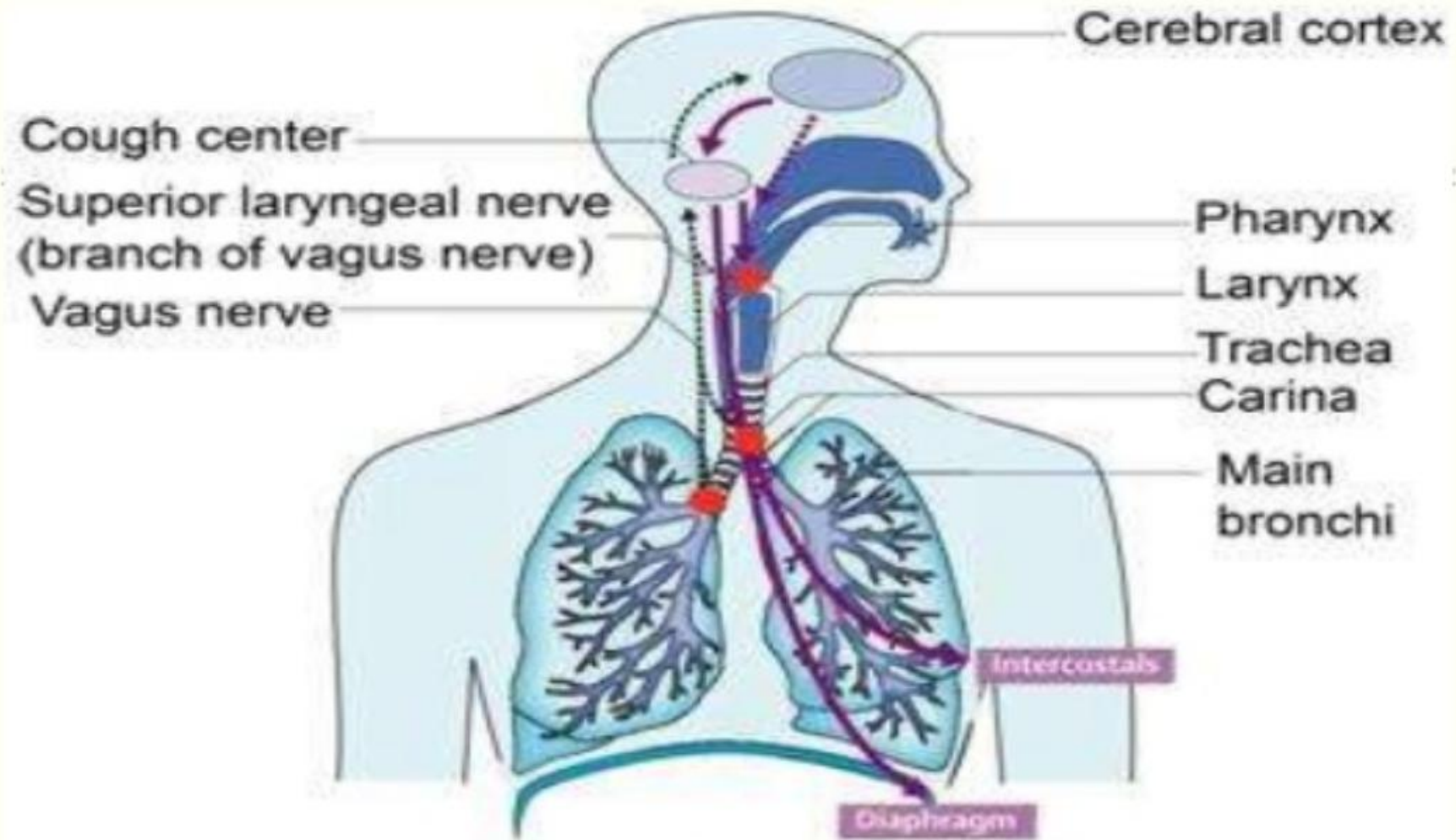


Chronic Cough in children

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Classification of cough



Cough is usually classified based on its duration, quality or etiology



They are helpful indicators to guide diagnosis and treatment



Duration ;



Acute (< 2weeks)



Subacute (2-4 weeks)



Chronic (> 4weeks)



Quality : moist/ wet/productive vs dry



Etiology: specific or non-specific

Acute cough

- ▶ Acute cough is likely to be caused by a viral upper respiratory tract infection.
- ▶ clinical diagnosis of a viral URTI
- ▶ It is important however, not to overlook any symptoms that may suggest a more serious but less common cause for the cough
- ▶ plan a review if the child deteriorates or the cough persists
- ▶ Other serious causes of acute cough; pneumonia, bronchiolitis, pertussis, foreign body inhalation
- ▶ red flags in the history

