

Chronic Cough

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Faculty/Presenter Disclosure

Faculty: Justin Ling

Relationships with commercial interests:

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- Consulting Fees: none



- Community: Internal Medicine (Respirology) at Cardio 1
- Hospital: Health Sciences Centre, St. Boniface, Grace
- Outpatient: Pulmonary Rehabilitation Program (Misericordia)

- Interests: end-stage lung disease, pulmonary function testing

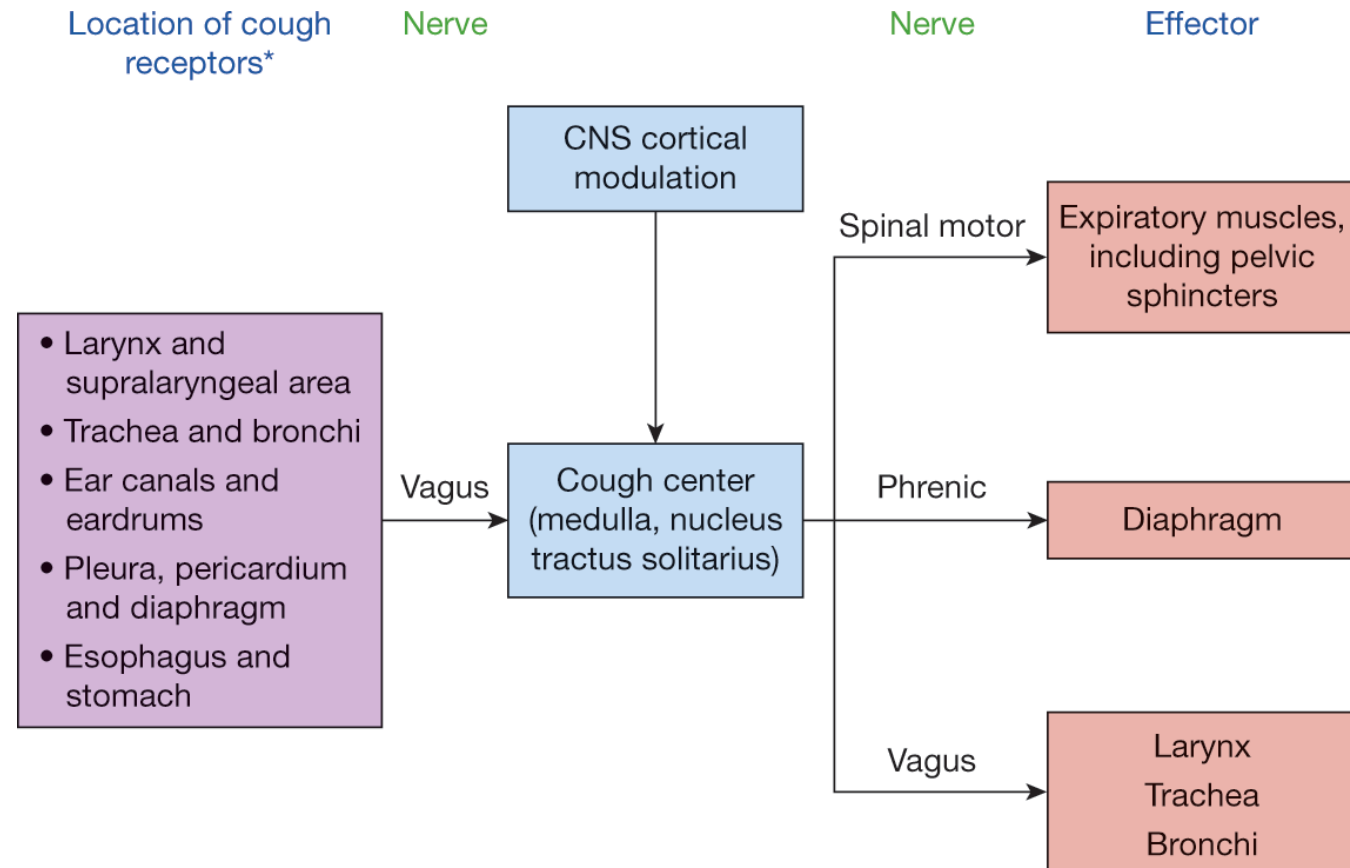
Objectives

- Describe complications of chronic cough
- Review a differential diagnosis for chronic cough
- Outline approaches to diagnosing and treating chronic cough

