
Gastrointestinal Tract Problems

Mouth ulcers

Mouth ulcers are extremely common, affecting as many as one in five of the population and they are a recurrent problem in some people. They are classified as aphthous (minor or major) or herpetiform ulcers. Most cases (more than three quarters) are minor aphthous ulcers, which are self-limiting. Ulcers may be due to a variety of causes including infection, trauma and drug allergy. However, occasionally mouth ulcers appear as a symptom of serious disease such as carcinoma. The pharmacist should be aware of the signs and characteristics that indicate more serious conditions.

What you need to know

Age
Child, adult
Nature of the ulcers
Size, appearance, location, number
Duration
Previous history
Other symptoms
Medication

Significance of questions and answers

Age

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

Nature of the ulcers

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

Other types of recurrent mouth ulcer include major aphthous and herpetiform. Major aphthous ulcers are uncommon, severe variants of the minor ones. The ulcers, which may be as large as 30 mm in diameter, can occur in crops of up to ten. Sites involved are the lips, cheeks, tongue, pharynx and palate. They are more common in sufferers of ulcerative colitis.

Herpetiform ulcers are more numerous, smaller and, in addition to the sites involved with aphthous ulcers, may affect the floor of the mouth and the gums. Table 1 summarises the features of the three main types of aphthous ulcers.

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

Duration

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

Oral cancer

Any mouth ulcer that has persisted for longer than 3 weeks requires immediate referral to the dentist or doctor because an ulcer of such long duration may indicate serious pathology such as

Table 1 The three main types of aphthous ulcers

Minor	Major	Herpetiform
80% of patients 2–10 mm in diameter (usually 5–6 mm)	10–12% of patients Usually over 10 mm in diameter; may be smaller	8–10% of patients 0.5–3.0 mm in diameter
Usually 1–5 mm in diameter Round or oval	Usually 10–20 mm in diameter or more Round or oval	0.05–1.0 mm in diameter Round or oval, coalesce to form irregular shape as they enlarge
Usually not very painful	Prolonged and painful ulceration. May present patient with great problems – eating may become difficult.	May be very painful

carcinoma. Most oral cancers are squamous cell carcinomas, of which one in three affects the lip and one in four affects the tongue. The development of a cancer may be preceded by a premalignant lesion, including erythroplasia (red) and leucoplakia (white), or a speckled leucoplakia. Squamous cell carcinoma may present as a single ulcer with a raised and indurated (firm or hardened) border. Common locations include the lateral border of the tongue, lips, floor of the mouth and gingiva. The key point to raise suspicion would be a lesion that had lasted for several weeks or longer. Oral cancer is more common in smokers than non-smokers.

Previous history

There is often a family history of mouth ulcers (estimated to be present in one in three cases). Minor aphthous ulcers often recur, with the same characteristic features of size, numbers, appearance and duration before healing. The appearance of these ulcers may follow trauma to the inside of the mouth or tongue, such as biting the inside of the cheek while chewing food. Episodes of ulceration generally recur after 1–4 months.

Ill-fitting dentures may produce ulceration and, if this is a suspected cause, the patient should be referred back to the dentist so that the dentures can be refitted. However, trauma is not always a feature of the history, and the cause of minor aphthous ulcers remains unclear despite extensive investigation.

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

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

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

Other symptoms

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

In most cases of recurrent mouth ulcers the disease eventually burns itself out over a period of several years. Occasionally, as in Behçet's syndrome, there is progression with involvement of sites other than the mouth. Most commonly the vulva, vagina and the eyes are affected, with genital ulceration and iritis (see p. 265).

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

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

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

Medication

The pharmacist should establish the identity of any current medication, since mouth ulcers may be produced as a side-effect of drug therapy. Drugs that have been reported to cause the problem include *aspirin* and other NSAIDs, cytotoxic drugs and *sulfasalazine* (*sulpha-salazine*). Radiotherapy may also induce mouth ulcers. It is worth asking about herbal medicines because *feverfew* (used for migraine) can cause mouth ulcers.

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

When to refer

- Duration of longer than 3 weeks
- Associated weight loss
- Involvement of other mucous membranes
- Rash
- Suspected adverse drug reaction
- Diarrhoea

Treatment timescale

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

Management

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

Chlorhexidine gluconate mouthwash

There is some evidence that *chlorhexidine mouthwash* reduces duration and severity of ulceration. The rationale for the use of antibacterial agents in the treatment of mouth ulcers is that secondary bacterial infection frequently occurs. Such infection can increase discomfort and delay healing. *Chlorhexidine* helps to prevent secondary bacterial infection but it does not prevent recurrence. It has a bitter taste and is available in peppermint as well as standard flavour. Regular use can stain teeth brown – an effect that is not usually permanent. Advising the patient to brush the teeth before using the mouthwash can reduce staining. The mouth should then be well rinsed with water as *chlorhexidine* can be inactivated by some toothpaste ingredients. The mouthwash should be used twice a day, rinsing 10 ml in the mouth for 1 minute.

Topical corticosteroids

Hydrocortisone and *triamcinolone* act locally on the ulcer to reduce inflammation and pain, and to shorten healing time. The former is available as pellets, the latter in a protective paste. To exert its effect, a pellet must be held in close proximity to the ulcer until dissolved. This can be difficult when the ulcer is in an inaccessible spot. One pellet is used four times a day. The pharmacist should explain that the pellets should not be sucked, but dissolved in contact with the ulcer. These treatments are best used as early as possible. Before an ulcer appears, the affected area feels sensitive and tingling – the prodromal phase – and treatment should start then. They should be applied 3–4 times daily. They have no effect on recurrence but should be restarted at the first signs of a new outbreak.

Local analgesics

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

Numbness, tingling and stinging can occur with *benzydamine*. Diluting the mouthwash with the same amount of water before use can reduce stinging. The mouthwash is not licensed for use in children under 12. *Benzydamine spray* is used as four sprays onto the affected area three times a day. Although *aspirin* is no longer recommended for children under 16 years because of possible links with Reye's syndrome, *choline salicylate dental gel* produces low levels of salicylate and can therefore be used in children.

Carbenoxolone

Available as gel and mouthwash, *carbenoxolone* was shown in one small study to relieve pain and reduce healing time.

Local anaesthetics (e.g. lidocaine (lignocaine), benzocaine)

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

Both *lidocaine* and *benzocaine* have been reported to produce sensitisation, but cross-sensitivity seems to be rare, probably because the two agents are from different chemical groupings. Thus, if a patient has experienced a reaction to one agent in the past, the alternative could be tried.

Mouth ulcers in practice

Case 1

Anthony Jarvis, a man in his early fifties, asks you to recommend something for painful mouth ulcers. On questioning, he tells you that he has two ulcers at the moment and has occasionally suffered from the problem over many years. Usually he gets one or two ulcers inside the cheek or lips and they last for about 1 week. Mr Jarvis is not taking any medicines and has no other symptoms. You ask to see the lesions and note that there are two small white patches, each with an angry-looking red border. One ulcer is located on the edge of the tongue, the

other inside the cheek. Mr Jarvis cannot remember any trauma or injury to the mouth and has had the ulcers for a couple of days. He tells you that he has used pain-killing gels in the past and they have provided some relief.

The pharmacist's view

From what he has told you, it would be reasonable to assume that Mr Jarvis suffers from recurrent minor aphthous ulcers. Treatment with *hydrocortisone* pellets (one pellet dissolved in contact with the ulcers four times a day), with *triamcinolone* in carmellose dental paste, or with a local anaesthetic or analgesic gel applied when needed, would help to relieve the discomfort until the ulcers healed. Mr Jarvis should see his doctor if the ulcers have not healed within 3 weeks.

The doctor's view

Mr Jarvis is most likely suffering from recurrent aphthous ulceration. As always, it is worthwhile enquiring about his general health, checking in particular that he does not have a recurrent bowel upset or weight loss. These ulcers can be helped by a topical steroid preparation.

Case 2

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

The pharmacist's view

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

The doctor's view

Referral is correct. It is likely that the doctor will refer her to an oral surgeon for further assessment and probable biopsy as the ulcer could be malignant. Cancer of the mouth accounts for approximately 2% of all cancers of the body in Britain. It is most common after the sixth decade and is more common in men, especially pipe or cigar smokers. Cancer of the mouth is most often found on the tongue or lower lip. It may be painless initially.

Heartburn

Symptoms of heartburn are caused when there is reflux of gastric contents, particularly acid, into the oesophagus, which irritate the sensitive mucosal surface (oesophagitis). Patients will often describe the symptoms of heartburn; typically a burning discomfort/pain felt in the stomach passing upwards behind the breastbone (retrosternally). By careful questioning, the pharmacist can distinguish conditions that are potentially more serious.

What you need to know

- Age
- Adult, child
- Symptoms
- Heartburn
- Difficulty in swallowing
- Flatulence
- Associated factors
- Pregnancy
- Precipitating factors
- Relieving factors
- Weight
- Smoking habit
- Eating
- Medication
- Medicines tried already
- Other medicines being taken

Significance of questions and answers

Age

The symptoms of reflux and oesophagitis occur more commonly in patients aged over 55. Heartburn is not a condition normally experienced in childhood, although symptoms can occur in young adults and particularly in pregnant women. Children with symptoms of heartburn should therefore be referred to their doctor.

Symptoms/associated factors

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

Deciding whether or not someone is suffering from heartburn can be greatly helped by enquiring about precipitating or aggravating factors. Heartburn is often brought on by bending or lying down. It is more likely to occur in those who are overweight and can be aggravated by a recent increase in weight. It is also more likely to occur after a large meal. It can be aggravated and even caused by belching. Many people develop a nervous habit of swallowing to clear the throat. Each time this occurs, air is taken down into the stomach, which becomes distended. This causes discomfort which is relieved by belching but which in turn can be associated with acid reflux.

Severe pain

Sometimes the pain can come on suddenly and severely and even radiate to the back and arms. In this situation differentiation of symptoms is difficult as the pain can mimic a heart attack and urgent medical referral is essential. Sometimes patients who have been admitted to hospital apparently suffering a heart attack are found to have oesophagitis instead. For further discussion about causes of chest pain, see p. 59.

Difficulty in swallowing (dysphagia)

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

Regurgitation

Regurgitation can be associated with difficulty in swallowing. It occurs when recently eaten food sticks in the oesophagus and is regurgitated without passing into the stomach. This is due to a

mechanical blockage in the oesophagus. This can be caused by a cancer or, more fortunately, by less serious conditions such as a peptic stricture. A peptic stricture is caused by long-standing acid reflux with oesophagitis. The continual inflammation of the oesophagus causes scarring. Scars contract and can therefore cause narrowing of the oesophagus. This can be treated by dilatation using a fibre-optic endoscope. However, medical examination and further investigations are necessary to determine the cause of regurgitation.

