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Management of Cough in Office Practice

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Management of Cough in Office Practice

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Preamble

- ☑ It is vital to confirm with the parents what they mean by cough. This is because parents often misinterpret noisy breathing, mucus spit out or a vibratory feel on the chest as “cold and cough.”
- ☑ As we all know, a cough is a sound produced by an attempt to expel an irritant during a forceful exhalation, while the term “cold” is used to refer to a nasal discharge or a blocked nose.
- ☑ Cough can be dry or wet—at times, what sounds like a dry cough but is associated with a noisy chest could be a wet cough.
- ☑ Cough can be a symptom of primary respiratory disease or it can be secondary to cardiac, upper gastrointestinal, or neurological disease; occasionally, it may also be a habit disorder.

Actual cough in early infancy is uncommon, so if an infant is coughing significantly, one must proactively rule out serious illnesses such as congenital heart disease, aspiration secondary to congenital malformations or gastroesophageal reflux, and cystic fibrosis.

Always ask following questions given in **Table 1**.

TABLE 1: Questions to be asked for clinical approach.		
Question		Interpretation
Is cough a predominant symptom?		If yes, it suggests an airway disease
If yes, is it dry or wet?		Upper airway—dry; lower airway—wet
Is there a past history of recurrent cough?		Suggests reactive airway disease
Is there a personal or family history of atopy?		Supports a diagnosis of atopic disease
Is the cough worse at night?	Soon after lying down	Postnasal drip
	Later in the night/early morning	Supports reactive airway disease
Onset	Sudden	Inhaled foreign body
	Over a few hours	Reactive airway disease
Progress	Recurrent episodic	Asthma
	Progressively worsening	Pertussis, mediastinal mass compressing airway
Sequence of appearance and disappearance of symptoms	High fever followed by cold and cough	Viral infection
	Cold and cough for 1–2 days followed by high fever	Prodrome followed by viral infection
	Cold and cough followed by mild fever	Reactive airway disease
	Cough subsiding soon after fever subsides	Viral infection
	Cough taking 5–7 days to subside after fever subsides	Viral infection on a background of reactive airway disease
Other symptoms—cold, fever, chest pain, breathlessness, palpitation, vomiting, and swallowing dysfunction		As per the symptom complex

If cough is a predominant symptom, the common possibilities are:

- Viral infection:** This also has a prominent fever with cold, cough can be throughout the day and night, often history of (h/o) contact. A hoarse loud cough suggests laryngeal involvement (almost always viral infection—croup); a dry hacking cough with throat irritation (maybe with a postnasal drip) suggests viral pharyngitis and a similar cough with painful swallowing (with submandibular lymphadenitis) denotes bacterial infection. A wet cough more than tachypnea suggests proximal lower airway involvement—bronchitis which is commonly viral, often allergic and at times bacterial. Tachypnea more than wet cough suggests distal lower airway involvement, i.e., bronchiolitis. It must be noted that infants with classical viral bronchiolitis have minimal or no cough.

- ☑ **Reactive airway disease:** No fever or mild fever later in the course of the illness, cough more in late night/early morning, may have associated cold/breathlessness, past h/o recurrent cough, well between episodes, personal or family h/o atopy.
- ☑ **Adenoid hypertrophy with secondary bacterial infection:** High fever with a blocked nose, maybe snoring and mouth breathing at night, past h/o recurrent cough as well as cold (blocked nose), maybe h/o ear infections. A persistent thick nasal discharge may suggest *sinusitis*.
- ☑ **Tuberculosis:** Persistent cough for 2 weeks or more, with or without fever and/or weight loss merits screening for tuberculosis.
- ☑ **Foreign body:** Usually in the toddler age group—the sudden onset of cough often needs to be fished out/probed by leading questions and is crucial to the diagnosis.
- ☑ *When another symptom predominates (more prominent than the cough),* these illnesses present differently to the clinician. The anatomical localization of such illnesses can be guided by the following features as given in **Table 2**.

TABLE 2: Anatomical localization related to cough.

Anatomical localization	Airways	Lung parenchyma	Pleura	Interstitium	Heart
<i>Symptoms/signs</i>					
Cough	+++	+	+/-	+/-	++
Fever	+/-	++	++	+/-	-
Breathlessness	+/-	++	++	+	+/-
Chest pain	-	+/-	++	-	-
Distribution of signs	Generalized	Localized	Localized	Generalized	Generalized/ Localized
Audible sound	Stridor/wheeze	Grunt	-	-	-
Retractions	Suprasternal/ subcostal	Intercostal	-	-	Intercostal/ subcostal

Chronic Cough

- ☑ When cough persists for >3 weeks, it is arbitrarily classified as a chronic cough. Basically, our thought process changes because most of the acute diseases presenting with a significant cough often settle down within a week.
- ☑ Tuberculosis should always be considered in case of chronic cough.
- ☑ Reactive airway disease (asthma), aspiration due to congenital malformations, undiagnosed foreign body, and cystic fibrosis can all present as chronic/recurrent cough.
- ☑ *Habit cough* is diagnosed when the child has a loud honking dry cough, which is almost incessant at times, but is strikingly totally absent in sleep and during play. It is a cough of “convenience.”

