Alison Blenkinsopp • Martin Duerden • John Blenkinsopp

Symptoms in the Pharmacy

A Guide to the Management of Common Illnesses

WILEY Blackwell

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NINTH EDITION

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Preface

This is the ninth edition of our book and comes at an exciting time with continued and increasing emphasis on community pharmacists' clinical role as first point of contact in primary care. In the 30 years since the first edition was published, our book has been translated into five languages and has sold over 60,000 copies all over the world.

In this new substantially updated edition, we:

- Incorporate information about *COVID-19 and Long COVID* in a new chapter.
- Add new sections in the *Women's Health* chapter, incorporating additional information about prescription-only medicine (POM) to pharmacy (P) medicine changes for the contraceptive *desogestrel*, and review the assessment of the *Menopause* and *Incontinence*.
- Refresh the Introduction with consideration of:
  - Remote consultations by telephone and video.
  - Implications of increased online purchasing of over-the-counter (OTC) medicines.
  - An update on how community pharmacy teams fit within a changing National Health Service (NHS) landscape as a source of first-contact care.
- Introduce a new chapter on *Older People, Frailty and Falls Prevention*.
- Add a new chapter on *Pharmacogenomics* and implications for the pharmacist.
- Integrate the previous chapter on *Insomnia* into a new one on *Insomnia and Mental Well-Being*.
- Add more accounts by patients to our case studies and also responses from nurse practitioners to reflect their input in primary care.

In addition, we:

- Enhance the readability with more illustration, diagrams and pictures.
- Continue our explicit emphasis on the evidence base for 'OTC' medicines and explain the book's approach and evidence sources.

- Provide a visual display at the end of each chapter of the guidelines, systematic reviews and other reliable sources of information used to update the book.

Some of the topics in this book are aligned to educational modules developed by the authors for Pharmacy Magazine. As for previous editions, we have sought and received feedback and suggestions from pharmacists (undergraduate students, pre-registration trainees and practising pharmacists). We thank all the pharmacists who sent us suggestions and we hope you like the new edition. We express special thanks to community pharmacists Lindsey Fairbrother, Abel Kubare, Luso Kumewenda and Babir Malik, as well as to our formal reviewer for their detailed comments and suggestions.

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Introduction and How to Use This Book

Community pharmacies are becoming increasingly important in the United Kingdom (UK) National Health Service (NHS) in providing assessment and advice about minor ailments and symptoms. Pharmacy teams are used to encouraging self-care and have become ever more widely used as a first port of call for minor illness, as well as for referrals by other health professionals. Pharmacists are responsible for ensuring that their staff provide appropriate advice and recommendations.

UK government policy has enabled pharmacists to have a greater role in the direct supply and supervision of medicines and some of this is achieved through license reclassification. There are three main categories for medicines which hold a licence authorised by the Medicines and Healthcare products Regulatory Agency (MHRA). Those that can be prescribed by a doctor, or by non-medical prescribers, are 'prescription only medicines' (POMs). After some years of use, if there is enough evidence to support their safe use without a prescriber's supervision a medicine may be reclassified by the MHRA to make it available for sale from pharmacies under the supervision of a pharmacist. These 'pharmacy medicines' (P) are not usually 'on display' on open pharmacy shelves. P medicines which have been safely used for several years may be further reclassified to 'general sales list' (GSL) medicines where they can be bought from pharmacies and other retail outlets, such as supermarkets and convenience stores and can be selected by patients from open shelves. Where the distinction between POM, P and GSL is particularly important this is indicated in this book.

Since the last edition of this book there have been several important changes in health policy, and events, which have strengthened the part played by

community pharmacies in the assessment and management of common conditions. One change is that the coronavirus disease (COVID-19) pandemic has accelerated the adoption of remote consultations with pharmacists by telephone and video, which has enhanced the role of and increased access to community pharmacies. There has also been greater digital integration of community pharmacy with the wider NHS which has enabled electronic referrals from general practitioners (GPs) in primary care and from NHS telephone triage services.

In this book, we recognise that members of the public present to pharmacists and their staff in a number of different ways and pharmacists require a mix of knowledge and skills in diseases and their treatment, as well as excellent consultation skills.

Types of presentation	Pharmacist portfolio of key skills
Asking to purchase a named medicine	Differentiation between minor and more serious symptoms
Requesting advice about symptoms and appropriate treatment in person or remotely	Listening skills
	Questioning skills
Requesting advice about minor injuries	Triage of minor injuries, first aid
Requiring general health advice (e.g. about dietary supplements)	Treatment choices based on evidence of effectiveness
Asking about effects/symptoms perceived to relate to prescribed medicines	Explaining skills
	Partnership working with patients
A digital referral by NHS 111 or a healthcare professional	Acting as a role model and training other pharmacy staff

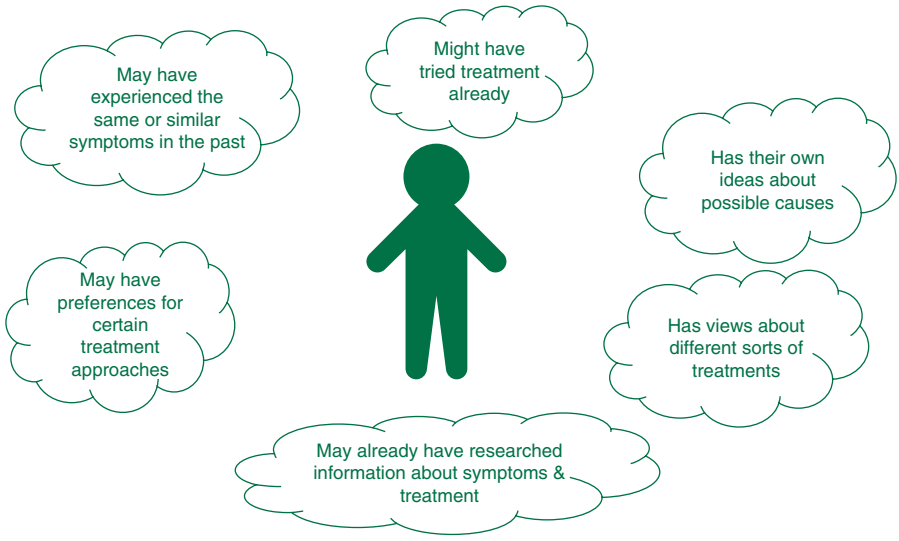
This introduction to the book has six sections:

1. Working in partnership with patients
2. Working in partnership with other health professionals
3. The consultation and developing consultation skills
4. Effectiveness of treatments and how we have used reference sources in this book
5. Layout of the chapters in this book.
6. The future

These set out the current context for community pharmacists' response to symptoms, a concise guide to pharmacy consultation skills, a summary of how we compiled evidence about treatment effectiveness and some comments on likely future developments. Throughout, we suggest how the reader might use this book and we then explain the layout of the chapters that follow.

WORKING IN PARTNERSHIP WITH PATIENTS

We refer to people seeking advice about symptoms as patients, although recognising that many will in fact be healthy people. We do this because we feel that the terms 'customer' and 'client' do not capture the nature of pharmacy consultations about health. In the past, pharmacists were seen as experts and patients as beneficiaries of pharmacists' information and advice. However, patients are not blank sheets or empty vessels; they have choices to make and are experts by experience in their own and their children's health. The following diagram illustrates some of the thoughts a patient may be having about their symptoms.



The pharmacist needs to take these factors into account during the consultation and enable patient participation by actively eliciting the patient's views and preferences. Many, but not all, patients will want to engage in decision-making about how to manage their symptoms. Some will want the pharmacist to decide on their behalf. The pharmacist needs to find out what the patient knows and wants. Finding out the information source(s) used by the patient is important, and if the reliability of the information is poor, this may need to be pointed out.

Healthcare professionals can only truly learn how to work in partnership by listening to what patients have to say. The list provided in the following section comes from a study of laypeople'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 laypeople

- Introduce yourself with unknown patients.
- Keep eye contact.
- Take your time; do not 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 – do not 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, weblinks, etc.).

Source: Reproduced from Bensing *et al*. (2011).

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; examples are *Patient Community Forums* at `https://patient.info/forums` and *netmums* at `www.netmums.com`. These lay networks can be very valuable, and pharmacists can contribute with their own expertise.

Some information from online sources or social media can be inaccurate or of poor quality, and some can create unrealistic beliefs and expectations. Others may be overtly or covertly promotional. Sometimes, information relates to medicines in different countries. A different issue is deliberate misinformation about health and treatments, and this has come to the fore during the COVID-19 pandemic. If you are concerned about the quality or relevance of health information that has been accessed by a patient, you can tactfully point them towards accredited sources of information, such as that provided on the *NHS Health* and *NHS Medicines* joint website (`www.nhs.uk`).

Pharmacists observe from their own experience that some patients are content to discuss even potentially sensitive subjects at the pharmacy counter. Sometimes, this 'public disclosure' may seem inappropriate and potentially embarrassing for other customers. While this is true for some people, others are put off asking for advice if they perceive insufficient privacy. The vast majority of UK community pharmacies have a consultation room or 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 should always bear privacy in mind and seek to create an atmosphere of confidentiality if sensitive problems are to be discussed, even if the patient does not seem concerned. Using professional judgement and personal experience, the pharmacist can look for signs of hesitancy or embarrassment on the patient's part, or identify inappropriate openness, and can suggest moving to a quieter part of the pharmacy or to the consultation area to continue the conversation. Proactively inviting a patient to the consultation area in response to a request about a sensitive topic, such as contraception, is appreciated by many.

Patients often assume that their community pharmacist and GP are both aware of the advice and treatments that each has prescribed or supplied and research shows that patients are keen for the health professionals providing their care to work together.

WORKING IN PARTNERSHIP WITH OTHER HEALTH PROFESSIONAL COLLEAGUES

Primary care

Community pharmacists are a key gateway into the formal NHS through their filtering of symptoms, with referral to the GP practice or dentist surgery, the optometrist, the out-of-hours (OOH) service or the accident and emergency (A&E) department when necessary. This filtering is more correctly termed as triaging and is increasingly important in maximising the skills and input of pharmacists and nurses. The NHS has introduced several policy changes to increase the involvement of pharmacists, optometrists and nurses in managing minor conditions in order to maximise GP time available for more serious and complex illness. The case studies in this book are included to illustrate the interactions between community pharmacists and other health professionals working in primary care.

Community pharmacists work closely with local GP practices and local healthcare organisations, enabled by the increasing digital integration that is enhancing communication and facilitating structured messaging and referral channels. Arrangements differ among UK countries and may involve GPs electronically referring patients for a community pharmacy minor illness consultation. Locally commissioned NHS minor ailment schemes, including the supply of medicines, exist in some areas, as do Patient Group Directions (PGDs) where certain medicines that are usually POMs can be supplied (see later in this chapter). Scotland has had a national service with electronic referral and records for several years.

GPs in England are dissuaded from prescribing over-the-counter (OTC) medicines to treat minor conditions and instead encourage patients to buy them. This is partly to reduce costs, but also to reduce pressure on GP services and increase the use of pharmacies. The role of community pharmacy in supporting this process is fundamental, as well as necessary for the policy to work. The current list of conditions for which OTC items should not routinely be prescribed in primary care in England is shown in Table A; we include it to illustrate how the NHS in one UK country intends to encourage shifting the management of these conditions away from the GP towards the community pharmacy.