Pregnancy

It has been estimated that as many as half of all pregnant women suffer from heartburn. Pregnant women aged over 30 are more likely to suffer from the problem. The symptoms are caused by an increase in intra-abdominal pressure and incompetence of the lower oesophageal sphincter. It is thought that hormonal influences, particularly progesterone, are important in the lowering of sphincter pressure. Heartburn often begins in mid to late pregnancy, but may occur at any stage. The problem may sometimes be associated with stress.

Medication

The pharmacist should establish the identity of any medication that has been tried to treat the symptoms. Any other medication being taken by the patient should also be identified; some drugs can cause the symptoms of heartburn, e.g. anticholinergic agents such as *hyoscine* and drugs with anticholinergic actions such as tricyclic antidepressants and phenothiazines. Calcium channel blockers, nitrates (especially *nifedipine*), *theophylline* and *aminophylline* can also aggravate heartburn, as can caffeine in compound analgesics or when taken as a stimulant.

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

When to refer

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

Treatment timescale

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

Management

The symptoms of heartburn respond well to treatments that are available OTC, and there is also a role for the pharmacist to offer practical advice about measures to prevent recurrence of the problem. Pharmacists will use their professional judgement to decide whether to offer antacids/alginate, H₂ antagonists or the proton pump inhibitor (PPI) *omeprazole* as first-line treatment. The decision will also take into account customer preference.

Antacids

Antacids can be effective in controlling the symptoms of heartburn and reflux, more so in combination with an alginate. Choice of antacid can be made by the pharmacist using the same guidelines as in the section on indigestion (see p. 86). Preparations that are high in sodium should be avoided by anyone on a sodium-restricted diet (e.g. those with congestive heart failure or kidney or liver problems).

Alginates

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

H₂ antagonists (cimetidine, famotidine, ranitidine)

Cimetidine, *famotidine* and *ranitidine* have been deregulated from prescription-only control for the short-term treatment (up to 2 weeks) of dyspepsia, hyperacidity and heartburn (see also p. 88). The 2-week treatment limit is intended to ensure that patients do not continuously self-medicate for long periods. Pharmacists and their staff can ask whether use has been continuous or intermittent when a repeat purchase request is made. The H₂ antagonists have both a longer duration of action (up to 8–9 h) and a longer onset of action than antacids.

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

Manufacturers state that patients should not take OTC *cimetidine*, *famotidine* or *ranitidine* without checking with their doctor if they are taking other prescribed medicines.

Cimetidine

Cimetidine can be sold OTC at a maximum dose of 200 mg and a maximum daily dose of 800 mg. The drug binds to microsomal cytochrome P450 in the liver and inhibits the normal operation of the enzyme system, increasing the levels of some drugs. As a result, *cimetidine* has a number of significant interactions with other drugs, including *theophylline*, resulting in toxic levels of *theophylline*. Other important concurrent drugs to avoid are *warfarin* and *phenytoin*. The BNF appendix on drug interactions gives further information.

Famotidine

Famotidine does not affect the cytochrome P450 system and therefore does not cause the same range of interactions as *cimetidine*. The drug is licensed for OTC use at a maximum dose of 10 mg and a maximum daily dose of 20 mg. *Famotidine* is also available as a tablet in combination with the antacids magnesium hydroxide and calcium carbonate. The idea behind this is to provide rapid symptom relief from the antacid and longer action from *famotidine*.

Ranitidine

Ranitidine is licensed for OTC use in a dose of 75 mg with a maximum daily dose of 300 mg. *Ranitidine* does not affect the cytochrome P450 system.

Proton pump inhibitors

Omeprazole was recently deregulated to a P medicine for the relief of heartburn symptoms associated with reflux in adults. PPIs, including *omeprazole*, are generally accepted as being amongst the most effective medicines for the relief of heartburn. It may, however, take a day or so for them to start being fully effective. During this period a patient with ongoing symptoms may need to take a concomitant antacid. *Omeprazole* works by suppressing gastric acid secretion in the stomach. It inhibits the final stage of gastric hydrochloric acid production

by blocking the hydrogen-potassium ATPase enzyme in the parietal cells of the stomach wall (also known as the proton pump).

Two 10 mg tablets once daily is the initial starting dose. Subsequently, symptomatic relief from heartburn can be achieved in some subjects by taking 10 mg once daily, increasing to 20 mg if symptoms return. The lowest effective dose should always be used and the maximum daily dose is two tablets. Patients taking *omeprazole* should be advised not to take H₂ antagonists at the same time. The tablets should be swallowed whole with plenty of liquid prior to a meal. It is important that the tablets should not be crushed or chewed. Alcohol and food do not affect the absorption of *omeprazole*.

If no relief is obtained within 2 weeks, the patient should be referred to the doctor. *Omeprazole* should not be taken during pregnancy or whilst breastfeeding. Drowsiness has rarely been reported. Treatment with OTC *omeprazole* may cause a false negative result in the 'breath test' for *helicobacter*. Its drug interaction profile is identical to that of the POM, and the *BNF* provides detailed information.

Practical points

Obesity

If the patient is overweight, weight reduction should be advised. There is some evidence that weight loss reduces symptoms of heartburn.

Food

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

Posture

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

Clothing

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

Other aggravating factors

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

Heartburn in practice**Case 1**

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

The pharmacist's view

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

It would be reasonable to advise the use of an alginate antacid product about 1 h after meals and before going to bed, or an H₂ antagonist. Practical advice could include the tactful suggestion that Mrs Beston's symptoms would be improved if she lost weight. Advice on healthy eating and contact with a local Weight Watchers group could be given. Mrs Beston could also try raising the head of the bed or using extra pillows at bedtime, wearing loose-fitting clothes, cutting down on tea, coffee and, if she smokes, on smoking. This is a long list of potential lifestyle changes. It might be a good idea to explain the

contributory factors to Mrs Beston and negotiate with her as to which one she will begin with. Success is more likely to be achieved and sustained if changes are introduced one at a time.

Menopausal women are more prone to heartburn, and weight gain at the time of the menopause will exacerbate the problem.

The doctor's view

The advice given by the pharmacist is sensible. Acid reflux is the most likely explanation for her symptoms. It is not clear from the presentation whether she was seeking medication or simply asking for an opinion about the cause of her symptoms, or both. It is always helpful to explore a patient's expectations in order to produce an effective outcome to a consultation. In this instance the interchange between the pharmacist and Mrs Beston is complex as a large amount of information needs to be given, both explaining the cause of the symptoms (providing an understandable description of oesophagus, stomach, acid reflux and oesophagitis) and advising about treatment and lifestyle. It is often sensible to offer a follow-up discussion to check on progress and reinforce advice. If her heartburn was not improving it would provide an opportunity to recommend referral to her doctor.

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

Case 2

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

if the pain worsens when bending or lying down, Mr Groves says it does not, but he tells you he usually gets the pain when he is at work, especially on busy days.

The pharmacist's view

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

The doctor's view

Mr Groves' story is suggestive of angina. He should be advised to contact his doctor immediately. The doctor would require more details about the pain, such as duration and whether or not the pain can come on without any exertion. If the periods of pain were frequent, prolonged and unrelieved by rest it would be usual to arrange immediate hospital admission as the picture sounds like unstable or crescendo angina.

If an urgent inpatient referral is not required, the doctor would carry out a fuller assessment that would usually include an examination, electrocardiogram (ECG), urine analysis and blood test. This in turn could lead to medication, e.g. *aspirin* or *glyceryl trinitrate* (GTN), possibly a long-acting nitrate (*isosorbide mononitrate*), perhaps a beta-blocker and/or calcium channel blocker being prescribed and an urgent outpatient referral to a cardiologist. Mr Groves would be strongly advised to stop smoking.

More detailed tests are likely to be arranged in hospital. These would probably include an exercise cardiogram and an angiogram. This latter test allows visualisation of the blood vessels supplying the heart muscle and assessment of whether surgery would be advisable.

Indigestion

Indigestion (dyspepsia) is commonly presented in community pharmacies and is often self-diagnosed by patients, who use the term to include anything from pain in the chest and upper abdomen to lower abdominal symptoms. Many patients use the terms indigestion and heartburn interchangeably. The pharmacist must establish whether such a self-diagnosis is correct and exclude the possibility of serious disease.

What you need to know

Symptoms

Age

Adult, child

Duration of symptoms

Previous history

Details of pain

Where is the pain?

What is its nature?

Is it associated with food?

Is the pain constant or colicky?

Are there any aggravating or relieving factors?

Does the pain move to anywhere else?

Associated symptoms

Loss of appetite

Weight loss

Nausea/vomiting

Alteration in bowel habit

Diet

Any recent change of diet?

Alcohol consumption

Smoking habit

Medication

Medicines already tried

Other medicines being taken

Significance of questions and answers

Symptoms

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

Age

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

Be cautious when dealing with first-time indigestion in patients aged 45 or over and refer them to the GP for a diagnosis. Gastric cancer, while rare in young patients, is more likely to occur in those aged 50 and over. Careful history-taking is therefore of paramount importance here.

Duration/previous history

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

Details of pain/associated symptoms

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

Ulcer

Ulcers may occur in the stomach (gastric ulcer) or in the first part of the small intestine leading from the stomach (duodenal ulcer). Duodenal ulcers are more common and have different symptoms from gastric ulcers. Typically the pain of a duodenal ulcer is localised to the upper abdomen, slightly to the right of the midline. It is often possible to point to the site of pain with a single finger. The pain is dull and is most likely to occur when the stomach is empty, especially at night. It is relieved by food (although it may be aggravated by fatty foods) and antacids.

The pain of a gastric ulcer is in the same area but less well localised. It is often aggravated by food and may be associated with nausea and vomiting. Appetite is usually reduced and the symptoms are persistent and severe. Both types of ulcer are associated with *H. pylori* infection and may be exacerbated or precipitated by smoking and NSAIDs.

Gallstones

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

Gastro-oesophageal reflux

When a person eats, food passes down the gullet (oesophagus) into the stomach. Acid is produced by the stomach to aid digestion. The lining of the stomach is resistant to the irritant effects of acid, whereas the lining of the oesophagus is readily irritated by acid. A sphincter (valve) system operates between the stomach and the oesophagus preventing reflux of stomach contents.

When this valve system is weak, e.g. in the presence of a hiatus hernia, or where sphincter muscle tone is reduced by drugs such as anticholinergics, *theophylline* and calcium channel blockers, the acid contents of the stomach can leak backwards into the oesophagus. The symptoms arising are typically described as heartburn but many patients use the terms heartburn and indigestion interchangeably. Heartburn is a pain arising in the upper abdomen passing upwards behind the breastbone. It is often precipitated by a large meal, or by bending and lying down. Heartburn can be treated by the pharmacist but sometimes requires referral (see p. 74).

