- Cough being one of the most common symptoms. ¹·²

- 30 million visits, $600 millions spent on OTC and Rx drugs for cough in 2010. ¹·²

- Cough being part of the body’s defense mechanism, usually lasts less than 3 weeks.

- **Chronic cough is defined as a cough that lasts more than 8 weeks.** ³

- A wide range of complications can occur from coughing. ⁴·⁵·⁶
ACCP Guidelines:

In 1998, the American College of Chest Physician (ACCP) developed evidence-based clinical practice guidelines to provide a systematic approach to diagnosing and managing chronic cough, which was subsequently updated and revised in 2006.
Case Study:

Mr. Rosenthal, 56-year-old male HR manager, presents to his family nurse practitioner with 10-week history of non-productive cough. His cough has become worse over the past couple of weeks. It’s affecting his sleep, embarrassed him at work and various social settings. He is now worried that there is something seriously wrong with him.
What else to know:

- Precipitating event
- Smoking history
- Medications taking
- Recent foreign travel or sick contact
- Significant past and present medical history
- What has he tried to alleviate the cough
Further history & exam findings for Mr. Rosenthal:

- Smoked cigarette, ¼ PPD x 2 years in college
- Traveled to Tibet 4 months ago
- Started with a cold. Thought at one point he had fever, but it broke pretty quickly. Most cold symptoms resolved within a week, but cough lingers
- No significant PMH
- Never took ACE-I
- c/o sensation of mucus being stuck to the back of throat with frequent throat clearing, occasional nasal congestion. Tried OTC Robitussin cough syrup, no benefit
- Denies recent weight loss, hemoptysis, fever, chills, night sweats
- Physical exam is largely normal, including no abnormalities of the mouth, nose, pharynx, neck, heart. Wheezing detected on exhalation
ACCP Guidelines

2 high-yield elements of the history:

1. The use of an ACE-I $^{8,9,10}$

2. Cigarette smoking or exposure to second-hand smoking
ACCP Guidelines

With a normal CXR in an otherwise healthy adult who doesn’t use an ACE-I or cigarettes, chronic cough is most commonly caused by 3 conditions:

- Upper airway cough syndrome (UACS)
- Asthma
- GERD

Current literature suggests that these 3 causes constitute more than 90% of cases of chronic cough. \(^{11-12}\)
ACCP Guidelines

1. no apparent cause for chronic cough
2. target 3 most common conditions sequentially
   - Upper airway cough syndrome (UACS)
   - Asthma
   - GERD
3. subsequent empiric therapy be added onto the step prior
Upper Airway Cough Syndrome

- Post nasal drip
- Other symptoms: nasal congestion, rhinorrhea, frequent throat clearing or globus
- Oropharyngeal exam: mucopurulent secretions or cobblestoning.¹⁷
- Underlying inciting factors in UACS
- Diagnosis in retrospect, by the resolution of the cough in response to empiric therapy.¹⁸
- Initial treatment is combination of 1st generation antihistamine and decongestant.³
- Nasal corticosteroids, nasal anticholinergic agents, or nasal antihistamines may also be effective.¹⁸
FNP’s recommendations:

1. 2-view CXR, TB skin test, PFT
2. Benadryl qhs, Sudafed prn, Flonase qd, Nasal saline rinse bid

3 weeks later, cough hasn’t changed. Sleep quality has deteriorated. Normal test results.
Cough-Variant Asthma

- chronic cough as the only symptom with an otherwise normal physical exam
- PFT is the initial test
- Methacholine challenge to confirm the diagnosis $^3$
- Initial treatment: ICSs and β-agonist
- Addition of a leukotriene receptor inhibitor
- For severe and refractory cough, a short course of oral corticosteroids can be considered $^{3,19}$
FNP’s recommendations:
1. 2-view CXR, TB skin test, PFT
2. Benadryl qhs, Sudafed prn, Flonase qd, Nasal saline rinse bid

3 weeks later, cough hasn’t changed. Sleep quality has deteriorated. Test results are normal.