This book covers almost all the conditions on the list plus others. The book is arranged as a series of chapters, with each covering a group of conditions,

TABLE A NHS England list of conditions for which OTC items should not routinely be prescribed in primary care (2018)

Acne (mild)	Athlete's foot
Burns and scalds (mild)	Cold sores of the lip (infrequent)
Conjunctivitis	Constipation (infrequent)
Coughs, colds and nasal congestion	Cradle cap
Cystitis (mild)	Dandruff
Dental caries (prevention)	Diarrhoea (adults)
Dry eyes/sore tired eyes	Dry skin (mild)
Earwax	Excessive sweating (hyperhidrosis)
Haemorrhoids	Hay fever/seasonal rhinitis (mild to moderate)
Head lice	Indigestion and heartburn
Infantile colic	Insect bites and stings
Irritant dermatitis (mild)	Migraine (infrequent)
Mouth ulcers	Nappy rash
Oral thrush	Painful conditions (e.g. aches and sprains, headache, period pain and back pain)
Ringworm	Sore throat (acute)
Sunburn due to excessive sun exposure	Teething
Threadworms	Toothache (mild)
Travel sickness	Warts and verrucae

e.g. *Gastrointestinal Tract Problems* or *Women's Health*. Within each chapter, there is a separate section for each condition.

To support joint working in the area of OTC medicines, as part of primary care, 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, if made (see later in this chapter). Two-way referrals with OOH centres are also helpful (i.e. from the OOH service to the pharmacy and from the pharmacy to the OOH service).
- Using the Patient Medication Record (PMR) to keep information on OTC recommendations to patients.
- Keeping local family doctors and nurses informed about POM to P medicine changes, both when a new medicine is switched and when a previous POM to P medicine is no longer marketed or has been switched back to POM.
- Using referral forms when recommending that a patient sees his/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.

Increasing access to medicines through POM to P switches

In recent years the increased number of POM to P changes is partly to encourage greater autonomy and choice by patients, with more rapid and convenient access to medicines, but also to enhance the role of pharmacists, and to take pressure off general practice. Widening the range of medicines available from pharmacies and extending the conditions that would otherwise have necessitated a general practice consultation meets both objectives.

Recent POM to P changes are highlighted in this book and include *desogestrel*, an oral contraceptive. At the time of writing vaginal oestrogen tablets are being considered for a POM to P reclassification so we have described their use in general terms rather than as a P drug (see the new Menopause section Chapter 6, Women's Health).

Some POM to P changes prove not be successful or commercially viable and the OTC product may be withdrawn. We have chosen to continue to describe

some of these medicines in this edition as their future availability as P medicines may change: *tamsulosin* for lower urinary tract symptoms in men, and *tranexamic acid* for menorrhagia are examples. For some, such as *calcipotriol ointment*, there may not be a UK launch as an OTC product even though they have been granted P status.

Patient Group Directions

A Patient Group Direction (PGD) is a legal framework to allow the safe supply of a medicine for specific patients, and may include provision of medicines that would otherwise require a prescription (POMs). PGDs are widely used in the NHS and among the most commonly used are stop smoking services; the supply of emergency hormonal contraception; the provision of influenza vaccinations; and recently, COVID-19 vaccinations. Community pharmacists in many areas are commissioned to supply certain medicines using a PGD, involving pharmacists in the wider work of the NHS, although 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 following list shows the range of PGDs that might be seen in community pharmacies:

- Erectile dysfunction
- Antimalarials
- Influenza and hepatitis B vaccine
- Meningitis vaccine
- COVID-19 vaccine
- Stop smoking (varenicline)
- Hair loss (private supply)
- Emergency contraception
- Salbutamol inhalers (for repeat supply)
- Oral contraception
- Cystitis treatment *(trimethoprim)*
- Sore throat management
- Weight loss (*orlistat* 120 mg)
- Impetigo

Each individual PGD includes specific circumstances in which the patient might need to be referred and whether this is to the GP practice or the A&E department.

Urgent care

At the end of the book, in the Appendix, we provide a set of pointers for direct referral; this is mainly related to physical illnesses. Pharmacists are also often asked to offer advice about accidents and injuries, many of which are likely to be minor with no need for onward referral. Pharmacists need to be familiar with the risk assessment and treatment to make a decision about when and where referral is needed. By helping to triage minor injuries, pharmacies can help to reduce costs, avoid unnecessary consultations elsewhere in the NHS, and take some of the pressure off emergency services. They can also help support and educate patients in managing common injuries.

The types of injuries that would be classified as 'minor' and amenable to self-care or simple 'first aid' are:

- Cuts, grazes and bruising
- Wounds, including those that may need stitches
- Minor burns and scalds
- Foreign bodies in the 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 the legs below the knee and to the arms below the elbow, where patients can bear the weight through their foot or move their fingers
- Minor nose bleeds

Referral to the A&E or minor injuries unit may need to be considered in certain circumstances. The following list provides general guidance on when a person might need to immediately go to A&E:

- 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 in 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.

THE CONSULTATION AND DEVELOPING CONSULTATION SKILLS

Responding to a request for a named medicine

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 their previous knowledge and experience of the purchaser.

Although most pharmacy customers do not mind being asked questions about their medicine purchase, many of those who wish to buy a medicine they have used before would prefer not to be subjected to the same questions each time. There are two key points here: 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 might be:

- Ask whether the person has used the medicine before; 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 the following text). 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 use their professional judgement in dealing with regular customers whom they already know and where the individual's medication history is known, with the pharmacy PMRs as a source of backup information. However, for new customers where such information is not known, more questions are likely to be needed.

With more patients being referred to the pharmacy from GPs and NHS 111, or from elsewhere, and the NHS discouraging the prescribing of some OTC medicines, patients may ask for a named medicine that it has been recommended they buy. In some circumstances, it might be best or necessary that this is supplied on a GP prescription (for example, use is outwith the licence for pharmacy supply), and this needs to be handled carefully.

Responding to a request for help with symptoms

The request may be made in person by the patient or remotely by telephone or video call. The patient may have been referred to the pharmacy by NHS 111 or by a local

healthcare professional. Requests may also be made by a customer on behalf of someone else. In this section, we set out the principles of responding to symptoms within a simple framework:

(A) Information gathering: By developing rapport, listening and questioning to obtain information about symptoms, and eliciting the patient's ideas.
(B) Decision-making: Is referral for a medical opinion required?
(C) Treatment and advice: The selection of possible, appropriate and effective treatments (when needed), offering options to the patient and advising on use of treatment, and offering health advice.
(D) Outcome: Advising the patient what action to take if the symptoms do not improve.

A. Information gathering

Most information required to make a decision and recommend treatment can be gleaned from just listening to the patient. Some patients will have been referred for a recommended treatment; others may want to repeat a previous treatment; and a few will have a new concern worrying them. In most cases, listening to the patient for a minute or two, rather than putting immediate questions, is usually the key to understanding their needs.

Patients with a new problem 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. Once the story has been told, additional, more focused information may be required. 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 am sure I can. To help me give the best advice, though, I would like a bit more information from you, so I need to ask a few questions. Some of them will need to be a bit personal. Is that OK and would you like to come to a more private area?
Patient	That is fine.
Pharmacist	Could you start by telling 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 has been going on for years.
Pharmacist	You say years?
Patient	Yes, on and off for 20 years since my last pregnancy. I have seen my doctor several times and had them injected, but it keeps coming back. My doctor said that I would have to have an operation, but I do not 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 is bright red.

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

When the patient has been referred to the pharmacy by another healthcare professional or from a telephone triage service, such as NHS111, they may already have been asked some or many questions as part of that process. However, the pharmacy may receive very little information and in some cases may have been provided with simply the presenting complaint, e.g. 'mouth ulcer'. The patient may think that all of the information they have already supplied has been sent to the pharmacy, so it is important to explain that it has not. Once the patient knows the reason why you seem to be asking questions that they have already been asked by someone else, they will understand why this is happening.

B. 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 (such as used in A&E) and clinical assessment. Most community pharmacists have developed procedures for information gathering to identify when the presenting problem can be managed within the pharmacy and when referral for medical advice is needed (so-called 'clinical pathways'). 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 UK, with computerised decision-support systems increasingly used. Patients who are referred to you from NHS 111 (now used across most of the UK) will already have been subject to questions based on a decision-support algorithm. 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 consultation went like this, 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 has 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 have 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 pneumonic in the section '*Structuring the consultation*', further in the text.

C. Treatment and health advice

Next, we discuss selection of treatment, including assessing likely effectiveness and agreeing treatment choices with patients.

The pharmacist's background in pharmacology, therapeutics and pharmaceutics 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 pharmacists to carefully think about the effectiveness of the treatments they recommend, combining this with their own and the patient's experience.

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 they may not consider medicines. The availability of more medicines from online pharmacies (including P medicines via an authorisation process), online supermarket ordering and online shops, such as Amazon, have increased access to medicines, herbal products and supplements.

The pharmacist will elicit the patient's preferences and discuss treatment options. Concordance is an agreement reached after negotiation between the patient and pharmacist that respects the beliefs and wishes of the patient in determining which, whether, when and how OTC medicines are to be taken is fundamentally important.

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 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).

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 self-help options, lifestyle interventions or 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.

Key interactions between OTC treatments and other drugs are included in each section of this book. For further information, the British National Formulary (BNF) provides an alphabetical listing of drugs and interactions, together with an indication of clinical significance. In this book, generic drug names are used. Drug names or ingredients, where appropriate, are *italicised*.

Pharmacy PMRs can provide helpful information if the patient is a regular customer at the pharmacy. Review of concurrent prescribed drug therapy can identify potential drug interactions and adverse effects. Adding information to the PMR for certain patients, such as older people, can complete the medication profile.

Community pharmacies have access to parts of the NHS primary care medical record. In England, this is the Summary Care Record (SCR) and Local Health and Care Record, and there is a similar system in place in Wales and Scotland. With the patient's verbal consent, pharmacists can check medicine-related information when, in their clinical judgement, it is appropriate to do so. Using SCR, the pharmacist can access information for patients who are not regular users of the pharmacy, thus overcoming the lack of PMR for these patients, especially if they are unsure

about the names of any of their prescribed medicines, the reason why they were prescribed or the relevant medical condition.

Health advice may be needed regardless of whether a treatment is recommended and symptom relief approaches, or simple reassurance and watchful waiting, can be appropriate in many conditions. Many guidelines include evidence-based health advice recommendations. An example of watchful waiting is seen with acute otitis media in children for which antibiotics are often requested (and in the past have been provided routinely). Ear pain associated with viral respiratory infections usually gets better in a similar time period with or without antibiotics, so pain relief medicines with *paracetamol* or *ibuprofen* are usually the best option while waiting for symptoms to resolve. Conjunctivitis in children is similar as most cases resolve without treatment in a few days.

There is increasing interest in the role of pharmacy in social prescribing. Social prescribing is a concept based on the recognition that many of the problems that are presented to healthcare may be helped by a social solution, rather than by providing medical treatments (or selling OTC products). Social prescribing involves helping patients to improve their health, wellbeing and social welfare by helping them connect to a variety of community services run by voluntary groups, the council or a local charity. One example is encouraging a person who has depression symptoms related to social isolation and loneliness to join a ramblers group, which will give them the company of other people, with the added bonus of increasing physical activity. The NHS has a number of initiatives designed to improve access to social prescribing. Pharmacies can get involved in local programmes, develop ties with 'social prescribing link workers', and keep information packs enabling patients to be signposted to relevant services.