Irritable bowel syndrome (IBS)

IBS is a common, non-serious but troublesome condition in which symptoms are caused by colon spasm (also see p. 122). There is usually an alteration in bowel habit, often with alternating constipation and diarrhoea. The diarrhoea is typically worse first thing in the morning. Pain is usually present. It is often lower abdominal (below and to the right or left of the belly button) but it may be upper abdominal and therefore confused with indigestion. Any persistent alteration in normal bowel habit is an indication for referral.

Atypical angina

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

More serious disorders

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

Diet

Fatty foods and alcohol can cause indigestion, aggravate ulcers and precipitate biliary colic.

Smoking habit

Smoking predisposes to, and may cause, indigestion and ulcers. Ulcers heal more slowly and relapse more often during treatment in smokers. The pharmacist is in a good position to offer advice on smoking cessation, perhaps with a recommendation to use NRT.

Medication

Medicines already tried

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

Other medicines being taken

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

NSAIDs have been implicated in the causation of ulcers and bleeding ulcers, and there are differences in toxicity related to increased doses and to the nature of individual drugs. Sometimes these drugs cause indigestion. Elderly patients are particularly prone to such problems and pharmacists should bear this in mind. Severe or prolonged indigestion in any patient taking an NSAID is an indication for referral. Particular care is needed in elderly patients, when referral is always advisable. A study looked at emergency admissions to

two hospitals in two areas of England for GI disease. When the results were extrapolated to the UK, the number of NSAID-associated emergency admissions in the UK per year would be about 12 000, with about 2500 deaths.

OTC medicines also require consideration; *aspirin*, *ibuprofen* and *iron* are among those that may produce symptoms of indigestion. Some drugs may interact with antacids; these include antibacterials (the absorption of most tetracyclines, e.g. *azithromycin*, *cefaclor*, *ciprofloxacin*, *itraconazole* and *ketoconazole*, may be reduced if taken at the same time as antacids) and *iron* preparations. Absorption of ACE inhibitors, *phenothiazines*, *sulpiride*, *gabapentin* and *phenytoin* may also be reduced. See the *BNF* for a full current list. Taking the doses of antacids and other drugs at least 1 h apart should minimise the interaction.

When to refer

- Age over 45 if symptoms develop for first time
- Symptoms are persistent (longer than 5 days) or recurrent
- Pain is severe
- Blood in vomit or stools
- Pain worsens on effort
- Persistent vomiting
- Treatment has failed
- Adverse drug reaction is suspected
- Associated weight loss
- Children

Treatment timescale

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

Management

Once the pharmacist has excluded serious disease, treatment of dyspepsia with antacids or an H₂ antagonist may be recommended and is likely to be effective. The preparation should be selected on the basis of the individual patient's symptoms. Smoking, alcohol and fatty meals can all aggravate symptoms, so the pharmacist can advise appropriately.

Antacids

In general, liquids are more effective antacids than are solids; they are easier to take, work quicker and have a greater neutralising capacity. Their small particle size allows a large surface area to be in contact with the gastric contents. Some patients find tablets more convenient and these should be well chewed before swallowing for the best effect. It might be appropriate for the patient to have both; the liquid could be taken before and after working hours while the tablets could be taken during the day for convenience. Antacids are best taken about 1 h after a meal because the rate of gastric emptying has then slowed and the antacid will therefore remain in the stomach for longer. Taken at this time, antacids may act for up to 3 h compared with only 30 min–1 h if taken before meals.

Sodium bicarbonate

Sodium bicarbonate is the only absorbable antacid that is useful in practice. It is water-soluble, acts quickly, is an effective neutraliser of acid and has a short duration of action. It is often included in OTC formulations in order to give a fast-acting effect, in combination with longer-acting agents. However, antacids containing *sodium bicarbonate* should be avoided in patients if sodium intake should be restricted (e.g. in patients with congestive heart failure). *Sodium bicarbonate* increases excretion of lithium leading to reduced plasma levels. The contents of OTC products should therefore be carefully scrutinised and pharmacists should be aware of the constituents of some of the traditional formulary preparations. For example, *magnesium trisilicate* mixture contains *sodium bicarbonate* and is therefore relatively high in sodium. The relative sodium contents of different antacids can be found in the *BNF*. In addition, long-term use of *sodium bicarbonate* may lead to systemic alkalosis and renal damage. In short-term use, however, it can be a valuable and effective antacid. Its use is more appropriate in acute rather than chronic dyspepsia.

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

Aluminium-based antacids are effective; they tend to be constipating and this can be a useful effect in patients if there is slight diarrhoea. Conversely, the use of aluminium antacids is best avoided in anyone who is constipated and in elderly patients, who have a tendency to be so. Magnesium salts are more potent acid neutralisers than aluminium. They tend to cause osmotic diarrhoea as a result of the formation of insoluble magnesium salts and are therefore useful in patients who are slightly constipated. Combination products containing aluminium

and magnesium salts cause minimum bowel disturbance and are therefore valuable preparations for recommendation by the pharmacist.

Calcium carbonate

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

Dimeticone (dimethicone)

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

Interactions with antacids

Because they raise the gastric pH, antacids can interfere with enteric coatings on tablets that are intended to release their contents further along the GI tract. The consequences of this may be that release of the drug is unpredictable; adverse effects may occur if the drug is in contact with the stomach. Alternatively, enteric coatings are sometimes used to protect a drug that may be inactivated by the low pH in the stomach; so concurrent administration of antacids may result in such inactivation.

Sucralfate works best in an acid medium; so concurrent administration with antacids should be avoided. Excretion of *quinidine* may be reduced and plasma levels increased if the urine is alkaline and antacids may increase urinary pH.

Antacids may reduce the absorption of tetracyclines, *azithromycin*, *itraconazole*, *ketoconazole*, *penicillamine*, *chlorpromazine*, *diflunisal*, *dipyridamole*, *ciprofloxacin*, *norfloxacin*, *ofloxacin*, *rifampicin* and *zalcitabine*. *Sodium bicarbonate* may increase the excretion of lithium and lower the plasma level, so that a reduction in lithium's therapeutic effect may occur. Antacids containing *sodium bicarbonate* should not therefore be recommended for any patient on lithium therapy.

The changes in pH that occur after antacid administration can result in a decrease in iron absorption if iron is taken at the same

time. The effect is caused by the formation of insoluble iron salts due to the changed pH. Taking iron and antacids at different times should prevent the problem. See *BNF* for a detailed listing of interactions with antacids.

Cimetidine, famotidine and ranitidine

Cimetidine, *famotidine* and *ranitidine* have been deregulated from prescription-only status for the short-term treatment of dyspepsia and heartburn (see also p. 75). *Cimetidine* affects the cytochrome P450 enzyme system in the liver and therefore produces a range of drug interactions (see p. 76); *famotidine* and *ranitidine* do not affect the cytochrome P450 system. Treatment with these drugs is limited to a maximum of 2 weeks.

Discussing the use of H₂ antagonists with local family doctors would be valuable. Perhaps agreeing general guidelines or a protocol for their use could be a feature of the discussion.

Domperidone

Domperidone 10 mg can be used for the treatment of postprandial stomach symptoms of excessive fullness, nausea, epigastric bloating and belching, occasionally accompanied by epigastric discomfort and heartburn. It increases the rate of gastric emptying and transit time in the small intestine, and also increases the strength of contraction of the oesophageal sphincter. *Domperidone* can be used in patients aged 16 and over. The maximum dose is 10 mg and the maximum daily dose 40 mg. When used as a POM medicine, *domperidone* is used to treat nausea and vomiting, but these indications are not included in the P licence and patients with these symptoms would need to be referred.

Indigestion in practice

Case 1

Mrs Johnson, an elderly woman, complains of indigestion and an upset stomach. On questioning, you find out she has had the problem for a few days; the pain is epigastric and does not seem to be related to food. She has been feeling slightly nauseated. You ask about her diet; she has not changed her diet recently and has not been overdoing it. She tells you that she is taking four lots of tablets; for her heart, her waterworks and some new ones for her bad hip (*diclofenac* modified release 100 mg at night). She has been taking them after meals, as advised and has not tried any medicines yet to treat her symptoms. Before the *diclofenac* she was taking *paracetamol* for the pain. She

normally uses *paracetamol* as a general painkiller at home; she tells you that she cannot take *aspirin* because it upsets her stomach.

The pharmacist's view

It sounds as though this woman is suffering GI symptoms as a result of her NSAID. Such effects are more common in elderly patients. She has been taking the medicine after food, which should have minimised any GI effects, and the best course of action would be to refer her back to the doctor. It would be worth reminding Mrs Johnson always to check before using home painkillers in addition to those prescribed by the doctor in future. She might otherwise inadvertently duplicate *paracetamol* doses.

The doctor's view

Referral back to her doctor is the correct course of action. Almost certainly her symptoms have been caused by the *diclofenac*. A large clinical trial showed that risk factors for serious complications with oral NSAIDs were age 75 or more, history of peptic ulcer, history of GI bleeding and history of heart disease. If this woman were over 75 and taking tablets for heart problems, she has two significant risk factors. The model predicts that for patients with none of the four risk factors, 1-year risk of a complication is 0.8%. For patients with all four risk factors, the risk is 18%.

She should be advised to stop the *diclofenac*. A blood test for *H. pylori* would be helpful and whilst awaiting the results she could be started on a PPI such as *lansoprazole*. If the *H. pylori* test came back positive she would also benefit from *H. pylori* eradication therapy.

Control of her primary symptom (hip pain) will then be a problem. NSAIDs should be avoided if possible. It may be possible to change the *paracetamol* to a compound preparation containing *paracetamol* and *codeine* or *dihydrocodeine*. Alternatively the GP may consider a cyclooxygenase (COX) 2 selective inhibitor such as *rofecoxib*, which is less likely to cause GI side-effects.

If an NSAID is necessary to control the pain and there is a documented history of peptic ulceration, an NSAID can be given with a PPI. The NSAID can also be given concomitantly with *misoprostol*. *Misoprostol* is a prostaglandin analogue that protects the gastric mucosa and may limit damage from NSAIDs. Research evidence shows that *omeprazole* was more effective than *misoprostol* in preventing unwanted effects.

Failure to control hip pain due to osteoarthritis (OA) may require referral to an orthopaedic surgeon to consider a hip replacement.