This time, Albuterol prn, Flovent bid, Robitussin AC q4h and a short burst of Prednisone taper are added to regimen.

Another 3 weeks later, patient returned with persistent cough. All prescribed medications haven’t helped. Now he is frustrated and depressed.
GERD

- GERD is thought to trigger cough
- Physiologic reflux and micro-aspiration vs. heightened cough sensitivity
- Frequency of GERD as the causative factor in chronic cough is unclear. Published reports vary widely ranging between 0% to 73%
- GERD can coexist with chronic cough as well as be the result of coughing
- Treat despite of no heartburn, regurgitation, or sour taste.
- Empiric treatment beginning with lifestyle changes and PPI for at least 8 weeks
- 23-hour pH monitoring?
FNP’s recommendations:
1. 2-view CXR, TB skin test, PFT
2. Benadryl qhs, Sudafed prn, Flonase qd, Nasal saline rinse bid

3 weeks later, cough hasn’t changed. Sleep quality has deteriorated. Test results normal.

This time, Albuterol prn, Flovent bid, Robitussin AC q4h and a short burst of Prednisone taper are added to regimen.

Another 3 weeks later, patient returned with persistent cough. All prescribed medications haven’t helped. Now he is frustrated and depressed.

FNP prescribed Prevacid 30mg bid for 8 weeks. Lifestyle modifications are discussed as well.

Patient returns after a month with that same nagging cough. Now he has this cough for 5 months in total. FNP orders a chest CT and refers him to ENT for further evaluation.
Algorithm by Terasaki & Paauw

1. Chronic cough >= 8 weeks

2. History & exam
   - Possible serious condition?
   - Risk factors? (cancer or HIV)

3. Use of ACE-I or cigarettes?

4. Abnormal 2-view CXR?

5. Common causes?
   - UACS
   - Asthma
   - GERD

6. Empiric treatment starting with UACS, then asthma, and finally GERD sequentially

7. Evaluate as appropriate
   - Discontinue ACE-I
   - Counsel to quit smoking

8. Evaluate as appropriate

9. UACS: 1st generation H1 blocker & decongestant

10. Asthma:
    - PFT
    - ICS & inhaled beta agonist

11. GERD: Trial of PPI for 8 weeks

12. If no response to empiric treatment, evaluate for less common causes or refer to a specialist
ALLERGIC RHINITIS
ACUTE SINUSITIS
List of potential causes of chronic cough in adult

Common conditions
- ACE-I cough
- Chronic bronchitis caused by cigarette smoking
- Upper airway cough syndrome (formerly postnasal drip)
- Asthma
- GERD

Less common conditions
- Non-asthmatic eosinophilic bronchitis
- Post-infectious cough (pertussis, mycoplasma)
- Bronchiectasis
- Interstitial lung disease
- OSA
- Primary lung cancer
- Heart failure
- TB
- Environmental exposures
- Zenker’s diverticulum
Uncommon conditions

- Sarcoidosis
- Environmental exposures (pneumoconiosis from asbestosis)
- Chronic tonsillar enlargement
- Chronic irritation to auditory canal (cerumen or foreign body)
- Idiopathic pulmonary fibrosis
- Aspirated foreign body
- Endemic fungi
- Paragonimiasis
- Peritoneal dialysis
- Cystic fibrosis
- Tracheomalacia
- Aberrant innominate artery
- Habit or tic cough
Cough hypersensitivity Syndrome

- Our body can modulate the sensitivity of the cough reflex sensors \(^{22}\)
- “Unexplained chronic cough”
- Reset the sensitivity of cough reflex with Gabapentin or Amitriptyline \(^{23}\)
Summary

- Systematic approach
- ACE-I and smoking history
- Red flags and risk factors for life-threatening disease
- CXR
- More than 90% of cases of chronic cough are diagnosed as being caused by UACS, asthma, or GERD. To address these conditions sequentially
- Less common causes
- Cough hypersensitivity syndrome
- Proper referrals to specialists, including pulmonology or ENT, when you’ve done all you can
References:


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