

# MIRACLE Academy

قال تعالى (يَرْفَعُ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ)

تفريغ OTC  
زميلتكم لجين أبو خرمة



لجان الدفوعات

# Cough

## **Non-Prescription Drugs and Parapharmaceuticals**

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# Cough

Physiological reflex to get rid of any substance presented in airway

Coughing is a protective reflex action caused when the airway is being irritated or obstructed.

Its purpose is to clear the airway so that breathing can continue normally.

The majority of coughs presenting in the pharmacy will be caused by a viral respiratory tract infection. They will often be associated with other symptoms of a cold.



induced either by infection like viral infection or other respiratory or non-respiratory disease

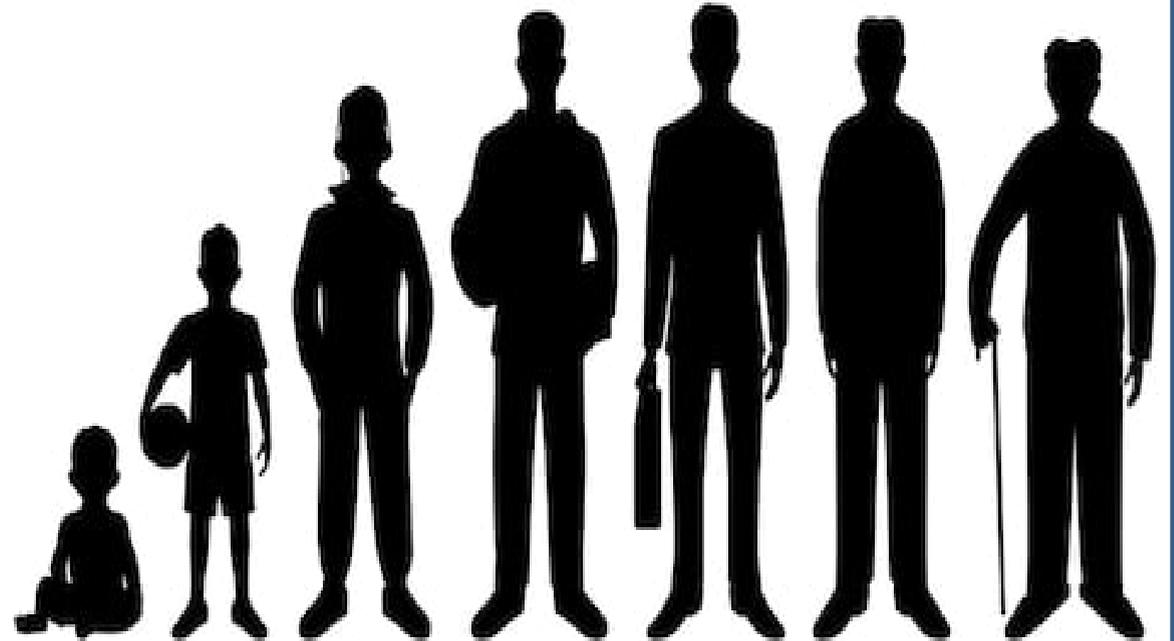
# Cough

**What you need to know**

# Cough

## Significance of questions and answers/ 1. 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.



# Cough

## Significance of questions and answers / 2. Duration ↗ acute ↘ chronic

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

*terminated without treatment*

Most coughs are self-limiting and will get better with or without treatment.

*but some cases take time*

Cough can often go on for 3 weeks or more after a bad cold but usually slowly subsides over this time

*في هذه الـ ٣ أسابيع تقدر القحة بسكن بطيء*

*من نجبى للطبيب العام؟*

**When to refer to GP:** → *General physician*

A cough of **longer than 2-3 weeks'** duration that has showed **no improvement, or is getting worse**. This is particularly so if accompanied by feelings of tiredness, malaise or fever.

+

*associated with other symptoms*

## Significance of questions and answers / 2. Duration and Etiology

- Cough is classified as:

1. **Acute** (duration **less than 3 weeks**), most commonly caused by:

1. Viral URTI (e.g., Common cold). → *Upper Respiratory Tract Infection.*

2. **Subacute** (duration of **3-8 weeks**), commonly caused by:

1. bacterial sinusitis

2. asthma → *chronic cough مرض مزمن الأزمات تآلف stage برضو حسب*

3. **Chronic** (duration of **longer than 8 weeks**), most

commonly caused by:

1. UACS (upper airway cough syndrome, also → *those patients have a feeling of mucus known as postnasal drip syndrome*) (*Hyper secretion*) that will block their Respiratory tract.