Case 2

Ken Jones is a local milkman in his early fifties and he comes in to ask your advice about his stomach trouble. He tells you that he has been having the problem for a couple of months but it seems to have got worse. The pain is in his stomach, quite high up; he had similar pain a few months ago, but it got better and has now come back again. The pain seems to get better after a meal; sometimes it wakes him during the night. He has been taking Rennies to treat his symptoms; they did the trick, but do not seem to be working now, even though he takes a lot of them. He has also been taking some OTC *ranitidine* tablets. He is not taking any other medicines.

The pharmacist's view

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

The doctor's view

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

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

Further investigation may be necessary to clarify the diagnosis. This could be achieved by a blood test (full blood count, renal and liver function, ESR, *H. pylori* serology), an endoscopy or a barium swallow/meal. The former is the more accurate method and allows for a biopsy to be taken. A biopsy is helpful in determining whether an ulcer

is benign or malignant and for identification of the presence of *H. Pylori*, which can cause peptic ulcers. This bacterium is present in nearly all cases of duodenal ulceration and over 80% of those with gastric ulceration. Treatment to eradicate *H. pylori* is very successful in healing ulcers and reducing the chances of future ulcer recurrence. This is particularly significant as the natural history of peptic ulcers is one of repeated relapse. *H. pylori* eradication may also be of benefit in non-ulcer dyspepsia. The most effective treatment to eradicate *H. pylori* is set out in the *BNF*.

Nausea and vomiting

Nausea and vomiting are symptoms that have many possible causes. From the pharmacist's point of view, while there are treatments available to prevent nausea and vomiting, there is no effective OTC treatment once vomiting is established. For that reason, this section will deal briefly with some of the causes of these symptoms and then continue in the next section to consider the prevention of motion sickness, where the pharmacist can recommend effective treatments to help prevent the problem.

What you need to know

Age
Infant, child, adult, elderly
Pregnancy
Duration
Associated symptoms
Has vomiting started?
Abdominal pain
Diarrhoea
Constipation
Fever
Alcohol intake
Medication
Prescribed
OTC
Previous history
Dizziness/vertigo

Significance of questions and answers

Age

The very young and the elderly are most at risk from dehydration as a result of vomiting. Vomiting of milk in infants less than 1 year old may be due to infection or feeding problems or, rarely, an obstruction such as pyloric stenosis. In the latter there is thickening of the muscular wall around the outlet of the stomach, which causes a blockage. It

typically occurs in the first few weeks of life in a first-born male. The vomiting is frequently projectile in that the vomit is forcibly expelled a considerable distance. The condition can be cured by a simple operation. The pharmacist must distinguish, by questioning, between vomiting (the forced expulsion of gastric contents through the mouth) and regurgitation (where food is effortlessly brought up from the throat and stomach). Regurgitation sometimes occurs in babies, where it is known as possetting and is a normal occurrence. When regurgitation occurs in adults, it is associated with oesophageal disease with difficulty in swallowing and requires referral (see p. 73). Nausea is associated with vomiting but not regurgitation and this can be employed as a distinguishing feature during questioning.

Pregnancy

Nausea and vomiting are very common in pregnancy, usually beginning after the first missed period and occurring early in the morning. Pregnancy should be considered as a possible cause of nausea and vomiting in any woman of childbearing age who presents at the pharmacy complaining of nausea and vomiting. Nausea and vomiting are more common in the first pregnancy than in subsequent ones.

Duration

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

Associated symptoms

An acute infection (gastroenteritis) is often responsible for vomiting and, in these cases, diarrhoea (see p. 110) may also be present. Careful questioning about food intake during the previous 2 days may give a clue as to the cause. In young children, the rotavirus is the most common cause of gastroenteritis; this is highly infectious and so it is not unusual for more than one child in the family to be affected. In such situations there are usually associated cold symptoms.

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

Nausea and vomiting may be associated with a migraine (see p. 197). Any history of dizziness or vertigo should be noted as it may point to inner ear disease, e.g. labyrinthitis or Meniere's disease as a cause of the nausea.

Alcohol intake

People who drink large quantities of alcohol may vomit, often in the morning. This may be due to occasional binge drinking or to chronic ingestion of alcohol. Alcoholic patients often feel nauseous and retch in the mornings. The questioning of patients about their intake of alcohol is a sensitive area and should be approached with tact. Asking about smoking habits might be a good way of introducing other social habits.

Medication

Prescribed and OTC medicines may make patients feel sick and it is therefore important to determine which medicines the patient is currently taking. *Aspirin* and NSAIDs are common causes. Some antibiotics may cause nausea and vomiting, e.g. *doxycycline*. Oestrogens, steroids and narcotic analgesics may also produce these symptoms. Symptoms can sometimes be improved by taking the medication with food, but if they continue, the patient should see the doctor. *Digoxin* toxicity may show itself by producing nausea and vomiting, and such symptoms in a patient who is taking *digoxin*, especially an elderly person, should prompt immediate referral where questioning has not produced an apparent cause for the symptoms. Vomiting, with loss of fluids and possible electrolyte imbalances, may cause problems in elderly people taking *digoxin* and diuretics.

Previous history

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

Management

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

Motion sickness and its prevention

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

What you need to know

Age

Infant, child, adult

Previous history

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

Length of journey

Medication

Significance of questions and answers

Age

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

Previous history

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

Mode of travel/length of journey

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

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

The pharmacist can also offer useful general advice about reducing motion sickness according to the method of transport to be used. For example, children are less likely to feel or be sick if they can see out of the car, so appropriate seats can be used to elevate the seating position of small children. This seems to be effective in practice and is thought to be because it allows the child to see relatively still objects outside the car. This ability to focus on such objects may help to settle the brain's receipt of conflicting messages.

For any method of travel, children are less likely to experience symptoms if they are kept occupied by playing games as they are therefore concentrating on something else. However, again, it seems that looking outside at still objects remains helpful and that a simple game, e.g. 'I Spy', is better than reading in this respect. In fact, for many travel sickness sufferers, reading exacerbates the feeling of nausea.

Medication

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

Management

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

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

Antihistamines

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

Anticholinergic agents

The only anticholinergic used widely in the prevention of motion sickness is *hyoscine hydrobromide*, which can be given to children over 3 years. Anticholinergic drugs can cause drowsiness, blurred vision, dry mouth, constipation and urinary retention as side-effects, although they are probably unlikely to do so at the doses used in OTC formulations for motion sickness. Children could be given sweets to suck to counteract any drying of the mouth.

Hyoscine has a short duration of action (from 1 to 3 h). It is therefore suitable for shorter journeys and should be given 20 min before the start of the journey. Anticholinergic drugs and antihistamines with anticholinergic effects are best avoided in patients with prostatic hypertrophy because of the possibility of urinary retention and in glaucoma because the intraocular pressure might be increased.

Pharmacists should remember that side-effects from anticholinergic agents are additive and may be increased in patients already taking drugs with anticholinergic effects, such as *amantidine*, tricyclic antidepressants (e.g. *amitriptyline*), butyrophenones (e.g. *haloperidol*) and phenothiazines (e.g. *chlorpromazine*). It is therefore important for the pharmacist to determine the identity of any medicines currently being taken by the patient. Table 2 summarises recommended doses and length of action for the treatments discussed.

Alternative approaches to motion sickness

Ginger

Some years ago it was found that ginger powder (*Zingiber officinale*) could effectively reduce motion sickness. No mechanism of action has been identified but it has been suggested that ginger acts on the GI tract itself rather than on the vomiting centre in the brain or on the vestibular system. No official dosage level has been suggested but

Table 2 Treatments for motion sickness

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

several proprietary products containing ginger are available. Ginger would be worth trying for a driver who suffered from motion sickness, since it does not cause drowsiness, and might be worth considering for use in pregnant women, for whom other antiemetics such as anticholinergics and antihistamines are not recommended. Ginger has been shown to be effective in a research trial in nausea and vomiting associated with pregnancy (see 'Women's Health').

Acupressure wristbands

Following their apparently successful use on board naval ships to reduce motion sickness, elasticated wristbands that apply pressure to a defined point on the inside of the wrists are now readily available. As yet there is no consistent evidence from clinical trials of the effectiveness of this method but research is continuing. Such wristbands might be worth trying for drivers or pregnant women.

Constipation

Constipation is a condition that is difficult to define and is often self-diagnosed by patients. Generally it is characterised by the passage of hard, dry stools less frequently than the person's normal pattern. It is important for the pharmacist to find out what the patient means by constipation, and to establish what (if any) change in bowel habit has occurred and over what period of time.

What you need to know

Details of bowel habit
Frequency and nature of bowel actions now
When was the last bowel movement?
What is the usual bowel habit?
When did the problem start?
Is there a previous history?
Associated symptoms
Abdominal pain/discomfort/bloating/distension
Nausea and vomiting
Blood in the stool
Diet
Any recent change in diet?
Is the usual diet rich in fibre?
Medication
Present medication
Any recent change in medication
Previous use of laxatives

Significance of questions and answers

Details of bowel habit

Many people believe that a daily bowel movement is necessary for good health and laxatives are often taken and abused as a result. In fact, the normal range may vary from three movements in 1 day to three in 1 week. Therefore an important health education role for the pharmacist is in reassuring patients that their frequency of bowel movement is normal. Patients who are constipated will usually com-

plain of hard stools which are difficult to pass and less frequent than usual.

The determination of any change in bowel habit is essential, particularly any prolonged change. A sudden change, which has lasted for 2 weeks or longer, would be an indication for referral.

Associated symptoms

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

Blood in the stool

The presence of blood in the stool can be associated with constipation and although alarming, is not necessarily serious. In such situations blood may arise from piles (haemorrhoids) or a small crack in the skin on the edge of the anus (anal fissure). Both these conditions are thought to be caused by a diet low in fibre that tends to produce constipation. The bleeding is characteristically noted on toilet paper after defecation. The bright red blood may be present on the surface of the motion (not mixed in with the stool) and splashed around the toilet pan. If piles are present, there is often discomfort on defecation. The piles may drop down (prolapse) and protrude through the anus. A fissure tends to cause less bleeding but much more severe pain on defecation. Medical referral is advisable as there are other more serious causes of bloody stools, especially where the blood is mixed in with the motion.

Bowel cancer

Large bowel cancer may also present with a persisting change in bowel habit. This condition kills about 20 000 people each year in the UK. Early diagnosis and intervention can dramatically improve the prognosis. The incidence of large bowel cancer rises significantly with age. It is uncommon among people under 50 years. It is more common amongst those living in northern Europe and North America compared with southern Europe and Asia. The average age at diagnosis is 60–65 years.

Diet

Insufficient dietary fibre is a common cause of constipation. An impression of the fibre content of the diet can be gained by asking what would normally be eaten during a day, looking particularly for the presence of wholemeal cereals, bread, fresh fruit and vegetables. Changes in diet and lifestyle, e.g. following a job change, loss of work, retirement or travel, may result in constipation. An inadequate intake of food and fluids, e.g. in someone who has been ill, may be responsible.

