

## Is There a Role for Certified Respiratory Educators in the Assessment and Management of Some Chronic Cough Patients?

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### Introduction

Cough is the most common symptomatic complaint seen in the ambulatory setting [1]. Although a persistent cough can be the presentation of life-threatening conditions such as lung cancer or tuberculosis, most are benign and are self-limited. Any cough lasting 3 weeks warrants a chest x-ray [2]. In the presence of a persistent cough, concerning symptoms including hemoptysis, shortness of breath, and systemic symptoms such as weight loss, fever, sweats or chills and abnormal physical signs such as wheezing, clubbing or lymphadenopathy should raise concerns that a serious condition may be responsible. In patients with a normal chest x-ray who do not have concerning symptoms or signs, the chronic cough, defined as lasting 8 weeks or longer, is likely due to a benign cause [2].

Fortunately, most persistent or chronic coughs are not associated with concerning symptoms or signs and are due to a benign condition. Despite the benign cause, chronic cough causes anxiety for sufferers and the people close to them and can severely interfere with quality of life and cause depression [3,4]. Cough may be responsible for school or work absences and preclude social activities such as attending concerts, the cinema and religious services [3,5]. It may also force affected individuals to leave the workforce. Physical consequences include stress urinary and sometimes fecal incontinence, vomiting, rib fractures, hernias and sleep disruption. Most referrals are female because they have a higher prevalence of cough and related complications, particularly stress incontinence [6] (Table 1).

The diagnostic considerations in patients who do not have a history of cancer or lung disease with chronic cough and a normal chest x-ray are listed in Table 1. The most common causes are cough-variant asthma, upper airway disease, i.e., rhinitis and/or sinusitis and gastroesophageal reflux [7]. An empiric approach to treatment is recommended after a comprehensive medical history, physical exam and spirometry are completed and this strategy is cost-effective for patients with a normal chest x-ray [8].

<b>Lower airway causes:</b>	Reactive airway disease (Asthma)
	Eosinophilic bronchitis
	Chronic bronchitis
	Smoker's cough
<b>Upper airway causes:</b>	
Rhinosinusitis	– Allergic
	– Vasomotor
	– May be features of both
<b>Gastroesophageal reflux:</b>	
Other causes:	
Angiotensin converting enzyme inhibitor (ACEI)	
Combination cough	– May need to treat more than one condition simultaneously
Chronic refractory cough also called idiopathic or tic cough	
Rarely sinister causes are responsible despite a normal chest x-ray e.g. bronchiectasis, congestive heart failure, cancer, chronic aspiration or sarcoidosis.	

**Table 1:** Differential diagnosis of chronic cough with a normal chest x-ray.

Chronic cough patients are a frustrating problem for physicians, primarily primary care practitioners but approximately one third of the referrals to our chronic cough clinic have been seen by a least one consultant for their chronic cough prior to referral to the Alberta Health Services (AHS) chronic cough clinic. Chronic cough patients account for nearly 40% of the referrals to respiratory specialists [9]. Physicians lack the time needed for the education and reassurance these patients need. The hectic setting of typical family practice, otolaryngology, gastroenterology or respirology offices is not conducive to achieving these goals.

Patients with chronic cough should undergo spirometry to rule out airway disease, asthma or COPD, as the cause. Common errors in the management of these patients include treating these patients with antibiotics, sometimes several courses, in the absence of infectious symptoms and prescribing trials of proton pump inhibitors (PPIs) or H2 receptor antagonists for patients who do not have symptoms of gastroesophageal reflux (GERD). If patients do not have heartburn, PPIs will unlikely improve their cough. Moreover, conservative measures for the management of GERD, such as raising the head of the bed, small frequent meals and avoiding large meals before retiring and refraining from alcohol and smoking should always be included in management if GERD is a concern [10]. If patients with cough are smoking then smoking cessation should be a mandatory part of successful management.

Approximately, 10% of patients started on an angiotensin converting enzyme inhibitor (ACEI) will develop cough [11]. Most primary care doctors are aware that ACEIs can cause cough and will stop the ACEI temporarily if cough develops. However, most will restart the ACEI if cough does not improve in a week or two. The median time for resolution of cough due to ACEI is 4 weeks so one should stop or substitute for the ACEI for at least 4 weeks to determine whether the cough will resolve [12,13].

