Resoiratory Disorders I

Colds and flu

The common cold comprises a mixture of viral upper respiratory tract infections (URTIs). Although colds are self-limiting, many people choose to buy over-the-counter (OTC) medicines for symptomatic relief. Some of the ingredients of OTC cold remedies may interact with prescribed therapy, occasionally with serious consequences. Therefore, careful attention needs to be given to taking a medication history and selecting an appropriate product.

Questions to be asked:

Age

Establishing who the patient is – child or adult – will influence the pharmacist's decision about the necessity of referral to the doctor and choice of treatment. Children are more susceptible to URTI than are adults.

Duration

Patients may describe a rapid onset of symptoms or a gradual onset over several hours; the former is said to be more commonly true of flu, the latter of the common cold. The symptoms of the common cold usually last for 7–14 days. Some symptoms, such as a cough, may persist after the worst of the cold is over.

Symptoms

Runny/blocked nose

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

Summer colds

In summer colds, the main symptoms are nasal congestion, sneezing and irritant watery eyes; these are more likely to be due to allergic rhinitis.

Sneezing/coughing

Sneezing occurs because the nasal passages are irritated and congested. A cough may be present either because the pharynx is irritated (producing a dry, tickly cough) or as a result of irritation of the bronchus caused by postnasal drip.

Aches and pains/headach

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

High temperature

Those suffering from a cold often complain of feeling hot, but in general a high temperature will not be present. The presence of fever may be an indication that the patient has flu rather than a cold.

Sore throat
The throat often feels dry and sore during a cold and may sometimes be the first sign that a cold is imminent.

Earache
Earache is a common complication of colds, especially in children. When nasal catarrh is present, the ear can feel blocked. This is due to blockage of the Eustachian tube, which is the tube connecting the middle ear to the back of the nasal cavity. Under normal circumstances the middle ear is an air-containing compartment. However, if the Eustachian tube is blocked, the ear can no longer be cleared by swallowing and may feel uncomfortable and deaf. This situation often resolves spontaneously, but decongestants and inhalations can be helpful. Sometimes the situation worsens when the middle ear fills up with fluid. This is an ideal site for a secondary infection to settle. When this does occur, the ear becomes acutely painful and is called acute otitis media (AOM). In summary, a painful ear can initially be managed by the pharmacist. There is evidence that both paracetamol and ibuprofen are effective treatments for acute otitis media (AOM). However, if pain were to persist or be associated with an unwell child (e.g. high fever, very restless or listless, vomiting), then referral to the GP would be advisable.

Facial pain/frontal headache
Facial pain or frontal headache may signify sinusitis. Sinuses are air-containing spaces in the bony structures adjacent to the nose (maxillary sinuses) and above the eyes (frontal sinuses). In a cold their lining surfaces become inflamed and swollen, producing catarrh. The secretions drain into the nasal cavity. If the drainage passage becomes blocked, fluid builds up in the sinus and can become secondarily (bacterially) infected. If this happens, persistent pain arises in the sinus areas. The maxillary sinuses are most commonly involved. When the frontal sinuses are infected, the sufferer may complain of a frontal (forehead) headache. The headache is typically worsened by lying down or bending forwards. A recent systematic review indicated only a small benefit from antibiotics even in sinusitis that had lasted for longer than seven days.

Flu
Differentiating between colds and flu may be needed to make a decision about whether referral is needed. Patients in 'at-risk' groups might be considered for antiviral treatment. Flu is generally considered to be likely if:
-temperature is 38◦ C or higher (37.5◦C in the elderly);
- one or more respiratory symptom – cough, sore throat, nasal congestion or rhinorrhoea – is present; or
- one or more constitutional symptom – headache, malaise, myalgia, sweats/chills, prostration – is present.
- Flu often starts abruptly with sweats and chills, muscular aches and pains in the limbs, a dry sore throat, cough and high temperature. Someone with flu may be bedbound and unable to go about usual activities. There is often a period of generalised weakness and malaise following the worst of the symptoms. A dry cough may persist for some time. Flu can be complicated by secondary lung infection (pneumonia).