1. COPD

2. GERD.



# Cough

## Significance of questions and answers / 3. Nature of cough

### Unproductive (dry, tickly or tight)

*Named as that because ↴*

In an unproductive cough, no sputum is produced.

These coughs are usually caused by viral infection that temporarily damages and irritates the airway and are self-limiting.

It is associated with, atypical bacterial infections<sup>①</sup>, GERD<sup>②</sup>, cardiac disease<sup>③</sup>, and some medications<sup>④</sup> such as.....

*ex:- Heart failure*

*unless there is no fluid overload in lungs  
productive cough ————— ↴*

*ACEIs*

# Cough

## Significance of questions and answers / 3. Nature of cough

### Productive (chesty or loose)

Sputum is normally produced by the body and it is an oversecretion that leads to coughing.

Oversecretion may be caused by irritation of the airways due to infection, allergy, etc., when the cilia are not working properly (e.g. in smokers).

Non-colored (clear or whitish) sputum is uninfected.

*Common in upper respiratory tract infection like common cold*

Green sputum is common in asthma and is thought to be due to eosinophils.

Chronic cough with haemoptysis associated with chronic fever and night sweats is a classical symptom of Tuberculosis

# Cough

## ① Medical History

### Significance of questions and answers / 4. Previous History

COPD	Asthma	Cardiovascular	Gastro-oesophageal Reflux
<p>Questioning may reveal a <u>history of COPD</u>, which is being treated by the doctor with antibiotics.</p> <p>In this situation, <u>further symptom relief</u> may be possible with an <u>appropriate cough medicine</u>. ✓</p>	<p>A <u>recurrent night-time cough</u> can indicate asthma, especially <u>in children</u>, and should be <u>referred</u>.</p> <p>Asthma <u>may sometimes present</u> as a <u>chronic cough without wheezing</u>.  <i>ممکن تكون الأزمة بس قحة بدون صوت صفير / حشيشة</i></p> <p>A <u>family history</u> of <u>eczema</u>, <u>hay fever</u> and <u>asthma</u> is worth <u>asking about</u>.</p> <p><u>Patients with such a family history</u> appear to be <u>more prone to extended episodes of coughing</u> following a simple respiratory tract infection. #</p>	<p>Coughing can be a <u>symptom of heart failure</u>.</p> <p>If there is a <u>history of heart disease</u>, especially with a <u>persisting cough</u>, <u>then referral is advisable</u>.</p> <p><i>uncontrolled HTN</i></p>	<p>can cause coughing. Sometimes such reflux is <u>asymptomatic apart from coughing</u>.  <i>ممکن الارتجاع يكون بدون أعراض إلا القحة</i></p> <p>Some patients are aware of acid coming up into their <u>throat at night</u> when they are in bed.  <i>فبما عدوك بالتشخيص</i></p> <p>It may also be suggested by <u>cough that is worse</u></p> <ul style="list-style-type: none"> <li>→ <u>during or after eating</u>,</li> <li>→ <u>with talking</u> and with</li> <li>→ <u>bending</u>.</li> </ul> <p><i>فبما له بأي حالة أو أشي بتعمله  بجس السعلة صارت أسود؟</i></p>

# Cough

## Significance of questions and answers / 4. Previous History

② **Smoking Habit** Depression of cilia action lead to accumulation of mucous in respiratory tract

Smoking will exacerbate a cough and can cause coughing since it is irritating to the lungs.

The cough is usually worse in the mornings.

شو دور الصبرلانتي؟  
سوطبيةة القية مع التدخين؟

If coughing is recurrent and persistent, the pharmacist is in a good position to offer health education advice about the benefits of stopping smoking, suggesting nicotine replacement therapy when appropriate.

However, on stopping, the cough may initially become worse as the cleaning action of the cilia is re-established during the first few days, and it is worth mentioning this.

طبعًا هم مش حاسين  
Smokers may assume their cough is harmless, and it is always important to mention that smoking is a serious cause of COPD and lung cancer.

high risk for

# Cough

## Significance of questions and answers / 5. Present Medications

### This includes:

- Those prescribed by a doctor
- Any bought OTC
- Borrowed from a friend or neighbor *سمع من صديقه أو جاره عن دواء واستقار منه*
- Any herbal remedies.

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, for example, a cough suppressant for a productive cough. *المرضى ماخذ دواء مش لحاله مثل*
- If one or more remedies have been tried for an appropriate length of time without success, then **referral** may be advisable.

