



# *Coughing Up the Facts on Chronic Cough*

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Presented at UBC's 4th Annual Advances in Respiratory and Critical Care Medicine, 2003

Chronic cough, is defined as a cough which lasts for more than three weeks. It does not include a cough associated with a history of chronic bronchitis in a smoker. Cough is the most common reason for a physician visit in North America. Most patients who present with cough will improve, but chronic cough can be a cause of significant social embarrassment and can also interfere with one's ability to work. A number of studies from referral centres have shown that history and physical examination, in most cases, with limited specialist investigations can provide a diagnosis and complete resolution with appropriate therapy.

## *How to assess your patient*

The three most common causes of chronic cough are:

- gastroesophageal reflux disease (GERD)
- asthma, and
- post-nasal drip.

More recently, eosinophilic bronchitis has been recognized as an important cause of cough in a significant minority of patients.

The patient interview should focus on the duration of cough, its intensity, and its pattern. A dry barking cough is often associated with GERD-related cough. Patients may report intermittent episodes of cough associated with what is perceived

## Bill's chronic cough

Bill, a 67-year-old retired engineering professor presents with a 2-year history of chronic cough. There is no definite history of wheeze. The patient thinks the cough may have initially been associated with an upper respiratory infection. The family physician had given the patient an inhaled corticosteroid for a couple of weeks, but it did not help. There was no reported history of gastroesophageal reflux. A recent chest radiograph has been reported as normal.



**For a followup on Bill, go to page 100.**

to be respiratory tract infections. If these episodes are associated with wheezing, this may indicate asthma as the cause of cough. The presence of wheezing is not diagnostic of asthma, but makes other diagnoses less likely. A previous history of seasonal allergies may also suggest the diagnosis of asthma. Post-nasal drip as a symptom may easily be elicited, but many patients conceptually have difficulty distinguishing between nasal congestion and/or post-nasal drip.

GERD may be apparent from asking about heartburn, but many patients seem to have accommodated to their dyspepsia and, therefore, they tend to underestimate its frequency. Asking about

the need for over-the-counter remedies, such as antacids, may detect more frequent symptoms. Asking about regurgitation of food, a sour taste at the back of the throat, frequent throat clearing, and hoarseness may suggest reflux as the cause. Lifestyle issues, such as a high intake of coffee, tea, spicy foods, alcohol, and/or carbonated pop, may also suggest the diagnosis.

A large volume of sputum may suggest bronchiectasis as a cause. A history of hemoptysis, in a cigarette smoker or a foreign-born person, should suggest the possibility of lung cancer or tuberculosis, respectively. A dry cough with progressive dyspnea in the presence of clubbing and basal Velcro crackles is pathognomonic of interstitial lung disease.

A number of drugs, most notably, angiotensin-converting enzymes may cause cough.

### *What are the investigations?*

After a history and physical examination is complete and a possible diagnosis is not apparent, further investigations will usually be required. An important initial investigation is a chest radiograph. A normal chest radiograph will make diagnoses, such as lung cancer, tuberculosis, and interstitial lung disease less likely. If the diagno-

sis of asthma is suspected, use of a spirometry before and after use of a short-acting beta agonist may elicit a 12% increase in forced expiratory volume in one second (FEV1) and confirm the diagnosis of asthma. Normal spirometry does not exclude the diagnosis of asthma and further management can be pursued.

Imaging of the sinuses rarely makes a major contribution to the diagnosis of post-nasal drip-associated chronic cough. If treatment of sinusitis and post-nasal drip is unsuccessful in providing

symptomatic relief, request a sinus radiograph at the end of treatment. If there is evidence of chronic sinusitis, *e.g.*, an air fluid level, referral to an ear, nose, and throat surgeon is indicated.

In the presence of a normal sinus radiograph and ongoing

symptoms, selective use of computerized scans of the sinuses is appropriate.

Many patients with GERD-related cough will present with classic reflux symptoms. In my experience at a tertiary referral cough clinic, 50% of patients with reflux-related cough will have no reflux symptoms and will be diagnosed based on ambulatory pH monitoring. It should be noted that in Canada a pH study costs less than a one-month course of proton pump inhibitors (PPIs).