Complications are much more likely to occur in the very young, the very old and those who have pre-existing heart disease, respiratory disease (asthma or chronic obstructive pulmonary disease (COPD)), kidney disease, a weak immune system or diabetes. Warning that complications are developing

may be given by a severe or productive cough, persisting high fever, pleuritic -type chest pain or delirium.

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

Previous history
People with a history of chronic bronchitis, also known as chronic obstructive airways disease (COPD) (defined as a chronic cough and/or mucus production for at least 3 months in at least two consecutive years when other causes of chronic cough have been excluded), may be advised to see their doctor if they have a bad cold or flulike infection, as it often causes an exacerbation of their bronchitis. In this situation the doctor is likely to increase the dose of inhaled anticholinergics and beta-2 agonists and prescribe a course of antibiotics. Certain medications are best avoided in those with heart disease, hypertension and diabetes.

Present medication
The pharmacist must ascertain any medicines being taken by the patient. It is important to remember that interactions might occur with some of the constituents of commonly used OTC medicines. If medication has already been tried for relief of cold symptoms with no improvement and if the remedies tried were appropriate and used for a sufficient amount of time, referral to the doctor might occasionally be needed. In most cases of colds and flu, however, OTC treatment will be appropriate.

When to refer
Earache not settling with analgesic
In the very young
In the very old
In those with heart or lung disease, e.g. COPD, kidney disease, diabetes, compromised immune system
With persisting fever and productive cough
With delirium
With pleuritic-type chest pain
Asthma

Treatment timescale
Once the pharmacist has recommended treatment, patients should be advised to see their doctor in 10–14 days if the cold has not improved.

Management
The use of OTC medicines in the treatment of colds and flu is widespread, and such products are heavily advertised to the public. The pharmacist's role is to select appropriate treatment based on the patient's symptoms and available evidence, and taking into account the patient's preferences.

Decongestants, Sympathomimetics
Sympathomimetics (e.g.pseudoephedrine) can be effective in reducing nasal congestion. Nasal decongestants work by constricting the dilated blood vessels in the nasal mucosa. The nasal membranes are effectively shrunk, so drainage of mucus and circulation of air are improved and the feeling of nasal

stuffiness is relieved. These medicines can be given orally or applied topically. Tablets and syrups are available, as are nasal sprays and drops.

Notes

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

Ephedrine and pseudoephedrine, when taken orally, have the theoretical potential to keep patients awake because of their stimulating effects on the central nervous system (CNS). In general, ephedrine is more likely to produce this effect than does pseudoephedrine.

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

Sympathomimetics are most likely to cause these unwanted effects when taken by mouth and are unlikely to do so when used topically. Nasal drops and sprays containing sympathomimetics can therefore be recommended for those patients in whom the oral drugs are less suitable.

The interaction between sympathomimetics and MAOIs is potentially extremely serious; a hypertensive crisis can be induced and several deaths have occurred in such cases. This interaction can occur up to 2 weeks after a patient has stopped taking the MAOI, avoid both oral and topical sympathomimetics.

Antihistamines

Antihistamines could theoretically reduce some of the symptoms of a cold: runny nose (rhinorrhoea) and sneezing. These effects are due to the anticholinergic action of antihistamines. The older drugs (e.g. chlorphenamine, promethazine) have more pronounced anticholinergic actions than do the non-sedating antihistamines (e.g. loratadine, cetirizine, acrivastine).

Antihistamines are not so effective at reducing nasal congestion. Some (e.g.diphenhydramine) may also be included in cold remedies for their supposed antitussive action or to help the patient to sleep (included in combination products intended to be taken at night).

Evidence indicates that anti-histamines alone are not of benefit in the common cold but that they may offer limited benefit for adults and children in combination with decongestants, analgesics and cough suppressants.

Zinc

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

Vitamin C

A systematic review found that high-dose vitamin C (over 1 g/day) taken prophylactically reduced the duration of colds by about 8%.

