has suffered from this problem for some years and that she sees her doctor quite regularly about this, along with a variety of other complaints. On checking your patient medication records, you find that she is taking five different medicines a day. Her regular medication includes a combination diuretic preparation, sleeping tablets and analgesics for

her arthritis (*co-dydramol* plus an NSAID). The joint pains seem to have become worse during the recent spell of bad weather.

The pharmacist's view

It would be best for this customer to see her doctor or practice nurse. She is already taking several medicines, including analgesics for arthritis. It would therefore be inappropriate for the pharmacist to consider recommendation of a further systemic anti-inflammatory or analgesic because of the possibilities of interaction or duplication. Indeed, the recent worsening of the symptoms indicates that consultation at the practice would be wise. Perhaps this woman is not taking all her medicines; the pharmacist could explore any such problems with her before referring her back to the surgery.

The doctor's view

Referral to the doctor is advisable. She may have OA, RA or even some other form of arthritis, and the doctor would be in the best position to advise further treatment. The GP is already likely to have made an assessment of her joint pains. OA most commonly affects the end joints of the fingers, whereas RA affects the other small joints of the fingers and knuckles; tenderness on squeezing these joints is a useful test for this condition. Knees can be affected by both OA and RA, whereas in the case of the hip, OA is most common. A feature of RA is morning joint stiffness. Blood tests and X-rays can assist the diagnosis. An appointment with the GP would also give an opportunity to review her medication. As suggested, she may not have been taking her medicines regularly. It would be helpful to find out whether she is experiencing adverse effects and to renegotiate her treatment.

Chapter 5

Women's Health

Cystitis

Cystitis is a term used to describe a collection of urinary symptoms including dysuria, frequency and urgency. The symptoms are caused by inflammation of the bladder, which may be due to infection; in 50% of cases, no bacterial cause is found. When infection is present, the most common bacterium is *Escherichia coli*, and the source is often the gastrointestinal (GI) tract. About half of the cases will resolve within 3 days even without treatment. Cystitis is common in women but rare in men; it has been estimated that more than 50% of women will experience an episode of cystitis during their lives. The pharmacist should be aware of the signs that indicate more serious conditions. Over-the-counter (OTC) products are available for the treatment of cystitis, but are recommended only when symptoms are mild, or for use until the patient can consult her doctor or nurse.

What you need to know

Age

Adult, child

Male or female

Symptoms

Urethral irritation

Urinary urgency, frequency

Dysuria (pain on passing urine)

Haematuria (blood in the urine)

Vaginal discharge

Associated symptoms
Back pain
Lower abdominal (suprapubic) pain
Fever, chills
Nausea/vomiting
Duration
Previous history
Medication

Significance of questions and answers

Age

Any child with the symptoms of cystitis should always be referred to the doctor for further investigation and treatment. Urinary tract infections (UTIs) occur in children, and damage to the kidney or bladder may result, particularly after recurrent infections.

Gender

Cystitis is much more common in women than in men for two reasons:

1. Cystitis occurs when bacteria pass up along the urethra and enter and multiply within the bladder. As the urethra is much shorter in females than in males, the passage of the bacteria is much easier. In addition, the process is facilitated by sexual intercourse.
2. There is evidence that prostatic fluid has antibacterial properties, providing an additional defence against bacterial infection in males.

Referral

Any man who presents with the symptoms of cystitis requires medical referral because of the possibility of more serious conditions such as kidney or bladder stones or prostate problems.

Pregnancy

If a pregnant woman presents with symptoms of cystitis, medical referral is needed, because bacteriuria (presence of bacteria in the urine) in pregnancy can lead to kidney infection and other problems.

Symptoms

Cystitis sufferers often report that the first sign of an impending attack is an itching or pricking sensation in the urethra. The desire to pass urine becomes frequent, and women with cystitis may feel the need to pass urine urgently, but pass only a few burning, painful drops. This frequency of urine occurs

throughout the day and night. Dysuria (pain on passing urine) is a classical symptom of cystitis. After urination, the bladder may not feel completely empty, but even straining produces no further flow. The urine may be cloudy and strong smelling; these may be signs of bacterial infection.

Chlamydial infection

Chlamydia is a sexually transmitted infection and is most commonly seen in women aged 16–24 years. About 1 in 10 women under the age of 25 years have it. Unfortunately, most women with it (about 80%) do not have any symptoms. Those that do can have symptoms of cystitis, an alteration in vaginal discharge or lower abdominal pain. Chlamydia can cause pelvic inflammatory disease (PID) and infertility. It is important that the infection be detected and treated. Screening programmes for chlamydia are now widespread. In England, the National Chlamydia Screening Programme (NCSP) offers screening to men and women under 25 years attending health clinics (contraceptive clinics, general practice, young people's services, antenatal clinics, etc.). As part of NCSP, in some areas community pharmacies also offer a screening (and sometimes treatment) service. Testing is recommended annually or on change of sexual partner (whichever is more frequent). Men are offered a urine test. Each woman is offered a urine test or is given a vulvovaginal swab to self-collect. The person can choose how to receive their results, for example, phone, post, etc. Those with positive results are offered treatment, usually with *azithromycin* or *doxycycline*, and advised about informing their sexual partner(s) who should also be tested. Following treatment, the test is repeated after 3 months. The use of condoms can prevent the infection from being spread.

Blood in urine

Macroscopic haematuria (visible presence of blood in the urine) is an indication for referral to the general practitioner (GP) surgery. It often occurs in cystitis when there is so much inflammation of the lining of the bladder and urethra that bleeding occurs. This is not usually serious and responds quickly to antibiotic treatment. Lesser degrees of bleeding are detected by dipstick tests or microscopy, and this is called 'microscopic haematuria'. Sometimes blood in the urine may indicate other problems such as a kidney stone. When this occurs, pain in the loin or between the loin and groin is the predominant symptom. When blood in the urine develops without any pain, specialist referral is required to exclude the possibility of a tumour in the bladder or kidney; any person reporting painless haematuria (red urine) should be advised to see their GP quickly.

Vaginal discharge

The presence of a vaginal discharge would indicate local fungal (usually candida or 'thrush') or bacterial infection and would require referral.

Associated symptoms

When dealing with symptoms involving the urinary system, it is best to think of it as divided into two parts: the upper urinary tract (kidneys and ureters) and the lower urinary tract (bladder and urethra). The pharmacist should be aware of the symptoms that accompany lower UTI and those that suggest more serious problems higher in the urinary tract (such as pyelonephritis), so that referral for medical advice can be made where appropriate.

Upper UTI symptoms

Systemic involvement, demonstrated by fever, nausea, vomiting, loin pain and tenderness, is indicative of more serious infection such as pyelonephritis, and patients with such symptoms require urgent referral. These infections are serious and there is a risk of septicaemia.

Other symptoms

Cystitis may be accompanied by suprapubic (lower abdominal) pain and tenderness.

Duration

In the absence of other symptoms or problems, treatment with OTC preparations is reasonable for mild cystitis of short duration (<2 days).

Previous history

Women with recurrent cystitis should see their doctor. One in two episodes of cystitis is not caused by infection. Sometimes the term 'urethral syndrome' has been used for these non-infective cases. The anxiety produced by repeated occurrences of cystitis is itself thought to be a contributory factor.

An estimated 1 in 10 cases of UTI is followed by relapse (the same bacterium being responsible) or reinfection (where a different organism may be involved). The remaining nine cases clear up without recurrence.

The identity of any preparations recently taken to treat symptoms of UTI or cystitis is important. The pharmacist may then decide whether an appropriate remedy has been used. Failed medication would be a reason for referral to the GP surgery.

Diabetes

Recurrent cystitis can sometimes occur in diabetes, and therefore anyone describing a history of increasing thirst, weight loss and a higher frequency of passing urine than normal should be referred. In patients with known diabetes

and recent onset urinary symptoms, it is best that they are assessed at the GP surgery as UTI can be more troublesome and sometimes more difficult to treat.

Cystitis after sex

Sexual intercourse may precipitate an attack of cystitis due to minor trauma or resulting infection when bacteria are pushed along the urethra. The occurrence of urinary symptoms occurring after starting a new sexual relationship is often called 'honeymoon cystitis'.

Women who get frequent episodes of cystitis following sexual intercourse may be prescribed a supply of an antibiotic such as *trimethoprim* by their doctor to take within 2 h of sex.

Other precipitating factors

Other precipitating factors may include the irritant effects of toiletries (e.g. bubble baths and vaginal deodorants) and other chemicals (e.g. spermicides and disinfectants). Use of a diaphragm for contraception can also cause symptoms of cystitis. Lack of personal hygiene is not thought to be responsible, except in extreme cases.

Postmenopausal women

Oestrogen deficiency in postmenopausal women leads to thinning of the lining of the vagina. Lack of lubrication can mean the vagina and urethra are vulnerable to trauma and irritation and attacks of cystitis can occur. For such women, painful intercourse can also be a problem, and this can be treated with OTC lubricants or prescribed products (e.g. oestrogen creams). Lubricant products are available OTC, and newer formulations mean that a single application can remain effective for several days. Should this approach be unsuccessful, or if other troublesome symptoms are present, referral to the doctor would be advisable.

Medication

Cystitis can be caused by cytotoxic drugs such as *cyclophosphamide*.

When to refer

All men, children
Pregnancy
Fever, nausea/vomiting
Loin pain or tenderness

Haematuria
Vaginal discharge
Duration of longer than 2 days
Recurrent cystitis
Failed medication

Treatment timescale

If symptoms have not subsided within 2 days of beginning the treatment, the patient should see her doctor.

Management

For pain relief, offer *paracetamol* or *ibuprofen* for up to 2 days. A high temperature will also be reduced, bearing in mind that a level above 38.5°C is more characteristic of higher UTI such as pyelonephritis, and all of these cases should be referred. The pharmacist can also recommend a product that will alkalinise the urine and provide symptomatic relief, although there is no good evidence of effectiveness. Other OTC preparations are of doubtful value. In addition to treatment, it is important for the pharmacist to offer advice about fluid intake (see 'Practical points' below). For women in whom cystitis is a recurrent problem, self-help measures can sometimes prevent recurrence. Signposting to relevant information is useful.

Potassium and sodium citrate

Potassium and sodium citrate work by making the urine alkaline. The acidic urine produced as a result of bacterial infection is thought to be responsible for dysuria; alkalinisation of the urine can therefore provide symptomatic relief. While easing discomfort, alkalinising the urine will not produce an antibacterial effect, and it is important to tell patients that if symptoms have not improved within 2 days, they should see their doctor. Proprietary sachets are more palatable than *potassium citrate mixture*.

Contraindications

There are some patients for whom such preparations should not be recommended. For *potassium citrate*, these would include anyone taking potassium-sparing diuretics, aldosterone antagonists or angiotensin-converting enzyme inhibitors, in whom hyperkalaemia may result. *Sodium citrate* should not be recommended for hypertensive patients, anyone with heart disease or pregnant women.

Warning

Patients should be reminded not to exceed the stated dose of products containing *potassium citrate*: several cases of hyperkalaemia have been reported in patients taking *potassium citrate mixture* for relief from urinary symptoms.

Complementary therapies

Cranberry juice has been recommended as a folk remedy for years as a preventive measure to reduce UTI. A recent update of a systematic review of evidence showed that drinking *cranberry juice* on a regular basis does not appear to have a significant benefit in preventing UTIs. *Cranberry juice* or capsules are also unlikely to be effective in the treatment of acute cystitis. Patients taking *warfarin* should not take cranberry products.

Azithromycin or doxycycline for chlamydial infection

Some community pharmacies in England and Wales supply *azithromycin* or *doxycycline* for chlamydial infection via a patient group direction (PGD) in a locally commissioned National Health Service (NHS) (this is a nationally commissioned service in Scotland).

Practical points

1. There is little evidence to support much of the traditional advice that has been given to women with cystitis, and the list that follows can be discussed with the woman to consider acceptability:
 - i) Drinking large quantities of fluids should theoretically help in cystitis because the bladder is emptied more frequently and completely as a result of the diuresis produced; this is thought to help flush the infecting bacteria out of the bladder. However, this may cause more discomfort where dysuria is severe and may be better as advice to prevent recurrence rather than to use during treatment. Drinking the normally recommended amount of fluids may be preferred.
 - ii) During urination the bladder should be emptied completely by waiting for 20 s after passing urine and then straining to empty the final drops. Leaning backwards is said to help to achieve a more complete emptying of the bladder than the usual sitting posture.
 - iii) After a bowel motion wiping toilet paper from front to back may minimise transfer of bacteria from the bowel into the vagina and urethra.
 - iv) Urination immediately after sexual intercourse will theoretically flush out most bacteria from the urethra, but there is no evidence to support this.
2. Reduced intake of coffee and alcohol may help because these substances seem to act as bladder irritants in some people.

Cystitis in practice

Case 1

Mrs Anne Lawson, a young woman in her 20s, asks to have a quiet word with you. She tells you that she thinks she has cystitis. On questioning, you find that she is not passing urine more frequently than normal, but that her urine looks dark and smells unpleasant. Mrs Lawson has back pain and has been feeling feverish today. She is not taking any medicine from the doctor and has not tried anything to treat her symptoms.

The pharmacist's view

This woman has described symptoms that are not of a minor nature. In particular, the presence of fever and back pain indicates that she may have an infection higher in the urinary tract. Mrs Lawson should see her doctor as soon as possible.

The doctor's view

Referral is advisable. She may have a higher UTI, possibly in the kidney. However, there is insufficient information to make a definite diagnosis. It would be useful to know if she has pain on passing urine and the site and nature of her back pain. Her symptoms could, in fact, be accounted for by a flu-like viral infection in which the backache is caused by muscular inflammation and the urine altered because of dehydration. The GP is likely to check the urine in the surgery with a dipstick test and also send a sample (midstream specimen of urine) to the laboratory for microscopy and culture. If the dipstick test were positive for blood, leucocytes and/or nitrites, a urinary infection would be likely, and the patient would be started on antibiotics awaiting laboratory confirmation of the bacteria responsible. She may subsequently require further investigations of her renal tract, for example, an ultrasound of her kidneys and possibly an intravenous urogram. Severe cases of kidney infection require emergency hospital admission for intravenous antibiotics; a serious concern is the high risk of septicaemia.

Case 2

A young man asks if you can recommend a good treatment for cystitis. In response to your questions, he tells you that the medicine is for him: he has been having pain when passing urine since yesterday. He otherwise feels well and does not have any other symptoms. No treatments have been tried already and he is not currently taking any medicines.

The pharmacist's view

This man should be referred to the GP surgery because the symptoms of cystitis are uncommon in men and may be the result of a more serious condition.

The doctor's view

Referral is necessary for accurate diagnosis. A urine sample will need to be collected for appropriate analysis. If it shows that he has a urinary infection, then treatment with a suitable antibiotic can be given and a referral to a specialist for further investigation made. The reason for referral is that urinary infection is relatively uncommon in men compared with women and may be caused by some structural problem within the urinary tract.

If in addition to discomfort on passing urine he has a urethral discharge, he is most likely to be suffering from a sexually transmitted disease (STD), such as chlamydia or gonorrhoea. To investigate this possibility, he would be referred to a sexual health clinic (or genito-urinary medicine clinic) for investigation and contact tracing and treatment, if indicated; GPs are advised not to manage suspected urethritis and to refer all suspected cases to these clinics. If pharmacists are consulted about urethral discharge by men (or women), or their partner, they can advise them to go directly to a local clinic.

Chlamydia is the most prevalent STD and the clinic would treat this using *azithromycin* or *doxycycline*. Although often symptomless in men, chlamydia can be complicated by an infection around the testis, which becomes very painful, swollen and red. It may also lead to reduced fertility. Another complication of chlamydia is the development of a reactive arthritis (Reiter's syndrome), which often affects the knees and feet and can be associated with conjunctivitis.

Case 3

It is Saturday afternoon and a young woman whom you do not recognise as a regular customer asks for something to treat cystitis. On questioning, you find out that she has had the problem several times before and that her symptoms are frequency and pain on passing urine. She is otherwise well and tells you that her doctor has occasionally prescribed antibiotics to treat the problem in the past. She is not taking any medicines.

The pharmacist's view

This woman represents a common situation in community pharmacy. She has had these symptoms before and is unlikely to be able to see her doctor before Monday. She should attend the GP surgery on Monday if the symptoms have not improved, and the pharmacist could suggest that she take a urine sample with her. In the meantime, she is experiencing a lot of discomfort, and it would be reasonable to recommend the use of an alkalinising agent, such as *sodium* or *potassium citrate*, over the weekend. You could advise her to drink plenty of fluids but with minimum consumption of tea, coffee and alcohol, all of which may cause dehydration and make the problem worse.

The doctor's view

The story is suggestive of cystitis. The pharmacist's view is sound, but I think should include 'safety netting' with advice on what to do if things deteriorate.

Symptomatic treatment with *potassium citrate* may help her until after the weekend. It would be interesting to know whether her cystitis symptoms usually resolve as in many cases these will get better after a few days without treatment. In cases of uncomplicated UTI in women, it is no longer routine to send urine for culture, but if the diagnosis is unclear, the doctor or nurse may check her urine to see if it is cloudy and test for blood, protein and nitrite using dipsticks. If she has had frequent episodes of UTI or this is a recurrence, a sample would be sent to the lab for microbiology. If her symptoms get worse, she should be advised to speak to the out-of-hours service as she may need to start antibiotics before Monday. Changing patterns of resistance mean that first-line 'empirical' (based on likely causes) antibiotics vary according to local protocols but *nitrofurantoin* or *trimethoprim* are usually used as first-line choices.

Dysmenorrhoea

Dysmenorrhoea, or painful periods, is cramping pain, usually in the lower abdomen, occurring shortly before or during menstruation, or both. Primary dysmenorrhoea is defined as pain in the absence of pelvic disease, whereas secondary dysmenorrhoea is caused by an underlying pelvic pathology such as pelvic infection, endometriosis, fibroids or endometrial polyps.

It has been estimated that as many as one in two women suffers from mild symptoms. Up to 1 in 10 of those affected will have severe symptoms, which necessitate time off school or work. Many of these women will try self-medication, seeking advice from their doctor only if this treatment is unsuccessful. Pharmacists should remain aware that discussing menstrual problems is potentially embarrassing for the patient and should therefore do so in privacy. The term painful periods is preferable to dysmenorrhoea when discussing these problems with patients.

What you need to know

Age

Previous history

Regularity and timing of cycle

Timing and nature of pains

Relationship with menstruation

Other symptoms

Headache, backache

Nausea, vomiting, constipation

Faintness, dizziness, fatigue

Emotional symptoms

Medication

Significance of questions and answers

Age

The peak incidence of primary dysmenorrhoea occurs in women between the ages of 17 and 25 years. Secondary dysmenorrhoea is most common in women aged over 30 years and is rare in women aged under 25 years. Primary dysmenorrhoea often becomes less troublesome after having children.

Previous history

Dysmenorrhoea is often not associated with the start of menstruation (menarche) but becomes a problem when periods become regular. This is because during the early months (and sometimes years) of menstruation, ovulation may not occur. These anovulatory cycles are usually, but not always, pain-free, and therefore women sometimes describe period pain that begins after several months or years of pain-free menstruation. The pharmacist should establish whether the menstrual cycle is regular and the length of the cycle. Further questioning should then focus on the timing of pains in relation to menstruation.

Timing and nature of pains

Primary dysmenorrhoea

Primary dysmenorrhoea classically presents as a cramping lower abdominal pain that often begins the day before bleeding starts. The pain gradually eases after the start of menstruation and is often gone by the end of the first or second day of bleeding. It is commonly accompanied by symptoms such as nausea, vomiting, migraine, bloating and emotional upset.

Mittelschmerz

Mittelschmerz is ovulation pain that occurs mid-cycle, at the time of ovulation. The abdominal pain usually lasts for a few hours but can last for several days. It is usually localised to one side and it can occur on different sides with each period (ovulation occurs on a random ovary each cycle). In some women brief episodes of this pain are the only symptoms of dysmenorrhoea.

Secondary dysmenorrhoea

A secondary cause is more likely if symptoms started after several years of painless periods. Other gynaecological symptoms associated with secondary causes of dysmenorrhoea include dyspareunia (pain with sex), vaginal discharge, menorrhagia, intermenstrual bleeding and post-coital bleeding.

The pain of secondary or acquired dysmenorrhoea may occur during other parts of the menstrual cycle and can be relieved or worsened by menstruation.

Such pain is often described as a dull, aching pain rather than being spasmodic or cramping in nature. Often occurring up to 1 week before menstruation, the pain may get worse once bleeding starts. Secondary dysmenorrhoea is more common in older women, especially in those who have had children. In pelvic infection, a vaginal discharge may be present in addition to pain. If, from questioning, the pharmacist suspects secondary dysmenorrhoea, the patient should be referred to her doctor for further investigation.

Endometriosis

Endometriosis mainly occurs in women aged between 30 and 45 years but can occur in women in their 20s. The uterus has an inner lining surface (endometrium). In endometriosis, pieces of endometrium are found in places external to the uterus. These isolated pieces of endometrium may lie on the outside of the uterus or ovaries, or elsewhere in the pelvis. Each section of endometrium is sensitive to hormonal changes occurring during the menstrual cycle and goes through the monthly changes of thickening, shedding and bleeding. This causes pain wherever the endometrial cells are found. The pain usually begins up to 1 week before menstruation, and both lower abdominal and lower back pain may occur. The pain may also be non-cyclical and may occur with sexual intercourse (dyspareunia). Endometriosis may cause subfertility. Diagnosis can be confirmed by laparoscopy.

Pelvic infection

Pelvic infection may be acute or chronic in nature. It is important to know whether or not an intrauterine contraceptive device (coil) is used. The coil can cause increased discomfort and heavier periods but also may predispose to infection. Acute pelvic infection occurs when a bacterial infection develops within the fallopian tubes. There is usually severe pain, fever and vaginal discharge. The pain is in the lower abdomen and may be unrelated to menstruation. It can be confused with appendicitis.

Chronic PID may follow on from an acute infection. The pain tends to be less severe, associated with periods, and may be experienced during intercourse. It is thought that adhesions that develop around the tubes following an infection may be responsible for the symptoms in some women. In others, however, no abnormality can be found, and the term 'pelvic congestion' is often used (this means the cause is unknown). In this situation, psychological factors are thought to be important.

Other symptoms

Women who experience dysmenorrhoea will often describe other associated symptoms. These include nausea, vomiting, general stomach discomfort, constipation, headache, backache, fatigue, feeling faint and dizziness. Many women

get emotional and upset at the time of a period. Distressing symptoms occurring in the second half of the menstrual cycle are part of the premenstrual syndrome (PMS) (discussed further in the next section).

Medication

The pain of dysmenorrhoea is thought to be linked to increased prostaglandin activity, and raised prostaglandin levels have been found in the menstrual fluids and circulating blood of women who suffer from dysmenorrhoea. Therefore, the use of a non-steroidal anti-inflammatory drug (NSAID) that inhibits the synthesis of prostaglandins is logical. It is important, however, for the pharmacist to make sure that the patient is not already taking an NSAID.

Women taking oral contraceptives usually find that the symptoms of dysmenorrhoea are reduced or eliminated altogether, and so any woman presenting with the symptoms of dysmenorrhoea and who is taking the pill is probably best referred to the GP surgery for further investigation (or change of pill).

When to refer

Presence of abnormal vaginal discharge
Abnormal bleeding
Symptoms suggest secondary dysmenorrhoea
Severe intermenstrual pain (mittelschmerz) and bleeding
Failure of medication
Pain with a late period (possibility of an ectopic pregnancy)
Presence of fever

Treatment timescale

If the pain of primary dysmenorrhoea is not improved after two cycles of treatment, referral to the doctor would be advisable.

Management

Simple explanation about why period pains occur, together with sympathy and reassurance, is important. Treatment with NSAIDs is often very effective in dysmenorrhoea and over 70% of women get good relief of symptoms.

NSAIDs (*ibuprofen and naproxen*) (see also Chapter 4 Painful Conditions: Headache: Management)

NSAIDs can be considered the treatment of choice for dysmenorrhoea, provided that they are appropriate for the patient (i.e. the pharmacist has questioned the patient about previous use of *aspirin* and history of GI

problems and asthma). They inhibit the synthesis of prostaglandins and thus have a rationale for use. Most trials have studied the use of NSAIDs at the onset of pain. One small study compared treatment started premenstrually against treatment from onset of pain: both strategies were equally effective.

Doses for *ibuprofen* are in Chapter 4 Painful Conditions: Headache: Management. Sustained release formulations of *ibuprofen* are also available. *Naproxen* 250 mg tablets can be used by women aged between 15 and 50 years for primary dysmenorrhoea only. Two tablets are taken initially and then one tablet 6–8 h later if needed. Maximum daily dose is 750 mg and maximum treatment time is 3 days.

Contraindications

Care should be taken when recommending NSAIDs, which can cause GI irritation and should not be taken by anyone who has or has had a peptic ulcer. All patients should take NSAIDs with or after food to minimise GI problems (see also previous page).

NSAIDs should not be taken by anyone who is sensitive to *aspirin* and should be used with caution in anyone who is asthmatic, because such patients are more likely to be sensitive to NSAIDs. The pharmacist can check if a person with asthma has used an NSAID before. If they have done so without problems, they can continue.

Aspirin

Aspirin also inhibits the synthesis of prostaglandins but is less effective in relieving the symptoms of dysmenorrhoea than *ibuprofen*. It also has the drawback that as an antiplatelet it can make menstrual bleeding heavier. One review found the number needed to treat for pain relief was 10 for *aspirin* compared with 2.4 for *ibuprofen*. *Aspirin* can cause GI upsets and is more irritating to the stomach than NSAIDs. For those who experience symptoms of nausea and vomiting with dysmenorrhoea, *aspirin* is probably best avoided. Soluble forms of *aspirin* will work more quickly than traditional tablet formulations and are less likely to cause stomach problems. Patients should be advised to take *aspirin* with or after meals. The pharmacist should establish whether the patient has any history of *aspirin* sensitivity before recommending the drug.

Paracetamol

Paracetamol has little or no effect on the levels of prostaglandins involved in pain and inflammation, and so it is theoretically less effective for the treatment of dysmenorrhoea than either NSAIDs or *aspirin*. However, it is a useful treatment when the patient cannot take NSAIDs or *aspirin* because of stomach problems or potential sensitivity. It is also useful when the patient is suffering with nausea and vomiting as well as pain, since it does not irritate the stomach. The pharmacist should remember to stress the maximum dose that can be taken.

Hyoscine

Hyoscine, a smooth muscle relaxant, is marketed for the treatment of dysmenorrhoea on the theoretical basis that the antispasmodic action will reduce cramping. In fact, the dose is so low (0.1 mg *hyoscine*) that such an effect is unlikely. The anticholinergic effects of *hyoscine* mean that it is contraindicated in women with closed-angle glaucoma. Additive anticholinergic effects (dry mouth, constipation and blurred vision) mean that *hyoscine* is best avoided if any other drug with anticholinergic effects (e.g. tricyclic antidepressants) is being taken.

Caffeine

There is some evidence (from a trial comparing combined *ibuprofen* and *caffeine* with *ibuprofen* alone and *caffeine* alone) that *caffeine* may enhance analgesic effect. OTC products contain 15–65 mg of *caffeine* per tablet. A similar effect could be achieved through drinking tea, coffee or cola. A cup of instant coffee usually contains about 80 mg of *caffeine*; a cup of freshly brewed coffee, about 130 mg; a cup of tea, 50 mg; and a can of cola drink, about 40–60 mg.

Non-drug treatments

Although exercise might seem unattractive with period pain, keeping active can reduce pain; gentle swimming, walking or cycling may help.

Transcutaneous electrical nerve stimulation (TENS) machines cannot be prescribed on the NHS but can be purchased OTC and have been used for painful periods. A systematic review of evidence found that high-frequency TENS may be of benefit. It seems to work by altering the body's ability to receive or perceive pain signals. High-frequency TENS has pulses of 50–120 Hz at low intensity and was found to be effective for pain relief. The evidence for low-frequency TENS (pulses of 1–4 Hz) is less convincing than for high frequency.

Locally applied low-level heat may also help pain relief. Putting a heat pad or hot water bottle (wrapped in a tea towel) on the abdomen may help reduce pain. Results from one study showed that the time to noticeable pain relief was significantly reduced when *ibuprofen* was combined with locally applied heat, as compared with *ibuprofen* alone. Warm baths or showers may help relieve pain and help with relaxation. Activities such as yoga or Pilates may also be useful.

Practical points

1. Exercise during menstruation is not harmful and may well be beneficial, since it raises endorphin levels, reducing pain and promoting a feeling of well-being. There is some evidence that moderate aerobic exercise can improve symptoms of PMS.

2. There is no convincing evidence of the efficacy of dietary changes in PMS.
3. Advice for women taking analgesics for dysmenorrhoea is as follows:
 - i) Take the first dose as soon as your pain begins or as soon as the bleeding starts, whichever comes first. If this is not adequate, some doctors advise to start taking the tablets on the day before your period is due. This may prevent the pain from building up.
 - ii) Take the tablets regularly, for 2–3 days each period, rather than 'now and then' when pain builds up.
 - iii) Take a strong enough dose. If your pains are not eased, ask your doctor or pharmacist whether the dose that you are taking is the maximum allowed. An increase in dose may be all that you need. Changing the type of NSAID may also help.
 - iv) Side effects are uncommon if you take an anti-inflammatory for just a few days at a time, during each period. (But read the leaflet that comes with the tablets for a full list of possible side effects.)

Dysmenorrhoea in practice

Case 1

Linda Bailey is a young woman aged about 26 years, who asks your advice about painful periods that started a few months ago. From your questioning, you find that Linda has lower abdominal pain and sometimes backache, which starts several days before her period begins. Her menstrual cycle used to be very regular but now tends to vary; sometimes she has only 3 weeks between periods. The pain continues throughout menstruation and is quite severe. She has tried taking *aspirin*, which did not have much effect.

The pharmacist's view

This woman sounds as though she is experiencing secondary dysmenorrhoea. The pain begins well before her period starts and continues during menstruation. Her periods, which used to be regular and relatively painless, are no longer so, and she has tried *aspirin*, which has not relieved the pain. She should be referred to her doctor.

The doctor's view

Referral does seem appropriate in this situation. Further information needs to be gathered from history taking (how long overall has she experienced pain and what it is like, the effect on her life, any pregnancies, does she use contraception, any history of pelvic infection, her concerns and ideas about her problem, the sort of help is she expecting, etc.), examination and preliminary investigations. It is quite possible that the patient has endometriosis and

referral to a gynaecologist may be indicated. The diagnosis of endometriosis can be confirmed by a laparoscopy. The range of treatment options includes other NSAIDs, hormone treatments and surgery. The hormonal treatments that can be used are progestogens, antiprogestogens, combined oral contraceptives (COC) and gonadotropin-releasing hormone (GnRH) analogues. GnRH preparations such as *goserelin* work by suppressing the hormones to create an artificial menopause. They can be used for up to 6 months (not to be repeated) and may have to be used with hormone replacement therapy to offset menopausal-like symptoms.

Case 2

Jenny Simmonds is a young woman aged about 18 years who looks rather embarrassed and asks you what would be the best thing for period pains. Jenny tells you that she started her periods about 3 years ago and has not had any significant problems with period pains until about a year ago. Her periods are regular – every 4 weeks. They have not become heavier, but she now gets pain, which starts a few hours before her period. The pain is usually gone by the end of the first day of menstruation, and Jenny has never had any pain during other parts of the cycle. She says she has not tried any medicine yet, is not taking any medicines from the doctor and can normally take *aspirin* without any problems.

The pharmacist's view

From the results of questioning, it sounds as though Jenny is suffering from straightforward primary dysmenorrhoea. She could be advised to take an NSAID and follow this regimen for 2 months and be invited back to see if the treatment has worked.

The doctor's view

Jenny's pain is most likely due to primary dysmenorrhoea. An explanation of this fact would probably be very reassuring. The treatment recommended by the pharmacist is sensible. If her pain was not helped by an NSAID, she could be advised to discuss further management with her GP. Sometimes the combined oral contraceptive pill (OCP) can be helpful in reducing painful periods.

Premenstrual syndrome

The term premenstrual syndrome describes a collection of symptoms, both physical and psychological, whose incidence is related to the menstrual cycle. Symptoms are experienced cyclically, usually from 2 to 14 days before the start of menstruation. Relief from symptoms generally occurs once menstrual

bleeding begins. The cyclical nature, timing and reduction in symptoms are all important in identifying PMS. Some women experience such severe symptoms that their working and home lives are affected.

Symptoms

In PMS the distressing physical, behavioural and psychological symptoms occur regularly in the absence of organic or underlying psychiatric disease. They usually become most prominent in the week before a menstrual period. Psychological symptoms include depressed mood, mood swings, anxiety, irritability and loss of confidence. Lack of libido, difficulty in concentrating, forgetfulness and tiredness may also occur. Physical symptoms include bloating and breast pain. Behavioural symptoms include reduced cognitive ability and aggression. Keeping a symptom diary and determining the relationship to menstruation may help clarify the diagnosis.

Severity

Most women notice some change of mood in the time leading up to a menstrual period; in a small proportion of women, these symptoms are disabling and may be associated with physical problems. In mild PMS, symptoms do not interfere with the woman's personal, social and professional life. In moderate PMS, symptoms interfere with the woman's personal, social and professional life, and daily functioning is possible, although it may not be to the usual level. In severe PMS, the woman withdraws from social and professional activities and cannot function normally.

Management

Perhaps the most important thing a pharmacist can contribute is to provide reassurance to the patient that you understand her concerns and the disruption that symptoms are causing to her life. Often explanation, reassurance and support may be all that are required. Treatment of the symptoms of PMS is a matter for debate, and there is a high placebo response to therapy in mood changes, breast discomfort and headaches when taken from 2 weeks before the period starts or throughout the cycle. For more severe cases doctors may prescribe a third-generation combined oral contraceptive, which are thought to reduce symptoms of PMS. Sometimes SSRI antidepressants such as *fluoxetine* are prescribed, which appear to reduce mood swings. Talking therapies such as cognitive behavioural therapy (CBT) may also be helpful.

All women with PMS may benefit from lifestyle advice that includes to take regular, frequent (2–3 hourly), small, balanced meals rich in complex

carbohydrates to reduce symptoms of bloating. Regular exercise is said to give relief from symptoms, and regular sleep will also help with mood. Things like mindfulness or meditation may help with stress. Smoking cessation and moderation in alcohol consumption are also sensible.

Complementary therapies and dietary supplements

There are many herbal dietary supplements said to improve symptoms of PMS. Few of these have clear evidence of benefit. There is some evidence that *pyridoxine* may reduce symptoms, but the quality of clinical trials is poor and the evidence thus not definitive. The mechanism by which *pyridoxine* might work in PMS is unknown. It has been used extensively in the past and it may be that it has a placebo effect. If they wish to try it, it is important that the patient be advised to stick to the recommended dose; higher doses of *pyridoxine* are reported to have led to neuropathy. The *British National Formulary* (BNF) states that 'prolonged use of *pyridoxine* in a dose of 10 mg daily is considered safe but the long-term use of *pyridoxine* in a dose of 200 mg or more daily has been associated with neuropathy. The safety of long-term *pyridoxine* supplementation with doses above 10 mg daily has not been established'.