# Cough

## Significance of questions and answers / 5. Present Medications

Angiotensin-Converting Enzyme (ACE) Inhibitors *suffix :- pril*

Examples: *enalapril, captopril, lisinopril and ramipril.*

Chronic coughing may occur in patients taking ACE-I.

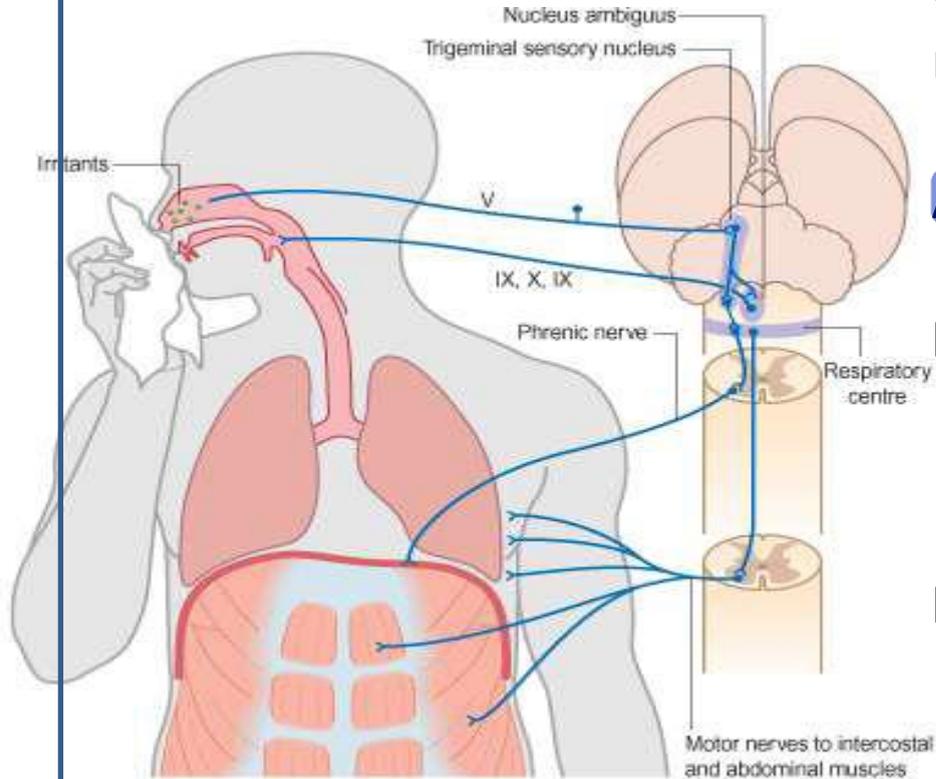
Patients may develop the cough within days of starting treatment or after a period of a few weeks or even months.

Typically, the cough is irritating, non-productive and persistent.

The cough may resolve or may persist; in some patients, the cough is so troublesome and distressing that ACE inhibitor therapy may have to be discontinued.

Any patients in whom medication is suspected as the cause of a cough, should be referred to the prescriber. *له بس أنا بجكياه ارجع للطيب بدون ما أحكيه من رواد الهنط لانهممكن المريننا يوقفه على كيفه*

# Mechanism of Cough



**Stimulation of mechano-or chemoreceptors** *in airway*  
(throat, respiratory passages or stretch  
receptors in lungs)