Cough remedies

Analgesics

Products for sore throats

Nasal sprays or drops?
Nasal sprays are preferable for adults and children over 6 years because the small droplets in the spray mist reach a large surface area. Drops are more easily swallowed, which increases the possibility of systemic effects.
For children under 6 years, drops are preferred because in young children the nostrils are not sufficiently wide to allow the effective use of sprays. Paediatric versions of nasal drops should be used where appropriate. Manufacturers of paediatric drops advise consultation with the doctor for children under 2 years.

Prevention of flu
Pharmacists should encourage those in at-risk groups to have an annual flu vaccination. In the UK, the health service now provides vaccinations to all patients over 65 years and those below that age who have chronic respiratory disease (including asthma), chronic heart disease, chronic renal failure, diabetes mellitus or immunosuppression due to disease or treatment.

Antivirals
The effectiveness of antivirals believed that they are likely to reduce the chance of developing complications, reduce the chance of dying and shorten the time taken to recover from an infection. It is possible that using antivirals for the non-infected members of a household when another member has the infection could reduce the spread of the pandemic. There is uncertainty as to how much resistance to antivirals could be present in a pandemic virus.
Three antiviral products are licensed for use: oseltamivir, zanamivir And amantadine. Only the oseltamivir and zanamivirneuraminidase inhibitors are recommended by the Department of Health and WHO for use in a pandemic. Amantadineis generally not recommended because of its lower efficacy, side-effects, and because rapid resistance can develop to its use.

Antibiotics
A serious complication of flu is the development of pneumonia and this can be either directly due to the flu virus or due to a secondary bacterial infection. In the case of a viral pneumonia, antibiotics are of no value although clinically it is difficult to tell the difference and antibiotics are usually given especially in a hospital setting with a severe illness.
Most uncomplicated infections in the community do not require antibiotics. They are now recommended for those at risk, such as people who have pre-existing Chronic Obstructive Pulmonary Disease (COPD), compromised immunity, diabetes, heart or lung disease. In these situations if there is no improvement within 48 h of starting antibiotics, then the person should be seen by the GP.

Cough

Coughing is a protective reflex action caused when the airway is being irritated or obstructed. Its purpose is to clear the airway so that breathing can continue normally. They will often be associated with other symptoms of a cold.

Significance of questions and answers
Age
Establishing who the patient is – child or adult – will influence the choice of treatment and whether

referral is necessary.

Duration

Most coughs are self-limiting and will be better within a few days with or without treatment. In general, a cough of longer than 2 weeks' duration that is not improving should be referred to the doctor for further investigation.

Nature of cough

-Unproductive (dry, tickly or tight)

In an unproductive cough, no sputum is produced. These coughs are usually caused by viral infection and are self-limiting.

-Productive (chesty, wet or loose)

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

Coloured sputum may sometimes indicate a bacterial chest infection such as bronchitis or pneumonia and require referral. In these situations the sputum is described as green, yellow or rust-coloured thick mucus and the patient is more unwell usually with a raised temperature, shivers and sweats. Sometimes blood may be present in the sputum (haemoptysis), with a colour ranging from pink to deep red.

Blood may be an indication of a relatively minor problem such as a burst capillary following a bout of violent coughing during an acute infection, but may be a warning of more serious problems. Haemoptysis is an indication for referral.

-Tuberculosis (TB)

Chronic cough with haemoptysis associated with chronic fever and night sweats are classical symptoms of TB.

-Croup (acute laryngotracheitis)

Croup usually occurs in infants. The cough has a harsh barking quality. It develops 1 day or so after the onset of cold-like symptoms. It is often associated with difficulty in breathing and an inspiratory stridor (noise in throat on breathing in). Referral is necessary.

-Whooping cough (pertussis)

Whooping cough starts with catarrhal symptoms-The whoop is the sound produced when breathing in after a paroxysm of coughing- The bouts of coughing prevent normal breathing and the whoop represents the desperate attempt to get a breath. Referral is necessary.

Associated symptoms

Cold, sore throat and catarrh may be associated with a cough. Often there may be a temperature and generalised muscular aches present. This would be in keeping with a viral infection and be self-limiting. Chest pain, shortness of breath or wheezing are all indications for referral

Previous history

Chronic bronchitis

Questioning may reveal a history of chronic bronchitis, which is being treated by the doctor with antibiotics.

