

## Chronic Cough

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**Pathogenesis of cough:** Cough receptors are at the airway bifurcations, in the larynx and at the distal esophagus. These link to cough afferents through the vagus and superior laryngeal nerves to the cough center and cerebral cortex. Efferent pathways coordinate the muscle response that leads to cough. Triggers can be inflammatory or mechanical changes in the airways, and by inhalation of chemical and mechanical irritants

Types of receptors include rapidly adapting receptors, slowly adapting receptors, and C-fiber receptors. Triggers for RARs include cigarette smoke, acidic and alkaline solutions, hyper and hypotonic saline, mechanical stimulation, pulmonary congestion, atelectasis, bronchoconstriction, and reduced lung compliance. Triggers for C-fibers include bradykinin, capsaicin, and acidic pH. Inflammatory mediators such as histamine and leukotrienes from neutrophils and monocytes can enhance the cough reflex.

**Epidemiology:** Chronic cough is > 8 weeks duration. Prevalence is 10% of the population, more common in women, and peak age is 50s. It can have significant physical and emotional tolls

**Causes of chronic cough:** Big 3 in adults are Upper airway cough syndrome, asthma (and eosinophilic bronchitis), and GERD (and LPR). Less common causes include Chronic Infections or Post-infectious cough, Airway and Parenchymal disease (COPD, CF, bronchiectasis, bronchiolitis, ILD, sarcoidosis), Tumors, Cardiovascular disease, Drugs (ACE-I, sitagliptin), recurrent aspiration, irritation of external auditory meatus, psychogenic, tracheobronchomalacia, OSA, AV malformations, laryngeal sensory neuropathy, disorders of pleura, pericardium, esophagus, stomach, and thyroid.

In adults with a normal CXR, some studies suggest big 3 account for >95% of cases.

In children, consider protracted bacterial bronchitis in those with a wet cough. Other common causes in children include asthma and nonspecific cough. Differs by age of child.

**History is key:** UACS (rhinorrhea, throat clearing, sensation of liquid dripping into back of throat), asthma (cough after URI, exposure to cold dry air, irritants like strong perfumes, exercise, other asthma symptoms), and GERD (heartburn, sour taste in the mouth, throat fullness, lump in the throat, regurgitation, dysphagia, relationship to eating, position)

When taking history, ask about time course, aggravating/alleviating factors, occupational and travel history, factors associated when cough began, symptoms of 'Big 3' causes of cough, and 'Red-flag' signs. Character of cough usually not helpful.

**Treatment:** - Directed at underlying cause – really search for the cause. Treatment of 'Big 3' can take time. UACS and asthma – 2 weeks, GERD/LPR – 3-6 months. ACE-I cough can last 1 month after discontinuing.