- ☑ *Complete blood count*: Limited utility in diagnosis; eosinophilia may support a diagnosis of atopic airway disease but is not specific and its absence does not rule out the diagnosis.
- ☑ *Chest X-ray*: More often than not, it is either normal or demonstrates nonspecific findings like prominent bronchovascular markings or ill-defined haziness which do not point to a particular diagnosis. However, in the case of chronic cough, a chest X-ray may suggest tuberculosis, a mediastinal mass pressing on a bronchus, or signs of a retained foreign body.
- ☑ A tuberculin test should no longer be used to diagnose tuberculosis.
- ☑ *Computed tomography (CT) scan* is rarely necessary in routine office practice and is reserved for suspected uncommon conditions presenting with cough.
- ☑ *Spirometry*: Though ideal to confirm the diagnosis of asthma, it needs the child's cooperation and the technician's patience, and is hence, difficult to implement in all suspected cases. In routine practice, asthma is a clinical diagnosis.

Cough is a symptom and not a disease. Curative treatment in the form of antibiotics is possible only in case of infections such as bacterial pharyngitis, complicated cold (sinusitis, otitis), and pneumonia as well as tuberculosis. However, the majority of diseases presenting with cough need only symptomatic and supportive therapy. There is no role for haphazard over the counter (OTC) cough medicines.

For supportive management of acute cough, the following categories of drugs are available.

Nonprescription oral *OTC medicines* for cough have different modes of action based on their active ingredients as follows.

- ☑ *Antitussives*, e.g., centrally acting nonopioid derivatives (dextromethorphan) or other peripherally active agents (levodropropizine) act by reducing the cough reflex.
- ☑ *Expectorants*, i.e., drugs leading to increased bronchial mucus production, make secretions easier to remove by cough or ciliary transport (guaifenesin).
- ☑ *Mucolytics*, i.e., drugs aiming to decrease the viscosity of bronchial secretions, act to make secretions easier to clear through coughing (bromhexine/ambroxol).
- ☑ *Antihistamine-decongestant combinations*, i.e., drugs that are combined antihistamine H1-receptor antagonists and alpha-adrenoceptor agonists, act by causing vasoconstriction of mucosal blood vessels thus reducing congestion.
- ☑ *Antihistamines*, i.e., antihistamine H1-receptor agonists, act by reducing histamine release and thus reducing local congestion and production of secretions. (chlorpheniramine maleate, promethazine, diphenhydramine).
- ☑ *Other drug combinations*, i.e., fixed drug combinations using different ingredients, have mechanisms of action based on individual ingredients—mostly highly irrational combinations.
- ☑ *Demulcents*—Demulcents form a coating and soothe the inflamed pharyngeal mucosa, thereby reducing the frequency and strength of the afferent impulses transmitted to the cough center—honey.

- ☑ *Over the counter antitussive medications* are no more effective than placebo for reducing cough from viral upper respiratory infections in children (SOR: A, systematic review of randomized controlled trials). OTC antitussives should not be used in children under 6 years old because of lack of demonstrated efficacy and potential adverse effects (SOR: C, expert opinion).
- ☑ *Honey* moderately improves cough frequency and severity in pediatric outpatients treated for nocturnal cough compared with placebo (SOR: B, systematic review of heterogeneous randomized controlled trials). *The peripheral antitussive levodropropizine* improved elimination of cough compared with antibiotics at day 6 of presumed viral illness, however, this is unavailable in the United States (SOR: C, cohort study).
- ☑ *Bronchodilators* (salbutamol and levosalbutamol) only useful in case of wheeze associated cough like bronchiolitis, WALRI, or asthma. *Inhaled drugs are preferred.*
- ☑ As evidence-based medicine does not support cough syrups but its availability and rampant prescriptions in the real world, we pediatricians can take a middle path by prescribing antitussives like dextromethorphan above 4 years of age as a single night time dose (0.5 mg/kg) or levodropropizine 1–2 mg/kg dose once or twice, apart from honey.
- ☑ *Educating the public and healthcare professionals about the natural history of cough associated with upper respiratory tract infection (URTI) is very important for avoiding unnecessary consultations since in the majority of cases, the cough resolves within 2 weeks. It is equally important to let parents know about red flags and when to return to a doctor. Cough persisting beyond 2 weeks needs proper evaluation. Cough remedies must be used with caution and only to relieve the discomfort caused by cough, not to “cure” cough.*
- ☑ Specific treatment depends on the cause such as an ideally chosen antibiotic for infective cough, or inhaled therapy for asthma.
- ☑ Symptomatic therapy most often fails to control cough though drugs may be considered to offer temporary relief from a distressing cough. It should be used judiciously in older children and avoided in infants and toddlers.
- ☑ Home remedies are useful such as hydration, propped-up position, open ventilation, honey with a drop of lime, sips of hot water, or hot water gargles.
- ☑ Cough suppressant only for dry cough—use with caution—dextromethorphan or pholcodine may be preferred—use sos—local demulcent is safe.
- ☑ Expectorant, guaifenesin, only for productive loose cough. Mucolytics (bromhexine, ambroxol, and acetylcysteine) useful in bronchiectasis, cystic fibrosis.
- ☑ Antihistamine as a mild sedative—use sos with caution—not useful for asthma.
- ☑ Bronchodilator, in case of bronchospasm, inhaled drug ideal.

Take Home Message

- ☑ Detailed history often is helpful to arrive at a provisional diagnosis and a physical examination and relevant investigations if required can fine tune the final diagnosis.
- ☑ Proper counseling is important especially when the cough may be recurrent or take time to be relieved and also when long-term compliant treatment is necessary as in the case of tuberculosis or asthma. Cough remedies are not much effective.

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Further Reading