Respiratory Tract Conditions

1-Cough

Cough is a reflex action to remove secretions or foreign material from the airways.
The **majority** of coughs presenting in the pharmacy will be caused by a **viral** upper respiratory tract infections (URTIs).
Types of cough according to nature:

1- Productive(wet or chesty); here ask about the color
2- Non-productive (dry or tight).

Types of cough according to duration:

1- Acute; which lasts < 3wks, mostly due to URT infection
2- Sub acute; between 3-8wks, which occurs after infection due to bronchial hyper-responsiveness
3- Chronic; which lasts > 8wks

1-Duration

Most coughs are self-limiting and will be better within a few days with or without treatment.
In general cough of **longer than 2 weeks** duration should be referred to the Dr. for further investigations .

2-Nature of cough: Whether the cough is:
A-Dry or:
B-Wet (i.e. there is sputum): and if it is wet ⟶ then we ask about the **color** of the sputum:
Non-colored (clear or whitish)⟶ no infection and we can recommend OTC products [1].
Colored sputum (green, yellow, or rusty) and sometimes contain blood (**hemoptysis**) ⟶ all these may indicate **chest infections** and require referral

3- Associated Symptoms:

A-Fever, night sweats, weight loss, and haemoptysis: may indicate TB **(tuberculosis)** referral for further investigations.

B-A recurrent night-time cough especially in children with or without wheezing may indicates **Asthma**⟶ referral for further investigations.
(Especially if there is a family history of eczema, asthma, hay fever …)
Night cough in children: fairly **common in association with a cold** but in the absence of cold symptoms could indicate asthma . (Symptom of cold include: sore throat, Runny / congested (or blocked) nose…).

C-Cough with frothy sputum, breathlessness (especially in bed during the night) may indicate **heart failure** ⟶ referral for further investigation.
(Note: other symptom of heart failure may be swollen ankles).
(if there is a history of heart disease especially with a persisting cough, then referral is advisable

D-Postnasal Drip:

It is a common cause of coughing and may be due to **sinusitis** ⟶ referral for further investigations. (Postnasal Drip is characterized by a nasal discharge that flows behind the nose and into the throat . Patient present with swallowing mucus or frequent clearing of the throat more than usual).

E-Chest pain, shortness of breath (SOB), wheezing, whooping ⟶ referral for further investigations

F-Croup:
Croup usually occurs in infants, the cough is harsh, barking and paroxysmal and the child often has difficulties in breathing and stridor (noisy inspiration)
referral for further investigations.
(Note: Croup usually develops a day or so after the onset of cold-like symptoms)

G-Coughing during the recumbent (supine, lying down), with heartburn may indicate **Gastro esophageal reflux disease (GERD)** which may be improved by antacid or histamine-2 receptor antagonists (H2RA)

H-Smoking: if cough is related to smoking, refer the patient to primary care provider; such cough should not be self-treated with cough suppressant and/or expectorant.

4-Drug-induced cough:

Angiotensin-converting enzyme (ACE) inhibitors (e.g. Lisinopril, Enalapril …) can induce cough in about 10% of patients (especially women), the cough is usually nonproductive, occurs within the first few months of therapy refer and suggest the alternative: Angiotensin –II receptor antagonists (valsartan, losartan…) .

Management:

- Non-pharmacological treatment:

Increase warm water intake (>2L/d), lozenges, steam inhalation (eucalyptus and menthol). All such managements have soothing effect and help to liquefy secretion and comfortable effect

- Pharmacological treatment:

A- Expectorant: no. of active ingredients formulated to help expectoration, include:

1. Guaifenesine, which stimulate secretion or RT fluid, increasing sputum volume and decreasing viscosity so assisting in sputum removal. It presents in syrup preparations and tab.

Adults	6 -12 years	1-6 years
200 mg four times daily	100 mg four times daily	50 mg four times daily

S.E: rarely N&V, headache
C.I: hypersensitivity to drug
Caution: not use for conditions characterized by excessive mucous production as OTC.
DF: tab, syrup and as combination with other products, ex??

2. Ammonium salts: Ammonium chloride is used as an expectorant in cough medicine. Its expectorant action is caused by irritative action on the bronchial mucosa. This causes the production of excess respiratory tract fluid, which presumably is easier to cough up. Ammonium salts are an irritant to the gastric mucosa and may induce nausea and vomiting.
DF: as combination with other products in syrup, ex??

- Mucolytic agent: use for productive cough and chesty cough, for ex: bromhexine (amp, tab, syr) and carbocysteine. It is secretolytic, sputum thinner and less viscous. This contributes to a secretomotoric effect by helping the cilia transport the sputum out of the lungs. For this reason it is often added to cough syrups.