D. Outcome

Most minor illnesses will improve with treatment and advice. Each consultation should include 'safety-netting' by explaining the timescale when further assessment and advice is needed if improvement has not occurred. This is set out for each condition in this book as 'Treatment timescale'. 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.

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, OOH service and A&E, patients may not see the doctor directly. Often trained nurses may assess patients, or sometimes suitably qualified clinical pharmacists, and they may prescribe treatment as independent prescribers or through PGDs. We have used this phrase for convenience, but if these alternative systems for assessment are established in your area, this may need explaining to patients. Alternatively, to indicate that a doctor may not always be directly involved we have used the expression 'referral to the GP surgery'.

Developing consultation skills

Effective consultation skills are the key to finding out what the patient's needs are, and deciding whether you can manage the problem or whether they might need to be referred to another practitioner. All community pharmacists will have learned consultation skills during their undergraduate, pre-registration or post-registration education. This section therefore aims to provide a summary relevant to consultations when responding to symptoms. A useful framework for thinking about and improving 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, having a coffee break and thinking about it, or merely acknowledging to oneself whether a particular consultation has been effective or not.*

Challenges in pharmacy consultations

Face-to-face consultations will have comprised the majority of many community pharmacists' experience. Here, the pharmacist is likely to have minimal or no advance knowledge of what the patient wants to discuss. The pharmacist may or may not already know the patient and be aware of some of their medical and social situations. Pharmacists may therefore need to elicit more information from patients who are not regular users of their pharmacy, although research indicated there is often little or no difference in practice in the questions asked.

The COVID-19 pandemic has impacted on pharmacy consultations in several ways, including from the use of plastic screens to the wearing of masks. The combination of the barrier of the screen and wearing of masks may make it harder to hear and understand what is being said and picking up on non-verbal cues is more difficult when part of the face is covered. Another important change has been in the use of remote consultations.

Remote consultations

The COVID-19 pandemic has accelerated the move towards remote consultations throughout the NHS with telephone and video consultations now mainstream in primary care and in hospitals. Improvements in technology have enabled greater use of video consultations and the NHS has its own systems, such as *Attend Anywhere* for England and *Near Me* for Scotland. Many patients will now have some experience of remote consultations for health reasons. These changes have brought both benefits and drawbacks. Benefits include improved efficiency and the possibility of increasing access to pharmacist consultations, but there are also significant challenges; see Table B.

Face-to-face consultation remains the accepted norm in community pharmacy with use of remote consultations in specific circumstances. For example, in Scotland the criteria for use of the NHS video consultation service by pharmacies are if the patient is:

- Housebound
- Too ill to go to the pharmacy, or may have a contagious illness
- Resident in a care home
- Unable to attend the pharmacy due to work, caring responsibilities or issues with transport
- Self-isolating or 'shielding' during the COVID-19 pandemic

For those pharmacists who are getting to grips with remote consultations, a summary of potential challenges is provided in Table B. This is by no means exhaustive, but provides a framework for resolving some of the difficulties.

During the COVID-19 pandemic, a lot of interest has been shown in how best to consult remotely or 'virtually'. There are several resources that are available to assist in ensuring that the required equipment can be used most efficiently, and in adapting the consultation style to make the process more productive. Pharmacists should consider this learning as an essential part of their continuing professional development. It is highly probable that remote consultations will still form a significant part of healthcare provision after the COVID-19 pandemic is over.

A useful set of current articles and resources are indicated in the following text. These are not exhaustive and may be subject to change. Some are those used in UK general practice.

TABLE B Summary of some of the challenges of remote consultations

	Telephone consultations	Video consultations
Access	• Almost everyone has access to a telephone	• Patient needs to own or have access to a smartphone, tablet, laptop or computer • Computer literacy varies • Risk of disadvantaging people who do not use the technology and those who are on low income
Appropriateness Risk management	• Need to assess if face-to-face consultation required	• Need to assess if examination needed to make diagnosis
Time management for both pharmacist and patient	• Call tends to be 'unscheduled' – best if use appointment system	• Use of appointment system important to make time, ensure availability of equipment, plus ensure privacy
Patient identification	• Not seeing the patient means that you will need a robust method to check that you are speaking to the right person	• If you know the patient, it is easy to know that you are speaking to the right person, but confirmation will still be required
Privacy and confidentiality	• Other people in the patient's location might hear what is being discussed	• Other people in the patient's location might see who the patient is talking to and hear what is being discussed • Important to check that patient is able to consult in privacy
Technical issues	• Signal strength for mobiles • Mobile phone battery charge running out	• Correct technology, equipment needed • Wi-Fi connection strength and consistency – 'freezing', etc. • Lighting

TABLE B (Continued)

	Telephone consultations	Video consultations
User issues	• Has patient got 'capacity' and cognitive skills? • Staff training required	• Has patient got 'capacity' and required cognitive skills? • Requires user familiarity with system • User error • Troubleshooting
Non-verbal communication	• Non-verbal communication and cues are absent	• Non-verbal communication and cues may be blunted
Interruptions and overlap	• Strategies needed to enable patient to describe problems adequately	• Speaking over one another because of lags between vision and sound
Hearing impairment	• Telephone volume can be adjusted, or acoustic loop used	• May allow lip reading by the patient
Shared decision-making	• Ensure patient has access to necessary information for informed choices	• Ensure patient has necessary information for informed choices. Can diagrams or illustrations assist?
Documentation	• Record-keeping will be necessary. If recording needs patient consent prior to recording	• Record-keeping necessary. May be significant confidentiality issues if taking 'snapshots' or recording – consent needed in advance

- Barnett, N. and Jubraj, B. (2020). Remote consultations: how pharmacy teams can practise them successfully. *The Pharmaceutical Journal*. From: https://pharmaceutical-journal.com/article/ld/remote-consultations-how-pharmacy-teams-can-practise-them-successfully (accessed 24 February 2022)
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- Royal College of General Practitioners. Remote consultation and triaging, resource hub (2021). https://elearning.rcgp.org.uk/mod/page/view.php?id=10551 (accessed 24 February 2022)
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- University of Oxford. Video consultations: a guide for practice (2020). Available at: https://bjgplife.com/wp-content/uploads/2020/03/Video-consultations-a-guide-for-practice.pdf (accessed 24 February 2022)
- NHS Education for Scotland. Video consultation checklist for clinicians (2020). Available at: https://learn.nes.nhs.scot/28956/coronavirus-covid-19/remote-consulting-and-recruitment/video-consultation-checklist (accessed 24 February 2022)

Structuring the consultation

Pharmacists need to develop a method of information seeking that works for them. There is no right and wrong here. It is very useful to adopt a framework to help structure the consultation.

The Calgary–Cambridge consultation model is widely taught in pharmacy, which includes:

- Initiating the consultation
- Gathering information
- Explanation and planning
- Closing the session

Some pharmacists find that a mnemonic, such as the two (WHAM and ASMETHOD) shown in the following text, can be a useful brief aide memoire, although care needs to be taken not to recite questions in rote fashion without considering their

relevance to the individual patient. Good listening will glean much of the information required. 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: 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.

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: All medicines taken regularly by the patient need to be identified 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 medicines being taken because of the potential for interaction with any recommended treatment.

The community pharmacist has an important role in detecting adverse drug reactions, and once the list of medicines has been obtained, consideration should be given to the possibility that the patient's symptoms might be an adverse effect caused by medication. Sometimes, the patient will perceive that this might be the case and ask about it. For example, whether a cough might be due to an angiotensin-converting enzyme inhibitor. When the pharmacist suspects an adverse drug reaction to a POM, a discussion with the prescriber about what actions should be taken may be needed (perhaps including a *Yellow Card* report to the Medicines and Healthcare products Regulatory Agency by the pharmacist or patient) and the prescriber may wish the patient to be referred back to them.

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 already been discussed. The others are now considered.

'A' – Age and appearance

The appearance of the patient may indicate whether a minor or more serious condition is involved. If the patient looks pale, clammy, flushed or grey, referral to the doctor should be considered. For children, appearance is important, but asking the parent whether the child is generally well is also needed. 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.

Age is important because some symptoms are 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.

Age will also play a part in determining any treatment offered by the pharmacist. Some preparations are not recommended at all for children under 12 years, e.g. *loperamide*. Others must be given in a reduced dose or as a paediatric formulation. These are included in this book for each medicine.

Other OTC preparations have a minimum specified age, e.g. 12 years for nicotine replacement therapy and 16 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, i.e. duration of symptoms

'H' – History

There are three 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. A third aspect is social history; for example, the pharmacist might know that the patient had a recent bereavement and is now living alone, or that they lost their job and had to move to a flat without a garden.

Questioning about the history of a condition may be useful; how and when the problem began, how it has progressed and so on. Any previous episodes should be asked about to determine the action taken by the patient and its degree of success. For example, in recurrent mouth ulcers: 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 (these may signify angina).

History taking is particularly important when assessing skin disease. Recognition of the appearance of skin conditions is not the most important factor and 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. Knowing which creams, ointments or lotions have been applied is essential.

'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 altered bowel habit for a period of time may only mention that they are constipated or that their stools are loose.

The 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 that 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, 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 and risk assessment

Most presenting symptoms will be of a minor and self-limiting nature and should resolve within a few days. We have already discussed safety-netting under 'D. Outcome' earlier in this section.

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 POM

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

Each section of this book includes a suggested list of 'When to refer'. At the end of the book, in the Appendix, we provide a summary of these with a set of pointers for direct referral; this mainly relates to physical illnesses.

Discussions with local GPs 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.

EFFECTIVENESS OF TREATMENTS AND REFERENCE SOURCES USED IN THIS BOOK

Treatment recommendations should, wherever possible, be based on evidence. For more recently introduced medicines and for those that have moved from POM to 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. Patients may still wish to exercise their choice to buy a medicine for which there is less evidence of effectiveness than the one the pharmacist has recommended.

Current evidence of effectiveness is summarised in the relevant BNF monograph. The BNF is updated every month online and can be found at `https://bnf.nice.org.uk/`

Useful websites for clinical guidelines and clinical evidence in the UK are:

- NHS Evidence – `www.evidence.nhs.uk`
- Clinical Knowledge Summaries (CKS) – `https://cks.nice.org.uk`
- The Scottish Intercollegiate Guideline Network (SIGN) – `www.sign.ac.uk`
- The National Institute for Health and Care Excellence (NICE) – `www.nice.org.uk`

Not all of these websites can be accessed from outside the UK (all websites accessed 28 February 2022).

The joint website for NHS Health A–Z and NHS Medicines A–Z (`www.nhs.uk`) includes symptom checkers and management advice for minor ailments and is intended for use by people in England (although this resource appears widely used across the UK). The website also has information on investigations (e.g. endoscopy) and operations (e.g. knee replacement), as well as aftercare. The NHS Health A–Z and Medicines A–Z resources are based on and reflect CKS and the BNF for much of their content in a manner which can be easily digested by patients and help them make choices about treatment.

Similar resources are available in Scotland at `www.nhsinform.scot` and in Wales at `www.wales.nhs.uk/healthtopics`. Again, not all of these websites can be accessed from outside the UK.

This book draws wherever possible on these clinical guidelines and resources when discussing clinical management. Some conditions do not have a clinical guideline and here, the book draws on evidence from high-quality systematic reviews, such as those produced by the Cochrane collaboration. The Cochrane resources, which include *Clinical Answers*, are available worldwide and the English portal is at `www.cochranelibrary.com`. 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; in such cases, a consensus of best practice has usually been agreed (such as within NICE, CKS or public health guidance).