Asthma

A recurrent night-time cough can indicate asthma, especially in children, and should be

referred. Asthma may sometimes present as a chronic cough without wheezing. A family history of eczema, hay fever and asthma is worth asking about.

Cardiovascular

Coughing can be a symptom of heart failure. If there is a history of heart disease, especially with a persisting cough, then referral is advisable.

Gastro-oesophageal

Gastro-oesophageal reflux can cause coughing. Sometimes such reflux is asymptomatic apart from coughing. Some patients are aware of acid coming up into their throat at night when they are in bed.

Smoking habit

Smoking will exacerbate a cough and can cause coughing since it is irritating to the lungs. One in three long-term smokers develop a chronic cough.

Present medication

It is always essential to establish which medicines are currently being taken. This includes those prescribed by a doctor and any bought OTC, borrowed from a friend or neighbour or rediscovered in the family medicine chest. It is important to remember the possibility of interactions with cough medicine. It is also useful to know which cough medicines have been tried already. The pharmacist may decide that an inappropriate preparation has been taken, e.g. a cough suppressant for a productive cough. If one or more appropriate remedies have been tried for an appropriate length of time without success, then referral is advisable.

Angiotensin-converting enzyme (ACE) inhibitors

Chronic coughing may occur in patients, particularly women, taking ACE inhibitors such as *enalapril*, *captopril*, *lisinopril* and *ramipril*.

When to refer

Cough lasting 2 weeks or more and not improving
Sputum (yellow, green, rusty or blood-stained)
Chest pain
Shortness of breath
Wheezing
Whooping cough or croup
Recurrent nocturnal cough
Suspected adverse drug reaction
Failed medication

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

Treatment timescale

Depending on the length of time the patient has had the cough and once the pharmacist has recommended an appropriate treatment, patients should see their doctor 2 weeks after the cough started if it has not improved.

Cough suppressants

Codeine/pholcodine

Pholcodine has several advantages over *codeine* in that it produces fewer side-effects (even at OTC doses *codeine* can cause constipation and, at high doses, respiratory depression) and *pholcodine* is less liable to be abused. Both *pholcodine* and *codeine* can induce drowsiness, although in practice this does not appear to be a problem. Nevertheless, it is sensible to give an appropriate warning. *Codeine* is well known as a drug of abuse and many pharmacists choose not to recommend it. Sales often have to be refused because of knowledge or likelihood of abuse. *Pholcodine* can be given at a dose of 5 mg to children over 2 years (5 mg of *pholcodine* is contained in 5 mL of *Pholcodine Linctus BP*). Adults may take doses of up to 15 mg three or four times daily. The drug has a long half-life and may be more appropriately given as a twice-daily dose.

Dextromethorphan

Dextromethorphan is less potent than *pholcodine* and *codeine*. It is generally non-sedating and has few side-effects. Occasionally, drowsiness had been reported but, as for *pholcodine*, this does not seem to be a problem in practice. *Dextromethorphan* can be given to children of 2 years and over. *Dextromethorphan* was generally thought to have a low potential for abuse. However, there have been rare reports of mania following abuse and consumption of very large quantities, and pharmacists should be aware of this possibility if regular purchases are made.

Demulcents

Preparations such as *glycerin*, *lemon* and *honey* or *Simple Linctus* are popular remedies and are useful for their soothing effect. They do not contain any active ingredient and are considered to be safe in children and pregnant women. They are now the treatment recommended for children under 2.

Expectorants

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

Guaifenesin (guaiphenesin)

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

Cough remedies: other constituents

Antihistamines

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

Sympathomimetics

Pseudoephedrine is used in cough and cold remedies for its bronchodilatory and decongestant actions. It has a stimulant effect that may theoretically lead to a sleepless night if taken close to bedtime. It may be useful if the patient has a blocked nose as well as a cough and an expectorant/decongestant combination can be useful in productive coughs. Sympathomimetics can cause raised blood pressure, stimulation of the heart and alterations in diabetic control.

Theophylline

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

Reference

Symptoms In The Pharmacy - 6thEdition - 2009