If the above investigations do not provide a diagnosis, further, more specialized investigations may be required. A high-resolution computed tomography scan of the chest may identify bronchiectasis or interstitial lung disease not apparent on a chest radiograph. Occasionally, a methacholine challenge test may be required to diagnose asthma. An additional use for this test is

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## Chronic Cough

in determining the relative contribution of asthma to a patient who may have co-existing GERD. A PC20 in the mild range in a very symptomatic patient will suggest other factors, such as GERD or post-nasal drip, and may be contributing to the cough.

### *How do you manage your patient?*

If the patient presents with one of the common presentations, therapy will be relatively easy. If asthma is suspected or has been confirmed with pulmonary function, treatment should be initiated with anti-inflammatory therapy, which will usually be in the form of a therapeutic trial of inhaled corticosteroids. For most patients with cough-variant asthma, a trial of low-dose inhaled corticosteroids, taken correctly, will lead to the resolution of the cough in a couple of weeks. Less commonly, a patient may have more severe airflow obstruction. In this case, either short-term, high-dose inhaled corticosteroids or a short course of prednisone may be required. In addition to pharmacologic interventions, allergen avoidance, cessation of smoking, and general avoidance of irritants should be encouraged where appropriate. Eosinophilic bronchitis is a diagnosis of exclusion and is associated with normal methacholine responsiveness, no reversibility, and sputum eosinophilia. At a primary care level, patients will usually be given a trial of inhaled corticosteroids and the distinction, clinically, from cough variant asthma may not be possible.

Post-nasal drip, in the absence of infection and established sinusitis, will usually respond to topical nasal steroids and or antihistamines. Ongoing symptoms may require a specialist referral.

GERD requires a multi-faceted approach. Lifestyle changes, which reduce exposure to known factors which aggravate reflux, should be encouraged, as should weight loss. Elevation of the head of the bed with wood-

## Take-home message



- Chronic cough is a common symptom in primary care.
- A careful history and physical exam will provide a diagnosis in most patients.
- Appropriate therapy will usually be associated with a therapeutic response. Selective use of specialist investigations will help to provide unnecessary, and often expensive trials of therapy.

## Bill's followup

Bill was given a further 2-week trial of inhaled corticosteroids. A trial of anti-reflux therapy was offered, but he preferred to have a 24-hour esophageal pH monitor completed.

Bill showed significant reflux and he responded to a 3-month course of proton pump inhibitors (Figure 1).

Discontinuation of medical therapy was associated with relapse of the cough.

en blocks as opposed to “extra pillows” or a foam wedge should be recommended. Specific acid reduction can be usually best achieved with a PPI. It is important to realize that reflux-related cough may require up to three months of treatment before the cough resolves. Thus, a two-week trial of reflux therapy which fails to cure a cough does not exclude the diagnosis of GERD-related cough. H2-antagonists may also be effective, but the effect is less consistent than with PPI. Eighty-five per cent of patients with reflux-related cough will respond to medical therapy, which may need to be augmented with a prokinetic agent.

If a patient continues to cough, treatment may need to be increased with a double dose of a PPI. Confirmation of breakthrough reflux on therapy, espe-