Evening primrose oil has been used for many years to treat the breast tenderness associated with PMS. However, there are no good-quality trials to support its use and therefore it is of unknown effectiveness. It is unlikely to do harm. The mechanism of action of *evening primrose oil* is said to be linked to effects on prostaglandins, particularly in increasing the level of prostaglandin E, which appears to be depleted in some women with PMS. The active component of *evening primrose oil* is gamma-linolenic (gammolenic) acid, which is thought to reduce the ratio of saturated to unsaturated fatty acids. The response to hormones and prolactin appears to be reduced by gamma-linolenic acid.

Menorrhagia

Menorrhagia is excessive (heavy) menstrual blood loss, which occurs over several consecutive cycles. It can be treated by the pharmacist OTC with *tranexamic acid*. One in three women describes periods as being 'heavy'. Although the technical definition of menorrhagia is blood loss of 60–80 ml or more per period (compared with average loss of 30–40 ml), this definition is not useful in practice. A more useful description is of heavy menstrual blood loss that, in the woman's view, interferes with her quality of life (physical, emotional, social). As with dysmenorrhoea, pharmacists should remain aware that discussing menstrual problems is potentially embarrassing for the patient and should therefore be done in private. The terms heavy menstrual loss and periods are preferable to menorrhagia when discussing these problems with patients. In most cases, where women present with symptoms of menorrhagia, there is no

underlying pathology. Careful history taking is needed to support the decisions about whether to treat or refer.

What you need to know

Age

Heaviness

Menstrual cycle – length, number of days of menstruation

Symptoms – bleeding pattern; impact on quality of life

Duration – how long have the periods been heavy?

Previous history – previous nature of periods

Significance of questions and answers

Age

Most patients presenting with menorrhagia are aged over 30. The most common causes of heavy periods in women aged under 30 are either an intrauterine device (IUD) (coil) or anovulatory cycles. Menstrual periods are not at regular intervals in the latter case.

Heaviness

A description of the symptoms is needed, as well as of how they are affecting the woman's life. It is important to establish if menstrual loss is greater than the woman feels she can reasonably manage. It is worth getting information on how often the patient has to change sanitary protection (towels or tampons). If the patient has to wear tampons and towels simultaneously, flow is heavy; this is called 'flooding' and can lead to bloodstained clothes. The passage of clots also represents heavy flow. Clots may be painful as they pass through the cervix. Also ascertain the effect on personal life, including any time off work. If these symptoms are severe, the patient should be referred to the GP surgery.

It is also sensible to ask about past medical problems, including clotting disorders, thyroid status and gynaecological history. Check if the patient looks pale or has symptoms of anaemia, particularly tiredness, weakness or dizziness. Platelet abnormality may cause easy bruising or bleeding gums. Thyroid disorders can cause menorrhagia. If anaemia, clotting disorders or thyroid problems are likely, the patient should see the GP.

Menstrual cycle

A normal cycle is between 21 and 35 days in duration and with no more than 3 days' variation in the length of individual cycles. The first day of a period

is counted as the first day of the menstrual cycle. A period normally lasts 2–7 days, with the average period being 5 days long. If a patient's period was previously regular and this has changed, pathology should be ruled out and referral is indicated.

Other symptoms

Specific questions can check for the presence of other symptoms that may suggest an underlying condition:

- Fibroids – dysmenorrhoea, pelvic pain
- Endometriosis – dysmenorrhoea, pain on intercourse (dyspareunia), pelvic pain
- PID/pelvic infection – fever, vaginal discharge, pelvic pain, intermenstrual and/or post-coital pain
- Endometrial cancer – post-coital bleeding, intermenstrual bleeding, pelvic pain

When to refer

Very heavy periods – clots or ‘flooding’

Irregular periods

Anaemia suspected

Symptoms suggesting clotting disorder

Anticoagulants or antiplatelets

Presence of abnormal vaginal discharge

Intermenstrual and/or post-coital bleeding

Pelvic pain

Pain on intercourse (dyspareunia)

Presence of fever

Treatment timescale

If menorrhagia is not improved after three cycles of treatment, referral to the doctor would be advisable.

Management

There is one treatment available OTC, *tranexamic acid*. The use of NSAIDs for dysmenorrhoea may also help reduce menstrual loss.

Tranexamic acid

Oral *tranexamic acid* reduces the volume of menstrual blood loss by about half through its antifibrinolytic effect, which increases blood clotting. It can be used

in women aged 18–45 whose cycle is regular (21–35 day cycles with no more than 3 days variation in the length of individual cycles). The treatment can be taken for up to 4 days per cycle, starting on the first day of the period. The usual dose is 1 g (2× 500 mg tablets), taken three times a day; this can be increased to four times a day if the bleeding is particularly heavy (maximum daily dose 4 g).

Contraindications

Tranexamic acid should not be taken by women with current or previous thromboembolic disease, those with a family history of such problems and those taking anticoagulants or oral contraception. Excretion of *tranexamic acid* is almost exclusively by the kidney; therefore, the treatment is not advised for women with mild-to-moderate renal insufficiency. Haematuria (blood in the urine) from upper urinary tract pathology is a contraindication because clotting may cause obstruction in the ureter.

An unusual cause of menorrhagia is endometrial cancer. This is usually associated with irregular periods, prolonged periods or abnormal bleeding between periods. Risk factors for endometrial cancer include obesity, diabetes, family history, polycystic ovary syndrome, unopposed oestrogen treatment or *tamoxifen*. OTC *tranexamic acid* is not recommended in these circumstances. If there is any concern about this possibility, the patient should see the doctor.

Cautions

Breastfeeding women should only take *tranexamic acid* on the advice of their doctor because the drug passes into breast milk.

Side effects

Nausea, vomiting and diarrhoea may occur; reducing the dose may help. Any patient who experiences visual disturbances while taking *tranexamic acid* should be referred to the doctor.

Other advice

There is no evidence that menorrhagia can be reduced by exercise or dietary changes.

Vaginal thrush

Vaginal candidiasis (thrush) is a symptomatic inflammation of the vagina and/or vulva caused by a superficial fungal infection with *candida yeast*.

Women often seek to buy products for feminine itching, which may be due to this infection, and may be embarrassed to seek advice or answer what they see as intrusive questions from the pharmacist. Vaginal pessaries, intravaginal creams containing imidazole antifungals and oral *fluconazole* are effective treatments if candida is the cause. Before making any recommendation, it is vital to question the patient to identify the probable cause of the symptoms. Advertising of these treatments direct to the public means that a request for a named product may be made. It is important to confirm its appropriateness.

What you need to know

Age

Child, adult, elderly

Duration

Symptoms

Itch

Soreness

Discharge (colour, consistency, odour)

Symptoms in partner

Dysuria

Dyspareunia

Threadworms

Previous history

Medication

Significance of questions and answers

Age

Vaginal candidiasis (thrush) is common in women of childbearing age, and pregnancy and diabetes are strong predisposing factors. This infection is rare in children and in postmenopausal women because of the different environment in the vagina. In contrast to women of childbearing age, where vaginal pH is generally acidic (low pH) and contains glycogen, which candida feeds on, the vaginal environment of children and menopausal women tends to be alkaline (high pH) and does not contain large amounts of glycogen.

Oestrogen, present between adolescence and the menopause, leads to the availability of glycogen in the vagina and also contributes to the development of a protective barrier layer on the walls of the vagina. The lack of oestrogen in children and postmenopausal women means that this protective barrier is not present, with a consequent increased tendency to bacterial (but not fungal) infection.

In the United Kingdom, the Commission on Human Medicines (CHM) recommends that women under 16 or over 60 years complaining of symptoms

of vaginal thrush should be referred to their doctor rather than be treated with OTC products. Child abuse may be the source of vaginal infection in girls, making referral even more important. Vaginal thrush is rare in older women and other causes of the symptoms need to be excluded.

Duration

Some women delay seeking advice from the pharmacist or doctor because of embarrassment about their symptoms. They may have tried an OTC product or a prescription medicine already (see 'Medication' below).

Symptoms

Itch (pruritus)

Allergic or irritant dermatitis may be responsible for vaginal itch. It is worth asking whether the patient has recently used any new toiletries (e.g. soaps, bath or shower products). Vaginal deodorants are sometimes the source of allergic reactions. Regular washing with warm water is all that is required to keep the vagina clean and maintain a healthy vaginal environment. The itch associated with thrush is often intense and burning in nature. Sometimes the skin may be excoriated and raw from scratching when the itch is severe.

Discharge

In women of childbearing age, the vagina naturally produces a watery discharge, and cervical mucus is also produced, which changes consistency at particular times of the menstrual cycle. Such fluids may be watery or slightly thicker, with no associated unpleasant odour. Some women worry about these natural secretions and think they have an infection.

The most common infective cause of vaginal discharge is candidiasis. Vaginal candidiasis may be (but is not always) associated with a discharge. The discharge is classically cream coloured, thick and curdy in appearance but, alternatively, may be thin and rather watery. Other vaginal infections may be responsible for producing discharge which are markedly different from that caused by thrush. The discharge associated with candidal infection does not usually produce an unpleasant odour, in contrast to that produced by bacterial infection. Infection leading to discharge described as yellow or greenish is more likely to be bacterial in origin, for example, chlamydia or gonorrhoea. Another common cause, bacterial vaginosis (BV), is characterised by a white/grey watery discharge that has a fishy odour.

Partner's symptoms

Men may be infected with candida without showing any symptoms. Typical symptoms for men are an irritating rash on the penis, particularly on the glans.

This must be treated at the same time as vaginal thrush; otherwise reinfection will occur.

Dysuria (pain on urination)

Dysuria may be present and scratching the skin in response to itching might be responsible, although dysuria may occur without scratching. Sometimes the pain on passing urine may be mistaken for cystitis by the patient. If a woman complains of cystitis, it is important to ask about other symptoms (see section on Cystitis, earlier in this chapter). The CHM advises that lower abdominal pain and dysuria are indications for referral because of their possible link with kidney infections.

Dyspareunia (painful intercourse)

Painful intercourse may be associated with infection or a sensitivity reaction where the vulval and vaginal areas are involved.

Threadworms

Occasionally, threadworm infestation can lead to vaginal pruritus and this sometimes occurs in children. The patient would also be experiencing anal itching in such a case. The pharmacist should refer girls under the age of 16 years to the doctor if there are vaginal symptoms.

Previous history

Recurrent thrush is a problem for some women, and many recognise that it follows antibiotic treatment (see below). Recurrent infections are defined as 'four or more episodes of symptomatic candidosis annually'. The CHM advice on supplying OTC products for vaginal thrush is that any woman who has experienced more than two attacks of thrush during the previous 6 months should be referred to the doctor. Repeated thrush infections may indicate an underlying problem or altered immunity, and further investigation is needed.

Pregnancy

During pregnancy almost one in five women will have an episode of vaginal candidiasis. This high incidence has been attributed to hormonal changes with a consequent alteration in the vaginal environment, leading to the presence of increased quantities of glycogen. Any pregnant woman with thrush should be referred to the doctor.

Diabetes

It is thought that candida is able to grow more easily in people with diabetes because of the higher glucose levels in blood and tissues. Sometimes recurrent

vaginal thrush can be a sign of undiagnosed diabetes or, in a patient who has been diagnosed, of poor diabetic control.

Sexually transmitted diseases

In the United Kingdom, the CHM insists that women who have previously had a sexually transmitted infection should not be sold OTC treatments for thrush. The thinking behind this ruling is that with a previous history of STD, the current condition may not be thrush or may include a dual infection with another organism.

Pharmacists may be concerned about how patients will respond to personal questions. However, it should be possible to enquire about previous episodes of these or similar symptoms in a tactful way, for example, by asking 'Have you ever had anything like this before?' and if 'Yes', 'Tell me about the symptoms. Were they exactly the same as this time?' and about the partner, 'Has your partner mentioned any symptoms recently?'.

Oral corticosteroids

Patients taking oral corticosteroids may be at increased risk of candidal infection.

Immunocompromised patients

Patients with HIV or AIDS are prone to recurrent thrush infection because the immune system is unable to combat them. People with leukaemia or lymphoma are also prone. Patients undergoing cancer chemotherapy are similarly at risk of infection.

Medication

Oral contraceptives

It has been suggested that these are linked to the incidence of vaginal candidiasis; however, oral contraceptives are no longer considered a significant precipitating factor.

Antibiotics

Antibiotics are notorious for causing thrush, and this is one reason they should be avoided unless absolutely necessary. Broad-spectrum antibiotics wipe out the natural bacterial flora (lactobacilli) in the vagina. These organisms keep candida suppressed, and their absence can predispose to candidal overgrowth. Some women find that an episode of thrush follows every course of antibiotics they take. The doctor may prescribe an antifungal at the same time as the antibiotic in such cases.

Local anaesthetics

Vaginal pruritus may actually be caused by some of the products used to relieve the symptom. Creams and ointments advertised for 'feminine' itching often contain local anaesthetics – a well-known cause of sensitivity reactions. It is important to check what, if any, treatment the patient has tried before seeking your advice.

When to refer

The UK CHM list (when supply of treatment by the pharmacy is not appropriate):

- First occurrence of symptoms
- Known hypersensitivity to imidazoles or other vaginal antifungal products
- Pregnancy or suspected pregnancy
- More than two attacks in the previous 6 months
- Previous history of STD
- Exposure to partner with STD
- Patient under 16 or over 60 years
- Abnormal or irregular vaginal bleeding
- Any bloodstaining of vaginal discharge
- Vulval or vaginal sores, ulcers or blisters
- Associated lower abdominal pain or dysuria
- Adverse effects (redness, irritation or swelling associated with treatment)
- No improvement within 7 days of treatment

Management

Both single-dose intravaginal and oral imidazole preparations are effective in treating vaginal candidiasis and give 80–95% clinical and mycological cure rates. A Cochrane review found them to be equally effective. Topical preparations may give quicker initial relief from itch or soreness, probably due to the vehicle. They may sometimes exacerbate burning sensations initially, and oral treatment may be preferred if the vulva is very inflamed. Oral therapies are effective, but it may be 12–24 h before symptoms improve. Some women find oral treatment more convenient. Patients find single-dose products very convenient, and adherence is higher than with treatments involving several days' use. The patient can be asked whether she prefers a pessary, vaginal cream or oral formulation. Some experts argue that oral antifungals should be reserved for resistant cases. Pharmacists will use their professional judgement together with patient preference in making the decision on treatment.

The pharmacist should make sure that the patient knows how to use the product. An effective way to do this is to show the patient the manufacturer's leaflet instructions. Where external symptoms are also a problem, an imidazole

cream (*miconazole* or *clotrimazole*) can be useful in addition to the intravaginal or oral product. The cream should be applied twice daily, morning and night.

The imidazoles can cause sensitivity reactions, but these seem to be rare. Oral *fluconazole* interacts with some drugs: anticoagulants, oral sulphonylureas, *ciclosporin* (*cyclosporin*), *phenytoin*, *rifampicin* and *theophylline*. The effects of single-dose *fluconazole* rather than continuous therapy with the drug in relation to interactions are not clear. Theoretically, single-dose use is unlikely to cause problems, but in a small study of women taking *warfarin*, the prothrombin time was increased.

Reported side effects from oral *fluconazole* occur in some 10% of patients and are usually mild and transient. They include nausea, abdominal discomfort, flatulence and diarrhoea. Oral *fluconazole* should not be recommended during pregnancy, where it may affect the foetus, or for nursing mothers because it is excreted in breast milk.

Practical points

Privacy

Patients seeking advice about vaginal symptoms may be embarrassed, fearing that their conversation with the pharmacist will be overheard. It is therefore important to ensure privacy. Requests for a named product may be an attempt to avoid discussion. However, a careful response is needed to ensure that the product is appropriate.

Treatment of partner

Men may be infected with candida without showing any symptoms. Typical symptoms for men are an irritating rash on the penis, particularly on the glans. While expert opinion is that male partners without symptoms should not be treated, this remains an area of debate. Symptomatic males with candidal balanitis (penile thrush) and whose female partner has vaginal thrush should be treated. An imidazole cream can be used twice daily on the glans of the penis, applied under the foreskin for 7 days. Oral *fluconazole* can also be used.

Testing kit

A test kit is available OTC and uses vaginal pH (tested using a swab, which changes colour if pH is high) together with a checklist of symptoms for the patient to identify a 'probable condition' (thrush or BV). The manufacturers state that the test is less accurate if (i) less than 1 day before or after a period, (ii) there are signs that a period has started or there is any vaginal bleeding, (iii) used less than 12 h since sexual intercourse or after using a vaginal douche and (iv) in menopausal women, in whom pH is likely to be elevated.

'Live' yoghurt

Live yoghurt contains lactobacilli, which are said to alter the vaginal environment, making it more difficult for candida to grow. It has been suggested that women prone to thrush should regularly eat live yoghurt to increase the level of lactobacilli in the gut. However, data are inconclusive as to the effectiveness of *Lactobacillus*-containing yoghurt, administered either orally or vaginally, in either treating or preventing thrush. Direct application of live yoghurt onto the vulval skin and into the vagina on a tampon has been recommended as a treatment for thrush. This process is messy, and some women have reported stinging on application, which is not surprising if the skin is excoriated and sore. It is otherwise harmless, although evidence of effectiveness is lacking.

Prevention

Thrush thrives in a warm environment. Women who are prone to attacks of thrush may find that avoiding nylon underwear and tights and using cotton underwear instead may help to prevent future attacks.

The protective lining of the vagina is stripped away by foam baths, soaps and douches, and these are best avoided. Vaginal deodorants can themselves cause allergic reactions and should not be used. If the patient wants to use a soap or cleanser, an unperfumed, mild variety is best.

Since candida can be transferred from the bowel when wiping the anus after a bowel movement, wiping from front to back should help to prevent this.

Vaginal thrush in practice

Case 1

Julie Parker telephones your pharmacy to ask for advice because she thinks she might have thrush. She tells you she didn't want to come to the pharmacy as she was concerned that the conversation might be overheard. When you ask why she thinks she may have thrush, she tells you that she was recently prescribed a week's course of *metronidazole*. She had her first baby about 6 months ago and has had some skin irritation following an episiotomy. When she went back to the GP after taking the *metronidazole*, she was prescribed a second course of *metronidazole* plus a course of *amoxicillin* for 1 week and a swab was taken. She didn't hear anything further for about 2 weeks until the GP rang her and asked if she had been told the results of the swab (she hadn't). She was asked to go and collect a prescription from the GP. She hasn't brought it in yet to be dispensed, but it is for a pessary.

The pharmacist's view

This sort of query is difficult to deal with because the pharmacist does not have access to diagnosis or test results. Increasing use of Summary Care Records may

help identify the proposed treatment. It sounds as though there may have been a communication problem initially and a delay in the test results being dealt with. I would ask what the name of the pessary on the prescription is and then explain what it's used for. I would explain that thrush sometimes happens after a course of antibiotics and that the pessary is likely to cure it.

The GP's view

In the absence of clear information, it would probably be best for Julie Parker to go back and see her GP who has already given her two courses of treatment and taken a swab. She needs to find out exactly what the GP has been treating her for and what the swab result is and to be able to explain to her GP what her current symptoms are. *Metronidazole* is often prescribed for BV. It could be that she has also developed thrush especially as she has been taking *amoxicillin*. It is always important for patients to know how and when they can get their results. Often patients understandably assume that if they don't hear from their doctors' surgery, the result is negative or normal. This is potentially dangerous, and it is always important for the person taking laboratory samples to explain clearly how and when the results will be available and agree this with their patient. In this situation it is also important for the prescriber to explain the rationale for the prescription that has been left for the patient at the surgery.

Case 2

Helen Simpson is a student at the local university. She asks one of your assistants for something to treat thrush and is referred to you. You walk with Helen to a consulting room in the shop where your conversation will not be overheard. Initially, Helen is resistant to your involvement, asking why you need to ask all these personal questions. After you have explained that you are required to obtain information before selling these products and that, in any case, you need to be sure that the problem is thrush and not a different infection, she seems happier.

She has not had thrush or any similar symptoms before but described her symptoms to a flatmate who made the diagnosis. The worst symptom is itching, which was particularly severe last night. Helen has noticed small quantities of a cream-coloured discharge. The vulval skin is sore and red. Helen has a boyfriend, but he hasn't had any symptoms. She is not taking any medicines and does not have any existing illnesses or conditions. Since arriving at the university a few months ago, she has not registered with the university's health centre and has therefore come to the pharmacy hoping to buy a treatment.

The pharmacist's view

The key symptoms of itch and cream-coloured vaginal discharge make thrush the most likely candidate here. Helen has no previous history of the condition,

and, unfortunately, the regulations preclude the recommendation of an intravaginal azole product or oral *fluconazole* in such a case. An azole cream would help to ease the itching and soreness of the vulval skin. As her boyfriend is not experiencing symptoms, he does not need treatment. However, because external treatment alone is unlikely to prove effective in eradicating the infection, it would be best for Helen to see a nurse or a doctor.

She would be well advised to register at the university health centre. She does not necessarily have to see a doctor as often nurses at these centres have considerable experience of managing these problems. You can explain to her that she can seek treatment on a temporary resident basis but that it would be best to get proper medical cover.

The doctor's view

The history is very suggestive of thrush and treatment should include an appropriate intravaginal preparation. However, a sexually transmitted infection is also a possibility, so a careful history is necessary. Chlamydia screening should be considered. The case history highlights some of the difficulties of asking personal questions about genitalia and sexual activity. These difficulties are also likely to occur in the doctor's surgery. It is important for the nurse or doctor to carefully explore the patient's ideas, understanding, concerns and preconceptions of her condition. Many nurses and doctors would prescribe without an examination if there is a clear history and examine and take appropriate microbiology samples only if treatment fails.

Emergency hormonal contraception

Emergency contraception is an intervention aimed at preventing unintended pregnancy after unprotected sexual intercourse or contraceptive failure. Dealing with requests for emergency hormonal contraception (EHC) requires sensitive interpersonal skills from the pharmacist. Enabling privacy for the consultation is essential, and the wider availability of consultation areas and rooms has improved this. Careful thought needs to be given to the wording of questions. Some 20% of women will go to a pharmacy other than their regular one because they want to remain anonymous.

What you need to know

Age

Why EHC is needed – confirmation that unprotected sex or contraceptive failure has occurred

When unprotected sex/contraceptive failure occurred

Could the woman already be pregnant?

Other medicines being taken

Significance of questions and answers

Age

EHC can be supplied OTC as a P medicine for women aged 16 years and over. For women under 16 years, the pharmacist should refer to the doctor or family planning service. In the NHS, EHC may also be supplied under PGDs according to a locally agreed-upon protocol. Some of these schemes include community pharmacies, and, if the PGD so states, supply can also be made to a woman under 16 years.

Why EHC is needed

The most common reasons for EHC to be requested are failure of a barrier contraceptive method (e.g. condom that splits), missed contraceptive pill(s) and unprotected sexual intercourse. In the case of missed pills, the pharmacist should follow the guidance of the Faculty of Family Planning and Reproductive Healthcare Clinical Effectiveness Unit (*Emergency Contraception: Guidance*, March 2017 [updated December 2017], at www.ffprhc.org.uk). A summary of this guidance is available in the *BNF* for individual types of pill (the online version of the *BNF* is updated monthly – <https://bnf.nice.org.uk/>).

When unprotected sex/contraceptive failure occurred

EHC needs to be started within 120 h of unprotected intercourse (*ulipristal*) or 72 h (*levonorgestrel*). The sooner it is started, the higher is its efficacy. If hormonal EHC is unsuitable for the woman, she can be referred to have an IUD fitted as a method of emergency contraception, providing this is done within 120 h of unprotected intercourse.

Requests are sometimes made for EHC to be purchased for use in the future (advance requests, for example, to take on holiday just in case). This is considered below.

Could the woman already be pregnant?

Any other episodes of unprotected sex in the current cycle are important. Ask whether the last menstrual period was lighter or later than usual. If in doubt, the pharmacist can suggest that the woman has a pregnancy test. EHC will not work if the woman is pregnant. There is no evidence that EHC is harmful to the pregnancy.

Other medicines being taken

Medicines that induce specific liver enzymes have the potential to increase the metabolism of oral EHC and thus to reduce its efficacy. Women taking the

following medicines should be referred to an alternative source of supply of EHC:

Anticonvulsants (*carbamazepine, phenytoin, primidone, phenobarbital (phenobarbitone)*)

Rifampicin, rifabutin

Griseofulvin

Ritonavir

St John's wort

There is an interaction between *ciclosporin* and *levonorgestrel*. Here, the progestogen inhibits the metabolism of *ciclosporin* and increases levels of the latter.

Treatment timescale

EHC must be started within 120 h of unprotected intercourse for *ulipristal* or 72 h for *levonorgestrel*.

When to refer

Age under 16 years

Longer than 120 h since unprotected sex

Taking a medicine that interacts with EHC

Requests for future use

Management

The hormonal emergency contraceptives *levonorgestrel* and *ulipristal* are available OTC and should be taken as soon as possible after unprotected intercourse for maximum efficacy. *Levonorgestrel* is effective if taken within 72 h (3 days) of unprotected intercourse, and efficacy decreases with time. *Ulipristal*, a progesterone receptor modulator, is effective if taken within 120 h (5 days) of unprotected intercourse. A replacement dose should be taken if vomiting occurs within 2 h of taking *levonorgestrel* or within 3 h of taking *ulipristal*.

Ulipristal

Dosage

Ulipristal is taken as a 30 mg single dose as soon as possible after unprotected intercourse.

Side effects

The most frequently reported side effects in clinical trials were headache (around one in five women) and nausea (around one in eight women).

Interactions

If the patient is taking a CYP3A4 inducer (e.g. *phenytoin, St John's wort*), the efficacy of *ulipristal* may be reduced.

Absorption of *ulipristal* may be reduced in patients who are taking medicines that increase the gastric pH; the clinical significance of this effect is unknown.

Ulipristal may reduce the action of COC and progestogen-only contraception.

Breastfeeding

The manufacturer advises not breastfeeding for 1 week after taking *ulipristal* and during this time to continue to express and discard the milk.

Women who should not take *ulipristal*

The product licence for the P medicine states that it should not be taken by a woman who is pregnant (because it will not work) or has severe hepatic dysfunction. Use in women with severe asthma treated with oral steroids is not recommended.

Levonorgestrel

Dosage

Levonorgestrel EHC is taken as a dose of one 1.5 mg tablet as soon as possible after unprotected intercourse.

Interactions

If the patient is taking a CYP3A4 inducer (e.g. *phenytoin, St John's wort*), the efficacy of *levonorgestrel* may be reduced.

Side effects

The most frequently reported side effects in clinical trials were headache (around one in five women) and nausea (around one in eight women). Far fewer women (1%) actually vomited. Although the likelihood of vomiting is small, absorption of *levonorgestrel* could be affected if vomiting occurs within 2 h of taking the tablet. Another dose is needed as soon as possible.

Women who should not take levonorgestrel

The product licence for the P medicine states that it should not be taken by a woman who is pregnant (because it will not work), has severe hepatic dysfunction or has severe malabsorption (e.g. Crohn's disease). Repeated administration within a menstrual cycle is not recommended.

Advice to give when supplying EHC

1. The BNF states that when supplying hormonal emergency contraception, women should be advised:
 - That their next period may be early or late
 - That a barrier method of contraception needs to be used until the next period
 - To seek medical attention promptly if any lower abdominal pain occurs because this could signify an ectopic pregnancy
 - To return in 3–4 weeks if the subsequent menstrual bleeding is abnormally light, heavy or brief or is absent or if she is otherwise concerned (if there is any doubt as to whether menstruation has occurred, a pregnancy test should be performed at least 3 weeks after unprotected intercourse).
2. If the next period is more than 5 days (*levonorgestrel*) or 7 days (*ulipristal*) later than usual, the woman should have a pregnancy test.
3. If the woman takes the COC, she and her partner should use condoms in addition to continuing the pill until she has taken it for 7 consecutive days.
4. EHC does not equate to ongoing contraception, nor does it offer protection against STD.

Practical points

1. A PGD is available in many areas for pharmacists to supply EHC on the NHS. The PGD was introduced to enable quicker access for EHC to women who are not covered by the OTC product licence (e.g. those under 16 years) and to overcome the difficulties faced by some women in relation to the cost of OTC EHC (up to £25). Pharmacists supplying under a PGD undertake additional training, follow a closely defined protocol and keep records of their supplies.
2. Pharmacists need to know local sources of family planning services and their opening hours so that they can refer if, for some reason, it is not appropriate for the pharmacy emergency hormonal contraception (P EHC) to be supplied. Knowledge of local services is also important for advice to women who may wish to obtain regular contraception and information about STDs.
3. EHC (*ulipristal*) can be used on more than one occasion within the same menstrual cycle, but this is likely to disrupt the cycle. There are no safety concerns about repeated use of EHC, but a woman doing so would find it

difficult to keep track of her cycle because of the changes EHC can cause. Some women may believe that repeated courses of EHC are a substitute for other contraceptive methods. EHC used in this way is less effective than other methods of contraception, and the risk of becoming pregnant is higher; it should be discouraged.

4. On advance supply of EHC, Royal Pharmaceutical Society (RPS) guidance states that 'if faced with a request for advanced supply of EHC the pharmacist should use their professional judgement to decide the clinical appropriateness of the supply'. The RPS suggests the following:

Declining repeated requests for advance supply and advising clients to seek more reliable methods of contraception.

Providing reminders to ensure that any prospective use of EHC is safe, effective and appropriate.

In a trial of wider access to EHC involving over 2000 women, those who had advance supplies at home were more likely to use EHC when required, without compromising regular contraceptive use or increasing risky sexual behaviour.

EHC in practice

Case 1

A customer whom you recognise as a regular comes into the pharmacy and asks to speak to the pharmacist. She says that she thinks she needs EHC and you move to the consulting room in the pharmacy. On questioning, you find out that she takes the progestogen-only pill (POP) but was away from home on business earlier this week and missed one pill, as she forgot to take them with her. The packet says that other contraception will be needed for 7 days. She had sex last night and says she had not had the chance to get any condoms. She is not taking any medicines other than the pill and is not taking any herbal remedies. Her last period was normal and there have been no other episodes of unprotected sex.

The pharmacist's view

Many of the women who request EHC are aged between 20 and 30 years and are regular users of contraception, but something goes wrong. This woman should take EHC and the pharmacist can go through the PIL with her to advise on timing of doses and what to do about side effects should they occur. The pharmacist can also sell condoms/spermicide and reinforce the advice about continuing other contraceptive methods until her POP has been taken for 7 consecutive days to regain the contraceptive effectiveness.

The doctor's view

The pharmacist's approach is appropriate. It is likely that the consultation was made easier because the pharmacist already had a professional relationship with the patient, which makes it more comfortable for her to seek advice in the first place. It would be useful for the customer to review the appropriateness of her POP and whether she has missed pills before. She could be advised to have a follow-up with her pill prescriber.

Case 2

It is a Saturday afternoon about 4.30 pm. A young woman comes into your pharmacy, asks your counter assistant for EHC and is referred to you. You move to the consultation area of the pharmacy, and in response to your questions she tells you that she had intercourse with her boyfriend last night for the first time. No contraception was used. She is not taking any medicines or herbal remedies. Her periods are fairly regular about every 30 days. You think the woman may be under 16 years.

The pharmacist's view

This woman had unprotected sex 12–18 h ago. If she is under 16 years, the use of P EHC would be outside the terms of the product licence and the pharmacist could ask her age. Some pharmacies can supply EHC on the NHS to under 16s through a PGD. If the area does not have a PGD, the pharmacist will have to consider what other methods of access are available. A walk-in centre, GP out-of-hours centre or accident and emergency department might be available, and the timescale for use of *ulipristal* is up to 120 h, so an appointment on Monday to access it would still be within this. The pharmacist should tactfully suggest that she could get advice on regular contraception and discuss whether she would prefer to get this from her GP or local family planning service.

The doctor's view

Referral does depend on her age, which can be difficult to assess, and whether or not there is a local PGD. One of the problems here is the day and time of presentation. It is unlikely that the local family planning service would be open late on a Saturday. She could wait until Monday and that would be OK for *ulipristal*, but as a general principle it would be better to take the EHC as soon as possible. A 'window of opportunity' is provided by her attendance. The best option would be to phone the on-call GP service. This could probably be done in the pharmacy, and the patient could discuss what to do with the duty GP or nurse (or the pharmacist could do this, with the patient's permission). If the patient turns out to be under age, the GP has a duty to advise her to discuss this with her parents. The General Medical Council (GMC) guidance is that the GP

can prescribe contraceptives to young people under 16 years without parental consent or knowledge, provided that:

- a) They understand all aspects of the advice and its implications (they are 'competent').
- b) You cannot persuade the young person to tell their parents or to allow you to tell them.
- c) In relation to contraception and sexually transmitted infections, the young person is very likely to have sex with or without such treatment.
- d) Their physical or mental health is likely to suffer unless they receive such advice or treatment.
- e) It is in the best interests of the young person to receive the advice and treatment without parental knowledge or consent.

The GMC also say the following: "You should keep consultations confidential even if you decide not to provide advice or treatment".

Case 3

A woman asking for EHC is referred to you. She thinks that she may be pregnant as she takes *Microgynon 30®*, a COC, and missed two pills this week, which is during the second week of the packet. This brand of pill contains 30 µg *ethinyloestradiol*. She had sex last night. Her last period was normal.

The pharmacist's view

The Faculty of Sexual and Reproductive Healthcare advise that EHC is not needed unless the woman has missed two pills during the first week of taking it – this patient missed the pills in the second week. This assumes that she took the pill every day during the first 7 days. The woman should avoid sexual intercourse or use condoms until seven consecutive pills have been taken. The pharmacist should discuss this with the woman. If she continues to be concerned and still wants to take EHC, the pharmacist could supply it as there are no safety concerns. The timing of the next period may be disrupted. The pharmacist could also suggest that she buys some condoms and spermicide.

The doctor's view

The pharmacist's advice is appropriate. The Faculty of Sexual and Reproductive Healthcare advice is complicated – a useful summary can be found in the BNF and is worth consulting for individual cases. Note that advice for the newer pills *Qlaira®* and *Zoely®* is different. It would be useful to know if she has had similar problems before. If she has had several events like this, changing to an

IUD or some other form of long-acting contraception may be a better option for her.

Case 4

“It was the week before I was due to go travelling in South America with my boyfriend for 6 months during my gap year. We’re used to using condoms but I’m worried in case one splits while we’re away. So I’m going to a pharmacy to see if I can buy the emergency contraception pill to take with me. I don’t want to go to the doctors to ask for it.”

This woman is now in your pharmacy asking to purchase EHC. Use the following chart to use your professional judgement and decide how to deal with the request. What other contraception options might the patient be advised to consider (if there is time)?

Potential harm to patient from not supplying	Potential harm to patient from supplying	Potential benefit to patient from supplying	Consequences for pharmacist of supplying/not supplying	What would I do if the patient were me/my spouse/my parent/my child? Is this decision different from the one I have reached for the patient? Why?
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Common symptoms in pregnancy

Constipation (see Chapter 2 Gastrointestinal Tract Problems: Constipation)

Constipation can occur in pregnancy because of the effect of hormonal changes. These changes reduce the contractility of the intestine, slowing down the transit of waste products. This in turn allows more fluid to be extracted through the bowel wall drying and hardening the faecal matter. Some pregnant women take oral *iron* preparations for anaemia, which can aggravate constipation. It makes sense to try to prevent this problem by attention to diet (fruit, vegetables and whole grain cereal, lentils and pulses) and increased fluid intake. If the constipation is aggravated by *iron* tablets, it may be worthwhile discussing a change of preparation with the GP.