LAYOUT OF THE CHAPTERS IN THIS BOOK

The majority of chapters in this book contain separate sections for specific symptoms or conditions. Each section starts with a brief description and then provides information on:

- *What you need to know* (yellow box) - helping to frame relevant questions
- *Significance of questions and answers*
- *When to refer* (blue box)
- *Treatment timescale* (pink box)
- *Management* - including treatment options
- *Practical points*
- *Case studies*

THE FUTURE

In addition to their expanded role in the management of minor conditions, community pharmacists are likely to be increasingly involved in the management of long-term chronic or intermittent conditions, such as hypertension, asthma or COPD, in the future. Here, monitoring of progress is important and a series of consultations is likely to be necessary, rather than just one. Access to the SCR or ideally, integrating directly within primary care medical records will aid this process.

Symptom self-assessment apps that can be used by members of the public on smartphones and tablets have progressed considerably since the previous edition of this book. The apps bring together 'reasoning' technology based on artificial intelligence with a database of medical conditions. Information from some of the symptom checker apps could be shared with the pharmacist to make the process

more efficient. As with online resources, the quality and content of these apps may be variable and if the pharmacist has doubts, these should be raised with the patient.

As we discuss in a new chapter in this edition, *Pharmacogenomics* (similar in meaning to pharmacogenetics) is an exciting, developing field of pharmacology. There is increasing interest in the use of pharmacogenomic testing in the pharmacy, but currently information that can be used to alter clinical decision-making and is clearly proven to improve clinical outcome is very limited. Nevertheless, consumers in many countries, including the UK, can now purchase a test from pharmacies and may ask their community pharmacist for their views on the value of testing or for help in acting on the results. Perhaps the most important role of the pharmacist at this current time is to advise on the place of pharmacogenomic tests, their usefulness, suitability and limitations.

Further POM to P switches are anticipated, with the continuing move to increase the clinical role of community pharmacists and to share the management and monitoring of long-term conditions that were previously within the domain of the GP. At the time of writing, there is increasing community pharmacy involvement in cardiovascular risk assessment, as well as in treating hypertension and hyperlipidaemia. Such changes will move the boundaries for preventive treatment of otherwise healthy people and expand the scope of practice of community pharmacists further.

Finally, the COVID-19 pandemic has had a major impact on how the NHS organises healthcare, the place of patient choice, the boundaries of selfcare, the roles of healthcare professionals, and in particular, on how respiratory tract infections are managed. We have tried to highlight some of these changes in the update for chapter 1 on respiratory problems, and in the new chapter 2 on COVID-19 and long-COVID. This was prepared at the time of a predicted transition of COVID-19 from a pandemic to an endemic state. We recognise this is a moving field and subject to further developments. There is some uncertainty about how this will play out so careful attention to health policy, the evolving evidence, and national guidelines will be needed in the future.

About the Companion Website

This book is accompanied by a companion website:

www.wiley.com/go/Blenkinsopp/Pharmacy

The website includes:

- Multiple choice questions and answers for practice.

CHAPTER 1

Respiratory Problems

COUGHS AND COLDS

Coughs and colds comprise a mixture of viral respiratory tract infections (RTIs). Although coughs and colds are nearly always self-limiting, some people visit their general practitioner (GP) for treatment, and there is concern about overprescribing antibiotics 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. Educating people on the self-limiting nature of symptoms is also important.

Respiratory infection symptoms may be related to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) with the risk of having or spreading coronavirus disease (COVID-19), which can be serious in some people, particularly in those who are vulnerable. All pharmacies have developed strict hygiene principles. In addition to following these principles, the pharmacist needs to be able to triage patients if COVID-19 is a possible cause. However, as symptoms are similar with colds, flu and SARS-CoV-2 infections, during the COVID-19 pandemic, all patients meeting certain diagnostic criteria (which are subject to change) should consider staying at home and follow the latest guidance on testing. Patients who telephone to ask for advice who have symptoms suggesting COVID-19 should be told not to visit the pharmacy or surgery. Advice on SARS-CoV-2 may continue to be modified with

Symptoms in the Pharmacy: A Guide to the Management of Common Illnesses, Ninth Edition.
Alison Blenkinsopp, Martin Duerden, and John Blenkinsopp.

Companion website: www.wiley.com/go/Blenkinsopp/Pharmacy

the emergence of new variants and with findings of new studies. This issue is discussed further in a separate chapter.

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 RTI 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 comorbidities (e.g. diabetes), may be at risk of developing complications, such as pneumonia, and are at higher risk of serious illness and death if they catch flu or SARS-CoV-2 infection.

What you need to know

Age (approximate)
- Child or adult
- Duration of symptoms
- Runny/blocked nose
- Summer cold
- Sneezing/coughing
- Generalised aches/headache
- High temperature
- Sore throat
- Earache
- Facial pain/frontal headache
- Flu
- Loss or disturbance of taste and/or smell
- Asthma
- Previous history
    - Allergic rhinitis
    - Bronchitis
    - Heart disease
- Present medication

Duration

Patients may describe a rapid onset of symptoms over hours or a gradual onset of symptoms over a day or two; the former is said to be more commonly true of flu (as well as COVID-19) and the latter of the common cold. This is generally the case 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; therefore, expectations of recovery may be unrealistic, and it is worth advising patients that this may happen.

Symptoms

Runny/blocked nose

Most patients will experience a runny nose (i.e. rhinorrhoea). This is initially a clear watery fluid, which later becomes a thicker and more tenacious, often coloured, mucus. Nasal congestion occurs because of dilatation of blood vessels, which leads 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

The main symptoms of summer colds 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 due to postnasal drip.

Box 1.1 RTIs (self-limiting) – usual durations

The average total lengths of the illnesses are as follows:

- Acute otitis media (AOM): 4 days
- Acute sore throat/acute pharyngitis/acute tonsillitis: 1 week
- Common cold: One and a half weeks
- Acute rhinosinusitis: Two and a half weeks
- Acute cough/acute bronchitis: 3 weeks

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 section on Facial pain/frontal headache later in this chapter). People often report muscular and joint aches and these are more likely to occur with flu and COVID-19 than with the common cold (see section on Flu later in this chapter).

High temperature

Those suffering from a cold often complain of feeling hot; however, 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 or COVID-19 rather than a cold (see section on Flu later in this chapter, and Chapter 2 on COVID-19).

Sore throat

The patient often feels their throat is dry and sore during a cold and this 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). Sore throat can also be a feature of COVID-19.

Earache/otalgia

Earache is a common complication of colds, especially in children. When nasal mucus and congestion is present, the ear can feel blocked. This is due to the blockage of the Eustachian tube, which connects 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 through swallowing, which may make the patient 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 (see Figure 1.1). When this does occur, the ear becomes acutely painful (otalgia). This ear pain is common in young children and usually the best treatment is pain-relief medicine. A secondary infection with inflammation may follow and when this occurs, this is called acute otitis media (AOM). However, even in the context of suspected infection, the evidence for antibiotic use is conflicting with some trials showing benefit and others showing no benefit from taking antibiotics. In a Cochrane review of AOM, overall the evidence from clinical trials shows that

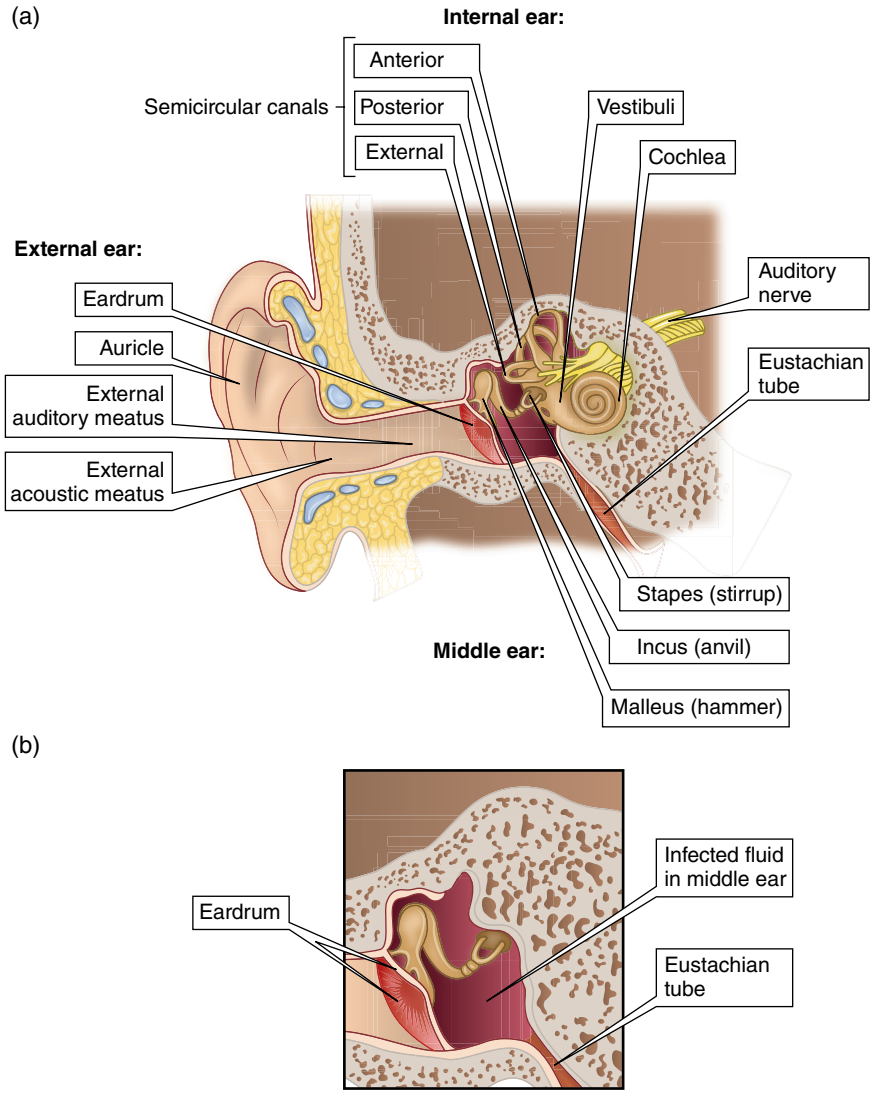

FIGURE 1.1 (a) Structure of the ear with (b) build-up of fluid in the middle ear causing pressure and pain, i.e. otalgia. If the ear becomes inflamed or infected, this is called AOM. *Source:* Nair and Peate (2014) *Pathophysiology for Nurses at a Glance*. Wiley, p. 63. Reproduced with permission of John Wiley & Sons.

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 rashes, and these risks can be greater than the potential for benefit. Antibiotics are most useful in children

under 2 years of age who have pain in both ears or a painful ear with discharge from that ear (i.e. otorrhoea); therefore, in these circumstances, suggesting getting a fairly rapid assessment by a doctor or nurse is appropriate. Do not advise patients 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 both otalgia and AOM. However, if pain persists or is associated with an unwell child (e.g. high fever, very restless or listless, and vomiting), then refer to the GP practice.