**Afferent impulses to cough centre (medulla)**



**Efferent impulses via parasympathetic & motor**  
(nerves to diaphragm, intercostal muscles & lung)



**Increased <sup>↑</sup>contraction of diaphragmatic, abdominal &  
intercostal (ribs) muscles**

فلما تسعل يتخس بحركة  
عضلات صدك والجاب الحاجز



**Cough**

## Goals of treatment

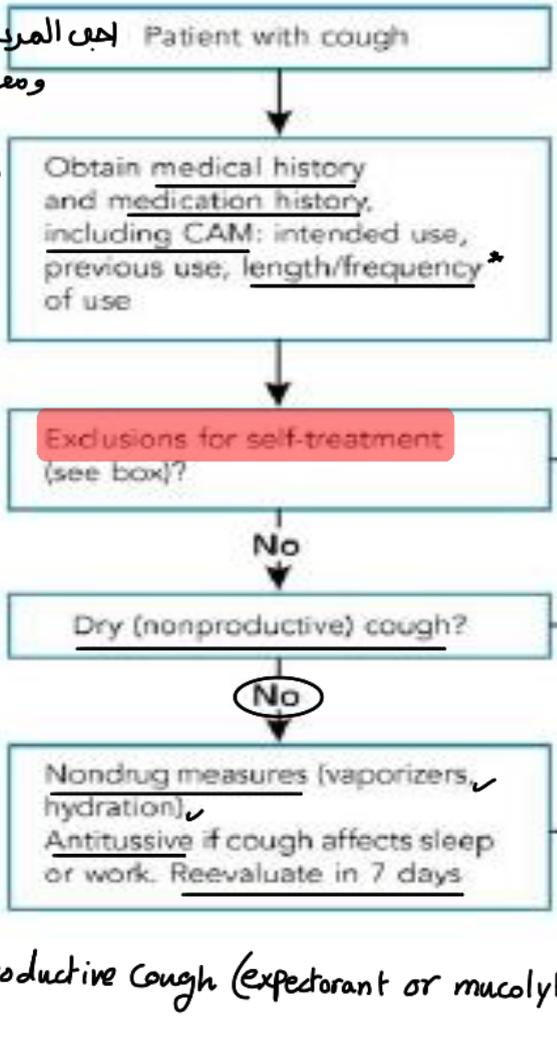
- Reduce the <sup>①</sup> number and severity of cough episodes.
- Prevent <sup>②</sup> complications.
- The <sup>③</sup> underlying disorder must be treated to stop the cause of cough

# Self care of cough

B-symptoms :- Fever, weight loss, sweat at night to detect a disease Prognosis  
 عرقلة بجير سرطانات دم مثل lymphoma, leukemia

اجب المريض كالتالي  
 ووقت قية

باخدمه  
 history



Need further investigation  
 x-ray, test to describe  
 appropriate antibiotic.

### Exclusions for Self-Treatment

- ① Cough with thick yellow sputum or green phlegm *indicate infection*
- ② Fever >101.5°F (38.6°C)
- ③ Unintended weight loss
- ④ Drenching nighttime sweats
- ⑤ Hemoptysis
- ⑥ History or symptoms of chronic underlying disease associated with cough (e.g., asthma, COPD, chronic bronchitis, CHF) *Congestive heart failure*
- ⑦ Foreign object aspiration
- ⑧ Suspected drug-associated cough
- ⑨ Cough for >7 days
- ⑩ Cough that worsens during self-treatment
- ⑪ Development of new symptoms during self-treatment

ACEI مثل

IP Productive Cough (expectorant or mucolytic)

## Non-pharmacological treatment

1. Using non-medicated lozenges to reduce throat irritation.
2. Hydration
3. Humidification using humidifiers(ultrasonic, evaporative) to increase the amount of moisture in inspired air , thus soothe irritated air
4. Treat the underlying cause of cough.

Xsmoking

Xcats



## Practical Points

❑ **Steam inhalations** especially for older, Not accepted for children

These can be useful, although a systematic review found insufficient evidence to judge whether there might be a benefit.

The steam helps to liquefy lung secretions and patients find the warm moist air comforting.

Some may prefer to add a preparation such as *menthol* and *eucalyptus* inhalant.

One teaspoonful of inhalant should be added to a pint of hot (not boiling) water and the steam inhaled. A towel can be put over the head to trap the steam.



بِسْتَنَدِمِ مَسْتَفِدَاتِ



## Practical Points

### ☐ Fluid Intake

Maintaining a good fluid intake helps to hydrate the lungs, and hot drinks can have a soothing effect.

For children a warm drink of honey and lemon can also be soothing.

General advice to patients with coughs and colds should be to increase fluid intake.



# Cough

## Management

The BNF gives the following guidance:

Suppressants	Demulcent cough preparations	Expectorants
<p>Used to treat unproductive coughs.</p> <p>When there is no identifiable cause, cough suppressants may be useful, for example, <u>if sleep is disturbed.</u></p> <p><i>Not suitable in case mucous over production</i> <u>They may cause sputum retention</u> and this may be harmful in patients with chronic bronchitis</p> <p><i>Leading to blocking &amp; exacerbate condition</i></p>	<p>contain soothing substances such as syrup or glycerol.</p> <p><i>↳ linctus syrup</i></p> <p>Some patients believe that such preparations relieve a dry irritating cough.</p> <p>Preparations such as <u>simple linctus</u> have the advantage of being <u>harmless and inexpensive</u>; <i>act locally</i></p> <p>Paediatric simple linctus is particularly useful in children.</p> <p><i>↳ because it is a highly sugar containing solution</i></p>	<p>Used in the treatment of productive coughs.</p> <p>Claimed to <u>promote expulsion of bronchial secretions,</u></p>