Laxatives that are not absorbed, like *lactulose* and *ispaghula husk*, are often used in pregnancy. Stimulant laxatives can be used but should only be considered if other interventions fail; *senna* is sometimes used for this purpose, but this should be avoided towards the end of the pregnancy as it can stimulate the uterus.

Haemorrhoids (see Chapter 2 Gastrointestinal Tract Problems: Haemorrhoids)

Haemorrhoids (piles) can be aggravated by constipation, and in pregnancy relaxation of the muscles in the pelvic floor and anus can lead to dilatation and swelling of the vascular cushions in the anal canal (haemorrhoids or piles). The dilatation is aggravated by the influence of the pregnancy hormones and constipation. Later in pregnancy, as the baby's head pushes down into the pelvis, further pressure is exerted on these vessels, aggravating haemorrhoids.

In the management of haemorrhoids, it is important to avoid constipation, take regular exercise to improve circulation, avoid standing for long periods and discuss with the pharmacist, midwife or GP an appropriate OTC treatment.

Backache

As pregnancy progresses, the ligaments of the lower back and pelvis become softer and stretch. Posture also changes, leading to an increased forward curve in the lumbar (lower) spine, which is called a lordosis. The change in the ligaments and the lordosis can lead to low backache.

Occasional use of *paracetamol* is acceptable in pregnancy if a painkiller is needed, but this is best avoided, if possible. Common-sense techniques avoiding heavy lifting, awkward bending and twisting are advisable, as is a good supportive mattress. Further help may be gained from an obstetric physiotherapist and chiropractor or osteopath.

Cystitis (see section on Cystitis, earlier in this chapter)

Increased frequency of urination is common in pregnancy and, although inconvenient, is medically unimportant. When it is associated with any signs of cystitis such as discomfort on urination, discolouration or offensive smell of urine, urgent referral to the GP is important. When cystitis occurs in pregnancy, the infection can move upwards from the bladder to the kidneys, causing a much more serious infection. If there is any doubt about cystitis being present, it is important to have the urine sent for analysis.

Headache

Headaches can be a common problem for some women in pregnancy. It is best to have a balance of exercise, rest and relaxation. Occasional *paracetamol* can be taken, but it is generally advisable to avoid medication during pregnancy. Occasionally persistent or severe headaches are due to raised blood pressure, particularly late in pregnancy. This is a severe complication, and, if suspected, it is important to get the midwife or GP to check for this.

Heartburn (see Chapter 2 Gastrointestinal Tract Problems: Heartburn)

Heartburn in pregnancy is caused by the relaxation of the muscles in the lower oesophagus, allowing the acid stomach contents to regurgitate upwards, causing a burning sensation. It is experienced by most pregnant women, to some extent. This acid reflux can also cause inflammation of the oesophagus – oesophagitis. It is aggravated as pregnancy progresses by pressure on the stomach from the growing baby. It can be reduced by raising the head of the bed, eating small meals and not eating prior to going to bed. A glass of milk may help. If antacid treatment is to be recommended, the pharmacist will need to consider the sodium content and avoid any medicine with a high sodium level. Often, midwives or the doctor may prescribe a suitable product.

Nausea/vomiting (morning sickness)

Nausea and vomiting is very common, especially in early pregnancy: nausea affects 70% and vomiting 60%. It is sometimes misleadingly called morning sickness as it actually can occur anytime during the day. Vomiting ceases by the 16th week in 90% of women. It is thought to be caused by the surge in hormone levels. It is important to take plenty of rest and get up in the mornings slowly, drink plenty of fluids, avoid food and smells that aggravate and eat bland foods. Ginger may be helpful. There are some trials that suggest that ginger reduces nausea and vomiting, but they all involve small numbers of people. The evidence for acupressure and acupuncture is inconclusive.

Vaginal discharge

A change in the normal vaginal secretions occurs in most women during pregnancy, and they tend to become more profuse. Some women are concerned by this and may ask for advice. Providing that the discharge is clear or white and non-offensive, it is a normal response to pregnancy. If, however, the discharge has an unpleasant odour, is coloured or is associated with symptoms such as soreness or irritation, referral to the midwife or GP is advised. The most common infection is thrush and this is usually managed with topical and intravaginal imidazoles.

Skin irritation and stretch marks

Mild skin irritation is common in pregnancy. It is caused by increased blood flow to the skin and by the stretching of the abdominal skin. Wearing loose clothing may help as may perhaps the use of an emollient/moisturising cream. Rarely if the itching becomes severe, a more serious cause may be revealed, that is, obstetric cholestasis (also known as intrahepatic cholestasis of pregnancy).

This condition may be associated with jaundice and can have a deleterious effect on the baby. It is important to refer patients who complain of severe itching.

Often the first sign of stretch marks in pregnancy is itchiness around an area where the skin is becoming thin and pink. These develop into stretch marks, which are narrow pink or purplish streaks on the surface of the skin. They usually appear on the abdomen or sometimes on the upper thighs or breasts. They vary from one woman to another but can cause distress. Reassurance is required that the marks should gradually fade away after pregnancy and become less noticeable, but they probably will not go away completely. Some creams and lotions claim either to prevent stretch marks or to remove stretch marks, but there is no reliable evidence that they work.

Chapter 6

Men's Health

Lower urinary tract symptoms

Lower urinary tract symptoms (LUTS) comprise storage, voiding and post-micturition symptoms affecting the lower urinary tract in older men. Voiding symptoms include weak or intermittent urinary stream, straining, hesitancy, terminal dribbling and incomplete emptying. Storage symptoms include urgency, frequency, urgency incontinence and nocturia. The major post-micturition symptom is post-micturition dribbling, which is common and troublesome.

There are many possible causes of LUTS such as abnormalities or abnormal function of the prostate, urethra, bladder or sphincters. Terms such as 'prostatism', 'symptoms of benign prostatic hyperplasia' (BPH) and 'clinical benign prostatic hyperplasia' are all used to describe LUTS in men. It is now recommended that the term LUTS should be used instead because abnormality or growth in size of the prostate only partly explains urinary symptoms in some men.

LUTS are a major burden for the ageing male population. Age is an important risk factor for LUTS, and the prevalence of LUTS increases as men get older. Troublesome LUTS can occur in up to 30% of men older than 65 years. LUTS rarely cause severe illness, but symptoms can severely affect the quality of life for both the sufferer and their family. Many men perceive their symptoms as being an inevitable part of growing older; they may also be embarrassed by them and may not seek help.

Tamsulosin is available OTC and can be used for up to 6 weeks, with a medical diagnosis required before any further treatment after this time. It was originally licensed for BPH, but the patient information leaflet now also refers

to LUTS. Pharmacists should follow the guidance on OTC *tamsulosin* from the Royal Pharmaceutical Society.

What you need to know

Age

- Nature of the symptoms
- Urinary symptoms – hesitancy, weak stream, urgency
- Duration
- Previous history
- Other symptoms
- Medication

Significance of questions and answers

Age

LUTS is a condition affecting men who are aged over 40.

Nature of the symptoms

Common symptoms include the following:

- A weak urine flow
- Needing to urinate more often, especially at night
- A feeling that the bladder has not emptied properly
- Difficulty starting to pass urine
- Dribbling urine
- Urgency – needing to rush to the toilet

The International Prostate Symptom Score (IPSS) is helpful in assessing symptoms. It includes seven urinary symptoms (incomplete emptying/frequency/interruption/urgency/weak stream/straining/nocturia) and one quality of life question, all graded in severity from one to five. 'Mild' refers to an IPSS of 0–7, 'moderate' refers to an IPSS of 8–19 and 'severe' refers to an IPSS of 20–35. Severity of LUTS should ideally be assessed using a validated scoring system such as the IPSS, and it is good practice to use a questionnaire to elicit information.

Duration

Men may present with symptoms that have lasted for months or even years.

Previous history

A typical history would describe gradual onset of the symptoms covered by the IPSS over a period of time, with symptoms slowly increasing.

Other symptoms

Men who are experiencing other urinary symptoms – pain on micturition, blood in the urine, cloudy urine, fever or incontinence – need to be directed to the GP surgery. If they have concerns about possible prostate cancer, they should also go to the surgery.

Medication

There is a theoretical risk of enhanced hypotensive effect if *tamsulosin* is given concurrently with medicines that reduce blood pressure. *Tamsulosin* should not be recommended for patients taking antihypertensive medicines with significant alpha₁-adrenoceptor antagonist activity: for example, *doxazosin*, *indoramin*, *prazosin*, *terazosin* or *verapamil*.

When to refer

'Red flag' warning symptoms (urgent referral)

- Pain on urination in the last 3 months
- Fever that might be related to a UTI
- Bloody or cloudy urine in the last 3 months (could indicate possible UTI)
- Urinary incontinence (leaking of urine may indicate chronic urinary retention)

Treatment timescale

If urinary symptoms have not improved within 14 days of starting treatment, or are getting worse, the patient should be referred to the doctor.

Management

Mild symptoms may be managed through lifestyle changes. This can include advice on prudent fluid intake and maintaining a healthy lifestyle with a balanced diet and regular exercise (see below). Limiting caffeine and alcohol intake can be particularly helpful.

Tamsulosin

Tamsulosin is an alpha₁-adrenoceptor antagonist ('alpha₁-blocker') that relaxes smooth muscle around the prostate and bladder outlet, resulting in increased urinary flow. OTC *tamsulosin* is indicated for treatment of 'functional symptoms of BPH' in males aged 45–75 years. The dose is one 400 µg capsule swallowed whole after the same meal each day. Symptoms may start to improve within a few days, and it may take at least a month to see the full effect. The more severe the symptoms, the greater the absolute reduction in symptom scores.

Medical review is required to confirm the diagnosis of LUTS and exclude that of prostatic cancer. All patients must see their doctor within 6 weeks of starting treatment for assessment of their symptoms and the confirmation that they may continue to take OTC *tamsulosin* from their pharmacist. The GP would be expected to:

- Assess the man's general medical history and co-morbidities and review current medication to identify possible causes of the LUTS
- Offer a physical examination
- Assess baseline symptoms to allow assessment of subsequent symptom changes
- Offer urine dipstick, prostate-specific antigen and serum creatinine testing as appropriate (see NICE LUTS Guideline CG97 or CKS guidance for further details)
- Refer the man for specialist assessment in some cases

Pharmacy staff will assess eligibility for an initial supply of *tamsulosin* (up to 6 weeks initial treatment: 14 tablets followed by a further 28 tablets if appropriate), while the GP confirms diagnosis and suitability for longer-term OTC treatment. Before making any further OTC supplies, the pharmacist needs to check with the patient that the doctor has carried out a clinical assessment and confirmed that OTC treatment can continue. For patients taking *tamsulosin* longer term, the pharmacist should advise seeing their doctor annually for a clinical review.

Contraindications

Tamsulosin should not be supplied if the LUTS are of recent duration (<3 months). Any patient who has had prostate surgery, problems with liver/kidney/heart or unstable or undiagnosed diabetes should not take OTC *tamsulosin*. Patients who suffer from fainting, dizziness or weakness when standing (postural hypotension) should not be recommended *tamsulosin*. Planned cataract surgery or recent blurred/cloudy vision that has not been examined by a GP or optometrist (may be indicative of unrecognised cataracts) are also contraindications.

Side effects

Dizziness is a common side effect (affects between 1 in 10 and 1 in 100 people). Uncommon side effects (affects between 1 in 100 and 1 in 1000 people) are headache, palpitations, postural hypotension, rhinitis, constipation, diarrhoea, nausea, vomiting, rash, pruritus, urticaria, abnormal (dry) ejaculation, asthenia (weakness). As with other alpha-blockers, drowsiness, blurred vision, dry mouth or oedema can occur.

Cautions

Tamsulosin can, in some individuals, cause a reduction in blood pressure. Signs of orthostatic hypotension are dizziness and weakness on standing. If this occurs, the patient should sit or lie down straight away. A rare problem that has occurred during cataract surgery in some patients taking (or who have previously taken) *tamsulosin* is 'intraoperative floppy iris syndrome' (IFIS). Therefore, *tamsulosin* is not recommended for patients who are due to have cataract surgery.

Herbal remedies

An updated systematic review found no evidence of benefit of the herbal remedy saw palmetto. NICE advise not to offer phytotherapy (herbal remedies), homoeopathy or acupuncture for treating LUTS in men.

Lifestyle advice

Mild symptoms may be relieved by making some lifestyle changes.

- (a) Avoiding alcohol and caffeine. Alcoholic drinks or drinks containing caffeine, such as tea, coffee or cola, can irritate the bladder and result in needing to pass urine more often.
- (b) Drinking less in the evening. Reducing the volume of fluid drunk in the evening and avoiding drinking liquids for 2 h before bedtime. This will reduce the chance of needing to get up in the night to pass urine. It is still important to drink enough fluid earlier on during the day.
- (c) Emptying the bladder. Going to the toilet before long journeys or in situations where a toilet cannot easily be reached.
- (d) Double voiding. This involves waiting a few moments after finishing passing urine and then trying to go again. It can help to empty your bladder more completely.
- (e) Avoid constipation as that can put pressure on the bladder. Increasing the amount of fruit and fibre eaten helps.
- (f) Cold and allergy medicines containing decongestants and antihistamines can affect the bladder muscles and might be best avoided.

Erectile dysfunction

Erectile dysfunction (ED, commonly known as impotence) is the persistent inability to achieve or maintain an erection sufficient for satisfactory sexual performance. It is a common condition and the prevalence increases with age. ED can be associated with conditions such as hypertension, diabetes mellitus, hypercholesterolaemia or cardiovascular disease. Stress from inability to perform can aggravate the condition. Purely psychological causes account for 1 in 10 cases. ED can have adverse effects on emotional well-being and self-esteem.

When *sildenafil* was first made available on prescription in 1998, it was seen to be a major advance in the treatment of this condition but, as it was expensive and demand likely to be high, restrictions were placed on its availability in the NHS. This meant that only men with ED related to certain medical conditions could get prescriptions under the 'Selective List Scheme' (via SLS prescription endorsement). When the drug came off patent in 2014 and cheaper versions became available, these restrictions were lifted for generic *sildenafil* (they still apply for some other drugs). The MHRA have agreed to allow a branded *sildenafil* product to be sold OTC by a pharmacist (P medicine) to patients over the age of 18 years following careful assessment. This provision is to start in 2018.

It is hoped that enabling wider legal access by providing OTC *sildenafil* via the pharmacy will go some way to reduce 'black market' sales of *sildenafil*, such as over the Internet, and should be much safer. To enable the process, a Pharmacy Checklist has been made available, which the patient can complete (use of this is not mandatory). This asks questions about the health of the patient, and if there are doubts about the safety of him using *sildenafil*, he should be referred to the GP for further assessment. The checklist also provides advice to support counselling. Alongside the Pharmacy Checklist, booklets are provided for healthcare professionals giving *Essential Information for Supply*. These materials are available at the electronic Medicines Compendium website (www.medicines.org.uk/emc).

What you need to know

- Age – over 18?
- Medical contraindications (refer to GP if unsure)
 - Heart attack or stroke within the last 6 months
 - Low blood pressure (hypotension < 90/50 mm Hg)
 - Poorly or uncontrolled high blood pressure
 - Unstable angina (chest pain)
 - Irregular heart beat or palpitations (arrhythmia)
 - Heart problems: valve disorders, left outflow obstruction, aortic narrowing or cardiomyopathy
 - Severe heart failure

- Previously diagnosed hepatic disease (including cirrhosis of the liver)
 - Severe renal impairment (for example, eGFR or creatinine clearance < 30)
 - Blood disorders: sickle cell anaemia, multiple myeloma or leukaemia, haemophilia
 - Active stomach or duodenal ulcers
 - Pulmonary arterial hypertension (rare)
 - Peyronie's disease or any other conditions causing deformation of the penis (rare)
 - Loss of vision because of damage to the optic nerve or an inherited eye disease such as retinitis pigmentosa (these are rare)
- Contraindicated medicines
- Nitrates (*nicorandil* or other nitric oxide donors, e.g. *glyceryl trinitrate*, *isosorbide mononitrate* or *isosorbide dinitrate*)
 - 'Poppers' for recreational purposes (e.g. amyl nitrite)
 - *Riociguat* or other guanylate cyclase stimulators for pulmonary hypertension
 - *Ritonavir*
 - CYP3A4 inhibitors, e.g. *saquinavir*, *cimetidine*, *itraconazole* or *ketoconazole*, *erythromycin* or *rifampicin* or *diltiazem*
 - Alpha-blockers, such as *alfuzosin*, *doxazosin* or *tamsulosin*

Significance of questions and answers

Over the years, *sildenafil* has proved to be very effective and very safe for most patients. The main concerns about safety relate to its use in those with recent cardiovascular disease events, such as myocardial infarction or stroke, and its use at the same time as nitrate drugs for angina. The MHRA advise that cardiovascular fitness for sex can be screened for by asking the patient, 'Can you walk briskly for 20 minutes or climb two flights of stairs without getting breathless?'

There are other conditions to look out for (check their ED Pharmacy Checklist and medical history). Many are rare and most patients consulting at the pharmacy requesting *sildenafil* will not have them. If there are concerns, they should be referred to the GP. Sometimes ED drugs can be used in these circumstances under medical supervision.

Some medicines are also contraindicated. The main ones to consider are those taken for angina, but if angina is a consideration, the patient should be referred to the GP in any case.

Management

Sildenafil citrate

Sildenafil is a phosphodiesterase type 5 (PDE5) inhibitor and prevents the breakdown of cyclic guanosine monophosphate (cGMP). During sexual

stimulation, cGMP is produced in the penis, relaxing the muscle in the corpora cavernosa so that blood can flow into the corpora and produce an erection. Sexual stimulation is still needed to produce an erection.

No more than one dose of OTC *sildenafil* is to be taken per day. One 50 mg tablet should be taken with water approximately 1 h before sexual activity. It normally takes between 30 and 60 min to take effect; if required, it can be taken up to 4 h before sexual activity. *Sildenafil* can be taken with or without food; fatty meals may delay absorption and thus effect. Grapefruit and grapefruit juice inhibit the CYP3A4 enzyme and can lead to higher *sildenafil* levels in the blood.

Most patients find that *sildenafil* works after one or two doses (taken on separate days). Some may need to take *sildenafil* a number of times on different days (a maximum of one 50 mg tablet per day), before they can achieve an erection satisfactory for sexual activity. If a patient is still not able to achieve an erection sufficient for satisfactory sexual activity, they should contact their doctor.

Drug interactions: CYP3A4 inhibitors (such as *ritonavir*, *ketoconazole*, *itraconazole*, *erythromycin*, *cimetidine*) reduce clearance of *sildenafil*. In patients taking *ritonavir*, *sildenafil* is contraindicated because a fourfold increase in *sildenafil* concentration results. Other CYP3A4 inhibitors have a weaker effect, but medical advice is recommended to decide whether a lower, 25 mg (POM) dose, may be needed. Postural hypotension may develop in a small number of susceptible patients taking an alpha-blocker (e.g. *alfuzosin*, *doxazosin* or *tamsulosin*), and medical advice is required.

Sildenafil potentiates the hypotensive effects of nitrates, so is contraindicated if a patient is taking a nitrate (e.g. *glyceryl trinitrate*, *isosorbide mononitrate*) or in patients who use 'poppers' (amyl nitrite).

Side effects: Most side effects are mild or moderate and of short duration. The commonest are headache, which may affect more than 1 in 10 patients, and indigestion/dyspepsia. Nausea, stuffy nose, dizziness, facial flushing, hot flush, colour tinge to vision, blurred vision and visual disturbance are also observed.

When to refer

- Medical and/or medication contraindications
- Adverse effects for immediate referral:
 - Chest pains before, during or after intercourse. Advise to get into a semi-sitting position and try to relax. Do NOT use nitrates to treat the chest pain.
 - A persistent and sometimes painful erection lasting longer than 4 h (priapism).
 - A sudden decrease or loss of vision.
 - An allergic reaction: sudden wheeziness, difficulty breathing or dizziness or swelling of the eyelids, face, lips or throat.

- Serious skin reactions such as Stevens–Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN): severe peeling and swelling of the skin, blistering of the mouth, genitals and around the eyes or fever. These are very rare.
- Seizures or fits.

Practical points

Sildenafil 50 mg is said to improve sex in 75% of cases. If the drug is ineffective, the patient should be referred to the GP. Sometimes a higher dose, or alternative drug, is successful.

The drug only works on those with sexual problems related to ED. *Sildenafil* will not enhance sexual performance, and it will not help with other problems such as premature ejaculation. It will not help sexual problems related to lack of attraction or relationship breakdown.

Mental health may be an issue. ED may be both a symptom and a cause of depression, and antidepressant drugs can cause impairment of arousal or sex. Pharmacists should bear this in mind and be alert to the possibility of depression. Heavy alcohol use can contribute to ED and is another area to ask about.

If a patient requesting *sildenafil* has previously been supplied with it by the pharmacy, he should be asked if anything has changed with respect to his health status or medicine usage.

Pharmacists should advise the patient to consult his doctor within 6 months of starting to use OTC *sildenafil* for a clinical review of potential underlying conditions and risk factors.

Providing lifestyle advice is important in the management of ED. Taking regular exercise and the role of stress should be discussed. Advice and support in losing weight and stopping smoking can be offered. Excess alcohol is commonly associated with ED and people should be advised accordingly. Advice on avoiding recreational drugs is also important, and sometimes neglected. Checking that other ‘unregulated’ drugs for ED are not being purchased (for example, over the Internet) may also be an issue and should be discouraged as this is not safe.

Hair loss

Androgenetic alopecia describes a distinctive pattern of hair loss that may occur in genetically predisposed people and is thought to be androgen dependent. It is also known as male pattern baldness as it is common in men, but it does affect some women as well. In men initial signs can occur anytime at or after puberty with age of onset usually between 20 and 25 years. By 50 years of age about half of men are affected.

Another less common cause is alopecia areata, which leads to patchy non-scarring hair loss that most commonly involves the scalp or beard and, less

frequently, the eyebrows and eyelashes. It can occur at any age. Patches of scarring alopecia can occur with infections such as ringworm (tinea). Causes of diffuse hair loss include telogen effluvium, hypothyroidism, severe iron deficiency and protein deficiency. Some drugs and chemotherapy can also cause hair loss.

Alopecia androgenetica may be partly treatable, but there are currently no treatments that the pharmacy can offer for alopecia areata. Although hair loss has been largely regarded as a cosmetic problem, the psychological effects on sufferers can be substantial. A sympathetic approach is therefore essential. *Minoxidil* is a medication that can be purchased OTC by men and women to rub into the affected area of the scalp. Another oral drug called *finasteride* is also available as a product for men, which is obtained on a private prescription but is not available OTC. Neither of these treatments is available on the NHS and patients should be advised they will not get them via NHS prescriptions.

What you need to know

Male or female

History and duration of hair loss

Location and size of affected areas

Other symptoms

Influencing factors

Medication

Significance of questions and answers

Male or female

Men and women both may suffer from alopecia androgenetica. (It is more common in women than might be supposed; 10% of premenopausal women are affected, and this rises to 30% of those over 70 years.) Alopecia areata can affect people at any age and affects the sexes equally. It is most common in childhood and young adults and is usually a relapsing condition.

History and duration of hair loss

Alopecia androgenetica is characterised by gradual onset of hair thinning and hair loss. In men, hair loss usually initially involves the front and sides of the scalp and progresses towards the back of the head. In women, hair loss is usually more diffuse, affecting the top of the scalp, and there is an increase in the parting width. Hair loss in women is increasingly recognised as a problem; it is stigmatising and tends to be disguised with wigs and hairpieces.

Alopecia areata may be sudden and results in patchy hair loss. The cause of alopecia areata remains unknown, but it is thought that the problem may be autoimmune in origin.

Telogen effluvium usually occurs 2–3 months after significant physical or emotional stress and occurs as a result of sudden cessation of hair growth at that time. The rate of hair loss increases significantly for a period of time before resolving spontaneously and returning to normal. Typically this can occur following childbirth in women, severe infection, crash diets or major surgery.

Location and size of affected area

If the affected area is less than 10 cm in diameter in alopecia androgenetica, then treatment with *minoxidil* may be worth trying.

Other symptoms

Coarsening of the hair and hair loss can occur as a result of hypothyroidism (myxoedema) where other symptoms might include a feeling of tiredness or being run down, a deepening of the voice and weight gain.

Inflammatory conditions of the scalp such as ringworm infection (*tinea capitis*) can cause hair loss. Other symptoms would be itching and redness of the scalp with an advancing reddened edge of the infected area. Referral would be needed in such cases.

In women, excessive bleeding during periods (menorrhagia) could lead to iron deficiency and anaemia, which in turn could cause diffuse hair loss or aggravate alopecia androgenetica. Absent or very infrequent periods are sometimes due to polycystic ovary disease or elevated prolactin levels, which in both cases can result in alopecia androgenetica.

Influencing factors

Hormonal changes during and after pregnancy mean that hair loss is common both during pregnancy and after the baby is born. While this is often distressing for the woman concerned, it is completely normal, and she can be reassured that the hair will grow back. Treatment is not appropriate.

Medication

Cytotoxic drugs are well known for causing hair loss. Anticoagulants (coumarins), lipid-lowering agents (*clofibrate*) and vitamin A (in overdose) have also been associated with hair loss. Such cases should be referred to the doctor. Other medications include *allopurinol*, beta-blockers, *bromocriptine*, *carbamazepine*, *colchicine*, *lithium* and *sodium valproate*.

When to refer

Alopecia areata

Suspected drug-induced hair loss

Suspected hypothyroidism
Menstrual disorders
Suspected anaemia

Treatment timescale

Treatment with *minoxidil* may take up to 4 months to show full effect.

Management

Minoxidil

Minoxidil is available OTC as a 2 and 5% mousse/foam or solution (check individual products for suitability for men and women and advisable age range). The mechanism of action of *minoxidil* in baldness is unknown; it was discovered when in trials for hypertension, people on oral *minoxidil* reported hair growth. The earlier *minoxidil* is used in balding, the more likely it is to be successful. Treatment is most likely to work where the bald area is less than 10 cm in diameter, where there is still some hair present and where the person has been losing hair for less than 10 years. The manufacturers of *minoxidil* say that the product works best in men with hair loss or thinning at the top of the scalp and in women in a generalised thinning over the whole scalp – both manifestations of alopecia androgenetica. Up to one in three users in such circumstances report hair regrowth of non-vellus (normal) hair and stabilisation of hair loss. A further one in three is likely to report some growth of vellus (fine, downy) hair. The final third will not see any improvement.

It is important that patients understand the factors that make successful treatment more or less likely and believe that their expectations are realistic. Some patients may still want to try the treatment, even where the chances of improvement are less.

After 4–6 weeks, the patient can expect to see a reduction in hair loss. It will take 4 months for any hair regrowth to be seen, and some dermatologists suggest continuing use for 1 year before abandoning treatment. Initially, the new hair will be soft and downy, but it should gradually thicken to become like normal hair in texture and appearance.

Application

The product should be applied twice daily to the dry scalp and lightly massaged into the affected area. The hair should be clean and dry, and the lotion or foam should be left to dry naturally. The hair should not be washed for at least 1 h after using the lotion.

Caution

Irritant and allergic reactions to the drug or other ingredients (such as propylene glycol in the lotion) sometimes occur. A small amount (~1.5%) of the drug is absorbed systemically, and there is the theoretical possibility of a hypotensive effect, but this appears to be unlikely in practice. *Minoxidil* is also known to cause a reflex increase in heart rate. While this is a theoretical risk, where such small amounts of the drug are involved, tachycardia and palpitations have occasionally been reported. The manufacturers advise against the use of *minoxidil* in anyone with hypertension, angina or heart disease without first checking with the patient's doctor. Although no specific problems have been reported, the manufacturers advise against use when pregnant or breastfeeding.

It is important to explain to patients that they will need to make a long-term commitment to the treatment should it be successful. Treatment must be continued indefinitely to maintain an effect; new hair growth will fall out 2–3 months after the treatment is stopped. *Minoxidil* should not be used in alopecia areata or in hair loss related to pregnancy.

Chapter 7

Eye and Ear Problems

Eye problems: The red eye

Conjunctivitis is a common condition resulting in red eyes, caused by infection, allergy or irritation. There are other more serious types of red eyes, which are usually more painful, that need to be considered. Notes on some of the causes of painful red eyes are provided below.

A good ‘rule of thumb’ is that if eye pain and change in vision are significant features, patients should be referred to the general practitioner (GP) surgery. In some parts of the United Kingdom, optometrists (opticians) will also manage these patients and will have direct access to eye clinics if onward referral is needed. Pharmacists should make themselves aware of these local care pathways, if relevant. Many other common eye problems are now managed by optometrists, and in many instances the patient can be directed to them for advice and care.

What you should know

Causes of red eye

Conjunctivitis

 Infective

 Allergic

 Blepharitis

Other causes – painful red eye

 Corneal ulcers

 Keratitis

- Iritis/uveitis
- Glaucoma
- One or both eyes affected?
- Duration of symptoms
- What is the appearance of the eye?
- Pain, gritty feeling, photophobia?
- Is vision affected?
- Any discharge from the eye(s) – purulent, watery?
- Does the patient wear contact lenses?

Significance of questions and answers

Conjunctivitis

The term *conjunctivitis* describes inflammation of the conjunctiva, which is a membrane covering the anterior white part of the eye (sclera) and the inside of the eyelids. It can become inflamed due to infection, allergy or irritation. The two main features are eye redness, due to dilatation of blood vessels over the sclera, and discharge; the conjunctiva on the inside of the eyelids contains cells that produce mucus, and glands that produce tears, and when inflamed more of these are secreted.

Infective conjunctivitis

Both bacteria and viruses can cause conjunctivitis. Viral conjunctivitis is the most common overall cause of infectious conjunctivitis and usually does not require treatment. Viral conjunctivitis is often accompanied by other signs of viral respiratory tract infection, such as cough and cold. The main symptoms of conjunctivitis, apart from redness or ‘pinkness’, are an uncomfortable gritty sensation and a discharge. It is not a painful condition. The discharge is sticky and purulent in bacterial infections and more watery in viral infections. Only one eye may be affected initially, but symptoms usually affect both eyes within a few hours. If symptoms of conjunctivitis are confined to one eye, this suggests the possible presence of a foreign body or another condition accounting for the red eye. A systematic review found that a purulent discharge with sticking together of eyelids on waking and lack of itching were stronger factors associated with bacterial conjunctivitis compared with the other types. Itching was the symptom most strongly related to allergic conjunctivitis.

All patients with conjunctivitis and pain in the eye(s) should be referred to the GP surgery. Also anyone who says their vision is affected (other than transient blurring, cleared by blinking, due to the discharge) should be referred for urgent assessment.

Management of conjunctivitis

Acute bacterial conjunctivitis is frequently self-limiting. A Cochrane systematic review found that 65% of cases of bacterial conjunctivitis resolve anyway

within 2–5 days when treated with placebo. This review concluded that use of antibiotic eye drops is associated with ‘modestly improved’ rates of both clinical and microbiological remission and recommended that ‘use of antibiotic eye drops should be considered in order to speed the resolution of symptoms and infection’.

‘Watchful waiting’ is therefore a reasonable alternative option, particularly as many cases will be viral. Systematic reviews show no increased rate of serious harm with placebo, compared with antibiotics. If there is a sticky discharge, gentle cleansing of the outside of affected eye(s) with cotton wool soaked in water can be recommended regardless of whether treatment is being suggested.

Chloramphenicol eye drops 0.5% every 2 h for the first 24 h and then four times daily or *chloramphenicol eye ointment* 1% can be used over-the-counter (OTC) for the treatment of acute bacterial conjunctivitis in adults and children aged 2 years or over. Symptoms usually settle in a few days. Five days treatment is usually adequate, but treatment should be continued for 48 h after resolution of symptoms.

People with infective conjunctivitis or those treating someone who is infected should wash their hands regularly and avoid sharing towels and pillows, as sometimes the infection can be contagious. Contact lenses should not be worn until the infection has completely cleared and until 24 h after any treatment has been completed. This is important as if lenses are left in with bacterial conjunctivitis, serious ulceration of the eye can occur.

If conjunctivitis symptoms persist for longer than 1 week, further investigation is needed, and referral to the GP surgery is indicated. Patients should be advised that medical advice is urgently needed if the eye(s) become markedly painful, there is photophobia (discomfort to light) or marked redness or vision is affected.

Other conditions with similar symptoms

Allergic conjunctivitis

This produces irritation and a watery discharge. Itchiness may be a significant feature, and sometimes, the conjunctiva over the whites of the eyes are very swollen or ‘oedematous’. It typically occurs in the hay fever season but can occur at other times in some people, for example, due to pet allergy. It is sometimes difficult to differentiate between infection and allergy, and therefore referral is needed if there is doubt.

Management

In allergic conjunctivitis due to hay fever, if there are other symptoms related to allergic rhinitis (e.g. sneezing, runny nose and nasal blockage), oral anti-histamines and nasal corticosteroids will treat most of them and may relieve eye symptoms (see Chapter 1 Respiratory Problems: Allergic rhinitis (hay fever)).

For predominant or significant eye symptoms, antihistamine drops can be helpful. Some preparations for pharmacist supply (P drugs) are also combined with sympathomimetic decongestant. They should not be used for more than 7 days.

If there is prolonged exposure to allergens in allergic conjunctivitis, then the continued use of a topical antihistamine becomes inappropriate, and it may be better to recommend drops containing a mast cell stabiliser such as *sodium cromoglicate* or *lodoxamide*. Another mast cell stabiliser preparation, *nedocromil sodium*, is also sometimes used, but is only available on prescription. These drugs help to treat allergic reactions by blocking the attachment of immunoglobulin/allergen complexes to mast cells.

Sodium cromoglicate 2% eye drops can be recommended OTC (P and GSL) for the treatment of both seasonal and perennial allergic conjunctivitis (not suitable for children younger than 1 year). Several proprietary brands are available. Warn patients that they might experience a mild transient burning or stinging sensation after administration. The drops should be used four times a day and are relatively quick acting at relieving symptoms but should be continued regularly to prevent symptoms returning. Contact lens wearers may need to leave lenses out while using them (see specific product details). They remain effective when used for long periods of time, but some of the product instructions recommend seeing a doctor if used continuously for more than 14 days.

Lodoxamide is used in a similar way and can be supplied as a P medicine. It should not be used in children under 4 years of age.

Blepharitis

Blepharitis describes inflammation of the margin of the eyelids. Characteristic symptoms are itchy, stinging and sticky eyes. The symptoms and appearance are like conjunctivitis and the conditions are often confused. It tends to be a chronic condition, and often there is an underlying chronic infection. Treatment can control symptoms and prevent complications; however, periodic relapses and exacerbations can occur. In some patients, there is an association with acne rosacea or seborrhoeic dermatitis (see Chapter 3 Skin Conditions).