Dose of bromhexine: 8-16 mg 3-4 times daily

S.E: headache, dizziness, skin rash

Caution: pt. with hx of peptic ulcer and it is C.I in active peptic ulcer

DF: tab, syrup, amp

B- Anti-tussive: which used for non-productive cough, esp. when disturb sleep, breathing.

*Codeine: is opioid analgesia, used as anti-tussive in low doses 10-20 mg 3-4 times daily (adult) and 5-12yrs half adult dose.

S.E: N&V, constipation, drowsiness, dyspnea and addiction

C.I: hypersensitivity, pregnancy for prolonged use or high dose at term.

DF: tab and combination with analgesic, why?

* Dextromethorphan: (sedilar)® presents as tab, syr, drop. Centrally acting anti-tussive without classical analgesic & little sedative effect. It is less addiction effect than codeine

S.E: N&V, dizziness, GIT disturbance, respiratory depression after overdose.

Dose: 30 mg each 6-8 hrs. for adult. Children take half adult dose.

Pediatric dose given in drops (15mg/ml)

1-3 months	0.5-1 mg tid	about 1 drop tid
3-6 months	1-2 mg tid	about 2 drops tid
7months-1yr	2-4 mg tid	about 3 drops tid

*Bumatirate citrate (Sinecode)® presents as syr & drop

anti-tussive, has central action. Usual dose up to 30 mg daily in 3-4 divided doses. It can cause nausea, rash, diarrhea but rarely reported.

C.I: hypersensitivity, not recommended in 1st trimester of pregnancy.

Anti-histamine: its action is through anti-cholinergic like drying action on the mucous membrane, also relief of cough and cold symptoms. Sedating anti-H1 like diphenhydramine and promethazine are used.

S.E: drowsiness, dry mouth, constipation, urinary retention, blurred vision.

C.I: glaucoma, BPH

Additional preparation:

 Sympathomimetics: it is useful for decongestant and bronchodilator action, help when cough ass. with blocked nose.

S.E: increase B.P, stimulate heart & change glucose control in DM.

Caution: DM, H.T, hyperthyroidism

Interaction: MAO-I, B-B, TCA

 Herbal cough products (Zecuf, Melerozum).

Theophylline: which is one of the bronchodilators, and it is available in some OTC products but it is best **avoided** because patients requiring medication to help with shortness of breath (SOB) or wheeze are best referred [(4)]. And because of the problems associated with theophylline, and the availability of wide range of safer alternative treatment [(5)].

Common Cold:

Is a mixture of URT viral infection, self-limited but symptomatic treatment is required. Transmitted primarily by direct contact with the pt. or through air droplets. Caused by rhinovirus (common) or adenovirus.

Pt. assessment:

1. Age: need for treatment choice. Very young and very old need referral.
2. Onset: abrupt---→ flu, gradually--→common cold
3. Symptoms: typically worse in 2nd & 3rd day, lasting 7 days and may reach 2wks……
   - sore throat:1st symptom in common cold
   - rhinorrhea, blocked nose due to congestion
   - sneezing, cough due to irritation and post-nasal drip
   - ache & pain : frontal headache, which differentiate from sinus headache,…?
   - Low grade fever
   - Earache, why? If very painful here need referral.
4. Previous history: asthmatic attack, lung disease & COPD triggered by viral infection.
5. Medical history: if the pt. takes immunosuppressive agents---→refer.

Common cold should differentiate from flu, for proper treatment.

Flu ccc. By sudden onset, high-grade fever, general malaise & body ache, sweating. Disability presents in flu and the pt. need bed rest.

Management:

. Non-pharmacological

. Pharmacological:

1. Anti-H1: if used alone not give the desired benefit

2. Sympathomimetics: relief congestion by constricted dilated blood vessels and swollen nasal mucosa, thus helping breathing.

a. Systemic: phenylephrine, pseudoephedrine, (phenylpropanolamine" withdrew because hemorrhagic stock"). These agents present in no. of cold remedies, they alter B.P control, glycemic control. Insomnia & restlessness can occur after their administration, so advice the pt. …….

b. Nasal: safest in administration, for children >2yrs, pregnant after 1st trimester, co-exist heart disease, DM, hypertension and hyperthyroidism, but still interact with MAO-I(phenelzine, isocarboxazid, moclobemide). Should be used for 7 days only because…

Ephedrine and phenylephrine are short acting, need to be administered 3-4 times/d, while oxymetazoline and xylometazoline are longer duration.

Dose: S.E: C.I: DI ?

H.W: what are the cough and cold preparations used commonly in the community pharmacy? (Trade names, dosageform, contents, indication and contraindication)