Facial pain/frontal headache

Facial pain or frontal headache may signify sinusitis. The paranasal sinuses are air-containing spaces in the bony structures adjacent to the nose (maxillary sinuses) and above the eyes (frontal sinuses); see Figure 1.2. During a cold, their lining surfaces become inflamed and swollen, producing mucus. The secretions drain into the nasal cavity. If the drainage passage becomes blocked, fluid builds up in the sinus, which causes pain from pressure and 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 those most commonly involved. A recently updated systematic Cochrane review indicated only a small benefit from antibiotics even in acute sinusitis that had lasted for longer than 7 days.

However, antibiotics may be recommended if the symptoms of sinusitis persist for more than 10 days or are severe with fever (i.e. a temperature of >38°C), severe local pain and 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

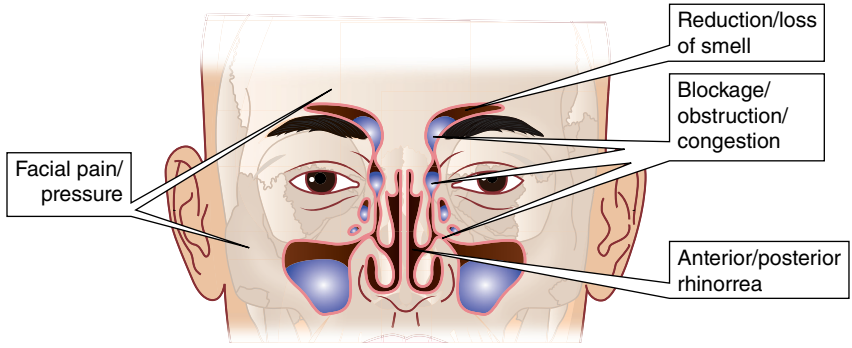

FIGURE 1.2 Position of the paranasal sinuses and symptoms of sinusitis. *Source:* Nair and Peate (2014) *Pathophysiology for Nurses at a Glance*. Wiley, p. 66. Reproduced with permission of John Wiley & Sons.

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, which are commonly found in combination products with an analgesic, are generally not recommended for sinusitis. Steam inhalation or nasal irrigation with saline are sometimes advised for painful sinuses. Care should be taken to avoid scalding with steam inhalation and it is not advised in children. Sitting in the bathroom with a running hot shower is a safer option. There is some evidence that nasal irrigation is more effective than steam inhalation in the context of persistent or recurrent sinusitis. Drinking adequate fluids and rest will generally help.

Flu

Differentiating between colds and influenza (and now COVID-19) 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. Influenza (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, such as cough, sore throat, nasal congestion or rhinorrhoea, is present.
- A minimum of one constitutional symptom, such as headache, malaise, myalgia, sweats/chills or prostration, is present.

As these symptoms are similar to that of SARS-CoV-2 infection, while COVID-19 is still a concern, all patients should consider staying at home and following the latest guidance (see the separate chapter 2 on COVID 19).

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, which differentiates it from viruses causing a 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. However, when a flu outbreak occurs, 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. As with other viral coughs and colds, for most people, there is nothing to be gained by taking antibiotics for flu, but antibiotics are often prescribed inappropriately, 'just in case'. It is important to avoid overuse of antibiotics to reduce the development of bacteria that are resistant to them, called antibiotic resistance.

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 young babies, 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 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. In these cases, antibiotics may be an important treatment and their use should be reserved for such cases so that antibiotic resistance resulting from overuse does not compromise their effectiveness.

Asthma

Exacerbations of asthma can be triggered by respiratory viral infections. Most people with asthma learn to start or increase their usual medication to prevent such an occurrence. However, if these measures fail, referral is needed.

Previous history

People with a history of COPD, also sometimes called chronic bronchitis or emphysema, may need referral. The diagnosis of COPD should be considered in patients over the age of 35 years who are or have been long-term smokers and who have shortness of breath while doing 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 bronchodilators (such as inhaled antimuscarinics and/or 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.

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 respiratory virus 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. However, in most cases of colds and flu, treatment with OTC medicines 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, e.g. COPD, kidney disease, diabetes and a compromised immune system

With persisting fever and productive cough

With delirium

With pleuritic-type chest pain

Asthma

Treatment timescale

Once the pharmacist has recommended symptomatic treatment, the patient should be advised to consult with their nurse or doctor in several weeks (see **Box 1.1**) if the respiratory infection has not improved, or earlier if there is a marked deterioration in symptoms. If unsure, the patient 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 which allows effectiveness to be judged.

The pharmacist's role is to select appropriate treatment based on the patient's symptoms and available evidence, as well as taking into account the patient's preferences. 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 Commission on Human Medicines (CHM) of the United Kingdom (UK) 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's Medicines and Healthcare products and Regulatory Agency (MHRA) advised that the following OTC cough and cold remedies should no longer be sold for children under the age of 6 years:

- Antitussives: *Dextromethorphan* (for children over 12 years only) and *pholcodine* – the British National Formulary (BNF) advises that these are now not generally recommended in children
- 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 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 years. 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; therefore, 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.

For nasal sprays/drops, advise the patient not to use the product for longer than 7 days. Rebound congestion (i.e. rhinitis medicamentosa) can occur with topically applied sympathomimetics, but not with orally given ones. 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*. Offer 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 for no more than 5 days, but they should not be used in children under the age of 6 years.

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 antimuscarinic/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. These drugs should be used with caution (as per current 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 unwanted effects when taken orally and are unlikely to do so when used topically. Nasal drops and sprays containing sympathomimetics can therefore be recommended for those patients in whom 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); the interaction can induce a hypertensive crisis and several deaths have occurred due to this. This interaction can occur up to 2 weeks after a patient has stopped taking the MAOI; therefore, establishing if any medication has recently been discontinued is essential. There is a possibility that topically applied sympathomimetics could induce such a reaction in a patient taking an MAOI. Therefore, avoid both oral and topical sympathomimetics in these patients.

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, it concluded that these measures had made an important contribution to reducing the misuse of *pseudoephedrine* and *ephedrine* in the UK.

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

Antihistamines could theoretically reduce some of the symptoms of a cold, such as runny nose (rhinorrhoea) and sneezing, because of their antimuscarinic action. This is more pronounced in the older drugs (e.g. *chlorphenamine*, also known as *chlorpheniramine*, and *promethazine*) than the non-sedating antihistamines (e.g. *loratadine, cetirizine* and *acrivastine*). Non-sedating antihistamines are thus less effective in reducing symptoms of a cold. Antihistamines are not so effective in 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 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 can 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).

The older antihistamines may produce the same adverse effects as antimuscarinic/anticholinergic drugs (i.e. dry mouth, blurred vision, constipation and urinary retention). These effects are more likely if antihistamines are given concurrently with antimuscarinics, such as *hyoscine*, or with drugs that have antimuscarinic actions, such as tricyclic antidepressants or bladder antispasmodics (e.g. *oxybutynin*). Antimuscarinic drugs' adverse effects are also more likely to be problematic if antihistamines are taken by people using some inhaled drugs containing antimuscarinics used for COPD, such as *ipratropium* or *tiotropium*. In older and frail people, the combined effects of several drugs with antimuscarinic/anticholinergic properties can be particularly troublesome (often referred to as 'anticholinergic load') and may also aggravate confusion or memory problems.

Antihistamines should be avoided in patients with a history of angle-closure glaucoma (usually this is glaucoma that will have presented acutely) or prostatic symptoms because of possible antimuscarinic side effects. In patients with angle-closure glaucoma, antihistamines may cause increased intraocular pressure. Drugs with an antimuscarinic effect can occasionally precipitate acute urinary retention in predisposed patients, e.g. men with prostatic problems (lower urinary tract symptoms [LUTS]) where bladder outlet obstruction causes poor urinary flow.

The probability of such serious adverse effects is low, but needs to be borne in mind.

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 problem rather than a practical one.

Interactions

- Alcohol
- Hypnotics
- Sedatives
- *Betahistine*
- Antimuscarinics

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. Therefore, it is generally not recommended that people take *zinc supplements* for colds.

Echinacea

A systematic review of trials indicated that some echinacea preparations might 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 rashes.

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 aged 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 the age of 6 years, 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

Flu immunisation – adults

Pharmacists should encourage those eligible to have an annual flu vaccination. In the UK, until 2019, the health service was providing vaccinations to all patients over the age of 65 years. Starting in 2020, annual flu jabs had been offered to all those over the age of 50 years because of the concern that the combination of coronavirus and flu infection may be particularly dangerous, and also because reducing flu infections may help to reduce pressure on the National Health Service (NHS) and social care staff who may be dealing with coronavirus. For winter 2022/2023 the plan is to return to offering flu vaccines to those over 65 plus high risk patients, although this may be subject to change.

The flu jab is also offered to all other people, aged over 6 months, who are deemed at high clinical risk. This includes those with chronic respiratory disease

(including asthma), chronic heart disease, chronic renal failure, chronic neurological disease, and diabetes mellitus or immunosuppression due to disease or treatment.

All pregnant women, and people living in long-stay residential care, are also advised to have immunisation alongside those who are the main carer for an older or disabled person, particularly if the person they care for is at high risk from coronavirus. All frontline health or social care workers are also advised to be immunised, and this would include pharmacy staff.

Recommendations are updated every year; therefore, 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, or in some cases administer it. Many community pharmacies in the UK are now commissioned by the health service to provide flu vaccinations (as well as COVID-19 jabs; see the chapter on COVID-19).

Flu immunisation – children

It is useful to be aware of the use of flu immunisations in children. As with adults the guidance is usually updated annually. The nasal spray flu vaccine is currently provided on the NHS for all children aged between 2 years and 15 years. If a person is aged 16 or 17 years and requires flu vaccine because they are at high clinical risk they should also receive the nasal spray rather than an injection.

If the child is aged between 6 months and 2 years and is in a high-risk group for flu, he/she will be offered a flu vaccine injection instead of the nasal spray. This is because the nasal spray is not licensed for children under the age of 2 years. Children aged 2–17 years may also have the flu vaccine injection if the nasal spray vaccine is not suitable for them.

Reducing transmission – hand hygiene and face masks

Prior to COVID-19, increasing attention was being paid to ways of reducing transmission of flu and colds. Many lessons have now been learnt from coronavirus. This has shown how good hygiene practice, as well as social distancing, can also prevent transmission of other respiratory viruses, such as colds and flu.

Routine handwashing with soap and water for at least 20 s (the advice is for the time taken to sing happy birthday twice) reduces the transmission of respiratory viruses and is the best method to eradicate them. Ethanol-based hand sanitisers can be used if immediate access to soap and water is difficult in everyday settings. Cold viruses and both SARS-CoV-2 and the influenza virus are susceptible to alcohol in formulations of greater than 60% ethanol. They are widely used in healthcare environments, and since the COVID-19 pandemic, use is now commonplace in shops and domestic settings too, and this can contribute to

reducing transmission of colds, flu and coronavirus. The rationale is that these viruses can survive for up to 72 h on hard surfaces and for several hours on the skin. Coronavirus survives longer than the cold or flu virus. Touching contaminated hands, surfaces and objects can transfer the virus, and washing hands or using hand sanitiser as soon after exposure as possible is important to reduce transmission. People should be advised not to touch their eyes, nose or mouth if their hands are not clean, but touching the face is a normal, regular habit and may be difficult to suppress.