Red flags in children who cough:⁷

- Neonatal onset of cough
- Cough during feeding
- Sudden onset of cough or a history of choking that may suggest foreign body inhalation
- Chronic, wet cough with sputum production
- Continuous, unremitting or worsening cough
- Presence of associated features such as shortness of breath, hypoxia or cyanosis, rapid breathing, stridor, night sweats, weight loss or haemoptysis
- Signs of chronic lung disease e.g. chest wall deformity, digital clubbing, poor growth
- Parental concern that persists despite reassurance
- Clinician's instinct

Chronic cough

Epidemiology and Burden

- ▶ Prevalence varies: ~10–22%
- ▶ Significant QoL impact on families
- ▶ High healthcare utilization
- ▶ Chronic cough can be a challenging and frustrating disorder for the patient, family, and physicians
- ▶ Management of chronic cough depends on the underlying diagnosis.
- ▶ If symptoms and signs found in the history and examination suggest there is a specific underlying disease causing the cough, then treatment should be aimed at this condition.

causes of chronic cough in children

Persistent respiratory infection including

- post viral cough, chronic bronchitis, bronchiectasis, cystic fibrosis, pertussis and tuberculosis

Passive exposure to cigarette smoke

Asthma

Recurrent aspiration

congenital abnormality

Habit cough

Sinusitis

Gastro-oesophageal reflux

Cardiac causes e.g.

- congestive heart failure
- congenital heart disease

Medication e.g. rarely ACE inhibitor

Chronic Cough

History & Physical
Examination

Presence of
specific cough
pointers

No

Yes

Pointers in the history of cough

Time of onset (neonatal, infancy and childhood),

Nature (dry or productive)

Quality (brassy, croupy, honking, paroxysmal or staccato)

The timing (persistent, intermittent, nocturnal and on awaking)

Triggering factors (cold air, exercise, feeding, seasonal, starts with a cold),

Alleviating factors (bronchodilators, antibiotics)

Presence of associated symptoms (eg, wheezing, breathlessness).

specific cough pointers

Auscultatory findings

Wheeze intrathoracic airway lesions (*eg*, tracheomalacia, asthma);
Crepitations, any airway lesions (from secretions),
 or parenchyma disease (ILD)

Cardiac abnormalities

Associated airway abnormalities, cardiac failure

Chest pain

Arrhythmia, asthma

Dyspnea or tachypnea

Any pulmonary airway or parenchymal disease

Chest wall deformity

Any pulmonary airway or parenchymal disease

Digital clubbing

Suppurative lung disease

Moist or productive cough

Suppurative lung disease

Exertional dyspnea

Any airway or parenchymal disease

specific cough pointers

Failure to thrive Any serious systemic including pulmonary illness e.g. CF

Feeding difficulties Any serious systemic including pulmonary illness, aspiration

Hemoptysis Suppurative lung disease, vascular abnormalities

Hypoxia/cyanosis Any airway or parenchyma disease, cardiac disease

Immune deficiency Suppurative lung disease or atypical infection

Neurodevelopmental abnormality Aspiration lung disease

Recurrent pneumonia Immunodeficiency, atypical infections, suppurative lung disease, congenital lung dx

evaluation

- ▶ Sequence of evaluation once a careful history is obtained including the age of onset, duration, other clinical problems, and response to medication
- ▶ **A.** Cough absent once asleep indicates likelihood of habit cough syndrome
- ▶ **B.** Cough present <3 mo, especially if spasmodic, requires consideration of pertussis syndrome
- ▶ **C.** Cough in infant with feeding warrants textured swallow study
- ▶ **D.** Cough present since neonatal period, history of transient tachypnea of newborn, chronic otitis media, warrants consideration of PCD

evaluation

- ▶ E. Cessation of cough after a short course of an oral corticosteroid is consistent with asthma; further evaluation can determine an appropriate treatment plan
- ▶ F. Failure to stop cough with the oral corticosteroid warrants further evaluation
- ▶ **1. Chest x-ray /chest CT scan**
 - ▶ a. Lobar hyperinflation, suggests retained foreign body—consider rigid bronchoscopy
 - ▶ b. Suggestion of airway inflammation or bronchiectasis warrants sweat chloride testing for CF
 - ▶ c. Situs inversus totalis suggests a likelihood of PCD
 - ▶ d. Normal chest x-ray warrants further evaluation
- ▶ **2. Flexible fiberoptic bronchoscopy** with bronchoalveolar lavage can determine the following:
 - ▶ a. Airway malacia, trachea, or bronchi
 - ▶ b. Protracted bacterial bronchitis