Medication

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

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

Many drugs can induce constipation; some examples are listed in Table 3. The details of prescribed and OTC medications being taken should be established.

When to refer

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

Treatment timescale

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

Table 3 Drugs that may cause constipation

Drug group	Drug
Analgesics and opiates	<i>Dihydrocodeine, codeine</i>
Antacids	<i>Aluminium salts</i>
Anticholinergics	<i>Hyoscine</i>
Anticonvulsants	<i>Phenytoin</i>
Antidepressants	<i>Tricyclics, SSRIs</i>
Antihistamines	<i>Chlorpheniramine, promethazine</i>
Antihypertensives	<i>Clonidine, methyldopa</i>
Anti-Parkinson agents	<i>Levodopa</i>
Beta-blockers	<i>Propranolol</i>
Diuretics	<i>Bendrofluazide</i>
Irono	
Laxative abuse	
Monoamine oxidase inhibitors	
Antipsychotics	<i>Chlorpromazine</i>

Management

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

Stimulant laxatives (e.g. senna, bisacodyl)

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

Docusate sodium appears to have both stimulant and stool-softening effects and acts within 12 days.

The use of *senna* pods and *cascara*, which is non-standardised, should be discouraged because the dose, and therefore action, are unpredictable. Castor oil is a traditional remedy for constipation, which is no longer recommended since there are better preparations available.

Bulk laxatives (e.g. ispaghula, methylcellulose, sterculia)

Bulk laxatives are those that most closely copy the normal physiological mechanisms involved in bowel evacuation and are considered by many to be the laxatives of choice. Such agents are especially useful where patients cannot or will not increase their intake of dietary fibre. Bulk laxatives work by swelling in the gut and increasing faecal mass so that peristalsis is stimulated. The laxative effect can take several days to develop.

The sodium content of bulk laxatives (as *sodium bicarbonate*) should be considered in those requiring a restricted sodium intake.

When recommending the use of a bulk laxative, the pharmacist should advise that an increase in fluid intake would be necessary. In the form of granules or powder, the preparation should be mixed with a full glass of liquid (e.g. fruit juice or water) before taking. Fruit juice can mask the bland taste of the preparation. Intestinal obstruction may result from inadequate fluid intake in patients taking bulk laxatives, particularly those whose gut is not functioning properly as a result of abuse of stimulant laxatives.

Osmotic laxatives (e.g. lactulose, Epsom salts, Glauber's salts)

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

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

Glycerin suppositories have both osmotic and irritant effects and usually act within 1 h. They may cause rectal discomfort. Moistening the suppository before use will make insertion easier.

Lubricant laxatives (e.g. liquid paraffin)

Liquid paraffin works by coating and softening the faeces; it prevents further absorption of water in the colon. Long-term use can result in impaired absorption of fat-soluble vitamins (A, D, E, K). Leakage of *liquid paraffin* through the anal sphincter may occur, causing embarrassment and unpleasantness. If *liquid paraffin* is inadvertently inhaled into the lungs, lipid pneumonia can develop. Inhalation could

occur during vomiting or if acid reflux (regurgitation) is present. The unpleasant and dangerous effects of *liquid paraffin* have led to restrictions in the UK on the pack size that can be sold. Pharmacists have an important role in discouraging the use of *liquid paraffin*, which has little valid therapeutic use.

Constipation in children

Parents sometimes ask for laxatives for their children. Fixed ideas about regular bowel habits are often responsible for such requests. Numerous factors can cause constipation in children, including a change in diet and emotional causes. Simple advice about sufficient dietary fibre may be all that is needed. If the problem is of recent origin and there are no significant associated signs, a single *glycerin suppository* together with dietary advice may be appropriate. Referral to the doctor would be best if these measures are unsuccessful.

Constipation in pregnancy

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

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

Constipation in the elderly

Constipation is a common problem in elderly patients for several reasons. Elderly patients are less likely to be physically active; they often have poor natural teeth or false teeth and so may avoid high-fibre foods that are more difficult to chew; multidrug regimens are more likely in elderly patients, who may therefore suffer from drug-induced constipation; fixed ideas about what constitutes a normal bowel habit are common in older patients. If a bulk laxative is to be recommended for an elderly patient, it is of great importance that the pharmacist give advice about maintaining fluid intake to prevent the possible development of intestinal obstruction.

Laxative abuse

Two groups of patients are likely to abuse laxatives: those with chronic constipation who get into a vicious circle by using stimulant laxatives (see p. 103), which eventually results in damage to the nerve

plexus in the colon; and those who take laxatives in the belief that they will control weight, e.g. those who are dieting or, more seriously, women with eating disorders (anorexia nervosa or bulimia), who take very large quantities of laxatives. The pharmacist is in a position to monitor purchases of laxative products and counsel patients as appropriate. Any patient who is ingesting large amounts of laxative agents should be referred to the doctor.

Constipation in practice

Case 1

Mr Johnson is a middle-aged man who occasionally visits your pharmacy. Today he complains of constipation, which he has had for several weeks. He has been having a bowel movement every few days; normally they are every day or every other day. His motions are hard and painful to pass. He has not tried any medicines as he thought the problem would go of its own accord. He has never had problems with constipation in the past. He has been taking *atenolol* tablets 50 mg once a day, for over 1 year. He does not have any other symptoms, except a slight feeling of abdominal discomfort. You ask him about his diet; he tells you that since he was made redundant from his job at a local factory 3 months ago, he has tended to eat less than usual; his dietary intake sounds as if it is low in fibre. He tells you that he has been applying for jobs, with no success so far. He says he feels really down and is starting to think that he may never get another job.

The pharmacist's view

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

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

To address the dietary problems, he could be advised to start the day with a wholemeal cereal and to eat at least four slices of wholemeal

bread each day. Baked beans are a cheap, good source of fibre. Fresh vegetables are also fibre-rich. It would be important to stress that fluid intake should also be increased. A high-fibre diet means patients should increase their fibre intake until they pass one large, soft stool each day; the amount of fibre needed to produce this effect will vary markedly between patients. The introduction of dietary fibre should be gradual; too rapid an increase can cause griping and wind.

To provide relief from the discomfort, a suppository of *glycerin* or *bisacodyl* could be recommended to produce a bowel evacuation quickly; in the longer term, dietary changes provide the key. He should see the doctor if the suppository does not produce an effect; if it works but the dietary changes have not been effective after 2 weeks, he should go to his doctor. Mr Johnson's medication is unlikely to be responsible for his constipation because, although beta-blockers can sometimes cause constipation, he has been taking the drug for over 1 year with no previous problems.

The doctor's view

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

Case 2

Your counter assistant asks if you will have a word with a young woman who is in the shop. She was recognised by your assistant as a regular purchaser of stimulant laxatives. You explain to the woman that you will need to ask a few questions because regular use of laxatives may mean an underlying problem, which is not improving. In answer to your questions she tells you that she diets almost constantly and always suffers from constipation. Her weight appears to be within the range for her height. You show her your pharmacy's body mass index (BMI) chart and work out with her where she is on the chart, which confirms your initial feeling. However, she is reluctant to accept your advice, saying that she definitely needs to lose some more

weight. You ask about her diet and she tells you that she has tried all sorts of approaches, most of which involve eating very little.

The pharmacist's view

Unfortunately this sort of story is all too common in community pharmacy, with many women who seek to achieve weight below the recommended range. The pharmacist can explain that constipation often occurs during dieting simply because insufficient bulk and fibre is being eaten to allow the gut to work normally. Perhaps the pharmacist might suggest that she joins a local group, either Weight Watchers or a self-help group (the local health promotion unit will know what is available). Despite the pharmacist's advice, many customers will still wish to purchase laxatives and the pharmacist will need to consider how to handle refusal of sales. Offering stimulant laxatives for sale by self-selection can only exacerbate the problems and make it more difficult to monitor sales and refuse them when necessary.

The doctor's view

This is obviously a difficult problem for the pharmacist. It is inappropriate for the young woman to continue taking laxatives and she could benefit from counselling. However, a challenge from the pharmacist could result in her simply buying the laxatives elsewhere. If, as is likely, she has an eating disorder, she may have very low self-esteem and be denying her problem. Both these factors make it more difficult for the pharmacist to intervene most effectively. An ideal outcome would be appropriate referral, which would depend on local resources but which might initially be to the doctor, or she could be advised about the Eating Disorder Association Helpline 0845 6341414, which can be accessed 8.30 AM–8.30 PM Monday–Friday.

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

Case 3

A man comes into the pharmacy and asks for some good laxative tablets. Further questioning by the pharmacist reveals that the medicine is for his dad who is aged 72. He does not know many details except that his dad has been complaining of increasing constipation

over the last 2–3 months and has tried *senna* tablets without any benefit.

The pharmacist's view

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

The doctor's view

Referral to the GP should be recommended in this situation. A *glycerin suppository* is a safe treatment to use in the meantime. Clearly, more information is needed to make an opinion and diagnosis. A prolonged and progressive change in bowel habit is an indication for referral to hospital for further investigations as the father could have a large bowel cancer. The GP would need to gather more information about his symptoms and would perform an examination that would include abdominal palpation and a digital rectal examination. This latter examination could confirm the presence of a rectal tumour. It is likely that an urgent referral would then be made for further investigations as an outpatient. At hospital the investigations could include sigmoidoscopy plus a barium enema X-ray and/or a colonoscopy. In colonoscopy a flexible fibre-optic tube is passed through the anus and then up and around the whole of the large bowel to the caecum.

Diarrhoea

Community pharmacists may be asked by patients to treat existing diarrhoea, or to offer advice on what course of action to take should diarrhoea occur, for example, to holidaymakers. Diarrhoea is defined as an increased frequency of bowel evacuation, with the passage of abnormally soft or watery faeces. The basis of treatment is electrolyte and fluid replacement; in addition, antidiarrhoeals are useful in adults and older children.

What you need to know

Age
Infant, child, adult, elderly
Duration
Severity
Symptoms, associated symptoms
Nausea/vomiting
Fever
Abdominal cramps
Flatulence
Other family members affected?
Previous history
Recent travel abroad?
Causative factors
Medication
Medicines already tried
Other medicines being taken

Significance of questions and answers

Age

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

Duration

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

Severity

The degree of severity of diarrhoea is related to the nature and frequency of stools. Both these aspects are important, since misunderstandings can arise, especially in self-diagnosed complaints. Elderly patients who complain of diarrhoea may, in fact, be suffering from faecal impaction. They may pass liquid stools, but with only one or two bowel movements a day.