Management of blepharitis involves advice on good eyelid hygiene, including advice to avoid eye make-up. Patients are usually given an instruction sheet on eyelid hygiene¹: this involves soaking the closed eyes with a warm cotton wool pad or flannel and subsequently cleaning the eyelids by wetting a cloth or cotton bud with cleanser (for example, baby shampoo diluted 1 : 10 with warm water or bicarbonate solution) and wiping along the lid margins. This washing helps clear the debris and reduces inflammation of the eyelid margin. Sometimes topical antibiotics are used for flare-ups of the condition, and long-term treatment is often needed (6 weeks or more). Although pharmacists can advise and support patients who have this common condition, confirmation of the diagnosis and initiation of treatment is best done by the optometrist or at the GP surgery.

Subconjunctival haemorrhage

A subconjunctival haemorrhage is a very common cause of a red eye. It is caused by a small bleed behind the membrane layer of the conjunctiva and results in redness over the white of the eye (sclera). It can look very alarming, but it causes no discomfort and is usually harmless. The redness usually clears within 1–2 weeks. It is most commonly a spontaneous, unexplained occurrence, and patients can usually simply be reassured. The only reason to refer them to the GP surgery would be if high blood pressure was suspected (for example, no recent check-up) or if they had unexplained bleeding or bruising elsewhere.

Painful eye conditions

Corneal ulcers, keratitis

Corneal ulcers may be due to an infection or a traumatic abrasion. The main symptom is that of pain as the cornea is exquisitely sensitive. There may be surrounding scleral inflammation. An abrasion can be caused by contact lenses, but wearers may not get as much pain as constant contact reduces the pain sensation. Early diagnosis is important as the cornea can become permanently scarred, with loss of sight. The cornea is the transparent covering over the front of the eye, and early ulcers may not be visible without staining. This involves examining the eye under ultraviolet light after instilling *fluorescein drops*, which will colour and highlight an otherwise invisible ulcer.

Keratitis is inflammation of the cornea, often with infection. It often presents with a unilateral, acutely painful red eye, and the patient complains of discomfort from bright light (photophobia). Sometimes it is caused by ultraviolet light damage from a welding torch or from sunbeds. It may be caused by herpes simplex virus or, occasionally, a bacterial infection. If herpes virus is the cause, there is usually an associated history of cold sores. *Acanthamoeba keratitis* is sometimes seen in soft contact lens wearers and is associated with poor lens hygiene, extended wear and swimming while wearing lenses. It can cause serious problems and can be difficult to treat.

Management

If these conditions are suspected, urgent referral is indicated to the optometrist or GP. A common cause of corneal ulcers is a foreign body caught under the eyelid, and these are usually easy to remove. Superficial ulcers caused by such trauma will usually heal quickly. Simply leaving the lens out will usually heal ulcers caused by contact lenses. Often a short course of antibiotic eye drops or ointment is also supplied to prevent secondary infection. Severe ulcers and keratitis caused by infection require assessment and treatment by specialists at an eye hospital.

Uveitis (iritis)

Uveitis, sometimes known as iritis, is inflammation of the iris and surrounding cilia body. It may occur in association with some forms of arthritis, sarcoidosis

or tuberculosis. It sometimes occurs as an isolated event with no obvious cause. In some cases infection seems to be the trigger. It mostly affects both eyes, but may be unilateral. The inflammation causes ‘deep’ eye pain, which is felt more within the eye than is the superficial gritty pain of conjunctivitis, and there is no discharge. The affected eyes are red, mostly around the cornea (circumcorneal inflammation or ‘injection’), and the pupils may be contracted due to muscle spasm in the iris, and possibly irregular. Blurring of vision and photophobia are common.

Management

Untreated uveitis can cause severe eye damage and loss of vision. If suspected, urgent specialist referral is necessary. Treatment is with topical corticosteroids (sometimes oral) to reduce inflammation, often alongside eye drops to paralyse and dilate the iris.

Glaucoma

Glaucoma occurs when the pressure of the fluid within the eye becomes abnormally high. There are two main types of glaucoma where (i) it occurs suddenly or (ii) develops slowly and insidiously.

It is the sudden onset type, acute closed-angle glaucoma, that causes a painful red eye. In most cases the iris folds over and blocks the drainage of fluid from the eye (it ‘closes the angle’). The pressure builds up rapidly, and the cornea swells and becomes hazy, causing impaired vision and a halo appearance around lights. It should be suspected in a person with an acute painful red eye. It is more common in Asian people, in women and in older people. People with acute glaucoma develop sudden onset headache and nausea. Vomiting is common. The pupil becomes fixed and the eye hard and tender. In older people, headache may be the main symptom, and it can sometimes be difficult to diagnose.

Management

Emergency hospital referral is necessary to prevent permanent loss of sight. The extreme pressure within the eye rapidly damages the optic nerve. After lowering pressure with drugs, treatment usually involves an operation or laser therapy to remove part of the iris. This lowers the pressure and should prevent it from developing again. Sometimes the unaffected eye is also treated as it is at high risk of acute glaucoma.

Chronic ‘open-angle’ glaucoma is the more common type of glaucoma that affects 2% of people aged over 40 years. This condition starts slowly and insidiously, without warning symptoms. The optic nerve is slowly damaged, which leads to loss of peripheral visual fields and blindness if not treated. Chronic glaucoma can be detected by an examination at the optician. It can run in families and regular check-ups are advised if there is a family history of glaucoma,

especially in those over 40 years of age. Free eye tests are available to those over the age of 40 years who have a close relative with glaucoma.

Contact lenses

There are two main types of lens: hard (gas permeable) and soft (hydrogel). Soft lenses are the most popular because of their comfort. One-day disposable lenses, which are worn once and require no maintenance or storage, are becoming increasingly popular. Another type of lens is extended wear disposables that can be reused for up to a month but should normally be removed and cleaned at night time. If patients keep lenses in for longer periods of time, this increases the chances of complications such as corneal ulcers, keratitis, and *Acanthamoeba keratitis* infection. Rubbing against the inside of the eyelid can cause a condition called papillary conjunctivitis.

Contact lenses should not be worn if the patient has conjunctivitis or is using certain eye drops (they should always check the patient information leaflet). Soft contact lenses can absorb the preservative benzalkonium chloride used in eye drops, and this can cause irritation and inflammation. Consequently, soft lenses should not be worn when using eye drops containing this preservative.

Eye problems: The dry eye

Dry eye is a common problem, particularly in older adults. Sometimes the term keratoconjunctivitis sicca is used. The tear film is needed to maintain a healthy eye surface and for enabling clear vision. Tears are made up of a complex mixture of water, salts, lipids, proteins and mucus. The lipids, or oily component, surround the tear film and help to prevent evaporation of the water, and the mucous component helps spread the tear film evenly over the surface of the eye. In dry eyes, the quantity or the composition of tears changes; either not enough salty fluid is produced by the tear glands, or tears may evaporate too quickly, or they may not spread evenly over the cornea (or a mixture of these things). Tear production diminishes with age and is affected by female hormones, so the problem is most common in older women.

What you should know

Causes of dry eye

Environment

Medical conditions

Medication

What are the symptoms – pain, gritty feeling, photophobia?

Is vision affected?

Does the patient wear contact lenses?

Significance of questions and answers

Environment

Windy, dry climates increase tear evaporation. Long periods of time spent working at a computer screen are associated with dry eye because blinking tends to be less frequent; thus redistribution of the tear film happens less often.

Medical conditions

Patients with rheumatoid arthritis, diabetes or thyroid problems are more likely to experience dry eyes.

Medication

Antihistamines, beta-blockers, chemotherapy, diuretics, HRT, oral contraceptives, selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants (TCAs) may affect the quantity and composition of tears. Preservatives in topical treatments may also contribute to dry eyes.

Symptoms

People with dry eyes may report irritated, gritty, scratchy or burning eyes, a feeling of something in their eyes, excess watering and blurred vision.

Vision

Patients with dry eyes may report experiencing some blurring of vision when they first wake up in the morning.

Contact lenses

Individuals who wear contact lenses are more likely to experience dry eyes.

When to refer

Most cases of dry eyes are mild to moderate and can be managed by the patient using self-care. Severe symptoms or those that do not improve with self-care should be referred to the GP or optometrist. Extreme cases can result in considerable discomfort and eye ulceration.

Management

Treatments for dry eyes aim to restore or maintain the normal amount of tears in the eye to minimise symptoms of dryness. There are two main treatments: lubricant eye preparations and treatments that replenish the oily

layer and reduce the evaporation of tears. The former include a range of drops, gels and ointments. Patients who wear contact lenses should use a preservative-free preparation. Preparations to replenish the oily layer include eye drops containing synthetic guar gum or a spray containing liposomes. Liposomal eye sprays can be applied onto the closed eyelids; when the eyes open, the liposomes spread across the surface of the eye, creating a new oily film.

Practical advice

Using a humidifier at home and work can help keep the air moist. Opening windows, even for a short time, will also help to refresh and moisten the air. Avoiding tobacco smoke and smoking cessation should help. Avoid drugs known to aggravate the condition (topical antihistamines will make it worse). Wearing sunglasses (especially of a wraparound style) outside will protect the eyes from the drying effects of sun and wind. If using a computer for long periods, ensure that the monitor is at or below eye level, avoid staring at the screen, and take frequent breaks to close/blink eyes.

Recommended treatments for dry eye syndrome

Recommend artificial tears and ointments in people with dry eyes where *Practical advice* is insufficient.

The severity of the condition and the person's preference should guide choice:

- For people with mild or moderate symptoms, artificial tears alone are usually sufficient.
 - *Hypromellose* is the most commonly used product but requires frequent administration (ideally 30-min intervals initially until symptoms improve, then decreased frequency).
 - Products containing *carbomers* or *polyvinyl alcohol* require less frequent application but may be less well tolerated.
 - *Sodium chloride* (saline) is short acting and suitable as 'comfort drops' or for use with contact lenses.
 - If a product causes irritation or if soft contact lenses are worn, consider switching to one that is preservative-free – *hypromellose*, *carbomers*, *polyvinyl alcohol*, *sodium chloride*, *carmellose sodium*, *hydroxyethylcellulose* and *sodium hyaluronate* are available without preservatives.
 - The preservative that most often causes eye irritation is benzalkonium chloride.
 - If more than six applications are used daily, consider using a preservative-free product as the risk of irritation from the preservative increases with the frequency of dosing.
- For people with severe symptoms, preservative-free artificial tears are suitable. Consider adding an ocular lubricant ointment to use at night.

- Eye ointments containing paraffin may be uncomfortable and blur vision, so they should usually only be used at night and never with contact lenses.

Source: Adapted from NHS Clinical Knowledge Summaries: <https://cks.nice.org.uk/dry-eye-syndrome#!scenario>.

Eye problems in practice

Case 1

Paul Greet is a man in his 40s who comes into your pharmacy on his way home from work wanting treatment for a stye. He asks to speak to the pharmacist. It is Friday night and you are just about to close. Your pharmacy is in the city centre. He asks if you would make him an emergency supply of *chloramphenicol eye ointment*, which his doctor usually prescribes for him. OTC *chloramphenicol* is licensed only for the treatment of acute bacterial conjunctivitis. What would you do?

The pharmacist's view

This sort of dilemma sometimes happens. Unless this man's GP surgery is open in the morning, he will not be able to get a prescription until Monday (unless he goes to A&E or talks to the out-of-hours service). In areas where community pharmacies can supply *chloramphenicol eye ointment* through a patient group direction, the pharmacist can, following a protocol, supply treatment for a stye (hordeolum) where appropriate.

As for making an emergency supply, it is up to the pharmacist to decide whether this constitutes an emergency, which requires the pharmacist to satisfy him or herself that 'there is an immediate need for the POM requested to be sold or supplied and it is impracticable in the circumstances to obtain a prescription without undue delay'. Patients' and pharmacists' views of what constitutes an emergency do not always coincide. A possible framework for making such decisions is shown as follows.

Potential harm to patient from not supplying	Potential harm to patient from supplying	Potential benefit to patient from supplying	Consequences for pharmacist of supplying/not supplying	What would I do if the patient were me/my spouse/my parent/my child? Is this decision different from the one I have reached for the patient? Why?
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However, the pharmacist will take into account the consequences of not making a supply, including suffering and any potential harm from delayed

treatment. If, in the pharmacist's view, the circumstances constitute an emergency, the requirements for emergency supplies are set out in *Medicines, Ethics and Practice* (Royal Pharmaceutical Society).

The doctor's view

Most styes are self-limiting. A stye can be an external one: a localised infection of the hair follicles of the eyelid margin or an internal stye, an infection of Meibomian glands on the inner surface of the lid.

Staphylococcus aureus is the infection responsible in nearly all cases. If left untreated, the stye will point and discharge and resolve spontaneously. The stye can be encouraged to point by the regular application of heat. A way of doing this would be to dip a cotton wool bud in hot water and then gently press it against the stye. Hot spoon bathing using a wooden spoon heated in warm water is an old-fashioned alternative (with care to avoid burning). Often *chloramphenicol ointment* is prescribed more to protect the eye from any discharge rather than actually treat the stye. It would probably help Paul Greet to understand the natural course of styes; although if he has used *chloramphenicol ointment* in the past, he may not be happy without a further supply this time.

It would be useful for his GP to review him if the styes have been recurrent. Sometimes recurrent styes can be associated with blepharitis, diabetes or raised lipids.

If there is inflammation surrounding the stye on the eyelid, then this would be a reason for referral to the GP, as systemic antibiotics may be indicated. Very occasionally, styes need incision and drainage to speed up their resolution.

Case 2

Kate Cosattis is a mum in her late 30s who wants advice about a problem with her daughter's eyes. Both of Ellie's eyes were sticky in the morning with 'yellow stuff' yesterday and today. The child is 18 months old, and her eyes seem to be bothering her because she has been rubbing them.

The pharmacist's view

I couldn't recommend *chloramphenicol* for this child because she's under 2 years. In any case I'm not convinced that it offers any benefit in infective conjunctivitis in children. So I explained to Kate that if she gently bathed the eyes to keep them clean over the next few days, it was likely that the infection would go by itself. She wanted to get some treatment, so I referred her to the GP.

The doctor's view

I agree with the pharmacist's opinion. The available evidence suggests that there is only moderate benefit from prescribing *chloramphenicol eye drops* compared

with placebo drops even in those who are subsequently shown to have bacterial infections on laboratory testing. In other words, most infections resolve spontaneously. In Ellie's situation it would be important to find out her mum's ideas, concerns and expectations about conjunctivitis and its management. She may be very insistent on a prescription, and many GPs would be persuaded by her wishes and issue one, especially given the time pressures of a consultation. If possible, time spent listening to her concerns, and addressing them could avoid a prescription and a rerun of this scenario in the future.

The parent's view

I wasn't happy with the pharmacist. I come here a lot for advice and usually he's really good. But this time he told me that the infection would probably go away by itself without treatment. And in any case he said he couldn't sell me anything, and I would have to take Ellie to the doctor. I was worried that the infection might get worse or even damage Ellie's eyesight for the future. Anyway, the doctor gave me some eye ointment and the infection cleared up in a few days. I don't see why the pharmacist couldn't have done the same.

Common ear problems

Although the treatment of common ear problems is straightforward, it does depend on accurate diagnosis and may require a prescription. It is not always possible to determine the problem from the story. A key issue for the pharmacist is the potential risk from not examining the inside of the ear and seeing how the ear looks. Unless the pharmacist is trained in clinical examination of the ear, diagnosis is best made by the doctor, who can examine the ear with an auroscope (also known as an otoscope). Referral to the doctor is therefore advisable for most ear problems. Ear problems that commonly present are described below.

What you need to know

- Earwax
- Otitis externa (OE)
- Otitis media
- Glue ear
- One or both ears affected?
- Symptoms – pain, itching
- Is there any hearing loss?

Significance of questions and answers

Earwax

Earwax is a normal physiological substance in the ear canal. It is produced by ceruminous glands, which are modified sweat glands lying within the ear canal. The wax (cerumen) aids removal of skin debris from the ear canal and cleans, lubricates and protects the lining of the ear canal; it also has antibacterial properties. Wax is usually soft and works its way out of the ear, but excessive build-up of hard earwax can develop in some people. Cotton wool buds should never be poked into the ear to clean or clear it as wax is pushed further in and it is possible to damage the eardrum.

Symptoms

Wax blocking the ear is one of the commonest causes of temporary deafness. It may also cause a discomfort and a sensation that the ear is blocked. Rarely, it can cause dizziness and nausea.

Management

Ear drops

The ear can often be unblocked by using ear drops, which soften wax and sometimes allow it to run out. Ideally the ear should be examined prior to use. Many people have had recurrent problems, recognise the symptoms and will purchase these drops from the pharmacy. If this is not adequate to clear the problem, the ear drops will have softened the wax, enabling ear irrigation at the GP surgery. Some pharmacists (and optometrists) now offer a service to remove wax. In some people with complicated ear problems, suction clearance of wax is advised by an ear specialist.

Recommendations for use of ear drops to soften earwax

- Do not advise drops if you suspect the person has a perforated tympanic membrane (usually determined from previous history).
- Prescribe ear drops for 3–5 days initially, to soften wax and aid removal.
- Olive oil or almond oil drops can be used three to four times daily for 3–5 days (do not prescribe almond oil ear drops to anyone who is allergic to almonds).
- Sodium bicarbonate 5% ear drops can also be used.
- Warm the drops before using them (e.g. let the bottle stand in the room for about half an hour or place the bottle in warm water).
- Pour a few drops into the affected ear.
- Lie with the affected ear uppermost when putting in drops.

- Stay like this for 2–3 min to allow the drops to soak into the ear and the earwax.
- Warn the person that instilling ear drops may cause transient hearing loss, discomfort, dizziness and irritation of the skin.

Source: Adapted from NHS Clinical Knowledge Summaries: <https://cks.nice.org.uk/earwax>.

A systematic review found that oil-based and water-based preparations are equally effective at clearing earwax and for softening earwax before ear irrigation.

Prevention. In people with recurrent problems due to earwax, regular use of ear drops may be helpful to prevent build-up of wax. Some people recommend once weekly.

Ear irrigation. If any wax remains despite this treatment, referral to the doctor or nurse is advisable. An electronic ear irrigator is used, which directs a regulated pressurised flow of water at body temperature into the ear. The use of drops for 3–5 days to soften the wax prior to this is recommended to make the procedure more effective.

Otitis externa

Otitis externa (OE) involves inflammation and infection of the skin in the ear canal. One in 10 people experiences it at some time in their life. OE may be localised or diffuse. In the former (due to a furuncle or boil), the main symptom is severe ear pain and, in the latter, a combination of some or all of pain, itching, hearing loss and discharge. Sometimes the ear canal is a site of eczema, which causes OE and may become secondarily infected.

OE can be precipitated by ear trauma (scratching, foreign bodies and use of cotton buds), swimming (especially in dirty or polluted water), chemicals (hairspray, hair dyes, shampoo and drops for earwax [ceruminolitics]) and skin conditions (eczema, seborrhoeic dermatitis and psoriasis). OE is five times more common in swimmers than in non-swimmers. It is more frequent in hot and humid environments and is 10 times more common in summer than winter.

Symptoms

The symptoms of OE are usually pain, itchiness and discharge. A boil (furuncle) can cause intense pain because of pressure in the confined skin and cartilage of the ear canal. Referral to the doctor may be necessary for accurate diagnosis.

It is possible that the same symptoms can arise from a middle ear infection (otitis media) with a perforated eardrum. In such a situation, which usually involves a child, the middle ear infection is likely to be associated with an upper respiratory tract infection. As the middle ear infection develops, so does the pain. It is often intense and remains so until the drum perforates, alleviating the pressure and pain and leading to a discharge.

Management

A good history is essential, including questions about any previous OE and recent foreign travel (association with swimming pools). Patients with OE should be referred to their local surgery, where they may be seen by a GP or a nurse. Some surgeries have a policy of taking a swab to enable treatment with an antibiotic to which the responsible bacterium is sensitive, rather than treating on a trial-and-error basis, which may lengthen time to healing. Thorough cleansing of the external ear canal is needed in severe cases of OE. This is performed under direct vision using microsuction or dry swabbing by an ear specialist. In some severe cases the ear may be packed with an antiseptic ribbon and intravenous antibiotics are used.

Acute localised otitis externa

Acute localised OE is caused by a boil (furuncle) in the ear canal and can be intensely painful. There may be associated cellulitis; if so systemic antibiotics should be started and *flucloxacillin* would be the treatment of choice. Regular analgesics help and effective pain relief can be achieved using *paracetamol*. This can be combined with *codeine* when the pain is more severe, although the evidence of benefit is not definitive. Applying heat by holding a hot flannel against the ear can help to relieve pain.

Diffuse otitis externa

Approximately 90% of diffuse OE cases are bacterial. *Pseudomonas* infections account for two-thirds, and *Staphylococcal* are the next most common. The remaining 10% of infections are fungal, and *Aspergillus* is the most common form. Topical treatments containing an antibiotic alone or in combination with a corticosteroid are effective.

For people who are prone to recurrent OE, the following self-care advice is helpful.

Self-care advice

- Avoid damage to the external ear canal.
- If earwax is a problem, the person should seek professional advice and have it removed safely to avoid damaging the ear canal.
- Cotton buds or other objects should not be used to clean the ear canal.
- Keep the ears clean and dry by:
 - Using ear plugs and/or a tight fitting cap when swimming – people with an acute episode of otitis externa should abstain from water sports for at least 7–10 days
 - Using a hair dryer (at the lowest heat setting) to dry the ear canal after hair washing, bathing or swimming

- Keeping shampoo, soap and water out of the ear when bathing and showering
- Ensure skin conditions that are associated with the development of otitis externa are well controlled:
 - If the person is allergic or sensitive to ear plugs, hearing aids or earrings, they should avoid them or use alternatives (for example, hypoallergenic hearing aids are available).
 - If the person has a chronic skin condition (for example, eczema or psoriasis), they should ensure that this is well controlled if possible.
- Consider using acidifying ear drops or spray (such as *EarCalm*[®]) shortly before swimming, after swimming and at bedtime. These ear drops are available to purchase OTC at pharmacies.

Source: From NHS Clinical Knowledge Summaries: <https://cks.nice.org.uk/otitis-externa>.

Otitis media

Otitis media is an infection of the middle ear compartment. The middle ear lies between the outer ear canal and the inner ear. Between the outer ear and the middle is the eardrum (tympanic membrane). The middle ear is normally an air-containing compartment that is sealed from the outside apart from a small tube (the Eustachian tube), which connects to the back of the throat. Within the middle ear are tiny bones that transmit the sound wave vibrations of the eardrum to the inner ear.

A viral cold, especially in children, can lead to blockage of the Eustachian tube and fluid formation within the middle ear. This causes symptoms of pressure and pain (otalgia). Sometimes the fluid can then be secondarily infected by a bacterial infection. Usually the best treatment is pain relief with *ibuprofen* or *paracetamol* as antibiotics make little difference, even if there is a bacterial infection. Children under 2 years, or where there is discharge from the ear, should be referred to the GP practice. If the pain persists for more than a few days, or if the child is unwell (e.g. high fever, very restless or listless, vomiting), then the child should be seen by a doctor. Management of this common condition is described in Chapter 1 Respiratory Problems: Earache.

Glue ear

Some children develop glue ear (also known as serous otitis media). This occurs because the fluid that forms in the middle ear does not drain out completely. In about 50% of cases it follows acute otitis media. The fluid becomes tenacious and sticky. If it affects both ears, it can cause deafness, and in younger children this can interfere with language development. Initially, observation over 6–12 weeks may be appropriate for most children, as spontaneous resolution is

common. If the condition persists, referral to an ear specialist may be warranted. Increasingly temporary hearing aids are used to avoid operation, as many cases will get better given more time.

In more severe or persistent cases, one method of dealing with this common problem is a minor operation in which the fluid is sucked out through the eardrum. After this, it is usual to insert a small grommet or 'T-tube' into the hole in the drum. The grommet has a small hole in the middle, which allows any further fluid forming to drain from the middle ear. The grommet normally falls out, on average after 10 months, and the small hole in the drum closes over. Sometimes they are reinserted. Although they improve hearing in the short term, the long-term effectiveness of these procedures is debated, and there are concerns that they can cause eardrum problems later in life.

Earplugs

Some children are advised not to get water into the ear after the insertion of a grommet. One method is to use earplugs that can be purchased from the pharmacy. However, this is often unnecessary, and bathing and swimming can be undertaken without using plugs, although it is sensible to avoid diving as water may enter the middle ear under pressure, which will impair hearing and may predispose to infection.

Ear problems in practice

Case 1

Sue Moorhouse is a woman in her 20s. She and her parents have been regular customers for years, and you know she recently went to Kenya on holiday. It is Saturday afternoon and Sue tells you that her ear problem has returned. She has had antibiotics to treat it on four previous occasions during the last 3 years. She tells you she recognises the signs. Her face started to swell this morning. Her outer ear now feels swollen, and her jaw is painful when she moves it. She knows from experience that if she can take some antibiotics within 24 h, the ear infection will not be so bad. In the past, the doctor has had trouble inserting the otoscope because the inside of her ear had been so swollen and painful. The problem causes a feeling of intense pressure inside the ear, and she then has a discharge from the ear, which seems to ease the pain. When you check your patient medication record, you find that you have dispensed four courses of *clarithromycin* for Sue in the last 3 years.

The pharmacist's view

It is typical that a problem like this happens on a Saturday afternoon when it is less easy to refer to the doctor. I could refer Sue to the out-of-hours service or

to an accident and emergency (A&E) department. Using the framework used in other parts of this book, I can think about possible actions I could take. There is no way I would consider leaving her to see the doctor on Monday.

Potential harm to patient from not supplying	Potential harm to patient from supplying	Potential benefit to patient from supplying	Consequences for pharmacist of supplying/not supplying	What would I do if the patient were me/my spouse/my parent/my child? Is this decision different from the one I have reached for the patient? Why?
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7

The doctor's view

Sue needs referral to the out-of-hours service or, failing that, to the local A&E department. It sounds like she has recurrent OE with cellulitis. She is likely to need high-dose antibiotic treatment. As this is her fifth episode in the last 3 years, she may need some follow-up, possibly with an ENT surgeon. If on resolution of this infection there were exudate and debris present in the outer ear canal, she could benefit from cleaning of the ear using microsuction. This can reduce the possibility of recurrence.

Note

- 1 Typical guidance on 'eyelid hygiene' can be found at: www.nhs.uk/Conditions/Blepharitis/Pages/Treatment.aspx

Chapter 8

Childhood Conditions

Illnesses affecting infants and children up to 16 years

Childhood problems understandably create significant parental anxiety. This heightened anxiety should be recognised and considered when parents seek help. Whether the pharmacist is confident about childhood problems or not, the most important method of dealing with this is to listen well and with compassion, not only to the presenting complaints but also to the specific concerns of the parent. Sometimes people will be open with their concerns; sometimes it will be necessary to ask them about their concerns more than once. Just sharing a concern can diminish the perceived problem and make the rest of the consultation with the pharmacist more effective.

Common childhood rashes

Most childhood rashes are associated with self-limiting viral infections. Some of these rashes fit well-described clinical pictures (e.g. measles) and are described below. Others are more difficult to label. They may appear as short-lived, fine, flat (macular) or slightly raised (papular) red spots, often on the trunk. The spots blanch with pressure (erythematous). There are usually associated cold symptoms, cough and raised temperature. These relatively minor illnesses are common in the first few years of life and most settle without treatment. Any rash in early childhood, particularly during the first year, can be alarming and frightening for parents. Advice, reassurance and referral are needed as appropriate.

What you need to know

When did it start?
Where did it start?
Where did it spread?
Any other symptoms?
Contact with children with rash
Past history of rash
Infectious diseases
 Chickenpox
 Measles
 Roseola infantum
 Fifth disease
 Rubella
 Meningitis
 Rashes that do not blanch

Infectious diseases

Chickenpox (also known as varicella)

This is most common in children under 10 years. It can occur in adults but is unusual. The incubation time (i.e. time between contact and development of the rash) is usually about 2 weeks (11–21 days). Sometimes the rash is preceded by a day or so of feeling unwell with a raised temperature and headache. The rash is characteristic but may be difficult to diagnose when only very few spots are present. If there is doubt, a history of recent exposure to chickenpox, or cases occurring in close contacts, may help confirm the diagnosis. Typically, chickenpox starts with small red lumps that rapidly develop into minute blisters (vesicles). The vesicles then burst, forming crusted spots over the next few days. The spots mainly occur on the trunk and face but may involve the mucous membranes of the mouth. They tend to come out in crops for up to 5 days. The rash is usually itchy and irritating. Once the spots have all formed crusts, the individual is no longer contagious. NHS Clinical Knowledge Summaries (CKS) advises that exclusion from school or work is not necessary after 6 days from the onset of the rash. The whole infection is usually over within 1 week, but it may be longer and more severe in adults. Sometimes the spots can become infected after scratching, so it can be helpful to advise cutting the child's fingernails short to reduce the chance of this possibility.

Measles

This is now a less common infection in the more developed countries but remains a significant cause of childhood mortality on a large scale in

developing countries. It is highly contagious in those without immunity. Every child should receive two doses of the combined measles, mumps and rubella (MMR) vaccine by entry to primary school. It is given between the ages of 12 and 15 months and repeated before starting school (before 5 years of age). At school-leaving age or at entry into further education, MMR immunisation should also now be offered to individuals who have not received two doses during childhood. The ideal coverage is over 95%. The uptake of MMR in England was about 85% in 2006 and may have been low due to unfounded fears of harm from the combined vaccine. Coverage of the first dose of the MMR vaccine (MMR) has slowly increased and was 92.3% for children reaching their second birthday in England in 2014–2015.

Before the introduction of measles vaccine in 1968, annual notifications in England and Wales varied between 160 000 and 800 000, with peaks every 2 years, and around 100 deaths from acute measles occurred each year. In 2015 and 2016, 91 and 547 cases of measles were confirmed in England and Wales, respectively. Provisional figures show a further increase in 2017. Many of these occurred in unvaccinated adolescents and young adults and were severe cases, often requiring hospitalisation (see Table 8.1 for the nature and risk of complications from measles).

Measles has an incubation period of about 10 days. The measles rash is preceded by 3–4 days of illness with symptoms of cold, cough, conjunctivitis and fever. After the first 2 days of this prodromal phase, small white spots (Koplik spots), like grains of salt, can be seen on the inner cheek and gums. The measles

Table 8.1 Nature and risk of complications of measles

Death occurs in around 1 in 5000 cases

Hospitalisation for complications may be required in as many as 1 in 10 cases

Respiratory complications are usually due to bacterial superinfection, and include:

- Otitis media (7–9% of children)
- Pneumonia (1–6% of children)

Central nervous system complications include

- Convulsions (about 1 in 200 children)
- Encephalitis (about 1 in 1000)
- Subacute panencephalitis is a rare but serious late complication affecting about 1 in 25 000 of all people with measles. It is more common in children – it affects 1 in 8000 of children who contract measles under the age of 2 years. It occurs a median of 7 years after exposure to the virus, although it may occur as late as three decades afterwards, and is invariably fatal

Diarrhoea affects about 8% of children, but is not usually severe

Pregnancy: Measles may result in miscarriage, premature birth and low birthweight

Complication and death rates are much higher in those who have immunodeficiency or malnourishment

Source: Information derived from *Clinical Knowledge Summaries: Measles* at <https://cks.nice.org.uk/measles> and Public Health England (2013).

rash then follows. It starts behind the ears, spreading to the face and trunk. The spots are small, red patches (macular) that will blanch if pressed. Sometimes there are so many spots that they merge together to form large red areas. If measles is suspected, all patients should be referred for assessment. Detecting the infection and controlling spread is very important.

In most cases the rash fades after 3 days, at which time the fever also subsides. If, however, the fever persists, the cough becomes worse or there is a difficulty in breathing or earache, then further medical attention should be sought as complications may be developing. Someone with measles is infectious for about 5 days after the rash appears.

Roseola infantum (sixth disease)

Roseola infantum is a common, relatively mild viral infection mostly occurring in children under 2 (it is seen between 3 months and 4 years of age). It can be confused with a mild attack of measles. There is a prodromal period of 3–4 days of fever followed by a rash similar to measles but which is mainly confined to the chest and abdomen. Once the rash appears, there is usually an improvement in symptoms, in contrast to measles, and it lasts only about 24 h.

Fifth disease (erythema infectiosum)

Fifth disease is a mild, self-limiting viral infection (parvovirus B₁₉) that usually affects children. It does not often cause systemic upset but may cause fever, headache and, rarely, painful joints. The rash characteristically starts on the face. It particularly affects the cheeks and gives the appearance that the child has been out in a cold wind. Fifth disease is sometimes called ‘slapped cheek’ disease because of the appearance of reddened cheeks. The rash then sometimes appears on the limbs and trunk as small red spots that blanch with pressure. The infection is usually short lived.

Fifth disease can have adverse effects in those who have a weakened immune system (immunocompromised) and in pregnancy. If the infection occurs in the first 20 weeks of gestation, there is an increased chance of miscarriage and a small chance the developing baby will become anaemic.

Rubella (German measles)

Rubella is a viral infection that is generally very mild; its main significance being the problems caused to the foetus if the mother develops the infection in early pregnancy. The incubation time for rubella is 12–23 days. The rash usually appears first and starts on the face and spreads to the trunk and limbs. The spots are very fine and red. They blanch with pressure. They do not become confluent as in measles. The appearance of the rash is followed by a mild cough and runny nose. There is often enlargement of glands around the neck and head. In women, rubella may be associated with painful joints (this is rare in children and men). The rubella rash lasts for 3–5 days.

Meningitis

Meningitis is a very serious infection that can be caused by bacterial, viral or fungal infections. The bacterial causes, which are much more serious than viral causes, include meningococcal, *Haemophilus* and pneumococcal infections. In the United Kingdom, vaccines are now routinely given for meningococcus C, meningococcus B (MenB), *Haemophilus influenzae* B and pneumococcus. Meningococcus can cause a septicaemia (infection spreading throughout the body in the blood) in addition to meningitis alone, causing a typical rash. Meningococcal septicaemia usually presents with flu-like symptoms that may rapidly worsen (see Table 8.2). There may be an associated rash that appears as tiny purplish red blotches or bruises which is caused by blood leaking out of capillaries. (Very small lesions are called petechiae, whereas the larger ones are called purpura and ecchymoses.) These do not blanch with pressure. The spots will start as a few tiny pinpricks and progress to widespread larger ones that coalesce together. The tumbler or glass test can be used to help assess whether or not the rash is serious. The side of a glass tumbler should be pressed firmly against the skin. If the spots are the small petechiae of septicaemia, they will not fade when the tumbler is pressed against the skin. Any suspicion of this condition requires emergency medical help.

Table 8.2 Other symptoms of meningitis

Meningitis can have a number of symptoms, other than rash, including

- A high temperature (fever) over 37.5°C (99.5°F)
- Feeling and being sick
- Irritability and a lack of energy
- A headache
- Aching muscles and joints
- Breathing quickly
- Cold hands and feet
- Pale, mottled skin
- A stiff neck
- Confusion
- A dislike of bright lights
- Drowsiness
- Fits (seizures)

Babies may also

- Refuse feeds
- Be agitated and not want to be picked up
- Have a bulging soft spot on their head (fontanelle)
- Be floppy or unresponsive
- Have an unusual high-pitched cry
- Have a stiff body

These symptoms can develop in any order and some may not appear

Rashes that do not blanch

As a general rule, all rashes that do not blanch when pressed (use glass tumbler test as described previously) ought to be referred to a doctor. These rashes occur when blood leaks out of capillaries, which may be caused by infection or by a blood disorder. It could be the first sign of leukaemia but can arise from less serious conditions. Blanching is not a concept that parents are familiar with. It is important to explain what is meant by blanching and how parents can check for it.