**There is no logic in using expectorants (which promote coughing) and suppressants (which reduce coughing) together as they have opposing effects.**

*It is wrong to treat dry cough with expectorant / also wrong to treat productive cough with cough suppressant*

# Treatment of cough

## Systemic antitussives

- Nonprescription systemic antitussives approved by the FDA include:
  1. Codeine
  2. Dextromethorphan
  3. Diphenhydramine

→ Present in the past to treat cough → unlike other opioid minimal cross BBB & no chance to cause

## Antitussives drugs: Codeine

euphoria +  
dependence

- Codeine is the cold standard antitussive indicated for the suppression of **nonproductive** cough caused chemical or mechanical respiratory tract irritation.
- OTC codeine-containing antitussive **must no more than 200 mg of codeine per 100 ml**.
- Hydrocodone and hydromorphone have similar efficacy but they are associated with a greater risk of dependency and are available only by prescription.
- Codeine **acts centrally on the medulla** to increase the cough threshold.

↓  
as a cough suppressant

# Antitussives drugs: Codeine

- Not recommended for children less than 2 years.
- Available as oral solution and syrups.
- Lethal dose in adults is 0.5 to 1 gm.
- Usual antitussive dose have low toxicity and little risk of addiction. *لعمارة اذا حاول ينسحر ويسرب علبتين - ٣ علب مرة واحدة*
- Concomitant use of codeine and CNS depressants (e.g., sedatives and alcohol) cause additive CNS depression.
- *\* Avoid in* Patients with asthma or COPD, addicts, and those who take other respiratory depressants or sedatives, should use codeine with caution.



## Antitussives drugs: **Dextromethorphan** الأشهر

- Considered approximately equipotent with codeine, dextromethorphan is a opioid with no analgesic, sedative, respiratory depressant, or addictive properties at usual antitussive doses.
- Most popular cough suppressant
- *Dextromethorphan* can be given to children of age 6 years and over. صموغ
- Low potential for misuse. **However**, there have been rare reports of mania following misuse and consumption of very large quantities, and pharmacists should be aware of this possibility if regular purchases are made. فلازم ننتبه لو اجي هاترينا كل يوم اديومين

## antidepressant drugs

Avoid →

\* Selective serotonin reuptake inhibitors ← وزيه

The combination of monoamine oxidase inhibitors (MAOIs) and dextromethorphan may cause serotonergic syndrome (e.g., increased blood pressure, hyperpyrexia, arrhythmias, and myoclonus).

\* Dextromethorphan should not be taken for at least 14 days after the MAOI is discontinued.

يعني بوقف دواء الإكتئاب و بستني عالأقل أسبوعين  
و بعضا بياخذ Dexamethorphane



# Treatment of cough

## Diphenhydramine

- Diphenhydramine, a first-generation antihistamine with significant sedating and anticholinergic properties, acts centrally in the medulla to increase the cough threshold.
- Second-generation antihistamines (e.g., loratadine) lack antitussive activity. هل يقدر استنبه ؟ 2nd generation
- Diphenhydramine potentiates the depressant effects of narcotics, sedatives, and alcohol on the CNS.

▷ Found in Panadol night because of its powerful sedative effect

# Treatment of cough: Demulcents

*Lozenges*

Examples: *glycerine, lemon and honey* or *simple linctus*.

*Local*

Popular remedies and are useful for their soothing effect.

They do not contain any active ingredient and are considered to be safe in children and pregnant women. ✓

They are now the treatment recommended for children under 6 years old. ✓



## Protussives (Expectorants)

- Guaifenesin, the only FDA-approved expectorant, is indicated for the symptomatic relief of productive cough.
- Guaifenesin is thought to act as an expectorant by increasing the volume and reducing the viscosity of secretions in the trachea and bronchi.
- Guaifenesin is marketed as oral liquids, syrups, caplets.
- ***Guaifenesin*** Commonly found in cough remedies. In adults, the dose required to produce expectoration is **100–200 mg**.



# Treatment of cough: **Topical Antitussives**

- **Camphor and menthol** are the only FDA-approved topical antitussives.

*either as lozenges or vapors*

- Camphor and menthol vapors stimulate sensory nerve endings in the nose , creating local anesthetic sensation and sense of improved airflow. *لما يكون أنفك مسكروشمه رح يفتح لسبب رائحته القوية*