Symptoms

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

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

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

Previous history

A previous history of diarrhoea or a prolonged change in bowel habit would warrant referral for further investigation and it is important that the pharmacist distinguish between acute and chronic conditions. Chronic diarrhoea (of more than 3 weeks' duration) may be caused by bowel conditions such as Crohn's disease, IBS or ulcerative colitis and requires medical advice.

Recent travel abroad

Diarrhoea in a patient who has recently travelled abroad requires referral since it might be infective in origin.

Causes of diarrhoea

Infections

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

Viral. Viruses are often responsible for gastroenteritis. In infants the virus causing such problems often gains entry into the body via the respiratory tract (rotavirus). Associated symptoms are those of a cold and perhaps a cough. The infection starts abruptly and vomiting often precedes diarrhoea. The acute phase is usually over within 2–3 days, although diarrhoea may persist. Sometimes diarrhoea returns when milk feeds are reintroduced. This is because one of the milk-digestive enzymes is temporarily inactivated. Milk therefore passes through the bowel undigested, causing diarrhoea. The health visitor or doctor would need to give further advice in such situations.

Whilst in the majority the infection is usually not too severe and is self-limiting, it should be remembered that rotavirus infection can cause death. This is most likely in those infants already malnourished and living in poor social circumstances who have not been breastfed.

Bacterial. These are the food-borne infections previously known as food poisoning. There are several different types of bacteria that can cause such infections: *Staphylococcus*, *Campylobacter*, *Salmonella*, *Shigella*, pathogenic *Escherichia coli* and *Bacillus cereus*. The typical symptoms include severe diarrhoea and/or vomiting, with or without abdominal pain. Two commonly seen infections are *Campylobacter* and *Salmonella*, which are often associated with contaminated poultry, although other meats have been implicated. Contaminated eggs have also been found to be a source of *Salmonella*. Kitchen hygiene and thorough cooking are of great importance in preventing infection.

Table 4 summarises the typical features of some of the following infections:

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

- *B. cereus* is usually associated with cooked rice, especially if it has been kept warm or has been reheated. It presents with two different clinical pictures, as shown in Table 4.
- *E. coli* infections are less common but can be severe with toxins being released into the body, which can cause kidney failure.

Antibiotics are generally unnecessary as most food-borne infections resolve spontaneously. The most important treatment is adequate fluid replacement. Antibiotics are used for *Shigella* infections and the more severe *Salmonella* or *Campylobacter* ones. *Ciprofloxacin* may be used in such circumstances.

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

Chronic diarrhoea

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

Irritable bowel syndrome (see p. 122). This non-serious but troublesome condition is one of the more common causes of recurrent bowel dysfunction in adolescents and young adults. The patient usually describes the frequent passage of small volumes of stool rather than true diarrhoea. The stools are typically variable in nature, often loose and semi-formed. They may be described as being like rabbit

Table 4 Features of some infections causing diarrhoea

Infection	Incubation	Duration	Symptoms
<i>Staphylococcus</i>	2–6 h	6–24 h	Severe, short-lived; especially vomiting
<i>Salmonella</i>	12–24 h	1–7 days	Mainly diarrhoea
<i>Campylobacter</i>	2–7 days	2–7 days	Diarrhoea with abdominal colic
<i>Bacillus cereus</i>	1–5 h	6–24 h	Vomiting
<i>Bacillus cereus</i> (two types of infection)	8–16 h	12–24 h	Diarrhoea

droppings or pencil-shaped. The frequency of bowel action is also variable as the diarrhoea may alternate with constipation. Often the bowels are open several times in the morning before the patient leaves for work. The condition is more likely to occur at times of stress, it may be associated with anxiety and occasionally it may be triggered by a bowel infection. Inadequate dietary fibre may also be of significance. It is possible that certain foods can irritate the bowel, but this is difficult to prove.

There is no blood present within the motion in an irritable bowel. Bloody diarrhoea may be a result of an inflammation or tumour of the bowel. The latter is more likely with increasing age (from middle age onwards) and is likely to be associated with a prolonged change in bowel habit; in this case diarrhoea might sometimes alternate with constipation.

Medication

Medicines already tried

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

Other medicines being taken

Details of any other medication being taken (both OTC and prescribed) are also needed, as the diarrhoea may be drug-induced (Table 5). OTC medicines should be considered; commonly used medicines such as magnesium-containing antacids and iron preparations are examples of medicines that may induce diarrhoea. Laxative abuse should be considered as a possible cause.

When to refer

Diarrhoea of greater than 1 day's duration in children younger than 1 year;
 2 days in children under 3 years and elderly patients;
 3 days in older children and adults
 Association with severe vomiting and fever
 Recent travel abroad
 Suspected drug-induced reaction to prescribed medicine
 History of change in bowel habit
 Presence of blood or mucus in the stools

Table 5 Some drugs that may cause diarrhoea

Antacids: <i>magnesium salts</i>
Antibiotics
Antihypertensives: <i>guanethidine</i> (common side-effect but rarely prescribed); <i>methyl dopa</i> ; beta-blockers (rare)
<i>Digoxin</i> (toxic levels)
Diuretics (<i>furosemide</i> (<i>frusemide</i>))
<i>Iron preparations</i>
Laxatives
<i>Misoprostol</i>
Non-steroidal anti-inflammatory drugs (NSAIDs)
Selective serotonin reuptake inhibitors (SSRIs)

Treatment timescale

One day in children, otherwise 2 days.

Management

Oral rehydration therapy

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

Rehydration may still be initiated even if referral to the doctor is advised. Sachets of powder for reconstitution are available; these contain sodium as chloride and bicarbonate, glucose and potassium. The absorption of sodium is facilitated in the presence of glucose. A variety of flavours are available.

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

Home-made salt and sugar solutions should not be recommended, since the accuracy of electrolyte content cannot be guaranteed, and this accuracy is essential, especially in infants, young children and

elderly patients. Special measuring spoons are available; their correct use would produce a more acceptable solution, but their use should be reserved for the treatment of adults, where electrolyte concentration is less crucial.

Quantities

Parents sometimes ask how much rehydration fluid should be given to children. The following simple rules can be used for guidance; the amount of solution offered to the patient is based on the number of watery stools that are passed. Table 6 provides the volumes required per watery stool.

Other therapy

Loperamide

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

Kaolin

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

Morphine

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

Table 6 Amount of rehydration solution to be offered to patients

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

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

Practical points

1 Patients with diarrhoea should be advised to drink plenty of clear, non-milky fluids, such as water and diluted squash.

2 Advice to eat no solid food for 24 h may be appropriate. Breast- or bottle-feeding should be continued in infants. The severity and duration of diarrhoea are not affected by whether milk feeds are continued. A well-nourished child should be the aim, particularly where the infant is poorly nourished to begin with and where the withholding of milk feeds may be more detrimental than in a well-nourished infant, where temporary withdrawal is unimportant. Some doctors continue nevertheless to advise the discontinuation of milk, especially bottle, during the acute phase of infection.

3 Patients with diarrhoea might be best advised to avoid cow's milk, because during diarrhoea the enzyme in the gut that digests milk (lactase) is inactivated. Temporary lactose intolerance can therefore be produced, which makes the diarrhoea worse.

Diarrhoea in practice

Case 1

Mrs Robinson asks what you can recommend for diarrhoea. Her son David, aged 11, has diarrhoea and she is worried that her other two children, Natalie, aged 4, and Tom, aged just over 1 year, may also get it. David's diarrhoea started yesterday; he went to the toilet about five times and was sick once, but has not been sick since. He has griping pains, but is generally well and quite lively. Yesterday he had pie and chips from the local takeaway during his lunch break at school. No one else in the family ate the same food. Mrs Robinson has not given him any medicine, but has some *kaolin* and *morphine* mixture at home and wants to know if David could take some, and also if the other children could take it if necessary.

The pharmacist's view

It sounds as if David has a bout of acute diarrhoea, possibly caused by the food he ate yesterday during lunchtime. He has vomited once, but

now the diarrhoea is the problem. The child is otherwise well. He is 11 years old, so the best plan would be to start oral rehydration with some proprietary sachets, with advice to his mother about how they should be reconstituted. *Kaolin* and *morphine* mixture should not be given to children under 12, and in any case is not considered first-line treatment for diarrhoea. If either or both the other children get diarrhoea, they can also be given some rehydration solution. David should see the doctor the day after tomorrow if his condition has not improved.

The doctor's view

David's diarrhoea could well be due to food poisoning. Oral rehydration is the correct treatment. He should also be told not to eat anything for the next 24 h or so until the diarrhoea has settled. If he wants to drink other fluids in addition to the electrolyte mixture, he should be told to avoid milk.

His symptoms should settle down over the next 24 h. If they persist or he complains of worsening abdominal pain, particularly in the lower right side of the abdomen, his mother should contact the doctor. Rarely, an atypical acute appendicitis may present as a bowel infection.

Case 2

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

The pharmacist's view

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

The doctor's view

Referral is a sensible course of action. Clearly more information is required, e.g. date of onset of symptoms, date of return to the UK. It does not sound as if any of the family are acutely ill but it would be necessary to ensure that no one is dehydrated. If the diarrhoea is persisting, it would be helpful to send stool samples to the local public health laboratory for analysis. It is possible that they may be suffering from giardiasis, which can be treated with *metronidazole*. Sometimes

stool samples come back showing no signs of infection, in which case the diarrhoea is considered as being due to postinfection irritability of the bowel. This usually resolves spontaneously with no specific treatment.

Case 3

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

The pharmacist's view

Holiday diarrhoea can be troublesome but can easily be dealt with. Mrs Berry could be advised to buy some *loperamide* capsules, which would be suitable treatment for her, Mr Berry and their 14-year-old son. In addition, she should purchase some oral rehydration sachets for the younger son. The sachets could also be used by other family members.

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

Holiday diarrhoea is usually self-limiting, but if it is still present after several days, medical advice should be sought. If the diarrhoea persists or is recurrent after returning home, the doctor should be seen. Finally, patients would be well advised to be wary of buying OTC medicines abroad. In some countries, a large range of drugs including oral steroids and antibiotics can be purchased OTC. Each year, patients return to Britain with serious adverse effects following the use of oral *chloramphenicol*, for example, which has been prescribed or purchased.

The doctor's view

The pharmacist has covered all the important points. The most likely cause of diarrhoea would be contaminated food or water. The best

treatment of acute diarrhoea is to stop eating and to drink bottled mineral water (with or without electrolyte reconstitution powders). It would be sensible to take an antidiarrhoeal such as *loperamide*.