When to refer

Suspected meningitis (see Table 8.2)

Flu-like symptoms

Vomiting

Headache

Neck stiffness

Rash

Small widespread spots or bruises that do not blanch when pressed

Rashes that do not blanch when pressed

Management

Fever

Moderate fever (raised temperature up to 40°C from normal 36.5 to 37.5°C) is usually not harmful and some experts believe it could even have beneficial effects in some illnesses. The question of whether and when an antipyretic medicine should be given remains a matter of debate. The National Institute for Health and Care Excellence (NICE) guideline on feverish illness in children advises against routine use of an antipyretic to solely reduce temperature if the child is otherwise well. It recommends that *paracetamol* or *ibuprofen* be considered when a feverish child is in distress, but not for the sole purpose of reducing body temperature.

NICE advises that when using *paracetamol* or *ibuprofen* in children with fever,

1. Continue only as long as the child appears distressed.
2. Consider changing to the other agent if the child's distress is not alleviated.
3. Do not give both agents simultaneously.
4. Only consider alternating these agents if the distress persists or recurs before the next dose is due.

Sponging with lukewarm water used to be recommended as a method of reducing fever but can cause crying, goosebumps and shivering and is now viewed as

potentially causing discomfort to the child. For these reasons NICE no longer recommends tepid sponging. They also advise to dress the child appropriately for their surroundings, with the aim of preventing either overheating or shivering, rather than taking most clothes off.

Many babies develop a raised temperature after immunisation. Some preparations containing *paracetamol* or *ibuprofen* can be used over-the-counter (OTC) to reduce post-immunisation fever. It is advised not to routinely give them to prevent fever around the time of vaccination unless the meningitis B (MenB) vaccine (Bexsero®) is being given to children under the age of 1, when prophylactic liquid *paracetamol* is recommended. However, if pain or fever is problematic after the child has been vaccinated, then *paracetamol* or *ibuprofen* may be used. Product licences vary, so check the labels.

Itching

The itching caused by childhood rashes such as chickenpox can be intense, and the pharmacist is in a good position to offer an antipruritic cream, ointment or lotion. *Calamine lotion* is used traditionally and it is thought evaporation results in cooling and soothing. Some experts are not so keen on this use as the powdery residue it leaves may further dry and irritate itchy dry skin. *Crotamiton cream* or *lotion* may also help to soothe itchy skin. If itching is very severe, oral *chlorphenamine* (*chlorpheniramine*) may be effective in providing relief and can be given to children of 1 year and over. It is licensed for use OTC in chickenpox rash. Such treatment would be likely to make the child drowsy but may be useful at night-time. A medical device is available comprising an osmotic gel containing glycerol, which has the effect of drawing water from the dermis to the skin surface, creating a cooling effect. There are no published studies of efficacy.

Infantile colic

Infantile (or baby) colic is defined for clinical purposes as repeated episodes of excessive and inconsolable crying in an infant who otherwise appears to be healthy and thriving. The cause of colic is unknown and it may affect between 1 in 20 and 1 in 5 babies. Although infantile colic is not harmful, it is stressful for both the baby and parents. It generally begins in the first few weeks after the baby is born and usually resolves by the time the baby is 3–4 months old.

What you need to know

Age

Symptoms

Feeding

Any advice already sought?
Is there parental stress?
Signs of serious illness

Age

Colic generally starts in the early weeks and may last up to the age of 3–4 months and by 6 months at the latest.

Symptoms

Mothers usually describe crying that occurs in the late afternoon and evening, where the baby cannot be comforted, becomes red and flushed in the face with crying and may draw the knees up. Clenching of the fists and arching of the back is common. Passing wind and difficulty in passing stools may also occur.

Colic rarely causes harm and the main problem is distress to mum and dad; breastfeeding may sometimes be stopped, in a search for a solution (which is not a good thing). It is important to be aware that colic is not the only cause of crying and discomfort and things like nappy rash or itchy eczema may be implicated. If a baby becomes inconsolable and cannot be comforted, the parent should be advised to consult a GP or out-of-hours service. Rarely, serious problems such as volvulus (twisting of the intestines) or a strangulated hernia can occur and cause illness, with vomiting and incessant and loud crying. Blood in the nappy is sometimes seen with volvulus. See Table 8.3 for signs of serious illness in a baby or toddler.

Feeding

Establish whether the baby is bottle-fed or breastfed (or a combination) and the type of formula milk being used. Infantile colic is equally common in babies that are either breastfed or bottle-fed.

Any advice already sought?

It is useful to ask whether advice has been sought already either from health professionals or from lay sources. The pharmacist can assess the relevance and appropriateness of advice already received. Health visitors have considerable experience of managing colic.

Management

There is no good evidence to support any of the commonly tried approaches to management. The most useful intervention is reassurance, advice and support. It is important to reassure parents that colic is not their fault and that the baby will ‘grow out of it’. The main problem is the upset it causes them.

Table 8.3 Advice for parents on serious illness from NHS Choices**Does your child have a serious illness?**

It can be difficult to tell when a baby or toddler is seriously ill, but the main thing is to trust your instincts

- You know better than anyone else what your child is usually like, so you'll know when something is seriously wrong

Signs of serious illness in a baby or toddler

Here's a checklist of warning signs that might be serious:

■ Temperature

- A high temperature, but cold feet and hands
- A high temperature that doesn't come down with *paracetamol* or *ibuprofen*
- Your child is quiet and listless, even when their temperature is down
- A high temperature in a baby less than 8 weeks old

■ Breathing

- Rapid breathing or panting
- A throaty noise while breathing
- Your child is finding it hard to get their breath and is sucking their stomach in under their ribs

■ Other signs

- Blue, pale, blotchy or ashen (grey) skin
- Your child is hard to wake up, or appears disorientated or confused
- They are crying constantly and you can't console or distract them, or the cry doesn't sound like their normal cry
- A spotty, purple-red rash anywhere on the body that doesn't fade when you press a glass against it – this could be a sign of meningitis
- Green vomit
- Your child has a fit (convulsion or seizure) for the first time
- Your child is under 8 weeks old and doesn't want to feed
- Nappies that aren't very wet – this is a sign of dehydration

If your child has any of these signs, get medical help as soon as possible:

- During the day from Monday to Friday – it's best to call your GP
- Evenings and weekends – call NHS 111 (in England), or call the out-of-hours number for your GP
- If your baby is under 6 months old, it's hard for a doctor or nurse to assess them over the phone – you can go to an urgent care (walk-in) centre or, if you are very worried, take them to accident and emergency (A&E)

Holding the baby through the crying episode may be helpful and make parents feel better. However, if there are times when the crying feels intolerable, it is best to put the baby down somewhere safe (such as their cot) and take a few minutes' 'time out'. Other strategies that may help to soothe a crying infant include things like pushing the pram or rocking the crib. Some parents find taking the baby for a car ride helps. It has also been suggested that 'white noise' (for example, from a vacuum cleaner, hairdryer or running water) is soothing, or bathing the baby in a warm bath may help.

An element that may be overlooked is encouraging parents to look after their own well-being by asking family and friends for support and enabling a break.

Trying to rest when the baby is asleep should be encouraged and also meeting other parents with similar experiences.

Health visitors frequently see colic and can provide advice and parental support. A support group called CRY-SIS may also help.

Simeticone

Simeticone has been commonly used to treat infantile colic and is included in several proprietary preparations. However, only three small trials were found in systematic reviews, and the evidence of benefit is uncertain. A trial of *simeticone* drops for 1 week could be suggested if other strategies are unsuccessful and the parents would like to try treatment.

Feeding

There is little evidence that dietary change, or additives to the baby's diet, helps with symptoms of colic. Breastfeeding mothers should be strongly encouraged to continue to breastfeed. There is no evidence that changes to the mother's diet make any difference either. In bottle-fed babies, various changes to the formulation are often tried, but this may confuse things and recommendations on such changes are best guided by a health visitor.

Complementary therapies

A study of herbal tea in colic showed a large reduction in crying but there are concerns over the study design. Furthermore, the safety of herbal teas in infants has been questioned, probably because of issues around standardisation of ingredients and questions about the possible presence of other ingredients. These are best avoided.

Behavioural approaches

In the past, it was thought that overstimulation of the baby might be a cause of colic. Therefore, there have been studies to test avoiding carrying or holding the baby unnecessarily and not intervening too rapidly when the baby cries. These studies did not show a significant effect.

Baby massage

Although baby massage seems to have become more popular as a method of managing colic, the evidence of benefit is uncertain.

Teething

Teething is the process in which deciduous teeth (sometimes known as milk teeth or baby teeth) emerge through the gums. Attributing symptoms to teething

should only be done when other causes have been ruled out. Teething can start as early as 3 months and continue up to 3 years. The association of discomfort and physical change associated with teething is a matter of some debate. Research shows that nurses are more likely to attribute symptoms to teething than GPs or paediatricians. The more contemporary view of teething is that it may account for symptoms that generally start 3–5 days before each tooth eruption and include pain, increased chewing, drooling, gum rubbing, sucking, irritability, wakefulness, ear rubbing, facial rash, decreased appetite, disturbed sleep and (possibly) mild temperature elevation. It is not itself a cause of infection. An important point about associating systemic problems with teething is that a more serious underlying cause must not be overlooked.

The appropriate management of teething is to relieve local discomfort using application of cold (teething rings cooled in the fridge are popular) and the use of analgesics (*paracetamol suspension*) or topical teething gels. For children who have been weaned, the supervised use of chilled fruit or vegetables (such as bananas or cucumber) can be considered. Herbal products are perhaps best avoided. There is a homoeopathic teething product available as granules that is relatively harmless. Parents should be encouraged to clean their baby's teeth from their first appearance using a baby toothbrush. Dummies should be avoided, but if used, then it is important not to dip them or teething rings into honey, fruit juices or syrups, as this will damage developing teeth. Further advice on prevention of teething problems can be obtained from the health visitor.

Nappy rash (napkin dermatitis)

Nappy rash is an irritant contact dermatitis confined to the nappy area. Nappies cause the skin to become waterlogged and fragile and hold irritant substances in place, resulting in irritation and inflammation. Subsequent colonisation with *Candida albicans* is common. Most babies will have nappy rash at some stage during their infancy. The best way to deal with nappy rash is to try to prevent it from happening in the first place. Contributory factors include prolonged contact of urine and faeces with the skin and the irritant effect of soaps/detergents/bubble baths. Advice from the pharmacist is important in both treating and preventing recurrence of the problem.

What you need to know

Nature and location of rash

Severity

Broken skin

Signs of infection

Duration

- Previous history
- Other symptoms
- Precipitating factors
- Skin care and hygiene
- Medication

Significance of questions and answers

Nature and location of rash

Nappy rash, sometimes called napkin dermatitis, appears as an erythematous (red) rash on the buttock area. Other areas of the body are not involved, in contrast to infantile seborrhoeic dermatitis, where the scalp may also be affected (cradle cap). In infantile eczema, other body areas such as wrists, elbows and knees are often involved. The initial treatment of nappy rash would be the same in each case.

Severity

In general, if the skin is unbroken and there are no signs of secondary bacterial infection, treatment may be considered. The presence of bacterial infection could be signified by exudate with weeping, blisters or yellow crusting. Secondary candida infection (thrush) is common in nappy rash, and the presence of satellite papules (small, red lesions near the perimeter of the affected area) and skin in the folds, which is nearly always affected in candida, would indicate such an infection.

Usually, there are no symptoms (scratching or systemic upset) but if the nappy rash is severe or painful, the child may be distressed or uncomfortable. Referral to the health visitor or GP surgery would be advisable if the nappy rash is very severe or if bacterial infection is suspected, since topical or systemic antibiotics might be needed. Secondary candida infection could be treated by the pharmacist using one of the azole topical antifungal preparations that are available.

Duration

If the condition has been present for longer than 2 weeks, the pharmacist might decide that referral to the doctor would be the best option, depending on the nature and severity of the rash.

Previous history

The pharmacist should establish whether the problem has occurred before and, if so, what action was taken, for example, treatment with OTC products.

Other symptoms

Nappy rash sometimes occurs during or after a bout of diarrhoea, when the perianal skin becomes reddened and sore by frequent exposure. The pharmacist should therefore enquire about current or recent incidence of diarrhoea. Diarrhoea may often occur as a side effect of antibiotic therapy and this may be the cause. Sometimes candida infection (thrush) in the nappy area may be associated with oral thrush that causes a sore mouth or throat (see section on Oral thrush, later in this chapter). If this is suspected, referral to the doctor is advisable.

Precipitating factors

Skin care and hygiene

At one time, nappy rash was thought to be a simple irritant dermatitis due to ammonia, produced as a breakdown product of urine in soiled nappies. However, other factors are now known to play a part. These include irritant substances in urine and faeces, sensitivity reactions to soaps and detergents or antiseptics left in reusable nappies, and sensitivity reactions to ingredients in some topical preparations, for example, in baby wipes. Soaps and detergents will also remove natural body fats and make the skin more susceptible to irritants and infection.

The major factor thought to influence the incidence of nappy rash is the constant wetting and rewetting of the skin when left in contact with soiled nappies. Maceration of the skin ensues, leading to enhanced penetration of irritant substances through the skin and the breakdown of the skin. Wearing occlusive plastic pants exacerbates this effect. Frequent changes of nappy together with good nappy-changing routine and hygiene are essential (see 'Practical points' below).

Medication

The identity and effectiveness of any preparations used for the current or any previous episode, either prescribed or purchased OTC, should be ascertained by the pharmacist. The possibility of a sensitivity reaction (allergy) to an ingredient in a topical product already tried should be considered by the pharmacist, especially if the rash has got worse.

When to refer

- Broken skin and severe rash
- Unwell baby
- Signs of infection
- Other body areas affected
- Persistence of rash

Treatment timescale

A baby with nappy rash that does not respond to skin care and OTC treatment within 1 week should be seen by the health visitor or GP.

Management

Treatment and the prevention of further episodes can be achieved by a combination of OTC treatment and advice on care of the skin in the nappy area.

Emollient preparations

8

Childhood Conditions

Emollients are moisturising treatments applied directly to the skin and cover it with a protective film. They are the mainstay of treatment and prevention and help to add to the body's natural barrier to irritant substances. Ointments are generally more effective than creams and lotions as they provide a better moisture barrier. The inclusion of a water repellent such as *dimeticone* is useful in theory, but there is no convincing evidence that such products are more effective. The choice of individual preparation may sometimes depend on customer preference, and many preparations are equally effective. Most pharmacists will have a particular favourite that they usually recommend. Some of the ingredients included in preparations for the treatment and prevention of nappy rash and their uses are described below.

Zinc (usually with castor oil)

Zinc acts as a soothing agent.

White soft paraffin ointment

White soft paraffin ointment has been used as a mainstay of both prevention and treatment for many years. It provides an inert barrier on the skin and prevents irritating substances causing damage.

Lanolin

Lanolin hydrates the skin. It can sometimes cause sensitivity reactions (allergy), although the high grades of purified lanolin used in many of today's products should reduce the problem.

Castor oil/cod liver oil

Castor oil and cod liver oil provide a water-resistant layer on the skin.

Antibacterials/antiseptics (e.g. chlorhexidine gluconate)

These may be useful in reducing the number of bacteria on the skin. Some antibacterials have been reported to produce sensitivity reactions.

Antifungals

Secondary infection with *Candida* is common in nappy rash and the azole antifungals are effective. *Miconazole* or *clotrimazole* applied twice daily could be recommended by the pharmacist with advice to consult the doctor if the rash has not improved within 5 days. If an antifungal cream is advised, treatment should be continued for 4–5 days after the symptoms have apparently cleared. An emollient cream or ointment can still be applied over the antifungal product.

Practical points

1. Nappies should be changed as frequently as necessary. Babies up to 3 months old may pass urine as many as 12 times a day.
2. Nappies should be left off wherever possible and, as long as possible, between changes so that air is able to circulate around the skin, helping the affected skin to become and remain dry. Laying the baby on a terry nappy or towel with a waterproof sheet underneath will prevent the soiling of furniture or bedding.
3. At each nappy change, the skin should be cleansed thoroughly by washing with warm water or using proprietary lotion or wipes. If using wipes, fragrance-free and alcohol-free baby wipes are preferable. The skin should then be carefully and thoroughly dried. The use of talcum powder can be helpful, but the clumping of powder can sometimes cause further irritation. Talcum powder should always be applied to dry skin and should be dusted lightly over the nappy area.
4. The most important thing is the regular use of an emollient cream or ointment before putting on a clean nappy, applied to clean dry skin, which helps to protect the skin against irritant substances. The routine use of a barrier preparation is widely recommended by experts.
5. Avoid soaps, bubble bath or lotions. These can remove fats (lipids) from the skin, making it more vulnerable to irritants and microorganisms.

Nappy rash in practice

Case 1

Jane Simmonds, a young mother, asks you to recommend a good cream for her baby daughter's nappy rash. The baby (Sarah) is 3 months old and Ms Simmonds tells you that the buttocks are covered in a red rash. The skin is not

broken and there is no weeping or yellow matter present. On further questioning, you find that a rash is also affecting the upper back and neck, and there are signs of its appearance around the wrists. The rash seems to be itchy, as Sarah keeps trying to scratch the affected areas. Ms Simmonds uses disposable nappies, which she changes frequently, and *zinc and castor oil cream* is applied at each nappy change, after cleansing the skin. The baby has no other symptoms and is not taking any medicines.

The pharmacist's view

Ms Simmonds' nappy-changing and skin-care routine seems to be adequate, but the baby has both nappy rash and the rash that has affected other areas of the body. It is possible that Sarah has infantile eczema, and referral to a GP or health visitor would be the best course of action.

The doctor's view

It is quite likely that Sarah does have eczema, which could be the cause of her nappy rash. It is also possible that an eczematous rash can be complicated by a secondary infection. Referral to the doctor or health visitor for further assessment would be wise. Such skin problems can be upsetting for the mother, who may feel her care has been inadequate, so it is important that Ms Simmonds should be given an opportunity to air her understanding and concerns about the problem and, in return, that the doctor offers an appropriate reassurance and explanation. The management would be to reinforce all the above practical points and possibly prescribe a weak topical corticosteroid, such as 1% *hydrocortisone*, with or without an antifungal or antibacterial agent to use on the nappy area. Avoidance of soap and detergents at bath time is also important. The use of emollients and a short course of 1% *hydrocortisone* will help with the other areas of eczema.

Case 2

Mrs Lesley Tibbs is worried about her baby son's nappy rash, which, she tells you, seems to have appeared over the last few days. The skin is quite red and looks sore and she has been using a proprietary cream, but the rash seems to be even worse. The baby has never had nappy rash before and is about 5 months old. Mrs Tibbs is using reusable nappies and recently changed the washing powder she uses, on a friend's recommendation. The rash affects only the nappy area and the baby has no other symptoms.

The pharmacist's view

The history gives two clues to the possible cause of the problem. This baby has not had nappy rash before and this episode has coincided with a change in

detergent, so it is possible that a direct irritant sensitivity or allergic reaction is occurring due to residues of detergent in the nappies after washing. The second factor is the cream that Mrs Tibbs has been using to treat the problem, with no success. The ingredients of the product should be carefully considered by the pharmacist to see if any might be potential sensitizers.

Initial advice to Mrs Tibbs might be to revert to her original detergent and to use a different treatment. Advice on nappy-changing routine could be given, and if the rash has not started to resolve within 1 week, or has become worse, referral to a health visitor or GP would be indicated.

The doctor's view

The advice given by the pharmacist should clear up the problem quickly. It would be quite reasonable to refer Mrs Tibbs and her baby to a health visitor for further advice if the rash does not settle down.

Head lice

Head lice are wingless insects that feed on blood from the human scalp. Head lice infection is common in young children. Effective treatments are available, but treatment failure may occur if products are not used correctly. It is therefore important for the pharmacist to explain how products should be used, since more patients are now being directed to pharmacies to obtain treatment. The pharmacist has a valuable health education role in explaining how to check children's hair for lice and in discouraging prophylactic use of insecticides. Parents are often embarrassed to seek advice, particularly if the child has head lice. Pharmacists can reassure parents that the condition is common to everyone and does not in any way indicate a lack of hygiene. The term infection is preferred to infestation because of the unpleasant image associated with infestation.

What you need to know

Age

Child, adult

Signs of infection

Live lice

Checking for infection

Nits

Scalp itching

Previous infection

Medication

Treatments used

Significance of questions and answers

Age

Head lice infection is most commonly found in children, particularly around 4–11 years old, with girls showing a higher incidence than boys. Older children and adults seem to be less prone to infection. Adult women occasionally become infected, but head lice infection is rare in adult men possibly because, as men lose hair through male pattern baldness, the scalp offers less shelter to lice.

Signs of infection

Unless infection has been confirmed by a health visitor, nurse or doctor who has conducted wet combing of the hair or inspected the scalp, the pharmacist should ask whether any check has been made to confirm the presence of head lice. Live lice should have been seen to warrant treatment (see Figure 8.1); parents often worry that their children may catch lice and want the pharmacist to recommend prophylactic treatment. Insecticides should never be used prophylactically, since this may accelerate resistance. Treatment should be reserved for infected heads.



Figure 8.1 This woman had acquired a head louse infection from her grandchild. Source: Weller et al. (2014). Reproduced with permission of Wiley Blackwell.

Checking for infection

Wet combing of the hair is a more reliable detection method than scalp inspection. Parents can easily check for infection by combing the child's hair over a piece of white- or light-coloured paper, using a fine-toothed comb (tooth spacing of < 0.3 mm). The hair should be damp or wet to make the combing process easier and less painful. Also, dry hair can produce static that causes lice to be repelled from the comb, making detection less likely. After each stroke from the roots to the tips of the hair, the comb should be wiped on a white tissue or cloth. The hair should be combed one section at a time. The hair at the nape of the neck and behind the ears should be thoroughly checked. These areas are preferred by lice because they are warm and relatively sheltered. After treatment of affected family members, parents should check whether the treatment has been successful by doing detection combing on day 2 or 3 after completing a course of treatment and again after a further interval of 7 days. More checks will be needed if there are further symptoms or when infection is known to have occurred in other children at school or playgroup.

If live lice are present, some will be combed out of the hair and onto the paper, where they will be seen as small beige, black, greyish or brown-coloured specks that on close inspection move. Cast shells are discarded as the louse grows and appear yellowish in colour. Louse faeces may be seen as small blackish specks on pillows and collars.

Nits

The presence of empty eggshells – the cream- or white-coloured nits attached to the hair shafts – is not necessarily evidence of current infection unless live lice are also found. Parents sometimes think that treatment has failed because nits can still be seen in the hair. It is therefore important for the pharmacist to explain that the empty shells are firmly glued to the hair shaft and may not be removed by the lotion used in treatment. A fine-toothed comb can be used to remove the nits after treatment.

Itching

Contrary to popular belief, itching is not experienced by everyone with a head lice infection. In fact, as few as one in five cases presents with itching, perhaps because detection now occurs at an earlier stage than used to be the case. When it occurs, itching of the scalp is an allergic response to the saliva of the lice, which is injected into the scalp in small amounts each time the lice feed. Sensitisation does not occur immediately and it may take weeks for itching to develop. It has been estimated that thousands of bites from the lice are required before the reaction develops. The absence of itching does not mean that infection has not occurred. In someone who has previously been infected and becomes reinfected, itching may quickly begin again.

Previous infection

The pharmacist should establish whether the child has been infected before. In particular, it is important to know whether there has been a recent infection, as reinfection may have occurred from other family members if the whole family was not treated at the same time. Head-to-head contact, between family members and also among young children while playing, is responsible for the transmission of head lice from one host to the next. The pharmacist could ask whether the parent was aware of any contact with infected children, for example, if there is currently a problem with head lice at the child's school.

Medication

While it is possible that treatment failure may occur, this is unlikely if a recommended insecticide has been used (see 'Management' below) correctly. Careful questioning will be needed to determine whether treatment failure has occurred. The identity of any treatment used and its method of use should be elicited.

Management

Having established that infection is present, the pharmacist can go on to recommend an appropriate treatment. Only those individuals in whom a live head louse has been found should be treated, and all those affected in the same household should be treated on the same day. Many areas in the United Kingdom have local public health guidance for treatment of head lice, and these should be consulted and followed. Some parents will have a preference, for example, not to use chemicals. There are several options:

- Physical insecticides
- Wet combing ('Bug Busting')
- Chemical insecticides
- Complementary therapies

Physical insecticides

There are now a range of physical products. They are generally now considered 'first line' as they have few adverse effects, and lice do not develop resistance to them. These kill the lice by a variety of means, such as physically coating their surfaces and suffocating them (*dimeticone* does this) or dissolving the wax coating of the louse and causing death by dehydration. There is reasonably good evidence of efficacy from randomised clinical trials for most of these.

Dimeticone products (lotions and sprays) usually require application to dry hair and are then left on for 8 h (or overnight) and washed out with shampoo

and water. This is usually repeated 7 days later. Each product has slightly different instructions for use, and these should be consulted. Several product packs contain a fine-toothed comb to enable lice detection to facilitate the process. Adverse effects are not common but include itchy or flaky scalp and irritation if it gets into the eyes. They can be used for people with eczema or asthma.

Another product, *isopropyl myristate/cyclomethicone solution*, is applied to dry hair and washed out after 10 min. Further application should be considered in 7 days if detection combing is positive (and is possibly advisable in any case).

Products containing a variety of other compounds that kill lice by physical means are also available. The individual product instructions should be followed.

Wet combing (Bug Busting) method

Various types of wet combs are available to purchase, and some are available on NHS prescription (via FP10). The plastic *Bug Buster® comb* has a lot of published evidence to support its use but it is likely that other combs, including the metal ones, are similarly effective.

How should wet combing treatment be performed?

- Wet combing is suitable for both detection of head lice infestation and as a treatment.
- The recommended regimen for wet combing treatment is four sessions spaced over 2 weeks (on days 1, 5, 9 and 13), continued if necessary until no full-grown lice have been seen for three consecutive sessions. Advise the following:
 - It will take 10 min to complete the process on short hair but 20–30 min for long, frizzy or curly hair.
 - Two combing procedures are recommended at each treatment session.
- Detailed instructions on how to perform wet combing are available on the patient information leaflet of the specific head lice treatment comb being used.
 - Detailed information on wet combing using the *Bug Buster® comb* is also available on the Community Hygiene Concern website (www.chc.org).

Source: From CKS (<https://cks.nice.org.uk/head-lice>).

Chemical insecticides

The main insecticide in use is *malathion*. With the advent of physical insecticides, which are more effective and do not cause resistance to develop, this is usually reserved for second-line use. Another insecticide, *permethrin*, is also available, and a mousse preparation is licensed for head lice. This is not now generally recommended because of its short contact time and because resistance rates are high in the United Kingdom.

Malathion is applied to dry hair and scalp and left for a minimum contact time of 12 h (or overnight). A repeat application 7 days after the initial treatment should be recommended. This second application will kill any lice that have emerged from the eggs in the meantime. Eggs take around 7 days to hatch. A detection comb should be used at day 4 and again at 8–10 days.

Malathion is available as alcoholic and aqueous lotions. The individual product instructions should be followed. Alcohol-based formulations are not suitable for all patients because they can cause two types of problems. Firstly, alcohol can cause stinging when applied to scalps with skin broken as a result of scratching, for example, in eczema. Secondly, in patients with asthma, it is thought that alcohol-based lotions are best avoided, as the evaporating alcohol might irritate the lungs and cause wheezing, perhaps even precipitating an attack of asthma. Such reactions are likely to be extremely rare, but caution is still advised.

The unpleasant smell of *malathion* is also an issue. Skin irritation, hypersensitivity reactions (such as anaphylaxis, angioedema and swollen eyes) and chemical burns have been reported with *malathion* products.

Malathion should be rubbed gently into dry hair and care should be taken to ensure that the scalp is thoroughly covered; the wet hair is then combed. The most effective method of application is to sequentially part sections of the hair and then apply a few drops of the treatment, spreading it along the parting into the surrounding scalp and along the hair. Approximately 50–55 ml of lotion should be sufficient for one application, although people with very thick or long hair may need more. A towel or cloth can be placed over the eyes and face to protect them from the liquid. When applying the product, particular attention should be paid to the areas at the nape of the neck and behind the ears, where lice are often found. The hair should then be left to dry naturally. A hair drier should not be used because *malathion* is inactivated by heat. When an alcoholic lotion is used, the hair should be kept away from naked flames.

Complementary therapies

There are a variety of complementary therapies, many derived from herbs. These include tea tree oil, coconut oil, eucalyptus and lavender-based products. Homeopathic remedies are also available. There are many home remedies, including the copious use of hair conditioner, baby oil, petroleum jelly and diluted white vinegar. Electric combs have also been advocated. The problem with all these treatments is lack of evidence of effectiveness. Some of them can cause skin irritation. Use of these is not generally recommended.

Other points

Teamwork among pharmacists, GPs, health visitors and nurses (particularly those involved in prescribing for head lice) is important to ensure consistency of messages and treatment information. Pharmacists can also liaise with health visitors, school nurses and public health specialists to communicate with schools

in the area and ensure the accuracy and currency of information given to parents and children. Local public health guidance should be consulted and followed.

Head lice in practice

Case 1

A young mother, who often comes into your pharmacy to ask for advice and buy medicines for her children, asks for a product to prevent head lice. Her children have not got head lice, but she wants to use a treatment ‘just to be on the safe side’ as she is embarrassed by the thought of such a thing. On questioning, you find out that the children are aged 5 and 7 years and that there are no signs of infection such as itching scalps. The children’s heads have not been checked for lice. She is not sure how to go about making such a check. There has not been any communication from the children’s school to indicate that head lice are a current problem at the school. This lady explains that she is very hygiene conscious and would hate her children to get nits.

The pharmacist's view

Treatment should not be used unless there is evidence of infection. From what this mother has said, it seems unlikely that her children have head lice, and there is no evidence of a current problem at school. However, head lice are easily transferred from one head to another, particularly among schoolchildren, and the pharmacist can explain that there is no stigma attached to having them. It would also be helpful to explain that head lice and hygiene are not linked, and they infect people from all walks of life, equally. If any live lice are found, treatment can be recommended.

The doctor's view

The advice given by the pharmacist is very helpful. It would have certainly been a lot quicker and more convenient, but inappropriate, to have sold a treatment. Hopefully, the information given by the pharmacist will allay her anxiety regarding hygiene and lice. This demonstrates an important role of health education that can be provided in the pharmacy.

Threadworm (pinworm)

Threadworm or pinworm (*Enterobius vermicularis*) is a parasitic worm that infects the intestines of humans. It is very common in young children, and parents may seek advice from the pharmacist. As with head lice infections, many parents feel embarrassed about discussing threadworm and feel ashamed that

their child is infected. Pharmacists can give reassurance that this is a common problem. In addition to recommending OTC anthelmintic (anti-worm) treatment, it is essential that advice be given about hygiene measures to prevent reinfection.

What you need to know

Age

Signs of infection

Perianal itching

Appearance of worms

Other symptoms

Duration

Recent travel abroad

Other family members affected

Medication

Significance of questions and answers

Age

Threadworm infection is very common in schoolchildren.

Signs of infection

Usually the first sign that parents notice is the child scratching his or her bottom. Older children may complain of an itchy bottom, particularly at night. Perianal itching is a classic symptom of threadworm infection and is caused by an allergic reaction to the substances in and surrounding the worms' eggs that are laid around the anus. Sensitisation takes a while to develop. So in someone infected for the first time, itching will not necessarily occur.

Itching is worse at night, because at that time the female worms emerge from the anus to lay their eggs on the surrounding skin. The eggs are secreted together with a sticky irritant fluid onto the perianal skin. Persistent scratching may lead to secondary bacterial infection, but this is rare. If the perianal skin is broken and there are signs of weeping, referral to the doctor for antibiotic treatment would be advisable.

Loss of sleep due to itching may lead to tiredness and irritability during the day. Itching without the confirmatory sighting of threadworms may be due to other causes, such as an allergic or irritant dermatitis caused by soaps or topical treatments used to treat the itching. In some patients, scabies or fungal infection may produce perianal itching.

Appearance of worms

The worms themselves can be easily seen in the faeces as white- or cream-coloured thread-like objects, up to 13 mm in length and less than 0.5 mm in width. Males are smaller than females. The worms can survive outside the body for a short time and hence may be seen to be moving. Sometimes the worms may be seen protruding from the anus itself. The eggs are too small to be seen and can survive for up to 3 weeks outside the body.

Other symptoms

In severe cases of infection, diarrhoea may be present and, in girls, vaginal itch.

Duration

If a threadworm infection is identified, the pharmacist needs to know how long the symptoms have been present and to consider this information in the light of any treatments tried.

Recent travel abroad

If any infection other than threadworm is suspected, patients should be referred to their GP surgery for further investigation. If the person has recently travelled abroad, this information should be passed on to the surgery so that other types of worm can be considered.

Other family members

Threadworm infection spreads rapidly in families and if one child is infected, it is highly likely that all other people in the family home have it. The reason for this is that the sticky eggs get under fingernails at night, following scratching, and get passed on to the other children, and then other household members, by oral ingestion. The pharmacist should enquire whether any other member of the family is experiencing the same symptoms. However, the absence of perianal itching and threadworms in the faeces does not mean that the person is not infected; it is important to remember that during the early stages, these symptoms may not occur.

Medication

The pharmacist should enquire about any treatment already tried to treat the symptoms. Correct use is essential if it is to be successful. The pharmacist should therefore also ask how the treatment was used, in order to establish whether treatment failure might be due to incorrect use.

When to refer

Infection other than the threadworm suspected

Recent travel abroad

Medication failure

Children under 2 years of age

Pregnant or breastfeeding

Management

When recommending treatment for threadworms, it is important that the pharmacist emphasises how and when the treatment is to be used. In addition, advice about preventing recurrence can be given, as described under ‘Practical points’ below. The BNF advises that *mebendazole* is the treatment for all patients over the age of 6 months. If symptoms do not remit after correct use of an appropriate preparation, patients should see their doctor.

Mebendazole

Mebendazole acts by inhibiting the uptake of glucose by the worms, causing immobilisation and death within a few days. It is largely unabsorbed from the gut and systemic adverse effects are minimal. It is the preferred treatment for threadworms and is an effective, single-dose treatment that should be given to everyone in the family at the same time (apart from young babies). It is also active against whipworm, roundworm and hookworm. Compliance with therapy is high because of the single dose.

The drug is formulated as a suspension or a tablet that is licensed to be given to children aged 2 years and over and to adults, and it is available OTC for those over 2 years of age (via pharmacy sales). Reinfestation is common and a second dose should be given to each family member after 2 weeks. Rarely, transient abdominal pain and diarrhoea may occur as side effects and is said to be associated with the presence of many worms. *Mebendazole* is not recommended for pregnant women.

Although it is not licensed for use in children under 2 years of age, the BNF recommends *mebendazole* for treating threadworm infection in children over 6 months. This would require a doctor’s (or nurse’s) prescription in children aged between 6 months and 2 years.