- Remind you that in spite of the prevalence of the presenting complaint, evidence is overall lacking, and therapeutic trials are reasonable
- Remind you that routine CT scans of the chest are *not* indicated
- (Even more) off-label uses for opioids and gabapentinoids

Physiology

- Self-clearing, protective mechanism
- Protects lungs against aspiration and promotes movement of secretions towards the mouth
- May be voluntary, involuntary, or a combination
 - Involuntary: mechanical, chemical, inflammatory, psychogenic



Source: Michael A. Grippi, Jack A. Elias, Jay A. Fishman, Robert M. Kotloff, Allan I. Pack, Robert M. Senior, Mark D. Siegel: *Fishman's Pulmonary Diseases and Disorders*: www.accessmedicine.com
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Signaling pathways in the development of cough. CN, cranial nerve. (Reproduced with permission from Silvestri RC, Weinberger SE. Evaluation of subacute and chronic cough in adults. In: UpToDate, Post TW (Ed). UpToDate, Waltham, MA. In: UpToDate, Post TW (Ed). UpToDate, Waltham, MA. (Accessed on November 18, 2014) Copyright © 2014 UpToDate, Inc. For more information visit www.uptodate.com.)

Complications

- Headache, dizziness, posttussive syncope
- Diaphoresis
- Hoarseness
- Chest pain (intercostal muscle strain)
- Rib fractures
- Cough-induced urinary or fecal incontinence
- Self-consciousness, social isolation, fear of severe illness
- Anxiety

Differential Diagnosis

- Case series of 71 patients (Smyrniotis, 1995):
 - A cause was determined in 97%
 - 40% postnasal drip, 24% asthma, 15% gastroesophageal reflux disease, 11% bronchitis
 - 38% had one, 36% had two, 26% had three of these causes
 - Treatment of the presumed underlying cause often treats the cough
 - Postnasal drip = upper airway cough syndrome = rhinitis
- Other common etiologies:
 - Post-infectious
 - Drug side effect
 - Idiopathic/cough reflex sensitivity

Differential Diagnosis

- Less common causes, by anatomy:
 - Airways (e.g. asthma)
 - Eosinophilic bronchitis
 - Chronic bronchitis (COPD, smoking)
 - Bronchiectasis
 - Aspiration
 - Neoplasm – new cough or recent change in chronic “smoker’s cough,” cough persisting more than 1 month beyond smoking cessation, hemoptysis in the absence of airway infection
 - Foreign body
 - Tracheobronchomalacia, compressive lesions
 - Pulmonary parenchyma
 - Interstitial lung disease
 - Sarcoidosis
 - Lung abscess
 - Neoplasm

Differential Diagnosis

- Less common causes, by anatomy:
 - Non-respiratory
 - Laryngeal sensory neuropathy
 - Irritated external auditory canal: oto-respiratory reflex
 - Premature ventricular contractions
 - Somatic cough syndrome, tic cough