Transfer of respiratory viruses usually occurs directly from person to person when an infected individual breathes, coughs or sneezes, and this appears to be the commonest route of transmission. Droplets of respiratory secretions or an aerosol comes into contact with the mucous membranes of the mouth and nose of another person. The eye may be another route of entry. 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. Other guidance related to experience with COVID-19 is the wearing of a face mask covering the nose and mouth whenever it is hard to stay away from people, such as in shops or on public transport, when this is local or national policy. This reduces the chances of spreading viruses to others. Keeping a distance as much as possible is also a reasonable precaution – ideally 2 metres or more. Ventilation has proved important by opening windows, doors and air vents whenever this can be done.

Flu pandemic

A flu 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 UK. 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 this 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 recent experiences with COVID-19 have made the threat of such pandemics much more tangible.

The Department of Health has issued various publications detailing the evidence base for dealing with pandemic flu for the UK 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

The National Institute for Health and Care Excellence (NICE) supports the use of *oseltamivir* and *zanamivir* (neuraminidase inhibitors) in seasonal flu outbreaks for those who are in at-risk groups if treatment is started within 36 h (*zanamivir*) or within 48 h (*oseltamivir*). These drugs can also be used to prevent transmission of flu (prophylaxis) under some circumstances. Advice to use these drugs for prophylaxis is triggered if the incidence of flu hits a specific threshold. The incidence is monitored by a national surveillance scheme. The other licensed antiviral *amantadine* is generally not recommended because of its lower efficacy and adverse effects, as well as due to the fact that 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 these drugs are likely to reduce the chance of developing complications, including 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 develop with their widespread use in the context of pandemic flu.

Antibiotics

A serious complication of flu (as well as COVID-19) is the development of pneumonia, which can be either directly due to the 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. Antibiotics are usually given in a hospital setting to patients with a severe illness. Avian flu outbreaks have been mainly complicated by viral pneumonia.

In uncomplicated influenza infections in the community, antibiotics 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 in 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 recrudescent (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.

COUGHS AND COLDS 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 that he caught from their baby grandson; 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. COVID-19 is unlikely as the infection was caught from the baby, and both Mr and Mrs Allen have had their COVID-19 jabs, but the family might want to consider having COVID-19 tests. Mr Allen is concerned most with his congested nose and sore throat. He is taking a number of medications, which indicates that oral sympathomimetics would be best avoided. You recommend that Mr Allen 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; in addition, it will not do much harm. You show Mrs Allen 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. It does sound like a cold rather than flu or COVID-19. A simple analgesic, such as *paracetamol*, could help both ease the headache and soothe the 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 Mr Allen's 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 did not 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*.

COUGH

The respiratory tract between the nose and the lung is exposed daily to inhaled viruses and bacteria, particulates, such as dirt or smoke, and also gaseous or irritant material with potentially harmful effects. See Figure 1.3 for an illustration of the anatomy. Defence mechanisms protect the airways from these insults or inhaled foreign bodies, such as bits of food. Healthy airways are lined by ciliated cells and covered with a mucus layer that traps inhaled particles and foreign pathogens. The cilia beat upwards and propel the mucus and trapped debris up the trachea and out of the respiratory system (sometimes called the 'mucociliary escalator'). As this accumulates, it is cleared by coughing – a normal everyday protective reflex action that is the result of rapid exhalation. Sputum (or phlegm) is mucus that has been coughed up from the lower airways (the trachea and bronchi). Foreign bodies and irritants are expelled in a similar way.

When viruses invade the cells of the respiratory tract, they trigger inflammation and stimulate the production of mucus; these are the commonest causes of an increase in coughing, which becomes uncomfortable and can cause distress. The majority of coughs presenting in the pharmacy will be due to viral RTIs. They will often be associated with other symptoms of a cold, such as nasal congestion, a runny nose and a sore or scratchy throat. The infection usually lasts for a few days, but damage to the respiratory tract lining causing irritation takes longer to heal and a cough can last for several weeks. The evidence to support the use of cough

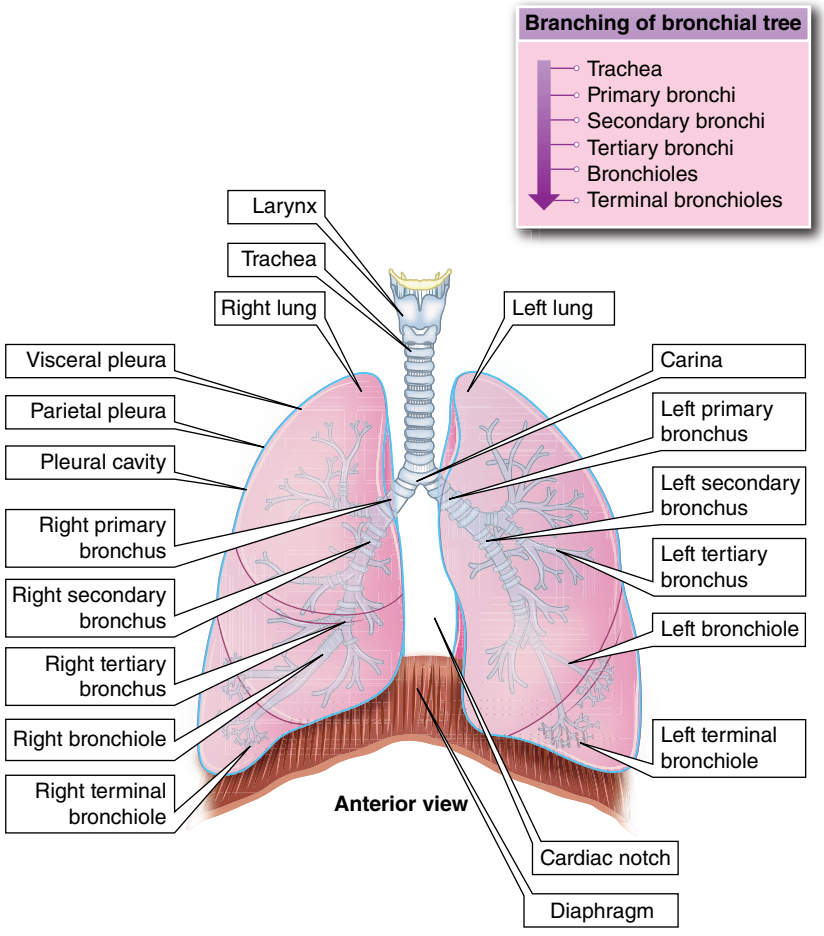

FIGURE 1.3 Anatomy of the lower respiratory tract. *Source:* Nair and Peate (2014) *Pathophysiology for Nurses at a Glance*. Wiley, p. 25. Reproduced with permission of John Wiley & Sons.

suppressants and expectorants to relieve symptoms is not strong, but some patients find them helpful.

Alongside a high temperature and change in or loss of taste and/or smell, a common symptom of COVID-19 is a new continuous cough. Therefore, as a precaution while SARS-CoV-2 is a concern, any person with a new cough, even if mild, should consider staying at home and follow the latest guidance on testing.

What you need to know

Age (approximate)

Baby, child or adult

Duration

Nature

Dry or productive

Associated symptoms

- Cold, sore throat and fever
- Loss of or change in taste or smell
- Sputum production
- Haemoptysis (blood in sputum)
- 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 the decision whether referral to the doctor's surgery 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, flu or COVID-19, but usually slowly subsides (see **Box 1.1**). It is useful to explain this fact as patients may not be

aware of the long duration. Acute bronchitis is the term often used to describe more severe cases arising from a viral infection leading to distressing cough and sputum production. Even in acute bronchitis, antibiotics are not needed for people who are otherwise well. A Cochrane systematic review found no benefit or only slight benefit of using antibiotics, at the most reducing the duration of illness by about half a day.

In general, a cough of longer than 2–3 weeks' duration that has shown 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 as the cough has not resolved, it may have a serious cause. Therefore, they can be reassured by a clear explanation of why a cough lingers.

Nature of cough

Unproductive (dry, tickly or tight)

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

Productive (chesty or loose)

Oversecretion of mucus leads to coughing, and production of copious sputum is often called a productive cough. This may be caused by irritation of the airways due to infection, allergy, etc., or when the cilia are not working properly as the lining of the respiratory tract has been damaged; this is seen in long-term smokers. Non-coloured (clear or whitish) sputum is uninfected and known as mucoid. Green sputum is not unusual in people with asthma and is thought to be due to eosinophils.

Coloured sputum is common and, in most cases, does not mean that antibiotic therapy is needed. Clinical trials in relatively healthy people with acute bronchitis indicate that antibiotics do not help overall, and sputum colour does not predict response to antibiotic treatment. It may be more useful as a sign in people who have other lung complications. For example, 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 there are bacteria involved and hence antibiotics may be indicated. Sometimes, blood may be present in 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.

Some people who have a tendency towards asthma develop wheeziness with a respiratory viral infection. They may benefit from inhalation treatment (or an increase in therapy) 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 (or 'chronic bronchitis'). This is defined as a chronic cough, excess sputum production, shortness of breath on exertion and wheeze, usually with a history of long-term smoking when other causes of chronic cough have been excluded. Therefore, 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 saying an antibiotic is indicated, which may raise expectations inappropriately. Antibiotics are usually considered if the person:

- Has severe symptoms, particularly sputum colour changes and increase in volume or thickness beyond normal
- Is systemically very unwell
- Is at high risk of serious complications because of a pre-existing comorbid condition, such as heart, lung, kidney, liver or neuromuscular disease or immunosuppression
- Is older or frail 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 and have been provided with 'rescue therapy'.

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

Tuberculosis

The number of tuberculosis (TB) cases has slowly declined after a rise in the UK between 2000 and 2010, but there is increasing concern about resistant strains. Chronic productive cough associated with breathlessness and haemoptysis are classical symptoms. There may also be weight loss, chronic fever and night sweats. TB is largely a disease of poverty and more likely to present in disadvantaged communities and in people who are malnourished. It is more common in urban areas.

In the UK, 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 especially important for people who smoke.

Croup (acute laryngotracheitis)

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

Whooping cough (pertussis)

Despite immunisation programmes, whooping cough is still seen in the UK. It starts with symptoms similar to viral respiratory infections. 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 (nose, throat and sinuses congested with mucus – or 'bunged up') may be associated with a cough. Often, there may be an elevated temperature and generalised muscular aches. This would be in keeping with a viral infection and be self-limiting. There may be a need to stay and home and follow the latest guidance on testing. 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 (for more details, see Coughs and Cold: Symptoms: Facial pain/Frontal headache elaborated earlier in this chapter).

Previous history

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

COPD ('chronic bronchitis' or emphysema)

Questioning may reveal a history of COPD. Sometimes, this 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 such patients should be referred to the surgery. Asthma may sometimes present as a chronic cough without wheezing, usually worse first thing in the morning. It is worth asking about a family history of eczema, hay fever and asthma. Patients with such a family history appear to be more prone to extended episodes of coughing following a simple RTI.

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 reflux

Gastro-oesophageal reflux can cause coughing. Sometimes, 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 indicated by cough that is worse during or after eating, as well as with talking and 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 that is usually worse in the morning. If coughing is recurrent and persistent, offer health education advice about the benefits of quitting smoking, including suggesting nicotine replacement therapy when appropriate. However, it is worth mentioning that on stopping smoking, the cough may initially become worse as the cleaning action of

the cilia is re-established during the first few days with increased mucus production. Smokers may assume their cough is harmless. Therefore, it is always important to ask about any change in the nature of the cough that might indicate a serious cause, particularly due to the fact that smokers 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 of prescribed medicines with cough medicine. This may also be an issue with some herbal remedies.