Non-drug measures

Adult threadworms do not live for longer than 6 weeks and for development of fresh worms, eggs must be swallowed and exposed to the action of digestive juices in the upper intestinal tract. The adult female worms lay eggs on the skin around the anus that causes pruritus; scratching the area then leads to them being transmitted on fingers to the mouth, often via food eaten with

unwashed hands. A bath, or shower, with washing of the perianal area, immediately after rising will remove eggs laid during the night. Getting the family to wash hands and scrubbing nails on getting up in the morning, before each meal and after each visit to the toilet is an essential part of management. This includes after changing nappies. Some people advocate frequent washing of cuddly toys and bed linen as well (see 'Hygiene Advice' below).

Breaking the cycle of reinfection by careful hygiene can cause the infection to die out without drug treatment, if this is preferred. Children under 6 months are best managed without recourse to drug treatment by these means. Alongside general hygiene advice, this would involve cleaning the bottom gently but thoroughly at each nappy change and for parents to wash their hands thoroughly before and after each nappy change.

Medication is also not recommended for pregnant or breastfeeding women. Some parents may prefer not to use a drug treatment for their children. Advice to older children and adults who are not using drug treatment is to physically remove the eggs by washing the perianal area first thing in the morning and washing or wet-wiping regularly during the day. Ideally this would be at 3-h intervals but twice a day is probably more realistic. In addition, the hygiene advice (see below) should also be followed.

If people who cannot take *mebendazole* (for example, pregnant women) continue to experience problems after using only hygiene measures, they should be referred to a GP.

Practical points

1. Parents are often anxious and ashamed that their child has a threadworm infection, thinking that lack of hygiene is responsible. The pharmacist can reassure parents that threadworm infection is extremely common and that any child can become infected; infection does not signify lack of care and attention.
2. All family members should be treated at the same time, even if only one has been shown to have threadworms. This is because other members may be in the early stages of infection and thus asymptomatic. If this policy is not followed, reinfection may occur.
3. Transmission and reinfection by threadworms can be prevented by the following practical hygiene measures:

Hygiene advice

- Environmental hygiene measures – undertake on the first day of treatment
 - Wash sleepwear, bed linen, towels and cuddly toys at normal temperatures and rinse well.
 - Thoroughly vacuum and dust, paying particular attention to the bedrooms, including vacuuming mattresses.

- Thoroughly clean the bathroom by ‘damp-dusting’ surfaces, washing the cloth frequently in hot water.
- Strict personal hygiene measures – for 2 weeks if combined with drug treatment or for 6 weeks if used alone
 - Wear close-fitting underpants or knickers at night. Change them every morning.
 - Cotton gloves may help prevent night-time scratching. Wash them daily.
 - Bath or shower immediately on rising each morning, washing around the anus to remove any eggs laid by the worms during the night.
- General personal hygiene measures – encourage all the time for all household members
 - Wash hands and scrub under the nails first thing in the morning, after using the toilet or changing nappies and before eating or preparing food.
 - Discourage nail biting and finger sucking.
 - Avoid the use of ‘communal’ or shared towels or flannels.

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Source: From Clinical Knowledge Summary (CKS): Threadworm. <https://cks.nice.org.uk/threadworm>.

Oral thrush (oral candidiasis)

Oral thrush (candidiasis) is an infection of the lining of the mouth, caused by the yeast-like organism, *Candida albicans* (rarely, other candida species are also implicated). It can also cause infection around the nappy area in babies and genital thrush, mostly seen in adults. Oral thrush in babies over the age of 4 months can usually be treated by the pharmacist.

What you need to know

Age

Infant, child, adult, elderly

Affected area

Appearance

Previous history

Medication

Significance of questions and answers

Age

Oral thrush is common in babies, particularly in the first few weeks of life. Sometimes, the infection is passed on by the mother during childbirth. In older children and adults, oral thrush is seen less, but may occur after antibiotic use or with inhaled corticosteroid treatment (see ‘Medication’ below). It is also

seen commonly with diabetes. Unless these causes can be readily identified and managed in this older group, it may also be a sign of immunosuppression, and referral to the doctor is usually advisable.

Affected areas

Oral thrush affects the surface of the tongue and the insides of the cheeks.

Appearance

Oral thrush

When candidal infection involves mucosal surfaces, white patches known as plaques are formed, which resemble milk curds; indeed, they may be confused with the latter by mothers when oral thrush occurs in babies. The distinguishing feature of plaques due to *Candida* is that they are not so easily removed from the mucosa, and when the surface of the plaque is scraped away, a sore and reddened area of mucosa will be seen underneath, which may sometimes bleed.

Nappy rash

In the nappy area, candidal infection presents differently with characteristic red papules around the outer edge of the area of nappy rash, so-called satellite papules. Another feature is that the skin in the folds is nearly always affected. Candidal infection is a common component of nappy rash (see section on Nappy rash, earlier in this chapter).

Previous history

In babies recurrent infection is uncommon, although it may sometimes occur following reinfection from the mother's nipples during breastfeeding or from inadequately sterilised bottle teats in bottle-fed babies.

Patients who experience recurrent infections should be referred to their doctor for further investigation.

Human immunodeficiency virus infection

Persistence of oral thrush and/or thrush of the nappy area after the neonatal period may be the first sign of HIV infection.

Medication

Antibiotics

Some drugs predispose to the development of thrush. For example, broad-spectrum antibiotic therapy can wipe out the normal bacterial flora, allowing the overgrowth of fungal infection. It would be useful to establish whether the patient has recently taken a course of antibiotics.

Immunosuppressives and corticosteroids

Any drug that suppresses the immune system will reduce resistance to infection, and immunocompromised patients are more likely to get thrush. Cytotoxic therapy and corticosteroids predispose to thrush. Patients using inhaled corticosteroids for asthma are prone to oral thrush because the drug is deposited at the back of the throat during inhalation, especially if inhaler technique is poor. Rinsing the throat with water after using the inhaler may be helpful, and using spacing devices reduces the chances of this problem.

The pharmacist should identify any treatment already tried. In a child with recurrent thrush, it would be worth enquiring about previously prescribed therapy and its success.

When to refer

Babies under 4 months

Adults and older children without obvious cause

Recurrent/persistent thrush

Failed medication

Treatment timescale

Oral thrush should respond to treatment quickly. If the symptoms have not cleared up within 1 week, patients should see their doctor.

Management

Antifungal agents

Miconazole

The only specially formulated product currently available for sale OTC to treat oral thrush is *miconazole oral gel*. Preparations containing *nystatin* are also effective but are restricted to prescription-only status.

Miconazole oral gel is an orange-flavoured product, which should be applied to the plaques using a clean finger four times daily after eating in adults and children over 6 years and twice daily in younger children and infants. *Miconazole oral gel* is not licensed for use in children under 4 months of age because of the risks of choking if it is not applied carefully. This restriction has caused some controversy but is based on case reports of harm to young babies. The BNF still advises the use of *miconazole* for these babies and gives information on doses, but such use is 'off label'. When this treatment is likely to be indicated in a baby under 4 months, parents should be referred to a GP surgery

as it will need a doctor's prescription. For young babies, the gel can be applied directly to the lesions, also using a clean finger. Care needs to be taken not to touch the throat. The gel should be retained in contact with the mouth lining (oral mucosa) for as long as possible. Treatment should be continued for 2 clear days, after the symptoms have apparently gone, to ensure that all infection is eradicated.

The licence for *miconazole oral gel* says it must not be applied to the nipple of a breastfeeding woman for administration to an infant, due to the risk of choking.

Miconazole oral gel is not recommended for patients taking *warfarin*. There is evidence of an interaction with *warfarin*, leading to an increased risk of bleeding.

Practical points

Oral thrush and nappy rash

If a baby has oral thrush, the pharmacist should check whether nappy rash is also present. When both oral thrush and candidal involvement in nappy rash occur, both should be treated at the same time. An antifungal cream containing *miconazole* or *clotrimazole* can be used for the nappy area.

Breastfeeding

When the mother is breastfeeding, care needs to be taken to carefully clean breasts and nipples. If the nipples are itchy, cracked or have flaky skin, candida infection should be suspected. Nipple thrush can be treated with *miconazole cream*, with care to remove any cream before feeding. For bottle-fed babies, particular care should be taken to sterilise bottles and teats.

Oral thrush in practice

Case 1

Helen Jones, a young mother, brings her daughter, Jane, to see you. Mrs Jones wants you to recommend something for Jane's mouth that has white patches on the tongue and inside the cheeks. Jane is 8 years old and is not currently taking any medicines. She has not recently had any antibiotics or other prescribed medicines. Jane does not have any other symptoms.

The pharmacist's view

Jane should be referred to her GP surgery, since thrush is rare in children other than infants. There is no apparent precipitating factor such as recent antibiotic therapy and Jane should see her doctor for further investigation.

The doctor's view

Helen Jones should be advised to take Jane to the doctor's surgery. The description is certainly suggestive of oral thrush. If there were any doubt as to the diagnosis, a swab could be taken for laboratory examination. If Jane did have thrush, then treatment such as *miconazole oral gel* or *nystatin oral suspension* might be prescribed.

The next concern would be to determine a precipitating cause. General enquiries about Jane's health would be necessary. The doctor would be in a good position to know of previous medical history including any transfusions and family history. A general physical examination would be carried out, looking, in particular, for signs of anaemia, any rashes or bruising, enlargement of lymph nodes (glands), enlargement of abdominal organs (e.g. liver or spleen) or any other masses. The doctor would be looking for signs of a malignancy such as leukaemia or lymphoma. Almost certainly blood tests would be arranged. The doctor would also make an assessment of any HIV risk factors and counsel Helen and Jane accordingly before initiating any further action.

Case 2

A young mother asks for something to treat her baby son's mouth. You look inside the baby's mouth and see white patches on the tongue and inside the cheeks. The baby is 5 months old and has had the patches for 2 days: at first his mother thought they were milk curds. He had some antibiotic syrup last week for a chest infection and finished it yesterday. The baby is not taking any other medicines and his mother has not given him anything to treat the symptoms yet. He has no other symptoms.

The pharmacist's view

You could recommend the use of *miconazole oral gel* for this baby. He has a thrush infection following antibiotic therapy that should respond well to the imidazole antifungal. His mother should use 2.5 ml of gel twice daily after feeds, applying it to the inside of the mouth and tongue using a clean finger. Treatment should be continued for 2 days after the problem has cleared up. If the symptoms have not gone after 1 week, the baby should be seen by a health visitor or GP.

The doctor's view

Oral thrush is the most likely diagnosis. It would be reasonable for the pharmacist to institute treatment in view of the baby's age alone, although in this case antibiotic treatment is an additional precipitating factor. If there were any doubt as to the diagnosis, his mother could seek the advice of the health visitor. It might be useful to ask the mother whether or not she is breastfeeding in

which case careful attention should be paid to cleaning the breasts and nipples, particularly before and after feeds. If she has symptoms suggesting thrush of the nipples (such as soreness and flaking skin), then *miconazole cream* can be used with care to clean it off prior to feeding. If she is bottle-feeding, extra care will be needed with sterilising bottles and teats.

Chapter 9

Insomnia

Difficulty sleeping

Insomnia is common; temporary insomnia can often be managed by the pharmacist. The key to restoring appropriate sleep patterns is advice on sleep hygiene (bedtime routines). Over-the-counter (OTC) products to aid sleep (the antihistamines *diphenhydramine* and *promethazine*) can help during the transition period and can also be useful in periodic and transient sleep problems. These products are advertised direct to the public, and pharmacists sometimes report difficulties in declining sales for continued use. An initial focus on sleep hygiene and careful explanation that antihistamines are for short-term use are therefore important.

What you need to know

Age

Symptoms

Difficulty falling asleep

Waking during the night

Early morning waking

Poor sleep quality

Snoring, sleep apnoea, restless legs

Duration

Previous history

Contributory factors

Shift working, being away from home

Alcohol

Caffeine – coffee, tea, cola
Stressful events
Current sleep hygiene
Medication

Significance of questions and answers

Age

In older people, the total duration of sleep is shorter and there is less deep (stage 4) sleep. Nocturnal waking is more likely because sleep is generally more shallow. However, people may still feel that they need more sleep and wish to take a medicine to help them sleep. Older people may nap during the day and this reduces their sleep need at night even further.

Many babies, toddlers and infants have poor sleep patterns, which understandably can cause anxiety to parents. In these situations, referral to the health visitor or doctor can be helpful. There are also some useful self-help books and pamphlets available.

Symptoms

Insomnia can be broken down into difficulty in getting to sleep, difficulty staying asleep, early wakening or feeling unsatisfied by sleep, despite adequate time and opportunity to sleep. Often a mixture of these can occur. These are associated with complaints of impaired daytime functioning, such as poor concentration, mood disturbance and daytime tiredness. It is important to distinguish between these different components of sleep problems:

Difficulty in falling asleep (possibly a symptom of anxiety)

Early morning waking (possibly a symptom of depression)

Waking during the night and poor sleep quality (further questioning needed to understand why). Sleep may be disturbed by snoring, sleep apnoea or restless legs. All of these can be associated with increased cardiovascular risk. Referral to the general practitioner (GP) is necessary. Both snoring and sleep apnoea are amenable to treatment. Restless legs are more difficult to manage, but the GP needs to check for other cardiovascular disease (CVD) risk factors.

Sleep may also be disturbed by underlying physical conditions: heart disease; chronic obstructive pulmonary disease (COPD) or asthma; neurological disease (Alzheimer's, Parkinson's); overactive thyroid; joint or muscle pains; or urinary symptoms or chronic pain. Any of these conditions requires referral to the GP.

Depression is an important cause of insomnia. Early morning waking is a classic symptom of depression. Here the patient may describe few problems in getting

to sleep but waking in the early hours and not being able to get back to sleep. It is usually associated with feeling very unhappy and rumination on things like hopelessness or worthlessness. This pattern requires referral to the doctor for further investigation.

The onset of symptoms of bipolar disorder may be associated with lack of sleep due to the mind working overtime. It is possible that insufficient sleep may actually trigger an episode of mania in bipolar disorder.

Anxiety can also cause insomnia. This is usually associated with difficulty in getting off to sleep because of an overactive mind and excessive worrying. This is something that many people experience, particularly before an important occasion, for example, an examination. If, however, this occurs as a more regular pattern, referral to the GP may be indicated.

Duration

Sleep disorders are classified as follows:

Transient (days).

Short term (up to 4 weeks).

Chronic (longer than 4 weeks).

All chronic cases should be referred to the doctor.

Previous history

Ask whether this is the first time problems in sleeping have occurred or whether there is a previous history. Where there is a previous history, it is helpful to know what treatments have been tried. It is also useful to be aware of a history of depression or anxiety or other mental health problems.

Contributory factors

1. Shift work with changing shifts is a classic cause of sleep problems. Those who work away from home may experience difficulty in getting a good night's sleep because of the combination of travelling and staying in unfamiliar places.
2. Alcohol – While one or two drinks can help by decreasing sleep latency (the length of time taken to fall asleep), the sleep cycle is disturbed by heavy or continuous alcohol consumption. Furthermore, alcohol causes diuresis, which causes wakening at night to urinate. Tolerance to the sedative properties of alcohol develops after 3–4 days. Insomnia may be related to alcohol dependence. Also consider the possibility of dependence on recreational drugs such as cocaine.
3. Life changes can cause disrupted sleep, for example, change or loss of job, moving house, bereavement, loss or separation or the change of life (i.e. menopause).

4. Other stressful life events might include examinations, job interviews, celebrations (e.g. Christmas) and relationship difficulties.
5. Obesity can be associated with sleep apnoea and snoring, both of which can interrupt sleeping.

Current sleep hygiene

It is worth asking about the factors known to contribute to effective sleep hygiene (see 'Practical points' below).

The impact of caffeine is particularly significant. There is an association between the daily intake of caffeine, sleep problems and daytime sleepiness. In excess amounts, caffeine can also trigger a fast heart rate, anxiety and restlessness. Caffeine is metabolised by the CYP1A2 enzyme and stays in the body for several hours; 4–6 h after a cup of coffee, the body will only have removed half of it. A caffeinated soft drink, or a cup of tea or coffee within a few hours of bedtime can result in enough caffeine in the system to affect sleep. The main effects are quite broad, including prolonged sleep latency (longer to fall asleep), shorter total sleep time, increases in light sleep and shortening of deep sleep time, as well as more frequent awakenings.

As stated, alcohol consumption is also an important consideration. Although it can help people fall asleep quickly, it can disrupt sleep patterns and stop deep sleep. It also causes diuresis, which results in the need to urinate at night. Problem drinking can aggravate anxiety and depression (or be caused by these), and alcohol dependence should be considered. When people complain of poor sleep, it is worth making tactful enquiries about whether alcohol may be a factor.

Medication

Some drugs can cause or contribute to insomnia, including decongestants, selective serotonin reuptake inhibitors (SSRIs) and serotonin/noradrenaline reuptake inhibitors (SNRIs), monoamine oxidase inhibitors, *methylphenidate*, corticosteroids, appetite suppressants and *phenytoin* and *theophylline*. Medical problems can be associated with insomnia through pain (e.g. angina, arthritis, cancer and gastro-oesophageal reflux) or breathing difficulties (e.g. heart failure, chronic obstructive airways disease and asthma). Other medical conditions such as hyperthyroidism and Parkinson's disease can also cause insomnia.

When to refer

Suspected depression

Chronic problem (longer than 4 weeks' duration)

Children under 16 years
 Snoring, apnoea, restless legs
 Associated physical conditions
 Suspected alcohol problems/dependency
 Recreational drug dependence

Treatment timescale

There should be an improvement within days: refer after 1 week if the problem is not resolved.

Management

Antihistamines (*diphenhydramine* and *promethazine*)

Antihistamines reduce sleep latency and also reduce nocturnal waking. They should be taken 20–30 min before bedtime and can be recommended for adults and children over 16 years. Tolerance to their effects can develop, and they should not be used for longer than 7–10 consecutive nights. *Diphenhydramine* has a shorter half-life than *promethazine* (5–8 h compared with 8–12 h). Following a 50 mg dose of *diphenhydramine*, there is significant drowsiness for 3–6 h. These antihistamines have anticholinergic side effects, including dry mouth and throat, constipation, blurred vision and tinnitus. These effects will be enhanced if the patient is taking another drug with anticholinergic effects (e.g. tricyclic antidepressants and phenothiazines), but patients taking these drugs would be better referred anyway. ‘Prostatic hypertrophy’ (lower urinary tract symptoms in men) and closed-angle glaucoma are contraindications to the use of *diphenhydramine* and *promethazine*. *Diphenhydramine* and *promethazine* should not be recommended for pregnant or breastfeeding women.

Benzodiazepines

Despite the UK Committee on Safety of Medicines (CSM) statement on the use of benzodiazepines, recommending that these drugs are for short-term use only and should not be used for longer than 2–4 weeks, pharmacists are well aware that some patients continue to be on them for long periods of time. In some areas the rate of repeat prescribing to older people (> 65 years) can be as high as 30%.

In older people taking benzodiazepines, such as *nitrazepam* and *temazepam*, long-term use can cause considerable harm. There is no evidence that they continue to help with sleep beyond a few weeks, but they are addictive, and many people get discontinuation symptoms if they stop them abruptly. Long-term use can aggravate anxiety and depression. Use is associated with road traffic accidents. In frail people, they can cause confusion, unsteadiness, falls and fractures. They can interact with alcohol causing profound sedation. Despite these facts

they are often prescribed for years, sometimes to younger fitter people who become more susceptible to the adverse effects if they continue to take them as they age. There does seem to be some complacency, with a view that they do little harm, but stopping them can be difficult.

Research shows that success rates in weaning patients off benzodiazepines can be high if slow withdrawal is supported and structured. This is an area where pharmacists and doctors can work together and discussions with local doctors can initiate this process. Advice on how to support people to ‘come off’ benzodiazepines can be found at: <https://cks.nice.org.uk/benzodiazepine-and-z-drug-withdrawal>.

Complementary therapies

Some patients prefer alternative treatments for insomnia, perceiving them as more natural. Herbal remedies have been traditionally used for insomnia, with valerian and hops being the most commonly used ingredients. They are not recommended for pregnant or breastfeeding women. In studies, side effects have been mild and transient and with no differences from placebo. Systematic reviews have not shown evidence of the efficacy of valerian and hops in sleep disorders.

Aromatherapy

A systematic review concluded that lavender oil may be of small to moderate benefit. Lavender oil has been shown to induce a sense of relaxation, as has camomile. One or two drops of the essential oil sprinkled on a pillow or three or four drops in a warm (not hot) bath can be recommended.

Melatonin

Melatonin is currently available only as prescription-only medicine in the United Kingdom; however, it is widely purchased and used in the United States to treat insomnia. *Melatonin* is produced by the body’s pineal gland during darkness and is thought to regulate sleep. Studies have shown that *melatonin* levels are lower in the elderly. Supplementation with *melatonin* can raise levels. *Melatonin* has a short half-life (2–3 h) and is subject to first-pass metabolism. Sublingual controlled release products are therefore popular in the United States. A systematic review concluded that *melatonin* has modest effects, with decreased sleep onset latency, increased total sleep time and improved sleep quality.

St John’s wort (*Hypericum*)

St John’s wort (SJW), a herbal remedy, is commonly used in the self-treatment of depression, and pharmacists will encounter people who come into the

pharmacy to buy it and those who seek the pharmacist's opinion about whether to take it or not. In a study among people with depression, one in three had tried SJW.

Systematic reviews and meta-analysis found that overall the evidence relating to SJW is inconsistent and complex. In mild-to-moderate depression, SJW preparations and standard antidepressants appear to show similar effects. In major depression, SJW preparations had only small benefits over placebo. The active component of SJW is thought to be similar to that of SSRIs. Pharmacists should bear in mind that there is variation of effect not only among the trials and their results but also among the different manufacturers' products tested. Products may differ considerably in their pharmaceutical quality and cannot be considered equivalent. Lack of standardisation of the amount of active ingredient is an issue; preparations can vary widely.

Pharmacists will make their own decisions about whether they will recommend SJW, and they need to be prepared to answer requests for advice about its use and to be aware of the emerging evidence. A cause for significant concern is drug interactions. BNF has advised:

St John's wort (Hypericum perforatum) is a popular herbal remedy on sale to the public for treating mild depression. It should not be prescribed or recommended for depression because *St John's wort* can induce drug metabolising enzymes and a number of important interactions with conventional drugs, including conventional antidepressants, have been identified (the BNF has further information on common interactions). Furthermore, the amount of active ingredient varies between different preparations of *St John's wort* and switching from one to another can change the degree of enzyme induction. If a patient stops taking *St John's wort*, the concentration of interacting drugs may increase, leading to toxicity.

The MHRA advises that women taking hormonal contraceptives for pregnancy prevention should not take herbal products containing SJW.

Pharmacists are an important source of information for patients about these possible interactions.

Nasal plasters for snoring

These adhesive nasal strips work by opening the nostrils wider and enabling the body to become accustomed to breathing through the nose rather than through the mouth. A plaster is applied each night for up to 1 week to retrain the breathing process. The strips have been suggested for use in night-time nasal congestion during pregnancy.

Practical points

Sleep hygiene

Key points are as follows:

- Establish fixed times for going to bed and waking up (and avoid sleeping in after a poor night's sleep).
- Not watching TV or using phones, tablets or computers shortly before going to bed.
- Try to create a relaxation period before going to bed. Try taking a warm bath or listening to calming music.
- Maintain a comfortable sleeping environment: not too hot, cold, noisy or bright.
- Using thick curtains or blinds, an eye mask and earplugs to stop you being woken up by light and noise.
- Avoid napping during the day.
- Avoid caffeine, nicotine, and alcohol within 6 h of going to bed.
- Avoid exercise within 4 h of bedtime (although exercise earlier in the day is beneficial).
- Avoid eating a heavy meal late at night.
- Avoid watching or checking the clock through the night; this increases anxiety.
- Only use the bedroom for sleep and sexual activity.
- Writing a list of worries, and any ideas about how to solve them, before going to bed, can help in forgetting about them until the morning.

Exercise

A systematic review found there is evidence that taking part in an exercise training programme had moderately positive effects on sleep quality in middle-aged and older adults. There is also evidence that regular exercise is beneficial in reducing depressive symptoms. A Cochrane review concluded that exercise seems to improve depressive symptoms when compared with no treatment or a control intervention but commented that in the more robustly designed studies the positive effects of exercise were smaller.

The Mental Health Foundation has run a campaign encouraging exercise in people with depression. Their website (www.mentalhealth.org.uk) gives free access to podcasts and booklets aimed at both professionals and patients including a 'How to' guide 'Look after Your Mental Health Using Exercise'.

Alternatives to medication are important especially as there is evidence that antidepressants are overall not beneficial in mild depression.

Bathing

A warm bath 1–2 h (not immediately) before bedtime can help induce sleep.

Using heat

An electric blanket can help sleep by relaxing the muscles and increasing the brain temperature. The effect is not needed throughout the night, only in inducing sleep; using a timer to switch off the blanket after 1 or 2 h is sensible.

Caffeine and alcohol

The stimulant effect of caffeine in coffee, tea and cola drinks is considerable (see earlier). Avoiding caffeine in the late afternoon and evening is a sensible advice. Enquiries about alcohol consumption may give useful information and guidance on moderation may be indicated.

Insomnia in practice

Case 1

Chris Jenkins, a 20-year-old student, comes into the pharmacy requesting some tablets to help him sleep. He says that he has had problems sleeping ever since he returned from Indonesia 10 days ago. He says that he cannot get off to sleep because he does not feel tired. When he eventually does fall asleep, he sleeps fitfully and finds it difficult to get up in the morning. He has never suffered from insomnia before. He is otherwise well, is not taking any medicines and does not have any other problems or difficulties.

The pharmacist's view

Long-haul travel can result in disruption of the sleep pattern and some people are more affected by it than others. It would be reasonable to recommend that Chris take an antihistamine (*diphenhydramine* or *promethazine*) for 4–5 days until the problem resolves. An alternative would be one of the herbal products to aid sleep. He should find that his normal sleep pattern is re-established within 1 week.

The doctor's view

This is quite likely to be a short-term problem due to his recent travelling. A very short course of antihistamines may re-establish a better pattern. Many people who complain of insomnia do not always admit to other problems in their lives. It is therefore important to be alert to this possibility. If his insomnia does not resolve quickly, or if the pharmacist were to notice that Chris seemed low or anxious, a referral would be appropriate.

Case 2

Maureen Thomas, aged about 50 years, comes in asking for something to help her sleep. She says she has seen an advertisement for some tablets that will help. She explains that her sleep has been bad ever since she had her children, but over the last few weeks it has got worse. She says she has had problems in getting off to sleep and recently has been waking early and not getting back to sleep. She lies in bed and her mind runs through her problems, constantly. She says that she has had some worries at work and her Mum has been unwell ... ‘but that’s all, no more than usual. I’ve had to put up with a lot worse and managed! I just need a few days’ good sleep and I’ll be OK’. Otherwise she reveals that she is not on any other medication and has never troubled anyone before with her sleeping problem.

The pharmacist's view

This patient is experiencing a number of sources of stress and difficulty that are likely to be contributing to her sleep problems. In addition to having trouble getting to sleep, she is also waking early and unable to get back to sleep, indicating that the sleep disturbance is extensive. Early waking can also be a symptom of depression. It would be best for her to see the doctor and this will need a careful, persuasive explanation from the pharmacist. It would also be useful to talk about sleep hygiene to see if there are any practical actions that she could take to alleviate the problem. While the use of an antihistamine or herbal medicine for a few days would not be harmful, it may prevent her from seeking advice from the doctor. Therefore, it would be better not to recommend a medicine on this occasion.

The doctor's view

Ideally, this woman should be advised to make an appointment to see her doctor. It is possible that she would be reluctant to do so, as she gives the impression that she thinks she should be able to cope and should not have to trouble anyone else with her problems. If the pharmacist could persuade her that it is completely acceptable to seek advice from her doctor, this would be the best course of action. She may be depressed and it would be helpful for a doctor to make a full assessment. This would include how she is feeling, how her life is being affected and what other symptoms she may have. It may be that she is also concerned by changes associated with approaching the menopause.

Just the ability to talk to a good, attentive, accepting listener can be very beneficial. She may benefit from seeing a counsellor or cognitive behavioural therapy which the GP could arrange. She may benefit from an exercise programme. Her consumption of alcohol should be explored as this is a very common underlying contributory factor and is often overlooked. Caffeine consumption should

also be discussed. If the underlying problem is moderate or severe depression, then most doctors would offer her an antidepressant, as well.

Case 3

A man whom you do not recognise as a regular customer asks to speak with you. He tells you that he has been feeling stressed lately in his job. (He is an estate agent and works locally.) He says he is having trouble sleeping and feels that things are getting on top of him. He is not getting much exercise these days – he used to play football and go training regularly, but since a knee injury he has given it up. He thinks he might be depressed but does not want to see his doctor because he does not want to end up on antidepressants. He read an article in the paper yesterday about SJW and would like to try it. He asks what you think and if it's safe. He is not taking any medicines.

The pharmacist's view

This is not an uncommon query. If someone just asks to buy SJW, I'd sell it to them after checking about other medication and asking whether they wanted to discuss anything. I would suggest a move to the consultation room. I find that some people don't want to see the doctor even when they think they're depressed. In this case it's because of a dislike of the idea of taking antidepressants. Although there is evidence that antidepressants work, especially in severe depression, it's not so clear-cut for mild depression. Cognitive therapy would be another option. There's good evidence to support it but its availability varies. Also some people want to try to manage their depression themselves rather than get into the formal health system.

If he decided to try SJW, I would explain that it could take 3–4 weeks to work. I would tell him that it does have some sedative effect and that taking it at night could be helpful.

If it were a woman of childbearing age, I would always ask whether she was on the pill, because SJW interacts with the oral contraceptive pill and makes it less effective.

The doctor's view

The evidence on the effectiveness of SJW is variable. Some trials show benefit and others no benefit when compared with placebo. Also there is considerable variation in the formulation of products. If it does work, it probably does so by acting as an antidepressant, and it is worth advising that it is safer and better to use a licensed antidepressant, which has clear evidence of benefit and is 'quality assured'.

Although this may be a case of work stress, it should be borne in mind that men are notoriously reticent to admit to mental health problems and are at

risk of serious illness and suicide. The pharmacist should advise this man to see his GP.

If this man were to come to his GP, it would be important to hear more about how he is being affected by his problem, that is, what it is like for him, what is the impact on his life, how he feels, etc. It would be useful to hear about his understanding of the problems and how he thinks he can be helped and whether he would be prepared to see a counsellor. The GP would need to do a risk assessment and check whether he is feeling suicidal and, if so, whether he has specific plans as to how he might kill himself.

Once an initial assessment has been made, it can often be useful to delay starting medication or making a referral at the first consultation and instead offer to review him in the next few days or week to see how he is. Just the fact of coming to see the GP, being listened to and taken seriously can be helpful, and the problem may be viewed in a different or better light on subsequent follow-up. In his case, it probably would be best to advise a non-pharmacological approach. Even if he were to take an antidepressant, the conditions triggering his depression are likely to be still there when he stops the medication. He could be referred for brief intervention counselling/therapy or cognitive behavioural therapy if he were in agreement, which can help to build resilience and prevent relapse. Mindfulness has also become very popular: it is a form of meditation and is recommended as an option for managing depression by NICE.

Another way to help him could be to enable him to get back to some exercise as this is known to improve depression. When he presented at the pharmacy, he mentioned that he was unable to play football because of a knee injury. It sounds as though a return to exercise could help him deal with some of his stress. Some GP practices can refer to local leisure centres that support people with these kinds of problems. Perhaps referral to a physiotherapist might be useful. It might be that he could try swimming as another form of exercise.

The customer's view

It was useful to know more about whether SJW works or not. The pharmacist advised me to see the doctor and I followed this advice. I'm glad that I did as the GP provided useful support and gave me helpful guidance. She helped me understand that I had a real illness and not to be embarrassed by my problems and to feel comfortable to return for regular review. I don't want to take drugs, which would include SJW, so I have been trying out mindfulness, which is helping me de-stress and relax. I've also taken up swimming and feel much more active with the bonus that physical tiredness helps me sleep.

Chapter 10

Prevention of Heart Disease

Prevention of heart disease

This chapter is different from the others in this book that are primarily concerned with responding to a symptom or problem. Here the pharmacist is assessing risk and advising on prevention. The development of cardiovascular disease (CVD) is largely asymptomatic up to the point where an ‘event’ (such as a heart attack or stroke) occurs. Pharmacists can suggest or make interventions (‘primary prevention’) to help people who are largely symptom free but at increased risk of developing heart disease in the future. Here the individual is not a patient because he or she does not have any disease or condition. Once a person has experienced an event and has an ongoing disease, the prevention of subsequent events is termed ‘secondary prevention’.

What is cardiovascular disease?

Established ‘atherothrombogenic’ CVD is mainly subdivided into peripheral vascular disease, transient ischaemic attack (TIA) and stroke, and coronary heart disease (CHD). This type of CVD occurs because of narrowing and/or blockage of the arteries from fatty deposits (atheroma). Impairment to blood flow in the coronary arteries can cause angina and in the leg arteries causes claudication. An acute CVD event usually arises because the atheroma ruptures and a blood clot forms over it (thrombus), either causing sudden blockage of the artery, or part of the clot breaks off and causes blockage in the circulation elsewhere (emboli). This is the chief mechanism for acute myocardial infarction, stroke and acute limb ischaemia.

In people with impaired coronary artery circulation, the condition remains asymptomatic until it manifests as angina, myocardial infarction (MI), sudden death or cardiac dysfunction (such as arrhythmias or cardiac failure). Other cardiac conditions such as heart failure and atrial fibrillation are also usually caused by CHD, resulting from damage to heart muscle and cardiac conduction.

How common is it?

Atherothrombogenic CVD is a leading cause of morbidity and mortality in the United Kingdom. In 2015 it caused more than 26% of all deaths or 158 000 (a similar proportion in both women and men).

CHD is the most common type of CVD, and in 2015 it was responsible for nearly 70 000 deaths – 1 in 7 men and 1 in 11 women die from this. CHD kills twice as many women in the United Kingdom as breast cancer. It is a common cause of morbidity and 2.3 million people are living with CHD in the United Kingdom, of which 60% are men. Around 39 000 deaths were from stroke in 2015, with 6 and 8% of all deaths in men and women, respectively. There are over 1.2 million stroke survivors in the United Kingdom, and half of them are aged under 75.

A major concern is premature deaths from CVD (defined as deaths occurring before the age of 75 years). About 42 000 people under the age of 75 in the United Kingdom die from CVD each year. These premature deaths are more common in men (women get the disease later in life); one-quarter of all premature deaths in men and 17% of all premature deaths in women are from CVD. There is a strong link to deprivation and where people live. People living in the north of England, central Scotland and the south of Wales have the highest rates in the United Kingdom. The highest rates of premature CVD are seen in the cities of Glasgow and Manchester (three times higher than for Hart in Hampshire, where rates are the lowest in the United Kingdom).

Despite these stark figures, there has been a steady decline in the rates of death from CVD over the past 50 years (in 1961 more than 50% of all deaths were due to CVD). Much of this is thought to be due to reduced rates of smoking, improvements in diet and better lifestyles. Some are due to successful medical interventions, both in preventing CVD and also treating CVD when it arises. However, it is thought that premature CVD remains a largely preventable condition, and the variation in rates of premature disease and death suggest there is still much to be done, particularly in the field of primary prevention.