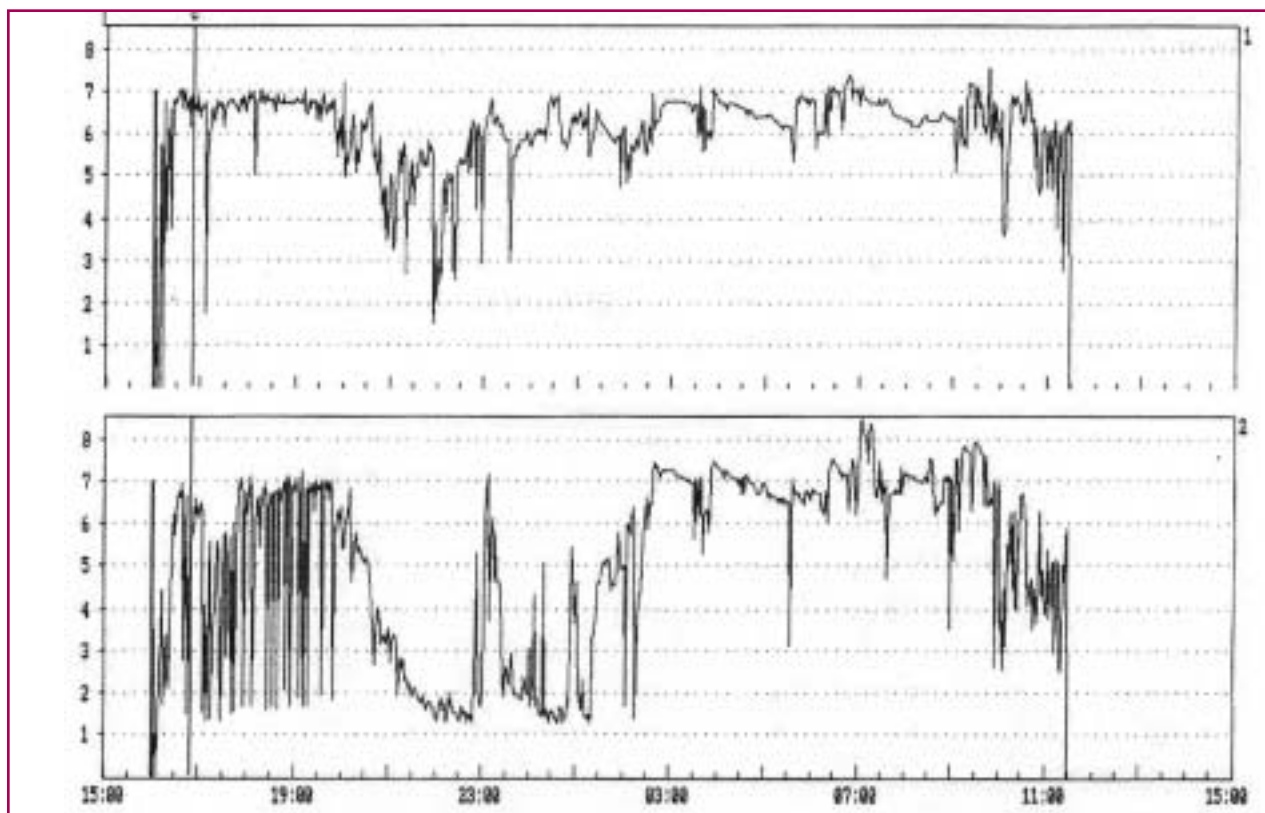


Figure 1. A 24-hour pH monitoring tracing for Bill showing significant proximal-top panel and distal-lower panel acid reflux.

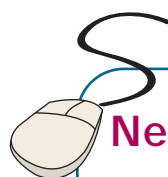
cially proximal reflux, suggest that a laparoscopic fundoplication may be required.

Although a minority—less than 5% of patients referred to a specialty clinic will have multiple causes for their cough—these patients may be challenging to treat. Objective tests, such as methacholine challenge tests and pH monitoring, may be very helpful in such cases and prevent prolonged therapeutic trials.

After extensive investigations in some patients, the diagnosis of psychogenic cough may be considered. Clinicians should be careful not to use such a diagnostic label before all other causes have been excluded. **CME**

#### Suggested Readings

1. Irwin RS, Curley FJ, French CL: Chronic cough: The spectrum and frequency of causes, key components of the diagnostic evaluation, and outcome of specific therapy. *Am Rev Respir Dis* 1990;141(3):640-7.
2. Gibson PG, Dolovich J, Denburg J, et al: Chronic cough: Eosinophilic bronchitis without asthma. *Lancet* 1989; 1(8651):1346-8.
3. Morice AH, Kastelik JA: Chronic cough in adults. *Thorax* 2003; 58(10):901-7.0



### Net Reading

The Lung Association  
[www.lung.ca/diseases/chronic\\_cough.html](http://www.lung.ca/diseases/chronic_cough.html)

[www.stacommunications.com](http://www.stacommunications.com)



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