

Cough

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

## What you need to know

Age (approximate)

Baby, child, adult

Duration

Nature

Dry or productive

Associated symptoms

Cold, sore throat, fever

Sputum production

Chest pain

Shortness of breath

Wheeze

Previous history

COPD (chronic bronchitis, emphysema,

Asthma

Diabetes

Heart disease

Gastro-oesophageal reflux

Smoking habit

Present medication

# 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 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 perhaps with a raised temperature, shivers and sweats.
- Sometimes blood may be present in the sputum (haemoptysis)
- Haemoptysis is an indication for referral.

- Antibacterials/antibiotics are **not usually indicated** for previously healthy people with acute bronchitis.
- Most cases of acute bronchitis are caused by viral infections, so antibacterials will not help.
- Two systematic reviews of antibacterials for acute bronchitis found only slight benefit, possibly reducing the duration of illness by about half a day.



- *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 characteristic
- whoop is not present in the early stages of infection. The whoop is the
- sound produced when breathing in after a paroxysm of coughing. The
- bouts of coughing prevent normal breathing and the whoop represents
- the desperate attempt to get a breath. 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

- *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.

- *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.

# *Angiotensin-converting enzyme inhibitors*

- Chronic coughing may occur in patients, particularly women, taking angiotensin-converting enzyme (ACE) inhibitors such as *enalapril*, *captopril*, *lisinopril* and *ramipril*.
- Patients may develop the cough within days of starting treatment or after a period of a few weeks or even months. The exact incidence of the reaction is not known and estimates vary from 2% to 10% of patients taking ACE inhibitors.

- The cough may resolve or may persist; in some patients, the cough is so troublesome and distressing that ACE inhibitor therapy may have to be discontinued.
- Any patients in whom medication is suspected as the cause of a cough should be referred to their doctor.
- Angiotensin-2 receptor antagonists, which have similar properties to ACE inhibitors and which do not affect bradykinin, can be used as an alternative preparation if cough is a problem.

## When to refer

Cough lasting 2 weeks or more and not improving

Sputum (yellow, green, rusty or bloodstained)

Chest pain

Shortness of breath

Wheezing

Whooping cough or croup

Recurrent nocturnal cough

Suspected adverse drug reaction

Failed medication



# 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

# Management

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

- The choice of treatment depends on the type of cough.
- **Suppressants** (e.g. *pholcodine*) are used to treat unproductive coughs,
- while **expectorants** such as *guaifenesin* (*guaiphenesin*) are used in the treatment of productive coughs.
- **Demulcents** like *Simple Linctus* that soothe the throat are particularly useful in children and pregnant women as they contain no active ingredients.

- *Expectorants are claimed to promote expulsion of bronchial secretions, but there is no evidence that any drug can specifically facilitate expectoration.*
- *Suppressants: Where there is no identifiable cause (underlying disorder), cough suppressants may be useful; for example, if sleep is disturbed.*
- *Demulcents: Preparations such as Simple Linctus have the advantage of being harmless and inexpensive. Paediatric Simple Linctus is particularly useful in children.*

- **Linctuses** are viscous, liquid oral preparations that are usually prescribed for the relief of cough. They usually contain a high proportion of syrup and glycerol which have a **demulcent effect** on the membranes of the throat. The dose volume is usually small (5 ml). In order to prolong the demulcent action, they should be taken undiluted and should be labeled by
  - “ *to be swallowed slowly without the addition of water*”.

- *Compound preparations are on sale to the public for the treatment of cough and colds but should not be used in children under 6 years of age;*
- Productive coughs should not be treated with cough suppressants because pooling and retention of mucus in the lungs can result leading to a higher chance of infection, especially in chronic bronchitis.
- There is no logic in using expectorants (which promote coughing) and suppressants (which reduce coughing) together as they have opposing effects.

# 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.
- The MHRA/CHM advise that codeine-containing cough suppressants should not be used for children under 18.

# *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 6 years and over.*



# *Demulcents*

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

# Expectorants

- They act by stimulating bronchial mucus secretion, leading to increased liquefying of sputum, making it easier to cough up.
- *Guaifenesin is commonly found in cough remedies.*

# Cough remedies: other constituents

- *Antihistamines*
- *Theoretically, these reduce the frequency of coughing* and have a drying effect on secretions.
- 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 the combination can be given as a night-time dose if the cough is disturbing sleep.
- This is one of the rare occasions when a side effect proves useful.

- The non-sedating antihistamines are less effective in symptomatic treatment of coughs and colds because of their less pronounced anticholinergic actions.
- *Interactions:*
  - CNS depressants
  - Anticholinergics
  - Alcohol

# *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.
- Oral sympathomimetics should be **used with caution** in patients with the following.
  - Diabetes
  - Coronary heart disease (e.g. angina)
  - Hypertension
  - Hyperthyroidism

# *Theophylline*

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

# *Diabetes*

- In short-term acute conditions, the amount of sugar in cough medicines is relatively unimportant.
- Nevertheless, many diabetic patients may prefer a sugar-free product, as will many other customers who wish to reduce sugar intake for themselves and their children, and many such products are now available.



# *Steam inhalations*

- These can be useful, particularly in productive coughs.
- A systematic review found that there was **insufficient evidence** to judge whether there might be a benefit from this treatment.
- The steam helps to liquefy lung secretions and patients find the warm moist air **comforting**.

- While there is no evidence that the addition of medications to water produces a better clinical effect than steam alone, some may prefer to add a preparation such as *menthol* and *eucalyptus* or a proprietary inhalant.
- One teaspoonful of inhalant should be added to a pint of hot (not boiling) water and the steam inhaled.
- A cloth or towel can be put over the head to trap the steam.

# *Fluid intake*

- Maintaining a high fluid intake helps to hydrate the lungs, and **hot drinks** can have a soothing effect.
- General advice to patients with coughs and colds should be to increase fluid intake.