Screening and risk factors

To address such concerns, a national programme of screening for CVD risk (NHS Health Checks) was introduced in England in 2010 with the intention of screening all individuals aged between 40 and 74 years every 5 years. Community pharmacies provide screening in some areas as part of local arrangements. Some similar initiatives are in place elsewhere in the United Kingdom.

An overall estimate of CVD risk over the next 10 years is scored using an algorithm or risk calculator based on current clinical guidance; in 2015 the National Institute for Health and Care Excellence (NICE) recommended the use of QRISK2 for England and Wales. This is also used in Northern Ireland. In Scotland, ASSIGN is the preferred risk calculator.

QRISK is derived from a very large database extracted from GP computer systems. It is updated annually. QRISK3 will replace QRISK2 in 2018. For further information, and to see the latest version of the QRISK calculator, see <https://qrisk.org/three/>.

The causes of CVD are multifactorial and are often termed ‘risk factors’. The estimation of individual CVD risk can be the starting point for discussions with patients, and a reduction in their risk should be the goal of interventions. Advice on smoking cessation and on exercise and improving diet is just as important as medical intervention. Pharmacists are in a crucial position to assist with lifestyle advice.

What you need to know

- Age, gender
- Ethnic origin
- Family history of CHD
- Smoking history
- Waist circumference/body mass index
- Diet
- Physical activity
- Alcohol intake
- Hypertension
- Diabetes
- Lipids
- Medication

Significance of questions and answers

A recent change has been to estimate the overall CVD risk, rather than risk of CHD. This is usually done by predicting the risk of a CVD event over the next 10 years using a risk calculator (see information on QRISK above). Assessment of an individual's risk of developing CVD involves a calculation based on both modifiable and non-modifiable risk factors for developing the disease. Non-modifiable risk factors include age, gender, ethnic origin and family history of CHD. Interventions to reduce absolute CVD risk are focused on modifiable risk factors.

Age and gender

With age, the risk of developing CVD increases. Unfortunately, it is not possible to affect the passage of years, but interventions can slow down the

accumulation of damage and disease. Around 80% of people who die from CVD are aged 65 years or over. Men develop it earlier in their lives – around 10–15 years earlier, but overall men and women have a similar risk over a lifetime. For example, this means a man's 10-year risk will be higher than a woman's 10-year risk at the age of 55 years, if all other risk factors are equal.

Ethnic origin

Heart disease in the United Kingdom is more common in Afro-Caribbean people and those from the Asian subcontinent (Bangladesh, India, Pakistan and Sri Lanka). Type 2 diabetes is also more common in these people when they live in a 'Westernised' country.

Family history of CHD

Risk of developing CHD increases if an individual has a close relative (father, mother, brother or sister) with the disease. A family history of premature CHD (i.e. a father or brother who had a coronary event before the age of 55 years or a mother or sister before the age of 65 years) is an even stronger indicator of risk.

Smoking history

In 2014 in Great Britain, 20% of men and 17% of women were current smokers (19% overall). Smoking tobacco has been shown to increase the risk of CHD. This effect is related to the number of cigarettes smoked; heavy smokers (more than 20 cigarettes per day) increase their risk of CHD by two- to fourfold over non-smokers.

It is not just about CVD risk. Smoking is also responsible for causing many cancers. In 2013, 17% (79 700) of all deaths of adults aged 35 years and over were estimated to be caused by smoking. About a half of all smokers will eventually die of a smoking-related illness. It is thought to be the primary reason for the gap in a healthy life expectancy between rich and poor; among men, smoking is responsible for over half the excess risk of premature death between the social classes.

No level of smoking has been demonstrated to be safe. Those who have recently stopped smoking remain at a higher risk for as long as 5 years after stopping, but the risk begins to decline within a few months of stopping.

Waist circumference/body mass index

Obesity is associated with an increased risk of stroke, heart disease, type 2 diabetes, hypertension and dyslipidaemia, that is, raised total cholesterol (TC), high low-density lipoprotein (LDL)-cholesterol and high triglyceride levels. Abdominal obesity (apple-shaped body) is particularly significant, and waist

circumference may be a better predictor of susceptibility to both diabetes and CHD than body mass index (BMI), especially in the Asian population. A waist circumference of more than 94 cm in men or 80 cm in women is associated with a relatively increased risk of CHD.

BMI is calculated by dividing an individual's weight (kilograms) by height (metres squared). The normal range of BMI is between 18.5 and 25 kg/m². Overweight is defined as a BMI > 25 kg/m², while obesity is a BMI > 30 kg/m².

Men in the United Kingdom increase their risk of CHD by 10% with every 1 kg/m² increase in BMI above 22 kg/m². Waist circumference greater than 94 cm in men and 80 cm in women identifies a CHD risk equivalent to that of a BMI > 25 kg/m². For a circumference greater than 102 cm in men and 88 cm in women, the risk is equivalent to that of a BMI > 30 kg/m².

The prevalence of obesity is similar among men and women, but men are more likely to be overweight. In the Health Survey for England in 2015, 62.9% of adults were overweight or obese (67.8% of men and 58.1% of women) and around 27.0% were obese (similar rates for men and women). Overweight and obesity increase with age and are increasing rapidly in the United Kingdom, and the percentage of adults who are obese has roughly doubled since the mid-1980s. Frequent fluctuations in weight are also associated with an increased risk of developing CHD.

Physical activity

Regular aerobic exercise has been proven to assist weight loss and reduce blood pressure. Physical inactivity is associated with an increased incidence of developing hypertension (a CHD risk factor) and is also a strong risk factor for type 2 diabetes. Current national guidance advises adults to do aerobic activities of at least 150 min of moderate intensity, or 75 min of vigorous intensity, or a mix of moderate and vigorous intensities, combined with muscle strengthening exercises every week, to reduce cardiovascular risk and to help prevent diabetes. See more details under Advice on physical activity, later in this chapter.

Alcohol intake

Drinking more than 21 units of alcohol per week is associated with an increase in blood pressure, which can be reversed if the intake is reduced. Alcohol can affect most parts of the body and, in addition to causing liver damage, can cause infertility, skin damage, heart damage, cancer and strokes. Many accidents, episodes of violence and risk-taking behaviour, for example, unprotected sex, are associated with alcohol. Excess alcohol in those under the age of 20 years can damage the brain while it is still developing.

In 2016 the advisory maximum drinking limits were reset in the United Kingdom by the Chief Medical Officers (a change that was controversial as it was regarded as unrealistic), down from 3–4 units per day for men and

2–3 units per day for women to 14 units per week for both men and women, spread over 3 days or more. They advise several alcohol-free days each week.

For information on the number of units of alcohol in different drinks, see <https://www.nhs.uk/oneyou/drinking>.

Hypertension

Hypertension is persistently raised arterial blood pressure. Unless it is very high ('malignant hypertension'), it is not a disease, but one of several risk factors for diseases such as CHD, stroke, heart failure and chronic kidney disease. An arbitrary threshold is set to describe 'high blood pressure' or hypertension as greater than 140 mm Hg systolic or greater than 90 mm Hg diastolic. Diastolic pressures of 90–109 mm Hg are found in about 20% of the middle-aged adult population. In younger people the prevalence is lower, whereas in elderly people it is higher. Current estimates suggest that in the United Kingdom around 40% of adult men and women either have high blood pressure (>140/90) or are on blood pressure treatment. In addition, undertreated hypertension is common, with up to half of all people with diagnosed hypertension not reaching recommended targets.

Contributing factors to hypertension should be identified. These include diabetes, obesity, excessive alcohol intake (>3 units/day), high salt intake and physical inactivity.

Diabetes

Diabetes greatly increases the risks of hypertension and of all types of CVD. It is also strongly associated with renal disease, limb amputation and blindness. People with diabetes are twice more likely to die of CVD than those without; it is responsible for 52% of deaths in type 2 diabetes and 44% in type 1 diabetes. About 20% of all hospital admissions for heart failure, myocardial infarction and stroke are in people with diabetes. The good news is that improving dietary habits, managing weight, keeping active and using medication for high blood pressure, and statins for lipid modification, can significantly reduce these risks. Although using drugs for controlling hyperglycaemia can reduce symptoms of type 2 diabetes, the evidence that they reduce CVD events is not clear cut. Some evidence is now emerging for newer drugs such as *dapagliflozin* and *liraglutide*.

People who are overweight or obese (especially central obesity) and/or have inactive lifestyles are at considerably increased risk of developing type 2 diabetes and obesity accounts for 80–85% of the overall risk of this condition. There is a strong correlation with waist circumference, and this is more marked in men with a waist circumference greater than 102 cm who are five times more likely to have diagnosed diabetes than those with a smaller waist circumference; women with waists greater than 88 cm are over three times more likely.

Family history is also important in the causation of type 2 diabetes as it tends to cluster in families. People with a family history of type 2 diabetes are two to six times more likely to have diabetes than people without a family history of such. People from Asian, African and Black communities in the United Kingdom are two to four times more likely to develop type 2 diabetes than white people. This increased propensity for type 2 diabetes in these groups, in turn, increases the risks of CVD.

Type 1 diabetes ('insulin dependent') accounts for less than 10% of all cases of diabetes and is caused by autoimmune destruction of the beta cells (which secrete insulin) in the pancreas. It can cause similar problems to type 2 diabetes with excess risks of CVD, renal disease and blindness. It is not associated with obesity, or inactivity, in the same way as type 2 diabetes.

Lipids

Many studies, including the Framingham Heart Study, have clearly established that high cholesterol levels are associated with increased risk of developing CVD. CVD is caused when arteries become narrowed by a gradual build-up of atheroma within their walls. Atheroma develops when cholesterol is taken up by cells into the lining of the artery and a narrowing process begins. Low-density lipoprotein cholesterol (LDL-cholesterol) is the component in the blood that is synthesized in the liver, following ingestion of fats, and is responsible for this build-up; it is sometimes called 'bad cholesterol' and is difficult to measure. High-density lipoprotein cholesterol (HDL-cholesterol) transports cholesterol back to the liver and appears to protect against CHD and is sometimes called 'good cholesterol'. TC (made up of LDL + HDL + some other fatty components – together known as lipids) and HDL-cholesterol are relatively easily measured by testing blood so the ratio of TC to HDL-cholesterol is conveniently used as a measure of overall risk from lipids, in an individual, when using CVD risk calculators (such as QRISK3).

As a rule, the higher the TC level, the greater the risk to health. High levels of TC are normal in the UK population, and more than half of adults in the United Kingdom have a TC level above 5 mmol/l (this is sometimes described as 'abnormal' but in fact is the norm). It is thought that the population in the United Kingdom have a relatively unhealthy diet with too much saturated fat, and this contributes to relatively high levels of CVD.

A word of caution is to consider hereditary abnormalities of lipid metabolism if cholesterol levels are very high, particularly when associated with a strong family history of premature CHD. A crude threshold is that this should be considered in all those whose TC is greater than 7.5 mmol/l, where familial hypercholesterolaemia is a possible diagnosis. Other combined 'dyslipidaemias' are seen where people have both a high TC and high levels of triglycerides.

Medication

A full medication history is important as some medicines can affect CVD risk either positively or negatively. The potential contribution of over-the-counter

(OTC) medicines should also be considered. Medications such as those that can cause dyslipidaemia (e.g. antipsychotic medication, corticosteroids or immunosuppressant drugs) increase CVD risk. Factors predisposing to CV toxicity include existing heart disease, uncorrected electrolyte abnormalities and poor renal function.

Sympathomimetic drugs such as *adrenaline*, *noradrenaline*, *dobutamine*, *dopamine* and *phenylephrine* can all cause elevation of blood pressure and precipitate heart failure. Other commonly prescribed medicines with CV side effects include *thyroxine*, tricyclic antidepressants and 'triptans'.

Managing heart disease risk in the pharmacy

The modifiable risk factors for CHD are generally accepted as smoking, cholesterol/lipid imbalance, hypertension, poor diet, obesity, excessive alcohol intake, physical inactivity and inadequate diabetes control. A recent literature review demonstrated the contribution of community pharmacy-based services to the reduction of risk behaviours and risk factors for CHD. The evidence supports the wider provision of smoking cessation and lipid management through community pharmacies. Both primary and secondary prevention of CHD involve similar interventions.

Smoking cessation and nicotine replacement therapy

In recent years, smoking cessation has become an increasingly important focus for the NHS, and the United Kingdom now has a comprehensive smoking cessation service. Nonetheless, there are still around 10 million tobacco users in Great Britain, and the cost to the NHS in England of smoking related illness was estimated at £2 billion per year in 2015.

Community pharmacies serve local communities and have the potential to reach and treat large numbers of people who use tobacco. They may be able to meet the needs of minority ethnic and disadvantaged groups and those who have difficulty accessing other community services. They have an important role to play in local education and communication campaigns. They should try to work in tandem with local Stop Smoking Services.

Nicotine replacement therapy (NRT) is an effective aid to smoking cessation for those smoking more than 10 cigarettes a day. Smokers are about twice as likely to stop long-term smoking when prescribed NRT and are up to six times more likely to succeed when NRT and behavioural support are combined. NICE guidelines recommend *bupropion* (POM), *varenicline* (POM) or NRT; before prescribing a treatment, prescribers are advised to take into account the person's intention and motivation to quit and how likely it is they will follow the course of treatment. They should normally be prescribed as part of an abstinent-contingent treatment, in which the smoker makes a commitment to stop smoking on or before a particular date (target stop date).

NRT should not be used at the same time as *bupropion* or *varenicline*. Some patients do appear to benefit from using a combination of NRT products.

It is important to recognize that many attempts to stop smoking fail, but that this should not dissuade people from further attempts, and these people are not ‘failures’. It is estimated that over a third of smokers attempt to quit each year and that with support 19% of these people will have quit 1 year after taking steps to do so.

Smoking cessation: tips for customers about quitting

- Set a quit date, prepare for it and stick to it.
- Get support and advice from friends, family and health professionals.
- Make a list of reasons to quit.
- Consider NRT for the first few weeks.
- Avoid situations where you will find it difficult not to smoke.
- Change your routine to distract yourself from times and places you associate with smoking.
- Stop completely if you can, rather than cut down.
- Get rid of all cigarettes, lighters and ashtrays before your quit date.
- Ask people not to smoke around you and tell everyone you are quitting.
- Keep busy, especially when cravings start.
- Reward yourself for not smoking.
- Calculate how much money you will save and plan how you will now spend it.

Useful advice and support materials are provided through the Smoke Free website (<http://www.nhs.uk/smokefree>). This also includes an application for smartphones. It signposts to local Stop Smoking Services.

A range of NRT products are available. They vary in the ease and frequency of use, the speed of nicotine release and the amount of behavioural replacement provided. There are few conclusive studies to show that one formulation is any more effective than another at achieving cessation. All products appear to increase the chances of success if used correctly.

Smokers should be advised not to smoke while using NRT products, although some chewing gums are licensed for smoking reduction.

The main adverse effects are similar to overconsumption of cigarettes and include nausea, dizziness, flu-like symptoms, palpitations, dyspepsia, insomnia and vivid dreams.

Nicotine replacement therapy: formulation options

Patches

Discreet – easy to wear and forget about, but watch for skin irritation.
Continuous nicotine release – suitable for regular smokers.

16-Hour patch (removed at night) – reduced insomnia.
 24-Hour patch – good for early morning cravings.
 Three strengths – allows a step-down reduction programme.
 Can cause skin irritation.
 Each brand has its own regime (follow instructions).

Chewing gum

Flexible regimen – controls cravings as they occur.
 Various flavours – allows customer preference.
 Various strengths – allows step-down reduction programme.
 Chewed slowly – to release nicotine and then ‘park’ gum between cheek and gum.

Nasal spray

Fast acting – helpful for highly dependent smokers.
 Usually advised to use twice an hour for 16 h.
 Local side effects (sore throat and rhinitis) – usually pass after first few days.
 Follow product instructions.

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Oral spray

Used when urge to smoke appears.
 Fast acting.
 Follow instructions on maximum use.

Sublingual tablet

Discrete – placed under tongue and dissolves over 20 min.
 Dose variation – one or two (2 mg) tablets may be used per hour.
 Sublingual – sucking or chewing the tablet will reduce its effectiveness.

Inhalator

Cigarette substitute – useful for smokers who miss hand-to-mouth action.
 Reduce usage over time – the recommended period is 12 weeks.

Lozenge

Various strengths – allows step-down reduction programme.
 Highest strength (4 mg) – good for smokers who start within 30 min of waking.
 Sucked until taste is strong – lozenge then ‘parked’ between cheek and gum.

Licenced indications for OTC nicotine replacement therapy

NRT can be recommended for adults and children aged 12 years or over, for pregnant women and for those who are breastfeeding.

Some NRT products are licensed to aid smoking reduction with the eventual aim of smoking cessation ('reduce to quit'). The smoker should attempt to quit when he or she is ready – but not later than 6 months after reducing the cigarette consumption. Young people (aged 12–18 years) should attempt to 'reduce to quit' only after consulting a healthcare professional.

Positive messages for prospective and new non-smokers

- Giving up smoking reduces the risk of developing smoking-related illness.
- Eight hours after quitting, nicotine and carbon monoxide levels in the blood are reduced by half and oxygen levels return to normal.
- After 24 h, carbon monoxide is eliminated.
- After 48 h, nicotine is eliminated.
- After 3 days, breathing becomes easier.
- After 2–12 weeks, circulation is improved and smokers' coughs start to get better.
- After 6 months, lung efficiency will have improved by 5–10%.
- After 5 years, the risk of having a heart attack is half of that of a smoker.
- After 10 years, the risk of heart attack is the same as that of a non-smoker.
- After 10–15 years, the risk of developing lung cancer is only slightly greater than that of a non-smoker.
- Research has shown that people who stop smoking before the age of 35 years survive about as well as lifelong non-smokers.

Unlicensed nicotine products such as e-cigarettes

Many electronic cigarettes, or e-cigarettes, are designed to look and feel like normal cigarettes. There are some products that are quite different and some come in flavours that provide an experience unlike that of smoking.

These devices have a heating element inside which vaporises a solution that contains nicotine, and this gives off an appearance of smoke (users are said to be 'vaping'). They have become very popular, both for recreational nicotine use and to help people reduce their cigarette consumption. There are concerns that they have not been regulated as medicines in the same way as other NRT products, although some licensed products are now available. There is some uncertainty about whether the use of e-cigarettes is better than other 'tried and tested' ways of stopping smoking. The long-term safety of electronic cigarettes is unknown.

Advice on physical activity

Physical inactivity is an important contributor to CVD. Cardiovascular benefits of regular physical activity include reduced blood pressure and less likelihood of obesity and diabetes. The Chief Medical Officers for the United Kingdom recommend that adults should do at least 150 min of at least moderate-intensity activity a week – for example, five 30-min bouts a week.

Something is better than nothing, and doing just 10 min of exercise at a time is beneficial. Moderate-intensity activity is any activity that increases heart and breathing rate, such as brisk walking, cycling, recreational swimming or dancing. Alternatively, if preferred, advice is to do 75 min of vigorous-intensity activity a week or a combination of moderate and vigorous activity. During vigorous activity, breathing is very hard, the heart beats rapidly and it may be difficult to hold a conversation. Examples include running, most competitive sports or circuit training. As well as this, adults are advised to also do strength and balance training 2 days a week. This could be in the form of a gym workout, carrying shopping bags or doing an activity such as tai chi. It's also critical to break up sitting (sedentary) time by getting up and moving around.

Dietary advice

NICE advises that people at high risk of (a 10-year risk > 10%), or with established CVD, eat a diet in which total fat intake is 30% or less of total energy intake, saturated fats are 7% or less of total energy intake, intake of dietary cholesterol is less than 300 mg/day and where possible saturated fats are replaced by monounsaturated and polyunsaturated fats.

Dietary changes are important, but NICE advises people with a high risk of CVD not to take plant stanols or sterols with the intent to reduce CVD risk. Some foods are fortified with these and they are also available in herbal supplements. Although these may reduce cholesterol levels, there is no clear evidence that they prevent disease events. People may wish to use them as these will do little harm, but these should not be relied on as 'a treatment'. They can be safely consumed alongside other drugs like statins. If the customer enjoys fried food, suggest choosing a vegetable oil high in polyunsaturates ('good fats'), such as sunflower or rapeseed oil.

Alongside this dietary advice, NICE recommends that a statin (usually *atorvastatin*) is prescribed to all those with CVD, and a prescription is offered to all those with high CVD risk, for the purpose of lowering cholesterol and reducing the chances of CVD events.

Weight management

Being obese increases the chance of CVD. This is in part because obese individuals are more likely to have high blood pressure, diabetes and dyslipidaemia (high cholesterol and triglycerides). Less fat, sugar and alcohol in the diet is necessary for weight control. In order to achieve a healthy body weight, it is also important to build regular, moderate exercise into a daily routine.

Pharmacy staff can give advice on a healthy diet that prevents weight gain and helps weight loss. Overweight people are prone to become obese. Rather than 'a diet', what really matters is long-term dietary change, and regular exercise, that will keep people healthy. Weight reduction at the outset may be required

Table 10.1 Benefits of 5- to 10-kg weight loss

Condition	Health benefit
Mortality	20–25% fall in overall mortality
	30–40% fall in diabetes-related deaths
	40–50% fall in obesity-related cancer deaths
Blood pressure	10 mm Hg fall in diastolic and systolic pressures
Diabetes	Up to a 50% fall in fasting blood glucose
	Reduces risk of developing diabetes by over 50%
Lipids	Fall of 10% TC, 15% LDL and 30% triglycerides
	Increase of 8% HDL

to kick-start this process. Customers whose BMI is greater than 25 kg/m² can be counselled on an appropriate plan.

A 3-month programme of weight reduction should aim for a 5- to 10-kg weight loss over 3 months or 0.5 kg per week (combining diet, exercise and behavioural strategies; see Table 10.1 for benefits of weight loss). In some areas, community pharmacies are commissioned to provide a weight management service.

The recommended calorie intake should be no more than 1400 kcal per day for most women and 1900 kcal per day for most men. People should be advised to moderate fat intake by eating less fatty meat, fatty cheese, full-cream milk, fried food, etc., and to reduce the amount of sugar. They should consider eating more vegetables, fruits, cereals, wholegrain bread, poultry, fish, rice, skimmed or semi-skimmed milk, grilled food, lean meat, pasta, etc. See <https://www.nhs.uk/Livewell/weight-loss-guide>.

OTC orlistat

Orlistat 60 mg capsules are available OTC for individuals aged 18 and over with a BMI of 28 kg/m² or greater, to be used in conjunction with a reduced calorie diet that is low in fat and with exercise. It is used to make the weight loss through diet and exercise more effective. *Orlistat* inhibits gastric lipases and causes less fat to be digested and absorbed.

Gastrointestinal adverse effects are common (e.g. oily spotting, abdominal discomfort, faecal urgency, fatty stools). These are usually reduced with continued use of *orlistat* and can often be reduced by limiting fat intake.

Orlistat reduces the absorption of fat-soluble vitamins. When it is supplied, a multivitamin supplement is advised at bedtime.

The amount of weight loss achieved with *orlistat* varies. In clinical trials, where the 120-mg dose was used with dietary change, patients lost 2.9 kg on average, compared with placebo and dietary change, over 1 year. After *orlistat* was stopped, a significant number of subjects regained weight. Importantly people showed improvement in their blood pressure, cholesterol levels and their blood sugars. In a longer-term clinical trial, fewer people developed type 2 diabetes over 4 years. *Orlistat* is also available on NHS prescription and is usually only recommended where the person has made a significant effort to lose weight through diet, exercise or lifestyle change.

Patients taking OTC *orlistat* need to read the patient information leaflet carefully as it contains essential information. This includes clear guidance on dietary restrictions and physical activity.

What you need to know

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Age and body mass index

Previous medical history

Medication

Current diet and physical activity

Significance of questions and answers

Age and body mass index

Those aged under 18 years cannot be treated with OTC *orlistat*. Requests for *orlistat* may be made by individuals who believe they need to lose weight but whose BMI is lower than 28, and pharmacy teams will need to handle these sensitively. It is important to be alert for the possibility of an eating disorder (such as anorexia).

Previous medical history

Kidney disease, or renal stones, is a contraindication to *orlistat*. Patients with hypothyroidism on thyroxine should be referred to the surgery if they wish to take *orlistat* as it can reduce control of the condition. There is also an interaction with antiepileptic drugs so people on these will need to be referred to their doctor.

Medication

Weight loss is likely to lead to improvements in metabolic control in diabetes, to reduced cholesterol and to lower blood pressure in hypertension. Treatments may need reviewing for these conditions.

Patients on *warfarin* or other oral anticoagulants should not be supplied with OTC *orlistat*. *Orlistat* may be prescribed by a doctor to those on these drugs with a requirement to monitor anticoagulant effects.

Patients on the combined oral contraceptive will need to use additional contraception if they develop severe diarrhoea while taking *orlistat*.

Current diet and physical activity

Patients need to adjust their diet so as to lose weight. They need to be on a low fat diet. Exploring current fat intake and helping the patient to assess the extent of the change needed is essential. Regular physical activity is also a key to weight management, and the pharmacist needs to gauge the current amount of exercise taken.

Treatment timescale

If the patient has been unable to lose weight after 12 weeks of treatment, encourage them to come back to see you to discuss why that may be. They may wish to discuss further with the nurse or doctor at their GP surgery. Some surgeries have direct access to dietician support.

Management

OTC *orlistat* is taken at a dose of 60 mg three times daily immediately before, during or up to 1 h after meals. If a meal is missed or does not contain fat, *orlistat* should not be taken. While taking it, the patient's diet should be mildly hypocaloric and with approximately 30% of calories from fat (e.g. in a 1800 kcal/day diet, this equates to < 60 g of fat). A low fat diet will not only aid weight loss but also reduce gastrointestinal (GI) side effects (see below). The daily intake of fat should be spread throughout the day. A realistic target for weight loss is 0.5–1 kg (1–2 lb) a week for adults. Some pharmacists offer to monitor the patient's weight to help maintain motivation. Treatment can be continued for up to 6 months. If patients wish to continue, they will need to attend their GP surgery where a prescription may be considered.

Contraindications

OTC *orlistat* should not be supplied if there is renal/kidney disease, thyroid disease or epilepsy. Patients with chronic malabsorption syndrome and those with cholestasis (bile flow from the liver is blocked) should also not take OTC *orlistat*. It is contraindicated in pregnancy and in women who are breastfeeding.

Side effects

The main side effects of *orlistat* are related to the GI system. Side effects are most severe when beginning therapy, and in trials they decreased in frequency with time, with nearly half of the side effects lasting less than a week, but some persisting for over 6 months. Because *orlistat*'s main effect is to prevent dietary fat from being absorbed, the fat is excreted unchanged in the faeces and so the stool may become oily or loose (steatorrhoea). Increased flatulence is also common. Bowel movements may become frequent or urgent, and cases of faecal incontinence have been seen in clinical trials. To minimise these effects, foods with high fat content should be avoided. Taking drugs for diarrhoea (such as *loperamide*) will not control these symptoms.

It is important to have adopted the low fat diet a few days before introducing *orlistat*. Oily stools and flatulence can be controlled by reducing the dietary fat content to somewhere in the region of 15 g per meal, and it has been suggested that the decrease in side effects over time may be associated with long-term acceptance and adoption of a low fat diet.

Referral to the GP

The doses of some medicines may need to be adjusted if the patient loses weight. Weight loss is likely to lead to improvements in metabolic control in diabetes, to changes in cholesterol levels and to lower blood pressure in hypertension. Doses of diabetic, cholesterol lowering and antihypertensive medication may therefore need to be changed.

Other medicines where the patient needs to check with their GP before starting *orlistat* are *amiodarone*, *acarbose*, *ciclosporin* and *levothyroxine*. There is an increased risk of convulsions when *orlistat* is given with antiepileptics. Patients with renal/kidney disease should consult their GP before using *orlistat*.

Cautions

Absorption of fat-soluble vitamins (vitamins A, D, E and K and β-carotene) is inhibited by the use of *orlistat*. The manufacturers of OTC *orlistat* recommend taking a multivitamin supplement at bedtime.

There is no clinical evidence of a drug interaction between *orlistat* and oral contraceptives, but if a woman taking *orlistat* has severe diarrhoea, they should be advised to use an additional contraception method.

Aspirin 75 mg

Low-dose *aspirin* tablets may be sold as a P medicine in packs of up to 100 tablets. They are currently licensed for the secondary prevention of thrombotic strokes, TIAs (or 'ministrokes'), heart attacks or unstable angina.

When used in secondary prevention, patients with hypertension should have their blood pressure controlled to minimise the risk of anti-platelet therapy contributing to the risk of cerebrovascular bleeding. Patients should be assessed for contraindications to *aspirin* therapy, and patients at increased risk of GI bleeding may require cover with a gastroprotective agent (usually a proton pump inhibitor).

It is important to be aware that low-dose *aspirin* is both not licensed and is no longer recommended for primary prevention of vascular events. The MHRA have cautioned against this use. NICE advises that people with type 2 diabetes without CVD should not be offered *aspirin*. This change in advice has come about following clinical trials (such as the 2008 Scottish POPODAD study), which showed that the harms of *aspirin* (particularly GI bleeding) are greater than any benefit from preventing CVD events. There may still be people who take *aspirin* in this context and advice should be given on harm versus benefit.

There is also no evidence to support the use of *aspirin* in low-risk subjects, such as middle-aged males with no other risk factors. It is likely that potential harms will exceed potential benefit.

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Preventing heart disease in practice

Case 1

A man who looks as if he is in his mid-50s asks to speak to the pharmacist. He says, 'I've been wondering if I should take them junior *aspirins*. A few of the lads at the snooker club are on them – and they say it can stop you having a heart attack?'. He asks what you think and if it is true that the *aspirin* tablets can prevent heart attacks. He does not appear to be overweight.

The pharmacist's view

I would first ask this man why he thinks he might need *aspirin*. That will give me an idea of how he has assessed his risk and it will be a good starting point. I would want to assess this man's risk of heart disease by asking about his family history, smoking, diet, physical activity and medication (looking particularly for diabetes and hypertension). On the basis of this assessment, I would decide whether he should be referred to the GP for a health check and formal risk assessment. If he were a smoker, I would prioritise that and discuss his readiness to quit. I would advise him that *aspirin* is no longer advised for people who have not had a heart attack or stroke as recent research suggests that the risk of harm (such as from stomach bleeding) is likely to exceed the small benefits in preventing cardiovascular events.

The doctor's view

I would agree with the pharmacist about considering his overall risk factors, his understanding of these factors and the areas he needs to work on. *Aspirin* is

now only used for secondary CVD prevention. If he hasn't had a blood pressure or cholesterol test in the last year or so, then it would make sense for this to be done. Some pharmacies provide this service. In most GP surgeries, further assessment and information can be gleaned from seeing the practice nurse. The most important aspect of advice is to cover all the risk factors and not just focus on one area. A follow-up review is often helpful to see how lifestyle has changed and what difficulties have been experienced. The pharmacist could have a useful continuing role in supporting this person to improve his lifestyle, particularly with smoking cessation, if indicated.

Case 2

A woman in her 40s comes in asking for some patches to help her give up cigarettes. The pharmacist finds out that she is a heavy smoker on 20–30 cigarettes per day, and has smoked for 25 years. She knows that she is overweight and struggles to keep it down. She managed to stop smoking for about 3 months once, but put on weight. She has a family history of diabetes and two of her grandparents died of heart attack in their seventies. Her uncle who is 60 years old has angina. She saw her GP about 1 year ago who told her that her cholesterol level was mildly raised at six and her blood pressure was borderline. She was supposed to go back for a review but has not done so yet.

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The pharmacist's view

I would ask this woman to tell me about her previous attempt to quit, including whether she used the various NRT products that can be bought OTC; in many parts of the United Kingdom, pharmacies are part of local NHS smoking cessation services and can provide treatment at no cost to the patient. Many people are concerned that they will put on weight when they stop smoking and I would talk with her about this. The health benefits of stopping smoking far outweigh any additional risk from being overweight, and discussing the figures can get this point across. Talking about what happened after she stopped smoking last time, including her diet and eating patterns might provide some ideas about minimising weight gain this time.

The doctor's view

It is very encouraging that she wants to do something about her smoking, especially as she has several risk factors for CVD. I think the pharmacist is in a good position to counsel and perhaps advise on appropriate NRT. It would be useful to ascertain how she managed to stop last time and the reasons for starting cigarettes again. The pharmacist is also in a position to offer advice about her weight and find out about her level of physical exercise. It would also be helpful to suggest a review at her GP surgery to follow up her blood pressure and cholesterol. It is likely that the nurse or doctor might want to do some

blood tests: fasting lipid profile, fasting blood glucose, electrolytes and renal function and liver profile. In addition, a urine test checking for proteinuria and glycosuria would be useful and, possibly, an electrocardiogram. If she remained hypertensive, these days usually detected by ambulatory blood pressure monitoring, medication may be advised. Of course, if she were able to lose weight and increase exercise, this would also help to lower her blood pressure.

Chapter 11

Malaria Prevention

Malaria is a serious illness caused by *Plasmodium* parasites infecting red blood cells transmitted through bites by the *Anopheles* mosquito. In a typical year, some 1500 cases of malaria are reported in the United Kingdom with up to 10 deaths. Three-quarters of cases are due to *Plasmodium falciparum* and another 15% to *Plasmodium vivax*; other species account for the rest. Each species causes slightly different symptoms; *P. falciparum* is most likely to result in severe disease or death. Eight out of 10 malarial infections occur in people who have visited friends or family in another country and the remainder among military staff and holiday travellers. Pharmacists and their teams are well placed to advise on malaria prevention measures, summarised as ABCD: Awareness of risk, Bite prevention, Chemoprophylaxis and Diagnosis (malaria is a medical emergency so prompt diagnosis and treatment are critical).

Malaria chemoprophylaxis cannot be prescribed on the NHS (using an FP10), but some medicines, *chloroquine*, *proguanil*, *chloroquine* and *proguanil* combination packs, and, from 2017, *atovaquone with proguanil* in a combination tablet are available over the counter or on private prescription. Others (*mefloquine*, *doxycycline*) can only be obtained on private prescription or, in some parts of the United Kingdom, a patient group direction (PGD). Chemoprophylaxis and measures to prevent mosquito bites significantly reduce but do not eliminate the risk of contracting malaria.

What you need to know

Age and weight

Child, adult

Pregnancy and breastfeeding

Previous history

Renal or liver impairment

Immune system

Area/s to be visited on this trip

Any current symptoms and travel to malaria endemic areas within the last year

Medication

Significance of questions and answers

Age and weight

In this chapter we focus on the use of the combination preparation *atovaquone with proguanil* because resistance to *proguanil* as a sole treatment or with *chloroquine* is so widespread. There are combination packs of *chloroquine and proguanil* available over-the-counter (OTC), but the regimen for these is complicated (different tablets are taken at different times and for different durations), and they are now rarely recommended as they are largely ineffective against the most common type of malaria parasite, *P. falciparum*. Individuals aged 18 years and over can be sold the *atovaquone–proguanil* combination preparation. Adults weighing less than 40 kg should not be offered OTC malaria chemoprophylaxis because safety and effectiveness have not been established in this group.

Atovaquone–proguanil chemoprophylaxis cannot be sold for use in children or adolescents, so they will need to be referred to obtain a prescription. Some other products can be supplied OTC to children but either are ineffective on their own or may require complicated regimens.