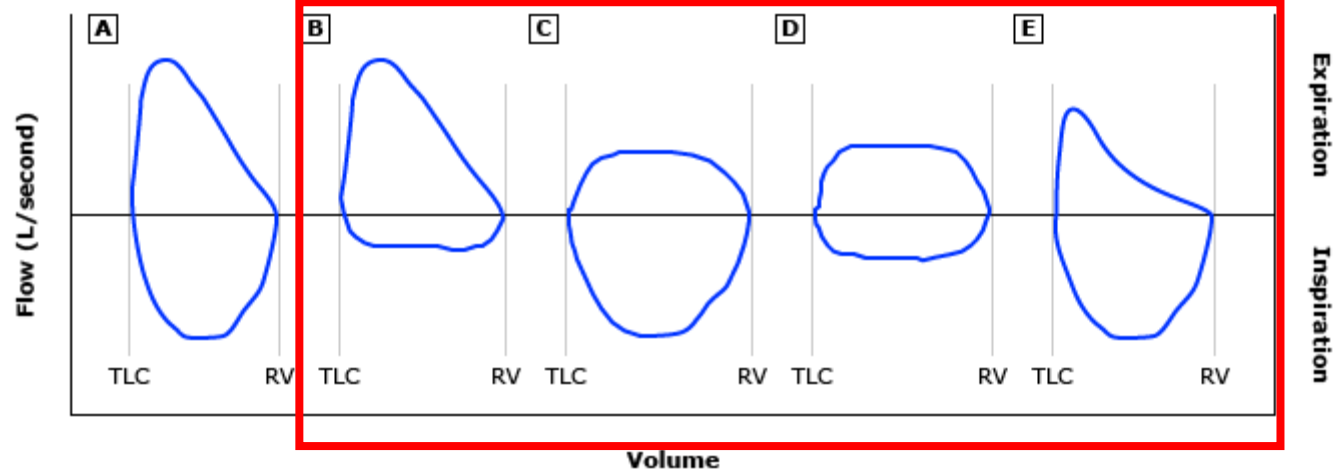
History

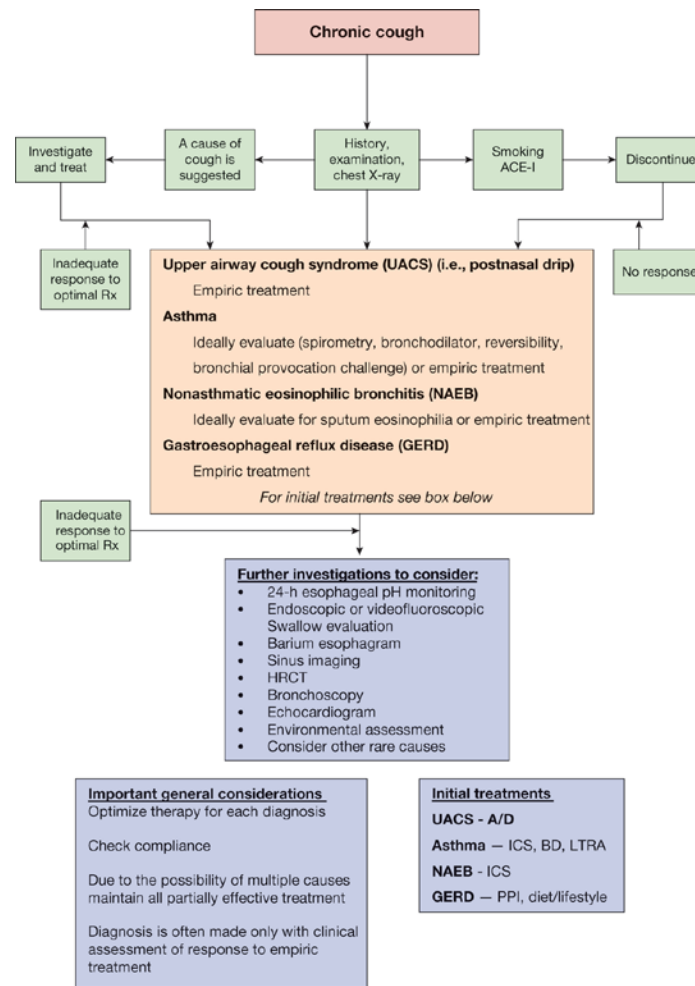
- Acute (<3 weeks) vs. subacute (3-8 weeks) vs. chronic (>8 weeks)
- Productive or non-productive
- Constitutional symptoms
- Past medical history/other comorbidities
- Smoking history
- Medication history (ACE inhibitors, may develop after years)

Initial Workup

- History:
 - **Smoking**, vaping, ACE inhibitors, URTI at onset of cough
 - Atopy, family history, worse symptoms with beta blockade or NSAIDs
 - Rhinitis, nasal discharge, frequent throat clearing, sensation of liquid in the back of the throat, sinusitis
 - Dyspepsia, cough improves on PPI, (high prevalence of GERD + OSA)
 - Nocturnal symptoms
 - **Hemoptysis, bronchorrhea, foul/purulent sputum, constitutional symptoms**
- Physical examination:
 - Nasal polyps, wheezing, nasopharyngeal secretions, dysphonia
- **Chest radiograph**
- Spirometry/pulmonary function tests/methacholine challenge