Table 4 Potentially serious lung disorders with chronic coughing

Condition	Investigations
Cystic fibrosis	Sweat test, nasal potential difference, assessment of pancreatic function, genotyping
Immune deficiencies	Differential white cell counts, immunoglobulin levels and subsets, functional antibody responses and lymphocyte subset analysis
Primary ciliary disorders	Screening F _n NO, saccharine test, ciliary ultrastructure and function, culture of ciliated epithelium
Protracted bacterial bronchitis	Chest radiography, sputum for culture, exclusion of other causes in this table. Response to 4–6 weeks antibiotic and physiotherapy HRCT scan
Recurrent pulmonary aspiration: Laryngeal cleft or 'H' type tracheo-oesophageal fistula Post-TOF repair with swallowing incoordination Neuromuscular or neurodevelopmental disorder GOR, hiatal hernia	Barium swallow, videofluoroscopy, 24 h pH studies, milk isotope scan, fat-laden macrophage index* on bronchialveolar lavage if bronchoscopy indicated. Oesophagoscopy with biopsy may be indicated. NB. There is little evidence that GOR alone is a cause of cough in otherwise healthy children
Retained inhaled foreign body	Chest radiography and HRCT scan may show focal lung disease Rigid bronchoscopy is both diagnostic and therapeutic and is almost always indicated if the history is suggestive of inhaled retained foreign body
Tuberculosis	Chest radiography, Mantoux, early morning gastric aspirates and gamma interferon tests
Anatomical disorder (eg, bronchomalacia) or lung malformation (eg, cystic congenital thoracic malformation)	Bronchoscopy and CT scan
Interstitial lung disease	Spirometry (restrictive defect), chest radiography and HRCT scan, lung biopsy

Evaluation of Chronic Cough

Chronic cough >4 weeks

Evaluate for specific cough pointers

Yes → Investigate & Treat underlying cause

No → Consider nonspecific cough pathway

Non-specific cough



Watch, wait and review

Usually post viral cough or acute bronchitis

Rarely FB inhalation, asthma,
upper airway disorders,
adverse events of medications,
GERD, ear problems