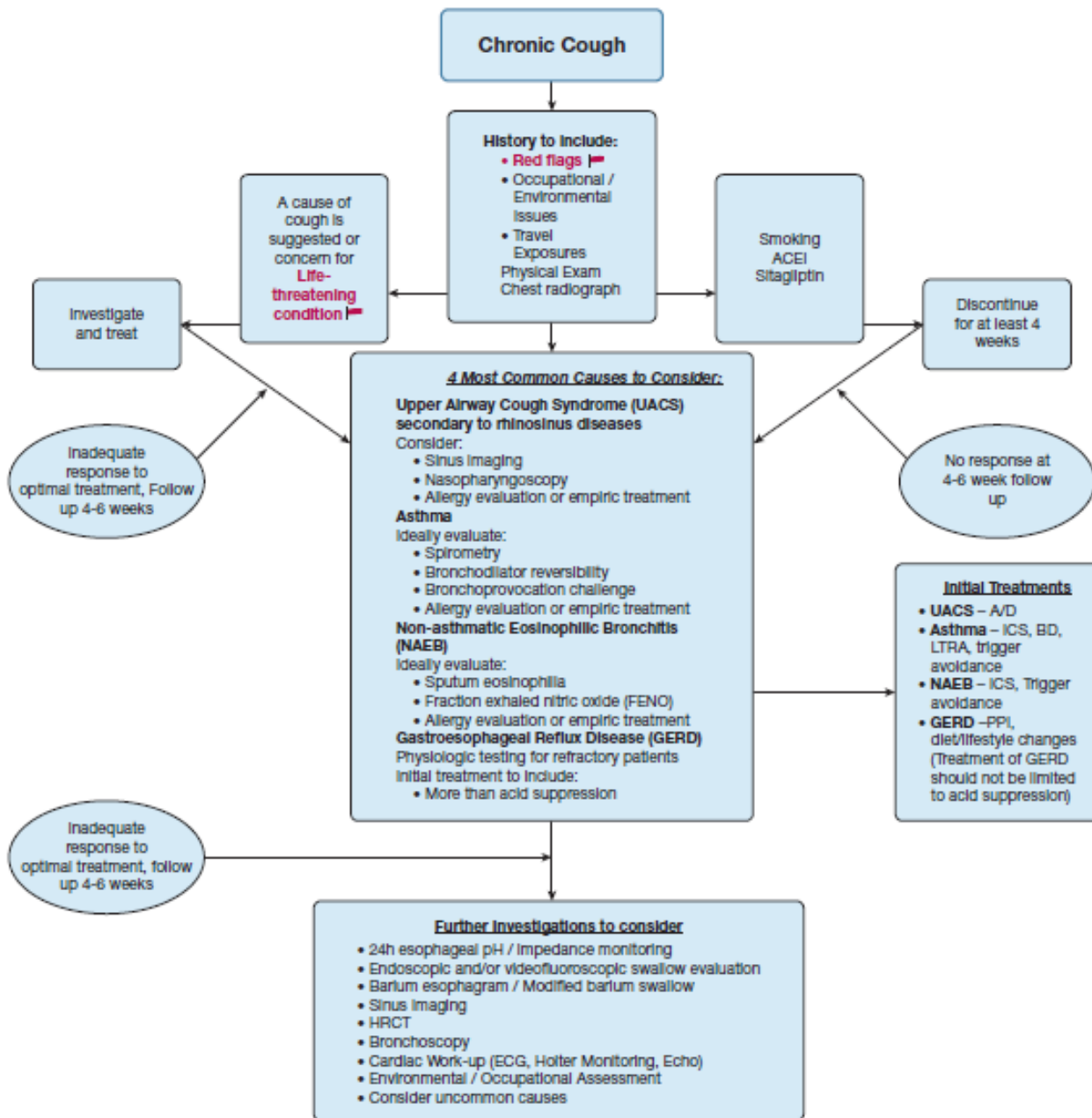
UACS – Intranasal corticosteroid, 1st generation antihistamine-decongestant, nasal rinse. Consider work-up for allergic rhinitis or sinusitis, and treat as appropriate.

Asthma/Eosinophilic bronchitis – Medium dose inhaled corticosteroid and short acting bronchodilator. Can consider leukotriene receptor antagonist, but typically not as effective.

GERD - Lifestyle + dietary changes, Acid suppression, consider prokinetic agent

Nonspecific therapies: multiple, but good option is combination of dextromethorphan and guaifenesin (will act centrally and peripherally). Can consider 1st generation antihistamines, benzonatate, nebulized lidocaine, inhaled steroids or ipratropium. Avoid narcotics if possible. May need to treat laryngeal sensory neuropathy with Gabapentin, Amitriptyline or Pregabalin. These can effectively be combined with speech pathology (recommended by ACCP).

**From ACCP Chronic Cough algorithms 2018**



**Important Reminders**

- Check for **red flags** and address them – see **Red Flags** box
- Optimize therapy for each diagnosis
- Check compliance during regularly scheduled and frequent follow ups (assess for patient barriers to enactment or receipt of instructions)
- Due to the possibility of multiple causes, maintain all partially effective treatment
- Routinely assess for environmental and occupational factors
- Routinely assess cough severity & quality of life with validated tools
- Routinely follow up with patient in 4-6 weeks
- Consider a referral to a Cough Clinic for refractory cough

**Red Flags**

- Hemoptysis
- Smoker > 45 years of age with a new cough, change in cough, or coexisting voice disturbance
- Adults aged 55-80 years who have a 30 pack-year smoking history and currently smoke or who have quit within the past 15 years
- Prominent dyspnea, especially at rest or at night
- Hoarseness
- Systemic symptoms
  - Fever
  - Weight loss
  - Peripheral Edema with weight gain
- Trouble swallowing when eating or drinking
- Vomiting
- Recurrent pneumonia
- Abnormal respiratory exam and/or abnormal chest radiograph coinciding with duration of cough