Flow-volume loops in upper airway obstruction

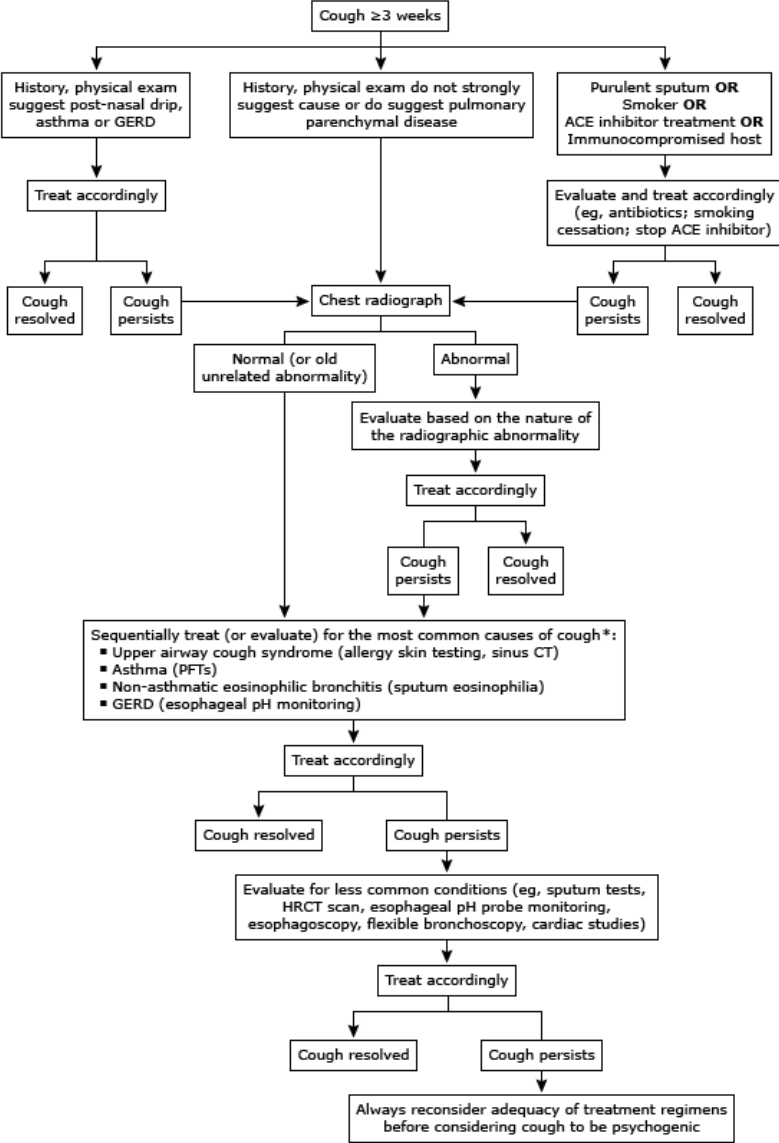




Source: Morise A, Uzzo JA, Elias JA, Fishman JA, Kotloff RM, Pack AI, Senior RM, Siegel MD. *Fishman's Pulmonary Diseases and Disorders*, 5e; 2015. Available at: <https://accessmedicine.mhmedical.com/content.aspx?bookid=1344§ionid=81186194> Accessed: March 21, 2020. Copyright © McGraw-Hill Education. All rights reserved.

Algorithm for the evaluation of chronic cough lasting 8 weeks in adults. ACE-I, ACE inhibitor; BD, bronchodilator; LTRA, leukotrienes receptor antagonist; PPI, proton pump inhibitor; ICS, inhaled corticosteroid; A/D, antihistamine/decongestant; HRCT, high-resolution computed tomography. (Reproduced with permission from Irwin RS, et al. Diagnosis and management of cough executive summary: ACCP evidence-based clinical practice guidelines. *Chest*. 2006;129(1 Suppl):1S–23S.)

Evaluation of subacute or chronic cough in adults



GERD: gastroesophageal reflux disease; ACE: angiotensin-converting enzyme.

* Also consider post-infectious etiology for subacute cough (3 to 8 weeks duration).

Cough assessment in adults

History taking and physical examination on presentation

- Cough duration
- Cough impact and triggers
- Family history
- Cough score (using VAS or verbal out of 10)
- HARQ
- Associated symptoms: throat, chest, GI
- Risk factors: ACE inhibitor, smoking, sleep apnoea
- Physical examination: throat, chest, ear

Routine evaluation

- Chest X-ray
- Pulmonary function test
- ?FeNO
- ?Blood count for eosinophils

Initial management

- Stop risk factors
- Initiate corticosteroids (oral or inhaled) or LTRA, particularly when FeNO or blood eosinophils high
- Initiate PPI only when peptic symptoms or evidence of acid reflux are present

Follow up assessment for cough

- Cough score (using VAS or 0 – 10)
- Associated symptoms

Improvement

- Continue for 3/12 and attempt withdrawal

No improvement

- consider low dose opiate
- consider promotility agent
- consider gabapentin
- consider pregabalin
- consider cough control therapy

Additional evaluation where indicated

- High resolution oesophageal manometry
- Induced sputum for eosinophils
- Sputum AAFB
- Laryngoscope
- Methacholine challenge
- Chest CT
- Bronchoscopy



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