Pregnancy and breastfeeding

OTC malaria chemoprophylaxis cannot be recommended for women who are pregnant (or planning to become pregnant) or who are breastfeeding.

Previous history

Any patient requesting OTC *atovaquone* and with a history of the following conditions should be referred to their GP surgery for advice: renal or hepatic impairment; depression; epilepsy/seizures; tuberculosis.

Immune system

Those who have no spleen or whose splenic function is severely impaired are at a particular risk of severe malaria and, where possible, should avoid travel to malarious areas.

People who have previously lived in an area where malaria is endemic should not rely on immunity and still need chemoprophylaxis.

Areas to be visited on this trip

The patient should be asked which country or countries will be visited, and will different places within the individual country or countries be visited? The current recommendations for malaria chemoprophylaxis can be found at the Fit for Travel or National Travel Health Network and Centre (NaTHNaC) websites. It is important to note that different areas within the same country to be visited can have different advice.

The risk of malaria may vary with season, and recommendations should not be given more than 6–8 weeks in advance of travel. Therefore, the pharmacist needs to ask when the person is leaving and how long they are planning to be away.

Any current symptoms

Symptoms of malaria include headache, fever, chills, sweats, diarrhoea, generally feeling unwell, cough and aching muscles. Any traveller should be advised to seek medical advice if they experience such symptoms within 1 year of returning from an endemic area and particularly within the first 3 months.

Medication

Atovaquone with proguanil should not be recommended OTC to people who are taking medicines listed in the table below.

Interacting drug	Effect of interaction
<i>Etoposide</i>	Some evidence of increased plasma concentration of <i>etoposide</i> and its metabolite
<i>Rifampicin</i> or <i>rifabutin</i>	Reduces plasma concentration of <i>atovaquone</i> by 50 and 34%, respectively
<i>Metoclopramide</i>	Reduces plasma concentration of <i>atovaquone</i> by 50%
<i>Warfarin</i> or other oral anticoagulant	<i>Proguanil</i> may potentiate the effect of <i>warfarin</i> and other coumarin-based anticoagulants that may lead to an increase in risk of haemorrhage
<i>Tetracycline</i>	Associated with decreases in plasma concentration of <i>atovaquone</i> . Extent of any effect not established
<i>Indinavir</i> , <i>efavirenz</i> , <i>zidovudine</i> or boosted protease inhibitors	Plasma concentration of <i>indinavir</i> reduced by 23%
	Potential increase in plasma concentration of <i>zidovudine</i>
	<i>Efavirenz</i> and boosted protease inhibitors reduce plasma concentration of <i>atovaquone</i> by up to 75%

Anticoagulants – *Proguanil* may potentiate the effect of *warfarin* and other coumarin-based anticoagulants that may lead to increased haemorrhage risk. Although the mechanism of this potential drug interaction has not been established, caution is required when initiating or stopping malaria chemoprophylaxis in patients on continuous treatment with oral anticoagulants. The dose of oral anticoagulant may need to be adjusted during use or after cessation based on international normalised ratio (INR) results. Travellers should ensure their INR is stable and within the therapeutic range prior to departure and they have adequate supplies of their anticoagulant for the whole trip.

The situation with non-vitamin K antagonist oral anticoagulants (NOACs) is uncertain. *Apixaban* and *rivaroxaban* are substrates of CYP3A4 and p-glycoprotein, while *dabigatran* is a substrate of p-glycoprotein. *Atovaquone* may produce minor inhibition of CYP3A4, but the effect of *proguanil* is unknown. Neither *atovaquone* nor *proguanil* inhibits p-glycoprotein. Until the science is clearer, caution is required.

When to refer

Adults weighing less than 40 kg

Children and adolescents

Women who are pregnant or breastfeeding, or who are planning to become pregnant

Renal or hepatic disease

Depression

Epilepsy

Taking any of the medicines listed in the table above

Travelling for long periods of time (needing > 12 weeks treatment)

Going to an area where alternative treatment may be needed

Treatment timescale

Atovaquone and *proguanil* should be started 1–2 days before arriving at the malaria endemic area, taken throughout the stay and for 7 days after leaving the area. The maximum duration of travel that can be covered by OTC treatment is 12 weeks (93 tablets). People requiring longer treatment should consult their general practitioner or a tropical disease clinic.

Management

Causal prophylaxis is directed against the liver stage of the malaria parasite, which takes approximately 7 days to develop. Successful drug activity at this stage prevents the parasite from progressing to infect red blood cells.

Atovaquone and proguanil

Combination tablets containing 250 mg *atovaquone* with 100 mg *proguanil* can be supplied OTC for use in adults weighing over 40 kg for chemoprophylaxis of *P. falciparum* malaria.

The dose is one tablet per day, starting 1–2 days before arriving at the malaria endemic area, taken throughout the stay and for 7 days after leaving the area. The tablet should be taken with food or a milky drink and ideally at the same time each day. Dietary fat taken with *atovaquone* increases the rate and extent of absorption. The tablets should preferably not be crushed. Diarrhoea or vomiting may reduce the absorption of *atovaquone* but are not associated with reduced efficacy in clinical trials. In the event of vomiting within 1 h of taking a tablet, a repeat dose should be taken. If vomiting occurs more than an hour after taking the tablet, a repeat dose is not necessary. No additional doses are required in diarrhoea.

Side effects

In clinical trials of *atovaquone–proguanil* for chemoprophylaxis of malaria, the most commonly reported adverse reactions were headache, abdominal pain and diarrhoea. The manufacturer also reports that dizziness may affect up to 1 in 10 people who take *atovaquone–proguanil* and highlights this on the PIL in the section about driving and using machinery.

The maximum duration of travel that can be covered by OTC treatment is 12 weeks (93 tablets). The pharmacist is required to signpost the patient to a source of travel advice to ensure vaccination and any other needs are covered.

The treatment cannot be recommended for patients with diagnosed renal or hepatic impairment of any severity.

Avoiding mosquito bites

General advice on avoiding mosquito bites is very important in preventing malaria. People should cover up with clothing when practical and apply DEET (*N,N*-diethyl-*m*-toluamide or diethyltoluamide)-based insect repellents to all exposed areas of the body, especially the feet, ankles and legs, while outdoors. It can also be applied to cotton clothing. Rooms should be sprayed with insecticides before sleeping to kill mosquitoes. Electrically heated devices that vaporise synthetic pyrethroid can be used each night to provide further protection. Beds should be covered with mosquito nets (preferably impregnated with insecticide). Keeping the room cool reduces mosquito activity.

Insect repellents

DEET is generally regarded as the first-line recommendation. Some other insect repellents are comparable to lower DEET concentrations but appear to have a

shorter duration of protection than DEET overall and should only be used if there is allergy or intolerance to DEET. Pharmacists need to be familiar with duration of action of different percentages of DEET and other insect repellents in order to advise on frequency of application.

Particular attention to protecting the ankles, which the mosquito appears to favour, is worth suggesting. One study found that spraying just the ankles with DEET gave a threefold reduction in the number of mosquito bites.

DEET

DEET can be used in a concentration of up to 50% and has a good safety record in children and pregnancy. It can be used from the age of 2 months. Nursing mothers should wash repellents off their hands and breast skin prior to handling infants.

The stronger the preparation, the longer it lasts; duration of protection is roughly 1–3 h for 20%, up to 6 h for 30% and up to 12 h for 50% DEET. There is no further increase in duration of protection beyond a concentration of 50%. Sweat-off time varies with activity. The interval between applications depends on this as well as the DEET formulation and concentration used. Repellent will therefore usually need to be reapplied on top of a sunscreen. When both sunscreen and DEET are required, DEET should be applied after the sunscreen. Thirty to 50 SPF sunscreen should be applied to compensate for DEET-induced reduction in SPF. Sunscreen is not required from dusk to dawn.

Pharmacists can show the patient the duration of action stated on the insect repellent packaging and remind them to reapply it at appropriate intervals. The range of available formulations of DEET (sprays, roll-ons, sticks, creams and wipes) means that most people can find a product that suits their preference. Cotton clothing (e.g. socks) can be sprayed with DEET; the duration of activity on clothing is shortened due to its volatility.

The Advisory Committee on Malaria Prevention (ACMP) provides the following guidance on use of DEET for protection from mosquito bites:

- DEET is suitable for all individuals over the age of 2 months (unless allergic).
- 50% has the longest duration of action and needs fewer applications per day.
- There is no current evidence that any group (including pregnant women and small children) is at increased risk from using 50% DEET.
- Lower concentrations are available:
 - They need more frequent application and may not be as effective as 50%.
 - Care must be taken to reapply or use a higher concentration DEET preparation if mosquito biting occurs after their use.

- Lower concentrations are not suitable for individuals who may expect prolonged exposure, such as that encountered by backpackers and expedition travellers.
- ACMP considers concentrations below 20% inappropriate.
- DEET applications can damage some plastic watch straps, watch 'glasses' and plastic jewellery; these items should not be allowed to come into contact with DEET.
- The user should ensure that repellents are not ingested or inhaled and do not come into contact with their eyes or mouth. Repellents should be used only on exposed areas of skin.

Lemon eucalyptus (*p*-menthane-3,8-diol)

p-Menthane-3,8-diol (PMD) gives similar protection to that from 15% DEET but is reported to provide a shorter period of protection than extended duration (microencapsulated) DEET.

Icaridin (picaridin)

Icaridin is reported to have repellent properties similar to DEET with a comparable duration of protection. If a traveller decides to use *icaridin* for mosquito bite prevention, a preparation of minimum strength 20% is needed.

Other insect repellents

There is no evidence to support the use of herbal remedies, homoeopathy, electronic buzzers, vitamin B1, garlic, yeast spreads, tea tree oil and bath oils in malaria prevention. Oil of citronella used can no longer be marketed in Europe as an active ingredient for the prevention of mosquito bites.

Practical points

1. Pharmacists and their teams can use a simple checklist to make sure all the relevant advice have been offered. The completed list can then be given to the traveller as a reminder of the bite prevention measures they need to implement.

Bite prevention: please tick measures advised

Insect repellent

Bed net

Electric vaporiser/coils

Insecticide spray

2. Advice for people travelling to an area with risk of malaria

Advise people who are planning travel to an area where malaria is endemic:

That chemoprophylaxis and measures to prevent mosquito bites do not eliminate the risk of contracting malaria (although they significantly reduce it).

Who have previously lived in an area where malaria is endemic that any immunity to malaria that they may have previously had will have been lost within a few months of leaving. Ensure they understand that they are at increased risk of contracting malaria when they return to these areas if they do not use chemoprophylaxis.

Who do not have a spleen that, if they contract malaria, they are much more likely to develop severe malaria than people with a spleen. Ensure they understand this risk before they decide to travel.

Who have other co-morbidities such as chronic renal, respiratory or heart disease, that they are at increased risk of harm if they contract malaria. Ensure they understand this risk before they decide to travel. The increased risk of harm depends on the severity of their co-morbidity and occurs because:

Malaria may be more severe in people with chronic ill-health.

Malaria may precipitate a deterioration in their chronic condition.

When to suspect malaria.

Malaria presents:

Most commonly with fever and flu-like symptoms (general malaise, headache, myalgia) but may also present with diarrhoea, respiratory symptoms, or jaundice.

Seven or more days after entering a malaria endemic area (the incubation period).

Up to 1 year after leaving a malaria endemic area (although malaria usually develops within 3 months of exposure).

What to do if malaria is suspected. They should: Seek medical attention as soon as possible; Start emergency standby treatment (if carried) if they are unable to access medical facilities within 24 h.

Source: NHS NICE CKS.

Cruises

All travellers on cruises should use insect bite avoidance measures. Cruises are a growing part of the holiday market. Most travellers on cruises are only ashore during daylight hours when *Anopheles* bites rarely occur and therefore do not require malaria chemoprophylaxis. However, the cruise itinerary must be reviewed carefully to determine the risk of exposure to malaria. Normally the cruise organisers will advise on such risks. As examples, cruises in the Caribbean may include several days travelling along the Amazon in Brazil or Orinoco River in Venezuela. Cruises along the East African coast may include a stop for a night or more in the port of Mombasa in Kenya and passengers may be ashore or on deck after dusk. These itineraries will require malaria chemoprophylaxis. In addition, cruises that have an overnight stay in any other malaria endemic region of the world require malaria chemoprophylaxis.

Useful information sources

Public Health England. Guidelines for malaria prevention in travellers from the United Kingdom (regularly updated): <https://www.gov.uk/government/publications/malaria-prevention-guidelines-for-travellers-from-the-uk>

CKS: Malaria prophylaxis (<https://cks.nice.org.uk/malaria-prophylaxis>)

NHS Choices: Malaria (<http://www.nhs.uk/Conditions/Malaria/Pages/Introduction.aspx>)

Appendix A: Summary of Symptoms for Direct Referral

'Red flags': alert signs and symptoms that suggest a serious underlying disease for urgent referral are discussed further and highlighted in the relevant chapters

Chest

Chest pain
Shortness of breath
Wheezing
Swollen ankles
Blood in sputum
Palpitations
Persistent cough
Whooping cough
Croup

Gut

Persistent loss of appetite
Difficulty in swallowing
Blood in vomit
Bloody diarrhoea
Vomiting with constipation
Pain on defaecation

Unintentional weight loss
Sustained alteration in bowel habit

Eye

Painful red eye
Loss of vision
Disturbance of vision
Double vision

Ear

Pain
Discharge
Deafness
Irritation
Tinnitus
Vertigo

Genitourinary

Difficulty in passing urine
Blood in urine
Abdominal/loin/back pain with cystitis
Temperature with cystitis
Urethral discharge
Vaginal discharge
Vaginal bleeding in pregnancy

Others

Neck stiffness/rigidity with pyrexia
Vomiting (persistent)
Non-blanching skin rash (purpura)
Allergic reaction with shortness of breath/faintness

Appendix B: Resource and Reference Grid

Note: The Cochrane review resources do not have a date as these are often updated. The most up to date version should be consulted.

Chapter and section	CKS https://ckss.nice.org.uk	NHS Choices www.nhs.uk	NICE guideline www.nice.org.uk	Other resources/references
Introduction				Bensing, J. M., Deveugel, M., Moretti, F. et al. (2011). How to make the medical consultation more successful from a patient's perspective? Tips for doctors and patients from lay people in the United Kingdom, Italy, Belgium and the Netherlands. <i>Patient Educ Couns</i> 84 (3): 287-293
Respiratory problems				<ul style="list-style-type: none">■ Respiratory tract infections (self-limiting), CG69■ Cochrane review: antibiotics for acute middle ear infection (acute otitis media) in children■ Cochrane review: antibiotics for clinically diagnosed acute rhinosinusitis in adults■ Fokkens, W, Hoffmans, R. and Thomas, M. (2014). Avoid prescribing antibiotics in acute rhinosinusitis. <i>BMJ</i> 349: 95703■ Cochrane review: vitamin C for preventing and treating the common cold■ Cochrane review: saline nasal irrigation for acute upper respiratory tract infections■ NICE Clinical Guideline 69 (CG69) (2008). Respiratory tract infections (self-limiting): prescribing antibiotics. https://www.nice.org.uk/guidance/cg69 (accessed 6 December 2017)

Cough	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> ■ Respiratory tract infections (self-limiting), CG69 ■ Butler, C., Kelly, M.J., Hood, K. et al. (2011). Antibiotic prescribing for discoloured sputum in acute cough/lower respiratory tract infection. <i>Eur Respir J</i> 38: 119–125 ■ Cochrane review: antibiotic treatment for people with a clinical diagnosis of acute bronchitis ■ Cochrane review: over-the-counter (OTC) medications for acute cough in children and adults in community settings
Sore throat	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> ■ Respiratory tract infections (self-limiting), CG69 ■ Little, P., Hobbs, F.D., Moore, M. et al. (2013). Clinical score and rapid antigen detection test to guide antibiotic use for sore throats: randomised controlled trial of PRISM (primary care streptococcal management). <i>BMJ</i> 347: f5806
Allergic rhinitis (hay fever)	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> ■ Suspected cancer: recognition and referral, NG12
Respiratory symptoms for direct referral	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> ■ Suspected cancer: recognition and referral, NG12
Gastrointestinal tract problems		<ul style="list-style-type: none"> ■ BMJ clinical evidence: aphthous ulcers (recurrent)
Mouth ulcers	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> ■ BMJ clinical evidence: aphthous ulcers (recurrent)

(continued)

Chapter and section	CKS https://cks.nice.org.uk	NHS Choices www.nhs.uk	NICE guideline www.nice.org.uk	Other resources/references
Heartburn	<input checked="" type="checkbox"/> Dyspepsia – GORD	<input checked="" type="checkbox"/> Heartburn and gastro-oesophageal reflux disease	<input checked="" type="checkbox"/> Gastro-oesophageal reflux disease and dyspepsia in adults: investigation and management, CG184	
Indigestion	<input checked="" type="checkbox"/> Dyspepsia	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Gastro-oesophageal reflux disease and dyspepsia in adults: investigation and management, CG184 <input checked="" type="checkbox"/> Suspected cancer: recognition and referral, NG12 <input checked="" type="checkbox"/> Acute upper gastrointestinal bleeding in over 16s: management, CG141	
Nausea and vomiting		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/> Tidy, C. (2015). Patient professional reference: infantile hypertrophic pyloric stenosis. https://www.patient.info/doctor (accessed 6 December 2017)
Motion sickness and its prevention		<input checked="" type="checkbox"/> Vertigo	<input checked="" type="checkbox"/>	
Constipation	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> GI tract (lower) cancers – recognition and referral		<input checked="" type="checkbox"/> Bowel cancer screening <input checked="" type="checkbox"/> Suspected cancer: recognition and referral, NG12 <input checked="" type="checkbox"/> Constipation in children and young people: diagnosis and management, CG99	<input checked="" type="checkbox"/> Ford, A.C., and Talley, N.J. (2012). Laxatives for chronic constipation in adults. <i>BMJ</i> 345: e6168

Diarrhoea	<input checked="" type="checkbox"/> Gastroenteritis <input checked="" type="checkbox"/> Diarrhoea – prevention and advice for travellers	Parashar, U.D., Nelson, E.A.S. and Kang, G. (2013). Diagnosis, management, and prevention of rotavirus gastroenteritis in children. <i>BMJ</i> 347: f7204.
Irritable bowel syndrome	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> ■ Irritable bowel syndrome in adults: diagnosis and management, CG61
Haemorrhoids	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> ■ Ford, A.C., Talley, N.J., Spiegel, B.M.R. et al. (2008). Effect of fibre, antispasmodics and peppermint oil in the treatment of irritable bowel syndrome: systematic review and meta-analysis. <i>BMJ</i> 337: a2313 ■ Cochrane review: bulking agents, antispasmodics and antidepressants for the treatment of irritable bowel syndrome ■ Khanna, R., MacDonald, J.K. and Levesque, B.G. (2014). Peppermint oil for the treatment of irritable bowel syndrome: a systematic review and meta-analysis. <i>J Clin Gastroenterol</i> 48: 505–512 ■ NICE Clinical Guideline 61 (CG61) (2008). Irritable bowel syndrome in adults: diagnosis and management. https://www.nice.org.uk/guidance/cg61 (accessed 6 December 2017)

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Chapter and section	CKS https://ckts.nice.org.uk	NHS Choices www.nhs.uk	NICE guideline www.nice.org.uk	Other resources/references
Skin conditions				
Eczema/dermatitis	<input checked="" type="checkbox"/> Atopic eczema <input checked="" type="checkbox"/> Dermatitis – contact	<input checked="" type="checkbox"/> Atopic eczema <input checked="" type="checkbox"/> Contact dermatitis	<input checked="" type="checkbox"/> Atopic eczema in under 12s: diagnosis and management, CG57	<ul style="list-style-type: none"> ■ Graham-Brown, R. and Burns, T. (2007). <i>Lecture Notes Dermatology</i>, 9e. Oxford: Wiley Blackwell. ■ Weller, R.B., Hunter, H.J.A., and Mann, M.W. (2014). <i>Clinical Dermatology</i>, 5e. Chichester: Wiley Blackwell.
Acne	<input checked="" type="checkbox"/> Acne vulgaris	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> ■ Weller, R.B., Hunter, H.J.A., and Mann, M.W. (2014). <i>Clinical Dermatology</i>, 5e. Chichester: Wiley Blackwell. ■ Rotta, I., Ziegelmann, P.K. and Otuki, M.F. (2013). Efficacy of topical antifungals in the treatment of dermatophytosis: a mixed-treatment comparison meta-analysis involving 14 treatments. <i>JAMA Dermatol</i> 149: 341–349 ■ Stewart, M. (2016). Patient information. Terbinafine for topical use (lamisil). https://www.patient.info/medicine/terbinafine-for-topical-use-lamisil (accessed 6 December 2017) ■ Cochrane review: topical antifungal treatments for tinea cruris and tinea corporis ■ Graham-Brown, R. and Burns, T. (2007). <i>Lecture Notes Dermatology</i>, 9e. Oxford: Wiley Blackwell.

Cold sores	<input checked="" type="checkbox"/> Herpes simplex – oral	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> ■ NHS choices: cold sore (herpes simplex virus). https://www.nhs.uk/conditions/Cold-sore/ (accessed 6 December 2017)
Warts and verrucae	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<ul style="list-style-type: none"> ■ Suspected cancer: recognition and referral, NG12 ■ Molluscum contagiosum ■ Skin cancers – recognition and referral ■ Molluscum contagiosum ■ Suspected cancer: recognition and referral, NG12 ■ Weller, R.B., Hunter, H.J.A., and Mann, M.W. (2014). <i>Clinical Dermatology</i>, 5e. Chichester: Wiley Blackwell. ■ Graham-Brown, R. and Burns, T. (2007). <i>Lecture Notes Dermatology</i>, 9e. Oxford: Wiley Blackwell. ■ British Association of Dermatologists (2015). Plantar warts (verrucas). www.bad.org.uk (accessed 6 December 2017) ■ NHS. Be clear on cancer symptoms – skin cancer (last reviewed 2016). http://www.nhs.uk/be-clear-on-cancer/symptoms/skin-cancer (accessed 6 December 2017) ■ McMillan: signs and symptoms of melanoma (2017). http://www.macmillan.org.uk/information-and-support/melanoma/understanding-cancer/signs-symptoms-melanoma.html (accessed 6 December 2017) ■ NICE Guideline 12 (NG12) (2015). Suspected cancer: recognition and referral. https://www.nice.org.uk/guidance/ng12 (accessed 6 December 2016)

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Chapter and section	CKS https://cks.nice.org.uk	NHS Choices www.nhs.uk	NICE guideline www.nice.org.uk	Other resources/references
Scabies	<input checked="" type="checkbox"/>			<ul style="list-style-type: none"> ■ Sashidharan, N.P., Basavaraj, S. and Bates, C.M. (2016). British Association for Sexual Health and HIV. Scabies Guidelines. www.bashhguidelines.org (accessed 6 December 2017) ■ Cochrane review: interventions for treating scabies ■ BMJ clinical evidence: seborrhoeic dermatitis of the scalp ■ Graham-Brown, R. and Burns, T. (2007). <i>Lecture Notes Dermatology</i>, 9e. Oxford: Wiley Blackwell.
Dandruff	<input checked="" type="checkbox"/> Seborrhoeic dermatitis	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> ■ Cochrane review: skin treatments for chronic plaque psoriasis ■ Arthritis Research UK (2015). Information for patients – psoriatic arthritis. http://www.arthritisresearchuk.org/arthritis-information/conditions/psoriatic-arthritis/symptoms.aspx (accessed 6 December 2017) ■ Graham-Brown, R. and Burns, T. (2007). <i>Lecture Notes Dermatology</i>, 9e. Oxford: Wiley Blackwell.
Psoriasis	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Psoriatic arthritis		<ul style="list-style-type: none"> ■ Psoriasis: assessment and management, CG153

Painful conditions			
Headache	<input checked="" type="checkbox"/> Headache – assessment <input checked="" type="checkbox"/> Headache – tension type <input checked="" type="checkbox"/> Headache – medication overuse <input checked="" type="checkbox"/> Migraine	<input checked="" type="checkbox"/> Headaches	<ul style="list-style-type: none"> ■ Steiner TJ., Scher, A.I., Stewart, W.F. et al. (2003). The prevalence and disability burden of adult migraine in England and their relationships to age, gender and ethnicity. <i>Cephalgia</i> 23; 519–527 ■ <i>The International Classification of Headache Disorders</i>, 3e (Beta version). https://www.ichd-3.org/ (accessed 6 December 2017)
Musculoskeletal problems	<input checked="" type="checkbox"/> Sprains and strains <input checked="" type="checkbox"/> Back pain – low (without radiculopathy) <input checked="" type="checkbox"/> Osteoarthritis <input checked="" type="checkbox"/> Neck pain – whiplash injury <input checked="" type="checkbox"/> Neck pain – non-specific <input checked="" type="checkbox"/> Rheumatoid arthritis	<input checked="" type="checkbox"/> Sprains <input checked="" type="checkbox"/> Back pain <input checked="" type="checkbox"/> Rheumatoid arthritis <input checked="" type="checkbox"/> Osteoarthritis <input checked="" type="checkbox"/> Whiplash	<ul style="list-style-type: none"> ■ Low back pain and sciatica in over 16s: assessment and management, NG59 ■ Rheumatoid arthritis in adults: management, CG79 ■ Osteoarthritis: care and management, CG177
Women's health			
Cystitis	<input checked="" type="checkbox"/> Urinary tract infection (lower) – women	<input checked="" type="checkbox"/> Chlamydia	<ul style="list-style-type: none"> ■ Urinary tract infection in under 16s: diagnosis and management, CG54 ■ Public Health England (last updated July 2017). National Chlamydia Screening Programme (N CSP). http://www.gov.uk/government/collections/national-chlamydia-screening-programme-ncsp (accessed 6 December 2017)

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Chapter and section	CKS https://cks.nice.org.uk	NHS Choices www.nhs.uk	NICE guideline www.nice.org.uk	Other resources/references
Dysmenorrhoea	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Painful periods		<ul style="list-style-type: none"> ■ Public Health England (PHE) (last updated June 2017). Guidance for primary care on diagnosing and understanding culture results for urinary tract infection (UTI). http://www.gov.uk/government/publications/urinary-tract-infection-diagnosis (accessed 6 December 2017) ■ Public Health England (PHE) (last updated November 2017). Managing common infections: guidance for primary care. Prepared by C. McNulty. http://www.gov.uk/government/publications/managing-common-infections-guidance-for-primary-care (accessed 6 December 2017) ■ Cochrane review: cranberries for preventing urinary tract infections ■ Cochrane review: transcutaneous electrical nerve stimulation for primary dysmenorrhoea
Premenstrual syndrome	<input checked="" type="checkbox"/>			<ul style="list-style-type: none"> ■ RCOG (2016). Premenstrual Syndrome, Management (Green-top Guideline No. 48).
Menorrhagia	<input checked="" type="checkbox"/>			<ul style="list-style-type: none"> ■ Heavy menstrual bleeding; assessment and management, CG54 ■ Harding, M. (2016). Patient Professional Reference: Menorrhagia. https://www.patient.info/doctor (accessed 6 December 2017)

Vaginal thrush	<input checked="" type="checkbox"/> Candida – female genital <input checked="" type="checkbox"/> Vaginal discharge	<input checked="" type="checkbox"/> Thrush		<ul style="list-style-type: none"> ■ Cochrane review: oral versus intra-vaginal imidazole and triazole antifungal treatment of uncomplicated vulvovaginal candidiasis (thrush) ■ British Association for Sexual Health and HIV (2007). National guideline on the management of vulvovaginal candidiasis. www.bashguidelines.org (accessed 6 December 2017)
Emergency hormonal contraception		<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> ■ General Medical Council (2013). 0-18 years guidance: contraception, abortion and sexually transmitted infections (STIs). http://www.gmc-uk.org/guidance/ethical_guidance/children_guidance/70_71_contraception.asp (accessed 6 December 2017)
Common symptoms in pregnancy	<input checked="" type="checkbox"/> Nausea/vomiting in pregnancy <input checked="" type="checkbox"/> Constipation		<input checked="" type="checkbox"/> Itching and intrahepatic cholestasis of pregnancy	
Men's health				
Lower urinary tract Symptoms		<input checked="" type="checkbox"/> Prostate problems	<input checked="" type="checkbox"/> Lower urinary tract symptoms in men: management, CG97	<ul style="list-style-type: none"> ■ Cochrane review: serenoa repens (saw grass) for benign prostatic hyperplasia
Erectile dysfunction	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Erectile dysfunction (impotence) <input checked="" type="checkbox"/> Sildenafil (Viagra and Revatio)		<ul style="list-style-type: none"> ■ British Society for Sexual Medicine (2013). Guidelines on the management of Erectile Dysfunction. http://www.bssm.org.uk/resources/ (accessed 21 February 2018)

(continued)

Chapter and section	CKS https://cks.nice.org.uk	NHS Choices www.nhs.uk	NICE guideline www.nice.org.uk	Other resources/references
Hair loss	<input checked="" type="checkbox"/> Alopecia – androgenic Alopecia, androgenetic – male <input checked="" type="checkbox"/> Alopecia, androgenetic – female <input checked="" type="checkbox"/> Alopecia areata			<ul style="list-style-type: none"> ■ Azari, A.A. and Barney, N.P. (2013). Conjunctivitis: a systematic review of diagnosis and treatment. <i>JAMA</i> 310 (16): 1721–1730 ■ Cochrane review: clinical answers. In people with acute bacterial conjunctivitis, how do antibiotics compare with placebo at improving outcomes? ■ Payne, J. (2016). Patient Information. Subconjunctival haemorrhage. https://patient.info/health/subconjunctival-haemorrhage-leaflet (accessed 6 December 2017) ■ Guly, C.M. and Forrester, J.V. (2010). Investigation and management of uveitis. <i>BMJ</i> 341: c4976 ■ Tong, L., Tan, J., Thumboo, J. and Seow, G. (2012). Dry eye. <i>BMJ</i> 345: e7533 ■ Drug and Therapeutics Bulletin (2016). The management of dry eye. <i>BMJ</i> 353:i2333
Eye and ear problems		<input checked="" type="checkbox"/> Conjunctivitis <input checked="" type="checkbox"/> Conjunctivitis – allergic <input checked="" type="checkbox"/> Conjunctivitis – infective <input checked="" type="checkbox"/> Blepharitis <input checked="" type="checkbox"/> Contact lenses <input checked="" type="checkbox"/> Red eye		

- Common ear problems
- Earwax
 - Otitis externa
- Clegg, A.J., Loveman, E., Gospodarevskaya, E. et al. (2010). The safety and effectiveness of different methods of earwax removal: a systematic review and economic evaluation. *Health Technol Assess* 14 (28): 1–192

Childhood conditions

Illnesses affecting infants and children up to 16 years

- Chickenpox
- Measles
- Roseola
- Slapped cheek syndrome (fifth disease)
- Rubella
- Meningitis – bacterial meningitis and meningococcal disease
- Feverish children – management
- Does your child have a serious illness?

Fever in under 5s: assessment and initial management, CG160

- When should I worry? A booklet that provides information for parents about the management of respiratory tract infections (coughs, colds, sore throats, and ear aches) in children. The Department of Primary Care and Public Health, Cardiff University (May 2006 and revised in October 2016), www.whenshouldworry.com (accessed 6 December 2017)
- Public Health England (2013). *Immunisation Against Infectious Diseases. The Green Book: Measles* (updated July 2013). <http://www.gov.uk/government/publications/measles-the-green-book-chapter-21> (accessed 6 December 2017)
- Clinical Knowledge Summaries: Measles, <https://cks.nice.org.uk/measles> (accessed 6 December 2017)

- Infantile colic
- Colic
- CRY-SIS is a support group for families with excessively crying, sleepless, and demanding children. www.cry-sis.org.uk (accessed 6 December 2017)

(continued)

Chapter and section	CKS https://cks.nice.org.uk	NHS Choices www.nhs.uk	NICE guideline www.nice.org.uk	Other resources/references
Teething	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Nappy rash (nappy dermatitis)		<input checked="" type="checkbox"/>		
Head lice	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> ■ Weller, R.B., Hunter, H.J.A., and Mann, M.W. (2014). <i>Clinical Dermatology</i>, 5e. Chichester: Wiley Blackwell. ■ Whybrow, C. (2017). Detection and recommended treatment of head lice. <i>Prescriber</i> January: 32–36 ■ Public Health England (PHE) (2013). PHE Guidance. Head lice (pediculosis). http://www.gov.uk/guidance/head-lice-pediculosis (accessed 6 December 2017) ■ British Association of Dermatologists (2017). Patient Information Leaflet: Head lice. http://www.bad.org.uk/for-the-public/patient-information-leaflets/head-lice (accessed 6 December 2017) 	
Threadworms (pinworms)		<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> ■ Henderson, R. (2014). Patient Information. Threadworm. http://www.patient.info/health/threadworms-leaflet (accessed 6 December 2017) ■ Public Health England (PHE). Threadworm factsheet
Oral thrush (oral candidiasis)		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>

Insomnia

Difficulty sleeping



Benzodiazepine and z-drug withdrawal

- Drake, C., Roehrs, T., Shambroom, J., and Roth, T. (2013). Caffeine effects on sleep taken 0, 3, or 6 hours before going to bed. *J Clin Sleep Med* 9 (11): 1195–1200.
- Welsh Medicines Resource Centre (2015). Sedative medicines in older people. June 2015. https://www.wemerec.org/learningresource_availablebulletins.html (accessed 6 December 2017)
- Gould, R.L., Coulson, M.C., Patel, N. et al. (2014). Interventions for reducing benzodiazepine use in older people: meta-analysis of randomised controlled trials. *BJP* 204: 98–107
- Milne, S. and Elkins, M.R. (2016). Exercise as an alternative treatment for chronic insomnia (PEDro synthesis). *Br J Sports Med.* doi:10.1136/bjsports-2016-096349

(continued)

Chapter and section	CKS https://cks.nice.org.uk	NHS Choices www.nhs.uk	NICE guideline www.nice.org.uk	Other resources/references
Prevention of heart disease				
Prevention of heart disease	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Smoking cessation <input checked="" type="checkbox"/> Obesity <input checked="" type="checkbox"/> CVD risk assessment and management 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Stop smoking <input checked="" type="checkbox"/> NHS Health Check <input checked="" type="checkbox"/> Weight loss guide 	<ul style="list-style-type: none"> Stop smoking services, public health guideline 10 Obesity: identification, assessment and management, CG189 Cardiovascular disease: risk assessment and reduction, including lipid modification, CG181 Type 2 diabetes in adults: management, NG28 	<ul style="list-style-type: none"> British Heart Foundation (last update 2017). Heart statistics. http://www.bhf.org.uk/research/heart-statistics (accessed 6 December 2017) Public Health England (PHE) (last update October 2017). Obesity: UK and Ireland prevalence and trends. www.noo.org.uk (accessed 6 December 2017) Action on Smoking and Health. Action on smoking and health (ASH) fact sheets. www.ash.org.uk (accessed 6 December 2017)
Malaria prevention				<ul style="list-style-type: none"> Public Health England Advisory committee on malaria prevention (ACMP) (last update October 2017). Malaria prevention guidelines for travellers from the UK. https://www.gov.uk/government/publications/malaria-prevention-guidelines-for-travellers-from-the-uk (accessed 6 December 2017)

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