It is also useful to know which cough medicines have already been tried so that the pharmacist may decide if an inappropriate preparation has been taken, e.g. 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 people taking angiotensin-converting enzyme (ACE) inhibitors, such as *enalapril, perindopril, lisinopril* and *ramipril*. Cough may start within days of starting treatment or after a few weeks or even months, and is estimated to affect from 2 to 10% of patients. ACE inhibitors cause bradykinin to accumulate in the lungs, which can trigger a cough. Typically, the cough is irritating, non-productive and persistent. Any ACE inhibitor may induce coughing; therefore, there seems to be little advantage to be gained in changing from one ACE inhibitor to another. In many people, the cough becomes so troublesome and distressing that ACE inhibitor therapy may have to be discontinued. Any patients in whom medication is suspected to be the cause of a cough should be referred to the prescriber. If cough is a problem, angiotensin II receptor antagonists, also known as the 'sartans', which have properties similar to that of ACE inhibitors and do not affect bradykinin, can be used as an alternative treatment.

When to refer
Cough lasting 2–3 weeks or more and not improving
Cough associated with significant fever, malaise or feeling of being unwell
Distressing cough in frail, older people
Concern about comorbidity, such as diabetes or heart disease
Sputum (purulent sputum in COPD), rusty or bloodstained

Haemoptysis – blood in sputum, coughing blood
Chest pain
Shortness of breath
Wheezing
Whooping cough or croup
Recurrent nocturnal cough
Suspected adverse drug reaction, ACE inhibitors
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, the patient 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 to what extent cough remedies available OTC are effective; however, these medicines are widely used. A systematic review concluded that 'there is no good evidence for or against the effectiveness of OTC medicines in acute cough'. 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 in reducing cough is debatable, they can have a useful soothing effect.

The choice of treatment depends on the type of cough. Suppressants (e.g. *pholcodine*) are used to treat unproductive coughs, while expectorants (e.g. *guaifenesin* [*guaiphenesin*]) are used to treat productive coughs. The pharmacist should check that the preparation contains an appropriate dose, since some products contain sub-therapeutic amounts. Demulcents, such as *simple linctus*, which 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 of 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; however, 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 these preparations should not be used in children under the age of 6 years; 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 properties are not therapeutically sound. The UK CHM (part of the MHRA) made recommendations in 2009 about safer use of cough and cold medicines for children aged under 12 years (see BNF, and Coughs and colds: Management, elaborated on earlier in this chapter).

Cough suppressants

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

Pholcodine/codeine

Pholcodine has several advantages over *codeine*. *Pholcodine* produces fewer side effects and is less liable to be misused. *Codeine* can cause constipation (even at OTC doses) and respiratory depression (at high doses). 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 of misuse and dependence, and many pharmacists choose not to recommend it. Sales of *codeine* often may have to be refused because of knowledge or likelihood of its misuse. The CHM/MHRA advises that *codeine*-containing cough suppressants should not be used for children under 12 years and for children of any age known to be ultra-rapid metabolisers (see the chapter on Painful Conditions for a description of this). *Pholcodine* should not be given to those under the age of 6 years. It is also not generally recommended for older children, although a dose of 5 mg can

be given to children over 6 years of age (5 ml of *Pholcodine Linctus BP* contains 5 mg of *pholcodine*). 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* is generally not recommended for children, although it can be given to children of age 12 years and over (its use should be avoided in children younger than this age). *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. These preparations do not contain any active ingredient and are considered to be safe in children and pregnant women. They are now the favoured treatment for children under the age of 6 years.

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. The 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; therefore, 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, *guaifenesin* is the only Food and Drug Administration approved expectorant. NICE states that there is some limited evidence to suggest it may reduce symptoms of acute cough.

Cough remedies: Other constituents

Antihistamines

Examples used in OTC products include *diphenhydramine* and *promethazine*. Theoretically, these drugs 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 antimuscarinic side effects; therefore, this 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 their additive antimuscarinic and sedative effects. Increased sedation will also occur with any drug that has a CNS depressant effect. Alcohol should be avoided because it will lead to increased drowsiness. See Coughs and colds: Management: Antihistamines, elaborated 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 Coughs and colds: 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. *Pseudoephedrine* 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, e.g. *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 found 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. 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 therapies 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.

This method should not be used 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 maintain hydration, and hot drinks can have a soothing effect. For children, a warm drink of honey and lemon can also be soothing.

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 for his respiratory tract infection 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

Dillip is a 4-year-old child who has a night-time cough for several weeks. The doctor's advice was appropriate at the time the doctor 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 the child's recent viral RTI. Such a cough is more likely to occur in those who have asthma or a family history of atopy (including a predisposition to sensitivity to certain common allergens, such as house dust mite, animal dander and pollen, which also cause hay fever). 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 RTI. 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. In addition, 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 raised the possibility of asthma, which is worrying.

Case 2

A man aged about 25 years asks if you can recommend something for his cough. The man 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 fever, pain on breathing or shortness of breath. The cough was chesty to begin with, but the man tells you it is now tickly and irritating. Wisely, he initially stayed at home and got a COVID-19 test and this was negative. He has not tried any medicines nor is he taking any medicines from the doctor.

The pharmacist's view

This patient has the symptoms of common cold and none of the danger signs associated with a cough that would make referral necessary. COVID-19 is unlikely in view of the negative test. He is not taking any medicines, so the choice of possible treatments is wide. Hence, something could be recommended to treat his congested nose, as well as his cough, e.g. 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, this patient 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 is worthwhile explaining that to the patient 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 smoking. If the patient became short of breath or has symptoms such as loss of taste or smell, COVID-19 might still be the cause as there can be occasional false-negative results.

SORE THROAT

Most people with a sore throat do not consult a doctor; only about 5% do so and many consult their pharmacist. Most sore throats that present in the pharmacy are 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; therefore, treatment with antibiotics is unnecessary in most cases. Clinically, it is difficult to differentiate between viral infections and bacterial infections. The majority 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 (this makes a throat infection less likely). It is also important to realise that in the UK (as in many other countries), sore throat remains 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 antibiotics can also cause side effects, such as diarrhoea, nausea and vomiting.

Once the pharmacist has excluded more serious conditions (which may include COVID-19), an appropriate OTC medicine can be recommended.

What you need to know

Age (approximate)
Baby, child or adult

Duration

Severity

Associated symptoms

- Cold, congested nose and cough
- Difficulty in swallowing
- Hoarseness
- Fever
- Loss of taste or smell (or alteration in them)

Previous history

- Smoking habit

Present medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Establishing who the patient is will influence the choice of treatment and the decision whether referral to the GP surgery 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 a sore throat 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 nasal congestion symptoms, then referral should be recommended when there is no improvement within 24–48 h.

Associated symptoms

Cold, 'bunged-up' nose 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 difficulty in swallowing (dysphagia), or hoarseness lasting longer than 3 weeks, are indications for referral. The former is sometimes seen with peritonsillar swelling or abscess (quinsy) associated with tonsillitis.

Loss of taste or smell (or alteration in them) is now a recognised feature of COVID-19, which can also cause sore throat. If this is suspected, the patient should consider staying at home and follow the latest guidance on COVID testing (see the chapter on COVID-19).

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 smoking. Surveys indicate that two-thirds of people who smoke want to quit smoking (see also 'Smoking cessation' in the chapter on 'Prevention of heart disease').

Present medication

The pharmacist should establish whether any medication has been tried to treat the symptoms. If it is found that 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 it is suspected that this is the problem, then 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 (i.e. suppression of white cell production in the bone marrow). The same principle applies to any other drug that can cause agranulocytosis, including *methotrexate* and *azathioprine*, which are commonly used as disease-modifying drugs for long-term conditions. In such patients, a sore throat can be the first sign of a life-threatening infection.

SYMPTOMS FOR DIRECT REFERRAL

Hoarseness

Hoarseness is caused by inflammation of the vocal cords in the larynx (i.e. 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' further in this section), which includes resting the voice, should be given. The infection usually settles within a few days and referral is not necessary.

When a respiratory infection occurs in babies, infants or small children, it can cause croup (acute laryngotracheitis), and severe cases may present with croakiness, 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, and some of them are serious. For example, laryngeal cancer can present in this way and hoarseness may be the only early symptom. A doctor will normally refer such a patient to an ear, nose and throat (ENT) specialist for accurate diagnosis.

Dysphagia

Difficulty in swallowing (dysphagia) can occur in severe throat infections. Sometimes, the infection causes pain, making swallowing very uncomfortable. Dysphagia can also happen when an abscess develops in the region of the tonsils (quinsy) as a complication of tonsillitis. This condition 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), also known as infectious mononucleosis, is a viral infection that causes sore throat with marked discomfort, and it may cause dysphagia. The sore throat and associated malaise may linger for several weeks. If this is suspected, referral is necessary for an accurate diagnosis.

Most bad sore throats will cause discomfort, but not true difficulty, in swallowing and hence they do not necessarily need referral unless there are other reasons for concern. If the patient has difficulty taking fluids or food, referral for medical assessment is warranted.

Dysphagia always needs referral when it is not associated with a sore throat (see the chapter on Gastrointestinal Tract: Heartburn – 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 a viral and a bacterial infection, but this is not so. 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. In a sore throat, the tonsils may swell and become red, and pus may appear as white spots on them. Symptoms typically get worse over 2–3 days and then gradually go away, usually within a week. This condition is often described as tonsillitis and does not normally require treatment. If an exudate is present, then this may increase the likelihood of a bacterial infection, but as an isolated finding, it has poor diagnostic value.

Thrush

Candidal (thrush) infection produces white plaques, but 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, e.g. leukaemia, HIV and acquired immunodeficiency 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 the chapter on 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 can leave its victims debilitated for some months afterwards and is associated with chronic fatigue syndrome (also known as myalgic encephalomyelitis). The infection is characterised by a sore throat that grumbles on with swollen lymph glands and also often causes general malaise, fatigue, muscle aches, chills, sweats, loss of appetite and headache. The most common age group affected is between 15 and 25 years of age. GF 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°C

Use of clinical scoring systems

Research shows that having three or four 'Centor' criteria has some predictive value for those people who are most likely to have more serious infection and who are more likely to derive some benefit from antibiotic treatment. There are 4 criteria:

- Presence of tonsillar exudate
- Presence of tender neck glands

- History of fever
- Absence of cough – this suggests absence of cold symptoms

A recent refinement of this system, increasingly used by GPs, is the FeverPAIN score (i.e. fever in last 24 h, severely inflamed tonsils, pus on tonsils, attends within 3 days and no cough or cold symptoms). This is also now advocated by NICE (Centor remains an option) based on research in UK general practice showing that people with a score of 4 or 5 are the ones most likely to benefit from antibiotic treatment.

The same research also showed that this scoring system was just as useful as doing near-patient testing for the presence of beta-haemolytic streptococcus A (the bacteria most commonly associated with throat infection) using rapid antigen detection testing (RADT). Centor criteria or FeverPAIN may be useful systems to consider by the pharmacist when deciding who may benefit from referral to the GP surgery.

There have been some 'test-and-treat' initiatives to encourage pharmacists to use near-patient testing for streptococcus using RADT. This may be particularly helpful in the pharmacy setting as more formal clinical assessment may be difficult in this environment. If the result is positive, the patient should be referred or considered for provision of antibiotics. Although the presence of streptococcus in the throat, detected by RADT, makes this a likely cause of infection, some patients carry this bacterium but it is not always the cause of infection (carriage rates in healthy young people are between 10 and 20%). It is unclear at the time of writing this chapter if these services should also include near-patient testing for COVID-19 diagnosis (using lateral flow tests) as sore throat is a common feature of coronavirus infection.