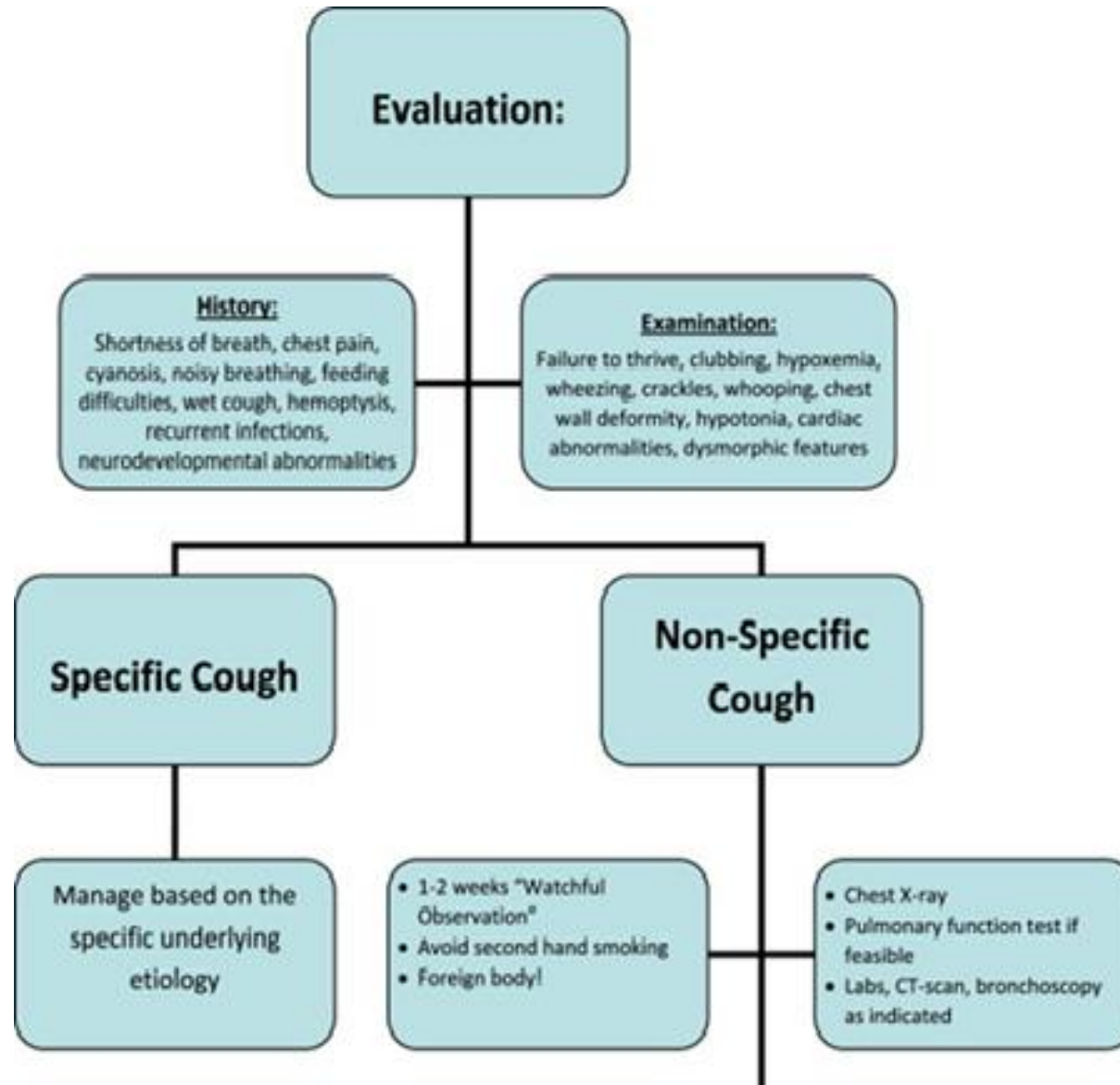
Evaluate

Tobacco smoke, Childs activity,
parental expectation

Treat any obvious illness above



Review in 1-2 weeks



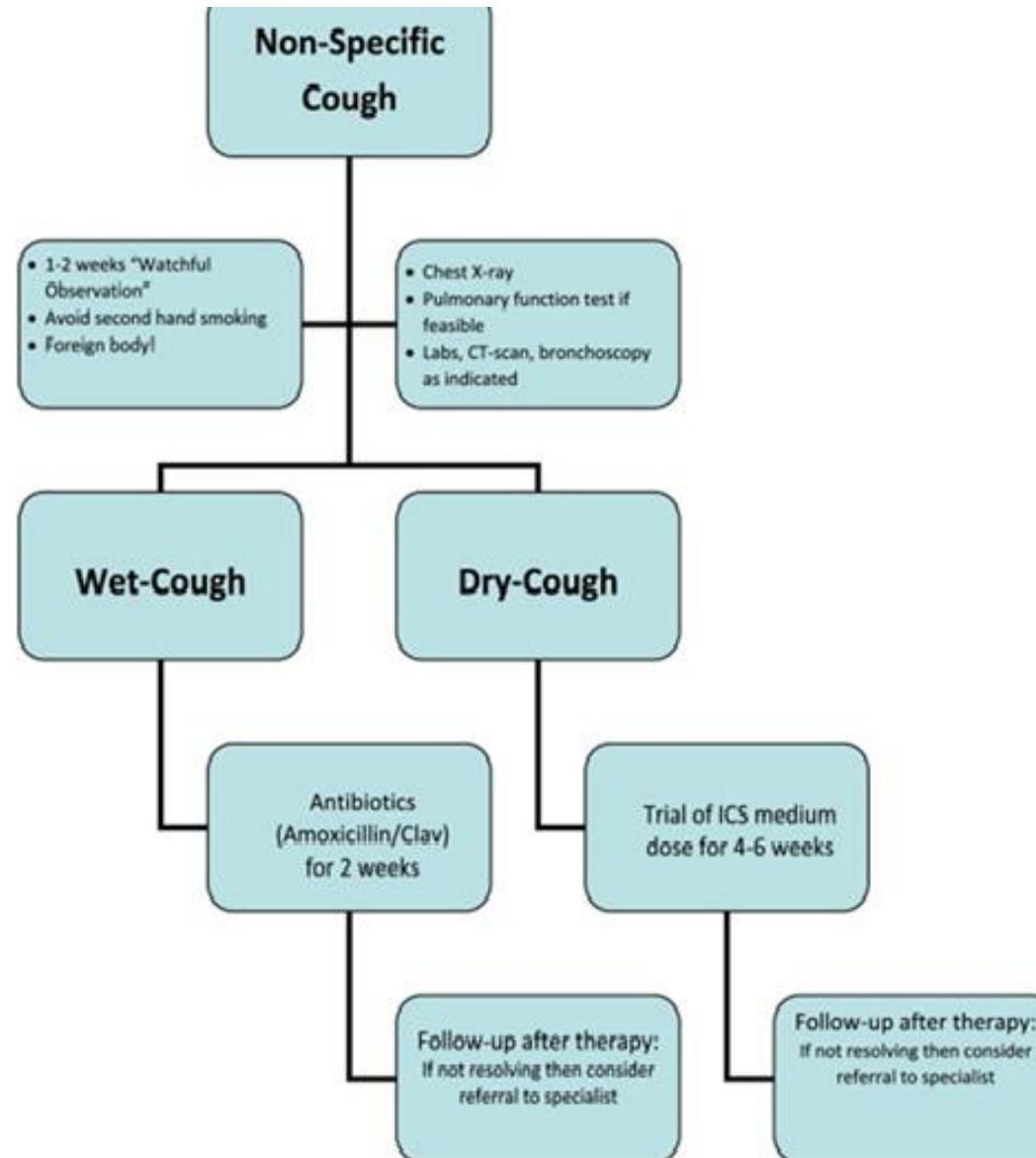
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graph TD; A[Review in 1-2 weeks] --> B[Persistent cough]; A --> C[Resolving]; A --> D[Specific cough pointers];
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Review in 1-2 weeks