Case 4

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

The pharmacist's view

Mr Radcliffe's diarrhoea may be due to the *amoxicillin*, which he started to take a few days ago. It would be best to call the patient's doctor to discuss the appropriate course of action because Mr Radcliffe's other drug therapy means that fluid loss and dehydration may cause electrolyte imbalance and put him at further risk. The doctor may decide to stop the *amoxicillin*.

The doctor's view

It is likely that the *amoxicillin* has caused the diarrhoea. The most important consideration in management is to ensure adequate fluid and electrolyte replacement. This is particularly so as the elderly (and babies) are not as resilient to the effects of dehydration. In Mr Radcliffe's case things are further complicated by his other medication: *furosemide* and *digoxin*. He is not on any potassium supplement or a potassium-sparing diuretic. Although there may be good reason for this, diuretics such as *furosemide* can lower the plasma potassium level and make *digoxin* dangerously toxic. Unfortunately, potassium can also be lost in diarrhoea, further aggravating this problem. It is therefore reasonable to ask for the doctor to visit and assess.

There is also a small possibility that the diarrhoea could be due to pseudomembranous colitis (PMC), which is caused by a bacterium (*Clostridium difficile*) in the colon and typically occurs as a complication of antibiotic treatment. It is thought that antibiotics upset the normal bowel flora allowing *Clostridium difficile* to flourish. This is a

relatively uncommon condition, which can be caused by most antibiotics, but has been reported most often with *clindamycin*, *ampicillin*, *amoxicillin*, and the cephalosporins. The condition is more likely to occur in the elderly.

The diarrhoea of PMC can range from mild self-limiting symptoms to severe protracted or recurrent episodes and can sometimes be fatal. There is often a low-grade fever, and abdominal pain/cramps may occur. The symptoms usually begin within 1 week of starting antibiotic treatment but may start up to 6 weeks after a course of antibiotics. Where possible, antibiotics should be discontinued in cases of PMC. It is sometimes necessary to treat severe cases with *metronidazole* or *vancomycin*.

Irritable bowel syndrome

IBS is defined as a functional bowel disorder in which abdominal pain is associated with defecation or a change in bowel habit, with the additional features of disordered defecation and abdominal distension. Its cause is unknown. IBS is estimated to affect 20% of adults in the industrialised world, most of whom (up to three quarters) do not consult a doctor. More women with IBS consult a health professional than do men and the incidence of the condition appears to be higher in women. Debate has been fierce about whether IBS has a psychological cause because it is associated with anxiety or depression in many patients. However, differences in bowel sensitivity have been shown in IBS patients compared to those without IBS, although the full picture is not yet clear.

What you need to know

Age

Child, adult

Symptoms

Gastrointestinal

Abdominal pain

Abdominal distension/bloating

Disturbed bowel habit; diarrhoea and/or constipation

Nausea

Other

Urinary symptoms especially frequency

Dyspareunia (pain during intercourse)

Significance of questions and answers

Age

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

IBS usually develops in young adult life. If an older adult is presenting for the first time with no previous history of bowel problems, a referral should be made.

Symptoms

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

Abdominal pain

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

Bloating

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

Bowel habit

Diarrhoea and constipation may occur; sometimes they alternate. A morning rush is common, where the patient feels an urgent desire to defecate several times after getting up in the morning and following breakfast, after which the bowels may settle. There may be a feeling of incomplete emptying after a bowel movement. The motion is often described as loose and semi-formed rather than watery. Sometimes it is like pellets or rabbit droppings, or pencil-shaped. There may be mucus present but never blood.

Other symptoms

Nausea sometimes occurs, vomiting is less common.

Patients may also complain of apparently unrelated symptoms such as backache, feeling lethargic and tired. Urinary symptoms may be associated with IBS, e.g. frequency, urgency and nocturia (the need to pass urine during the night). Some women report dyspareunia.

Duration

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

Previous history

You need to know whether the patient has consulted his/her doctor about the symptoms and, if so, what they were told. A history of travel

abroad and gastroenteritis sometimes appears to trigger an irritable bowel. Referral is necessary to exclude an unresolved infection. Any history of previous bowel surgery would suggest a need for referral.

Aggravating factors

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

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

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

Medication

The patient may already have tried prescribed or OTC medicines to treat the condition. You need to know what has been tried and whether it produced any improvement. It is also important to know what other medicines the patient is taking. IBS is associated with anxiety and depression in many patients but it is not known whether this is cause or effect.

When to refer

Children

Older person with no previous history of IBS

Pregnant women

Blood in stools

Unexplained weight loss

Caution in patients aged over 45 with changed bowel habit

Signs of bowel obstruction

Unresponsive to appropriate treatment

Treatment timescale

Symptoms should start to improve within 1 week.

Management

Antispasmodics

Antispasmodics are the mainstay of OTC treatment of IBS and research trials show consistent improvement in abdominal pain with smooth muscle relaxants. *Alverine citrate*, *peppermint* and *mebeverine* are

used. They work by a direct effect on the smooth muscle of the gut, causing relaxation and thus reducing abdominal pain. The patient should see an improvement within a few days of starting treatment and should be asked to return to you in 1 week so you can monitor progress. It is worth trying a different antispasmodic if the first has not worked. Side-effects from antispasmodics are rare.

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

Alverine citrate

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

Peppermint oil

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

This treatment should not be recommended for children. Occasionally *peppermint oil* causes heartburn and so is best avoided in patients who already suffer from this problem. Allergic reactions can occur and are rare; rash, headache and muscle tremor have been reported in such cases. One trial involving 110 people showed improvement in symptoms of abdominal pain, distension and stool frequency.

Mebeverine hydrochloride

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

Bulking agents

Traditionally, patients with IBS were told to eat a diet high in fibre, and raw wheat bran was often recommended as a way of increasing the fibre intake. Bran is no longer recommended in IBS (see 'Practical points, Diet'). Bulking agents such as ispaghula containing soluble fibre can help some patients. It may take a few weeks of experimentation to find the dose that suits the individual patient. Remind the patient to increase fluid intake to take account of the additional fibre. Bulking agents are also available in combination with antispasmodics. The evidence for benefit is not strong, as studies have involved small numbers of patients. Possible positive benefit has been shown for ispaghula husk.

Antidiarrhoeals

Patients who complain of diarrhoea may be describing a frequent urge to pass stools, but the stools may be loose and formed rather than watery. Use of OTC antidiarrhoeals such as *loperamide* is appropriate only on an occasional, short-term basis. In two studies involving a total of 100 patients, *loperamide* improved diarrhoea, including frequency of bowel movements, but not abdominal pain or distension.

Practical points

Diet

Patients with IBS should follow the recommendations for a healthy diet (low fat, low sugar, high fibre). Bran used to be widely recommended but more recent research indicates that consumption of bran (which contains insoluble fibre) is not helpful and can make symptoms worse. Dietary sources of soluble fibre can be recommended including oats and pulses.

Some patients find that excluding foods which they know exacerbate their symptoms is helpful (see 'Aggravating factors' above). The sweeteners sorbitol and fructose can make symptoms worse and they are found in many foods: the patients need to check labels at the supermarket. Cutting out caffeine, milk and dairy products, and chocolate may be worth trying. Although some patients benefit from the withdrawal of milk and dairy products, there is no evidence of lactase deficiency in IBS. Remind patients that caffeine is included in many soft drinks and so they should check labels.

Complementary therapies

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

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

Chinese herbal medicine

A recent high-quality randomised 16-week trial showed benefit (global improvement) from standard and individualised Chinese herbal treatment for IBS. The numbers needed to treat (NNTs) to produce benefit were 2.3 for standard and 3.2 for individualised treatment. The results were highly statistically significant. The herbal medicine in this trial was prepared and dispensed by a herbal practitioner. One of the difficulties in recommending this form of treatment is the lack of control and consistency of the ingredients in herbal preparations.

Irritable bowel syndrome in practice

Case 1

Joanna Mathers is a 29-year-old woman who asks to speak to the pharmacist. She has seen an advertisement for an antispasmodic for IBS and wonders whether she should try it. On questioning, she tells you that she has been getting stomach pains and bowel symptoms for several months, two or three times a month. She thinks her symptoms seem to be associated with business lunches and dinners at important meetings and include abdominal pain, a feeling of abdominal fullness, diarrhoea, nausea and sometimes vomiting. In answer to your specific question about morning symptoms, Joanna says that sometimes she feels the need to go to the toilet first thing in the morning and may have to go several times. Sometimes she has been late for work because she felt she couldn't leave the house due to the diarrhoea. Joanna tells you that she works as a marketing executive and that her job is pressurised and stressful when there are big deadlines or client meetings. Joanna drinks six or seven cups of coffee a day and says her diet is 'whatever I can get at work and something from the freezer when I get home'. She is not taking any other medicines and has not been to the doctor about her problems as she didn't want to bother him.

The pharmacist's view

The picture that has emerged indicates IBS. She has the key symptoms and there is a link to stress at work. It would be worth trying an antispasmodic (*alverine*, *peppermint oil* or *mebeverine*) for 1 week

and asking Joanna to come back at the end of that time. She also needs a careful explanation of aggravating factors for IBS and might want to try a gradual reduction in her intake of coffee over the next few days. If there is no improvement, a different antispasmodic could be tried for a further week, with referral then if needed.

The doctor's view

Joanna gives a clear history of IBS. Her symptoms are likely to settle with the pharmacist's advice and treatment. There is up to a 60% placebo response rate in IBS sufferers, so it would be surprising if she did not improve when next reviewed. If there were no improvement, then a referral would be sensible. A referral would give her doctor an opportunity to deal with her concerns about what was wrong and give her an appropriate explanation of IBS. She could also be given some time to consider how she might tackle her work pressures. Plenty of information is available on the web, which she could be advised to look at, e.g. www.ibsnetwork.org.uk.

Case 2

Jane Dawson asks to see the pharmacist. She is in her early twenties and says she has been getting some upper abdominal pain after food. She wants to try a stomach medicine. On further questioning she says that she has had an irritable bowel before but this is different, although she does admit that her bowels have been troublesome recently and she has noticed some urinary frequency. Jane says that she has been constipated and felt bloated. She says that she went to her doctor last year and was told she had IBS. The doctor said it was all due to stress, which had upset her. Over the last year she has started a new job and moved into new accommodation. She eats a healthy diet and exercises regularly.

The pharmacist's view

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

The doctor's view

Jane probably has IBS but there is insufficient information so far to make that diagnosis. It is not uncommon to have upper abdominal pain with IBS, but other possibilities need to be considered. It sounds as though Jane thinks it is coming from her stomach. She may fear that she has an ulcer. She also mentions urinary frequency, which may well

be associated with IBS but could be a urinary infection. A referral to her doctor is sensible to make a complete assessment of her symptoms. It is likely that the assessment would just involve listening to her description of her problem, gathering more information and a brief examination of her abdomen. A urine sample would show whether or not she had a urinary infection. If there was still doubt about the diagnosis, a referral to a gastroenterologist at the local hospital could be made. Between 20% and 50% of referrals to gastroenterologists turn out to be due to IBS. The main purpose of referral is for a diagnosis as there is no therapeutic advantage.