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, whatever the cause and with or without antibiotics. 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 of clinical trials found that simple analgesics (*paracetamol, aspirin* and *ibuprofen*) are very effective in reducing the pain due to 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* can provide rapid and effective relief from sore throat pain. A systematic review showed no benefit of adding other analgesic constituents. The use of *aspirin* has gone out of favour because of the increased risk of adverse effects. (For a discussion of doses, side effects, cautions and contraindications for simple analgesics, see the chapter on Painful Conditions: Management). The patient can be advised to take the analgesic regularly to sustain pain relief.

Flurbiprofen lozenges are licensed for sore throat in adults and children aged 12 years and over, and there is evidence that they provide pain relief. They contain 8.75 mg of *flurbiprofen* (a non-steroidal anti-inflammatory drug) 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 under 12 years of age, whereas the mouthwash may only be recommended for children over 12 years of age.

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* and *lidocaine*, also both available in throat sprays)

Lozenges and pastilles are commonly used OTC treatments for sore throats, and where viral infection is the cause, the main use of antibacterial and antifungal 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.

PRACTICAL POINTS

Diabetes

Mouthwashes and gargles are suitable and can be recommended. Sugar-free pastilles are available, but the sugar content in 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. Manufacturers' recommendations about whether to use the mouthwash diluted or undiluted should be checked and appropriate advice should be given to the patient.

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 her son has a temperature and 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, I might recommend some *paracetamol* in soluble or syrup form to make it easier to swallow. Both the analgesic and antipyretic effects would be useful in this case.

The doctor's view

The pharmacist is sensible in recommending referral. The description suggests a severe tonsillitis, which can be caused by either a bacterial or a viral infection. If it turns out to be viral, then there is a strong possibility of GF. 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. If the patient meets Centor or FeverPAIN criteria, then it may be advisable to prescribe oral *penicillin*, or alternatively *clarithromycin* if the patient is allergic to *penicillin*. These can be provided as an 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 to identify a bacterial infection. If the infection has gone on for over a week, then a blood test can identify glandular fever (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 RTI. The symptoms described should improve within a few days. It is also possible that this could be COVID-19 so tests for this may be advised (dependent on latest guidance). The girl should consider staying at home until the diagnosis is clear, or symptoms have settled. 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 the girl has a blocked nose and tickly cough, a viral infection is most likely. COVID-19 can also present in this way, particularly in younger people in whom it is usually a mild infection. Many patients 'pre-COVID' attended the GP surgery with similar symptoms hoping for a quick cure with antibiotics that have no place in such infections. At present, if COVID-19 is a possible cause, we triage these patients and advise they stay at home several days until symptoms have settled. They should not go to the pharmacy or the surgery!

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 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 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 that the man 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 25% of people in the UK, 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 these symptoms. Animals shed particles of their skin or fur that are called dander to which some people develop an allergy. Perennial allergic rhinitis occurs when symptoms are present all year round and this is commonly caused by the house dust mite, animal dander, and feathers in cushions, pillows and duvets. 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 or adult
Duration
Symptoms
Rhinorrhoea (runny nose)
Nasal congestion
Nasal itching
Watery eyes
Irritated eyes
Eye discharge
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 develop perennial allergic rhinitis than younger people. Young adults who are taking examinations should avoid treatments that may cause drowsiness. People who drive or operate machinery also need to avoid treatment that causes drowsiness.

Duration

Sufferers will often present with seasonal rhinitis as soon as the pollen count becomes high around late March when tree pollens appear. 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 commonly 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:* With all of the following – normal sleep; normal daily activities, such as sports and leisure; and normal work and school; symptoms not troublesome
- *Moderate or severe:* With one or more of the following – abnormal sleep; impairment of daily activities, such as sports and leisure; and problems caused at work or school; symptoms troublesome

Symptoms

Rhinorrhoea

A runny nose is commonly in 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 that of a direct effect of pollen grains being caught in the eye, setting off a local inflammatory response. The scleral conjunctivae (white

of the eye) can become very swollen. 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 sneezing and then rhinorrhoea, progressing to nasal congestion. Pollen rises during the day after being released in the morning and then settles at night, so symptoms of hay fever are classically more severe in the morning and in the evening. 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; therefore, 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 this 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.

Wheezing

Difficulty in breathing, possibly with a cough, suggests either asthma or aggravation of asthma by pollen allergy. When associated symptoms, such as tightness of the chest, wheezing, shortness of breath or coughing, are present, same-day referral is usually advised. Some sufferers experience asthma symptoms only during the hay fever season (i.e. seasonal asthma). These episodes can be quite severe and hence 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 Coughs and colds: Symptoms, discussed 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, often with swollen scleral conjunctivae. 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, referral may be needed.

Medication

Establish whether any prescription or OTC medicines are being taken by the patient to identify potential interactions with antihistamines.

Ask if any medicines have been tried already, especially where there is a previous history of allergic rhinitis. Some patients know that certain antihistamines cause them to become drowsy. Be aware of the potentiation of drowsiness by some antihistamines combined with other medicines. This can lead to increased danger in certain occupations and while driving.

Failed medication

If symptoms are not adequately controlled with OTC preparations, referral to the GP practice can enable exploration of 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, consider referral to the GP surgery.

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 based on the patient's symptoms and previous history, where relevant, as well as the patient's preference.

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 benefit).

Antihistamines

Many pharmacists 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, but less so in reducing nasal congestion. Non-sedating antihistamines available OTC include *acrivastine, fexofenadine, 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, fexofenadine 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 of age, *cetirizine* for those over 6 years of age, and *acrivastine* and *fexofenadine* for those over 12 years of age.

While drowsiness is an unlikely side effect of any of these 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. For students, similar advice can be given if exams are imminent.

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 and are rarely used in hay fever these days. Indeed, both drugs are available in the UK among OTC products promoted for the management of temporary sleep disorders (see Chapter 9 on 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 occur in at least 1 in 10 patients. Patients may develop tolerance to their sedation effects. Antimuscarinic 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 hypnotics, sedatives and anxiolytics, as well as alcohol consumption. The alcohol content of some OTC medicines should be remembered. Antihistamines may decrease the effects of *betahistine*.

Side effects: The major side effect of the older antihistamines is their potential to cause drowsiness. Their antimuscarinic/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 antimuscarinic effects (e.g. tricyclic antidepressants, most commonly *amitriptyline*, and neuroleptics, such as *prochlorperazine*, *metoclopramide* or *haloperidol*). The BNF cautions against the use of older antihistamines in elderly patients.

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 in patients with a history of acute angle-closure glaucoma (i.e. episode of glaucoma of sudden onset), since the antimuscarinic effects produced can cause an increase in intraocular pressure. These drugs should be used with caution in patients with liver disease or prostatic hypertrophy.

Decongestants

Oral or topical decongestants may be considered for short-term use 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 and should not be used for more than 1 week. Their use, interactions and adverse effects are considered in the section on Coughs and colds: Management: Decongestants, discussed earlier in this chapter.

Eye drops containing an antihistamine and sympathomimetic combination (*antazoline* with *xylometazoline)* 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), *budesonide nasal spray, 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 to obtain full benefit 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, budesonide, fluticasone* and *mometasone nasal sprays* can be provided OTC 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 corticosteroids 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 in 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. These drops contain the preservative *benzalkonium chloride*, which is occasionally associated with allergy. Drops containing benzalkonium should not be used at the same time as wearing soft contact

lenses as benzalkonium can be deposited on these lenses causing discolouration of the lenses, and sometimes eye irritation.

Barrier nasal sprays

Thixotropic gel nasal sprays are available; the theory is 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 there is no definitive evidence of effect or lack of effect.

PRACTICAL POINTS

1. Car windows and air vents should be kept closed while driving. Otherwise, there can be a high pollen concentration inside the car. Some car ventilation and 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.

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 several weeks. 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 an OTC corticosteroid nasal spray, provided he is aged 18 years or over. If he is under 18 years, an oral 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 out' for a few days in advance to make sure it does not cause drowsiness, if he is intending to use it at exam time. If the symptoms are not better in a week, he should see a doctor or nurse.

The doctor's view

As suggested, a corticosteroid nasal spray is likely to be effective for the symptoms of this young man and will not cause sedation. 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 at a time when he is not taking exams, driving or operating machinery.

Case 2

A woman in her early 30s 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 breathing symptoms for a few days and they have gradually got worse. She is not feverish and is otherwise well. 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. As she is not feverish or feeling particularly unwell 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 better option. Clinical pharmacists in general practice can also provide this expertise.

RESPIRATORY SYMPTOMS FOR DIRECT REFERRAL

CHEST PAIN

Respiratory causes

A localised knife-like pain aggravated by breathing or coughing is a characteristic of pleurisy. It is usually caused by a respiratory infection and may be associated with an underlying pneumonia. Less commonly, pain of this sort 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 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, vice-like, 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 the onset 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 lung 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.

COVID-19

A well-recognised important diagnostic feature of COVID-19 is that it can cause prolonged shortness of breath due to inflammation of the lung and airways.

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 due to 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 RTIs 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 bloodstained.

Haemoptysis

The presence of blood in sputum is always alarming. Small traces of blood can result from a broken capillary caused by coughing, which is harmless. The most common cause is RTI, 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 nose-bleed 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.

Note: The Cochrane review resources do not have a date as these are often updated. The most up-to-date version should be consulted.

Respiratory problems	Clinical Knowledge Summaries (CKS) (https://cks.nice.org.uk)	NHS Health A-Z (www.nhs.uk)	NICE guideline (www.nice.org.uk)	Other resources/references
Coughs and colds	☑	☑		• Cochrane review: vitamin C for preventing and treating the common cold • Cochrane review: saline nasal irrigation for acute upper respiratory tract infections
Cough	☑	☑	• Cough (acute): antimicrobial prescribing. NICE guideline [NG120].	• Butler, C., Kelly, M.J., Hood, K. *et al.* (2011). Antibiotic prescribing for discoloured sputum in acute cough/lower respiratory tract infection. *Eur Respir J* 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

(*Continued*)

Respiratory problems	Clinical Knowledge Summaries (CKS) (https://cks.nice.org.uk)	NHS Health A-Z (www.nhs.uk)	NICE guideline (www.nice.org.uk)	Other resources/references
Sore throat	☑	☑	• Sore throat (acute): antimicrobial prescribing. NICE guideline [NG84]	• 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). *BMJ* 347: f5806
Sinusitis	☑	☑	• Sinusitis (acute): antimicrobial prescribing. NICE guideline [NG79].	• Cochrane review: antibiotics for clinically diagnosed acute rhinosinusitis in adults • Fokkens, W., Floffmans, R. and Thomas, M. (2014). Avoid prescribing antibiotics in acute rhinosinusitis. *BMJ* 349: g5703
AOM	☑ Ear infections	☑	• Otitis media (acute): antimicrobial prescribing. NICE guideline [NG91].	• Cochrane review: antibiotics for acute middle ear infection (acute otitis media) in children

Allergic rhinitis (hay fever)	☑	☑	
Respiratory symptoms for direct referral	☑		• Suspected cancer: recognition and referral. NICE guideline [NG12].