Persistent
cough

Resolving

Specific
cough
pointers



New point from Uptodate

- ▶ Gastroesophageal reflux disease (GERD) is probably an unusual cause of chronic cough in otherwise healthy children. Nonetheless,
- ▶ in selected children with nonspecific cough and other symptoms suggestive of GERD (such as recurrent regurgitation, dystonic neck posturing in infants, and heartburn in older children), it is reasonable to do an empiric trial of treatment for GERD for four
- ▶ weeks, using acid-suppressing medications such as a proton pump inhibitor (PPI) .
- ▶ Longer duration of PPIs should not be used without objective confirmation of GERD

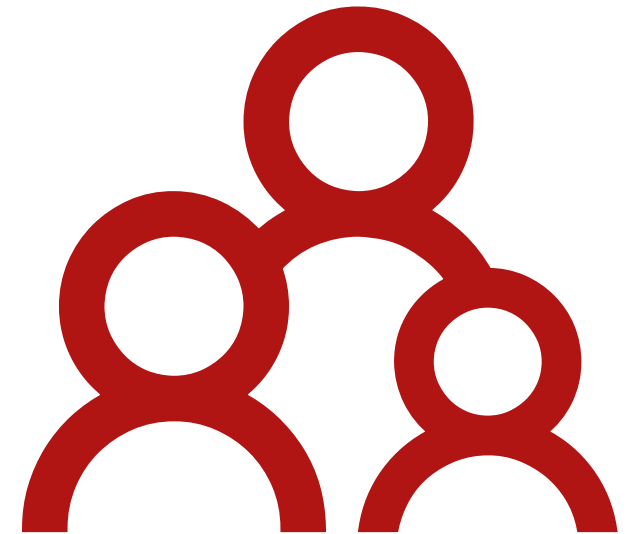
sinusitis

- ▶ Patients with sinusitis, usually have a cough with sputum that is worse early in the mornings.
- ▶ Chronic coughs are usually caused by subacute sinusitis or chronic sinusitis (more than three months from the onset of symptoms). Therefore, symptoms usually include purulent secretions from the nose and pharynx and nasal congestion rather than fever, lethargy
- ▶ Graphy from sinuses is useful after age of 6 as it reveals, opacification, or mucosal thickening of more than 4 mm and air-fluid levels.



The cough without a cause: Habit cough syndrome

- ▶ Clinical criteria, consisting of a repetitive cough up to several times per minute for extended periods of time that is totally absent once a sleep is sufficient to make the diagnosis of this disorder.
- ▶ children over 5 years, and especially teens
- ▶ the coughs usually do not disturb children but for their parents it is a source of great frustration.
- ▶ Once identified, a simple behavioral methodology can provide sustained cessation of cough for most children with this disorder.





▶ **Thank you for
your attention**