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

Often the above approach is effective treatment in itself. However, if Jane did want some medication, a bulk bowel regulator to help her constipation plus some antispasmodic tablets would be of value.

Haemorrhoids

Haemorrhoids (commonly known as piles) can produce symptoms of itching, burning, pain, swelling and discomfort in the perianal area and anal canal and rectal bleeding. Haemorrhoids are swollen veins, rather like varicose veins, which protrude into the anal canal (internal piles). They may swell so much that they hang down outside the anus (external piles). Haemorrhoids are often caused or exacerbated by inadequate dietary fibre or fluid intake. The pharmacist must, by careful questioning, differentiate between this minor condition and others that may be potentially more serious.

What you need to know

- Duration and previous history
- Symptoms
 - Itching, burning
 - Soreness
 - Swelling
 - Pain
 - Blood in stools
 - Constipation
 - Bowel habit
- Pregnancy
- Other symptoms
 - Abdominal pain/vomiting
 - Weight loss
- Medication

Significance of questions and answers

Duration and previous history

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

Symptoms

The term haemorrhoids includes internal and external piles, which can be further classified as: (1) those which are confined to the anal canal and cannot be seen; (2) those which prolapse through the anal sphincter on defecation, then reduce by themselves or are pushed back through the sphincter after defecation by the patient; and (3) those which remain persistently prolapsed and outside the anal canal. These three types are sometimes referred to as first, second and third degree, respectively. Predisposing factors for haemorrhoids include diet, sedentary occupation and pregnancy and there is thought to be a genetic element.

Pain

Pain is not always present; if it is, it may take the form of a dull ache and may be worse when the patient is having a bowel movement. A severe, sharp pain on defecation may indicate the presence of an anal fissure, which can have an associated sentinel pile (a small skin tag at the posterior margin of the anus) and requires referral. A fissure is a minute tear in the skin of the anal canal. It is usually caused by constipation and can often be managed conservatively by correcting this and using a local anaesthetic-containing cream or gel. In severe cases a minor operation is sometimes necessary.

Irritation

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

Bleeding

Blood may be deposited onto the stool from internal haemorrhoids as the stool passes through the anal canal. This fresh blood will appear bright red. It is typically described as being splashed around the toilet pan and may be seen on the surface of the stool or on the toilet paper. If blood is mixed with the stool, it must have come from higher up the GI tract, and will be dark in colour (altered). If rectal bleeding is present, the pharmacist would be well advised to suggest that the patient see the doctor so that an examination can be performed to exclude more serious pathology such as tumour or polyps. Colorectal cancer can cause rectal bleeding. The disease is unusual in patients under 50 and the pharmacist should be alert for the middle-aged patient with rectal bleeding. This is particularly so if there has been a significant and sustained alteration in bowel habit.

Constipation

Constipation is a common causatory or exacerbatory factor in haemorrhoids. Insufficient dietary fibre and inadequate fluid intake may be involved, although the pharmacist should also consider the possibility of drug-induced constipation.

Straining at stool will occur if the patient is constipated; this increases the pressure in the haemorrhoidal blood vessels in the anal canal and haemorrhoids may result. If piles are painful, the patient may try to avoid defecation and ignoring the call to open the bowels will make the constipation worse.

Bowel habit

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

Pregnancy

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

Other symptoms

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

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

Medication

Patients may already have tried one or more proprietary preparations to treat their symptoms. Some of these products are advertised widely, since the problem of haemorrhoids is perceived as potentially embarrassing and such advertisements may sometimes discourage patients from describing their symptoms. It is therefore important for the pharmacist to identify the exact nature of the symptoms being experi-

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

Present medication

Haemorrhoids may be exacerbated by drug-induced constipation and the patient should be carefully questioned about current medication, including prescription and OTC medicines. A list of drugs that may cause constipation can be found on p. 103. Rectal bleeding in a patient taking *warfarin* or another anticoagulant is an indication for referral.

When to refer

- Duration of longer than 3 weeks
- Presence of blood in the stools
- Change in bowel habit (persisting alteration from normal bowel habit)
- Suspected drug-induced constipation
- Associated abdominal pain/vomiting

Treatment timescale

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

Management

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

Local anaesthetics (e.g. benzocaine, lidocaine (lignocaine))

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

Skin protectors

Many antihaemorrhoidal products are bland, soothing preparations containing skin protectors (e.g. *zinc oxide* and *kaolin*). These products have emollient and protective properties. Protection of the perianal

skin is important, because the presence of faecal matter can cause symptoms such as irritation and itching. Protecting agents form a barrier on the skin surface, helping to prevent irritation and loss of moisture from the skin.

Topical steroids

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

Astringents

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

Antiseptics

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

Counter-irritants

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

Shark liver oil/live yeast

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

Laxatives

The short-term use of a laxative to relieve constipation might be considered. A stimulant laxative (e.g. *senna*) could be supplied for 1 or 2 days to help deal with the immediate problem while dietary fibre and fluids are being increased. For patients who cannot or choose not to adapt their diet, bulk laxatives may be used long-term.

Practical points

Self-diagnosis

Patients may say that they have piles, or think they have piles, but careful questioning by the pharmacist is needed to check whether this self-diagnosis is correct. If there is any doubt, referral is the best course of action.

Hygiene

The itching of haemorrhoids can often be improved by good anal hygiene, since the presence of small amounts of faecal matter can cause itching. The perianal area should be washed with warm water as frequently as is practicable, ideally after each bowel movement. Soap will tend to dry the skin and could make itching worse, but a mild soap could be tried if the patient wishes to do so. Moist toilet tissues are available and these can be very useful where washing is not practical, e.g. at work during the daytime, and some patients prefer them. These tissues are better used with a patting rather than a rubbing motion, which might aggravate symptoms. Many people with haemorrhoids find that a warm bath soothes their discomfort.

An increased intake of dietary fibre will increase bowel output, so patients should be advised to take care in wiping the perianal area and to use soft toilet paper to avoid soreness after wiping.

How to use OTC products

Ointments and creams can be used for internal and external haemorrhoids and should be applied in the morning, at night and after each bowel movement. An applicator is included in packs of ointments and creams and patients should be advised to take care in its use, to avoid any further damage to the perianal skin.

Suppositories can be recommended for internal haemorrhoids. After removing the foil or plastic packaging (patients have been known to try and insert them with the packaging left on), a suppository should be inserted morning, night and after bowel movements. Insertion is easier if the patient is crouching or lying down.

Haemorrhoids in practice

Case 1

Tom Harris, a customer whom you know quite well, asks if you can recommend something for his usual problem. You ask him to tell you more about it: Mr Harris suffers from piles occasionally; you have dispensed prescriptions for Anusol HC and similar products in the past; and have previously advised him about dietary fibre and fluid intake. He has been away on holiday for 2 weeks and says he hasn't been eating the same foods he does when at home. His symptoms are itching and irritation of the perianal area but no pain and he has a small swelling, which hangs down from the anus after he has passed a motion, but which he is able to push back again. He is a little constipated, but he is not taking any medicines.

The pharmacist's view

Mr Harris has a previous history of haemorrhoids, which have been diagnosed and treated by his doctor. It is likely that his holiday and temporary change in diet have caused a recurrence of the problem, so that he now has a second-degree pile, and it would be reasonable to suggest symptomatic treatment for a few days. You could recommend the use of an ointment preparation containing *hydrocortisone* and skin protectors for up to 1 week, and remind Mr Harris that the area should be kept clean and dry. You might consider recommending a laxative to ease the constipation until Mr Harris's diet gets back to normal (you advise that he returns to his usual high-fibre diet); a small supply of a stimulant laxative (perhaps a stimulant/stool softener such as *docusate sodium*) would be reasonable. He should see his doctor after 1 week if the problem has not cleared up.

The doctor's view

The treatment suggested by the pharmacist should settle Mr Harris's symptoms within 1 week. The treatment is of course symptomatic and not curative. If he continues to suffer from frequent relapse, referral should be considered. His doctor could advise whether or not to refer him for injection or removal of the piles.

Case 2

Mr Briggs is a local shopkeeper in his late fifties who wants you to recommend something for his piles. He tells you that he has had them for quite a while – a couple of months. He has tried several different ointments and suppositories, all to no avail. The main problem now is bleeding, which has become worse. In fact he tells you, somewhat

embarrassed, that he has been buying sanitary towels because this is the only way he can prevent his clothes from becoming stained. He is not constipated and has no pain.

The pharmacist's view

Mr Briggs should be referred to his doctor at once. His symptoms have a history of 2 months and there must be quite profuse rectal bleeding, which may well be due to a more serious disease. He has already tried some OTC treatments, with no success. His age and the description of his symptoms mean that further investigation is needed.

The doctor's view

Mr Briggs should be advised to see his doctor. This is not a typical presentation of piles. He will need a more detailed assessment by his doctor who will need to look for a cancer of the colon or rectum. Piles can bleed at times other than when defecating but this is uncommon. The doctor would gather more information by questioning and from an examination. The examination would usually include a digital rectal assessment to determine whether or not a rectal tumour is present. It is quite likely that this man would require outpatient hospital referral for further investigations, which would involve sigmoidoscopy and barium enema.

Case 3

Caroline Andrews is a young woman in her mid-twenties, who works as a graphic designer in a local art studio. She asks your advice about an embarrassing problem: she is finding it very painful to pass motions. On questioning, she tells you she has had the problem for a few days and has been constipated for about 2 weeks. She eats a diet that sounds relatively low in fibre and has been eating less than usual because she has been very busy at work. Caroline says she seldom takes any exercise. She takes the contraceptive pill but is not taking any medicines and has no other symptoms such as rectal bleeding.

The pharmacist's view

Caroline would probably be best advised to see her doctor, since the symptoms and pain which she has described might be due to an anal fissure, though they may be caused by a haemorrhoid.

The doctor's view

A fissure would be the most likely cause of Caroline's problem. An examination by her doctor should quickly confirm this. Correction of the constipation and future preventative dietary advice could well

solve the problem. The discomfort could be helped by a local anaesthetic-containing cream or gel. If this is applied prior to a bowel action, the discomfort would be less. In severe cases that are not settling, referral to a specialist surgeon is necessary in order to release one of the muscles in spasm for rapid relief of pain. Topical nitrate (e.g. *glyceryl trinitrate* 0.2–0.3% *ointment*) is also now used by hospital specialists to treat anal fissure (unlicensed indication).