Nasal steroids are often prescribed for suspected upper airway cough even though most are not due to allergic rhinitis. Diphenhydramine with or without a decongestant and/or nasal saline rinses should be used as the first line treatment for most coughs due to upper airway disease [2]. Narcotics are not indicated for the management of chronic cough not due to malignancy or to a serious intractable lung disease such as idiopathic pulmonary fibrosis or usual interstitial pneumonitis.

Similar to other medical specialists, respirologists have long wait

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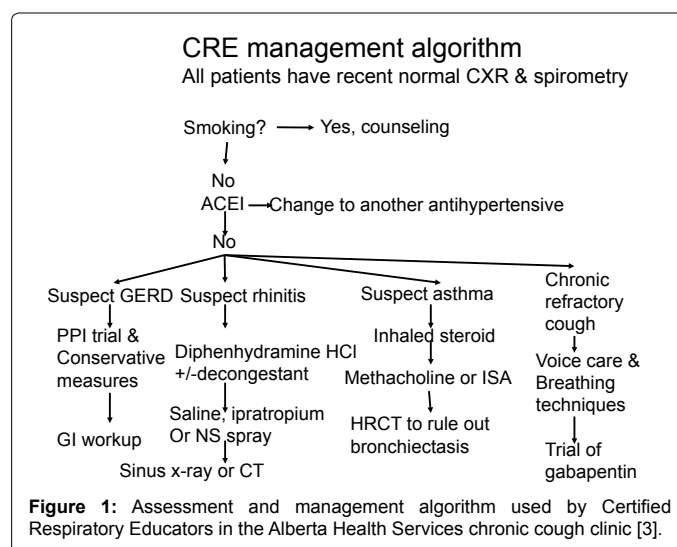
times for non-urgent referrals. Referrals for the assessment of chronic cough that have normal chest x-rays are often a low priority since they have often been coughing for years [5]. The mean cough duration of referrals to the AHS chronic cough clinic is 5.5 years and in many cases the cause is not pulmonary and do not require the skills of a respirologist and outcomes are poor [5].

In 2012, there were 2.5 physicians per 1000 population in Canada compared to an Organization for Economic Co-operation and Development (OECD) average of 3.2/1000 and Canada spent 10.9% of its GDP on health care, 72% within the public health system (<http://www.oecd.org/els/health-systems/Briefing-Note-CANADA-2014.pdf>). There is an immediate need for the increased use of other health care professionals to improve access to care and to control the costs of health care.

Once dangerous conditions are excluded, the assessment and management options for patients with chronic cough are reasonably straightforward. The differential diagnosis of chronic cough in patients with a normal chest x-ray overlaps with asthma [2]. These patients need spirometry as part of their assessment, often need education about asthma and the conditions in the differential diagnosis of asthma and need instruction in proper inhaler technique. Certified respiratory educators (CREs) are nurses, respiratory therapists, pharmacists and physical therapists who have completed a course and a national certifying exam to counsel smoking cessation, to provide patient education to individuals with asthma or COPD with an emphasis on self-management for dealing with exacerbations, the instruction of patients in proper inhaler technique and the performance of basic spirometry [3,5]. Once referrals have been screened to eliminate those whose coughs may be due to a worrisome cause, CREs have the skills to assess and counsel patients and the time to discuss a patient's symptoms and how to best control them [5]. CREs can discuss the conditions contributing to cough, reassure the patients of the benign nature of their condition, explain the importance of adherence to prescribed regimens, and instruct the proper way to use inhalers and other medications.

A study was undertaken to validate this approach [3,5]. Patients underwent computer randomization to care by a respiratory physician specialist (MD) or to care by a CRE after they underwent screening to rule a sinister cause of their cough [5]. Approximately one half of the referred patients were appropriate for CRE care. The major reasons for exclusion were the presence of comorbidities, abnormal chest x-rays, or exclusionary symptoms. The screening process was effective. Only 5 among the 490 (1%) screened patients were inappropriately randomized; 4 had previously unrecognized mild bronchiectasis and one had previously unrecognized interstitial lung disease [5]. The screening process did not miss any cases of primary lung cancer or pulmonary metastases. The CREs saw the patients randomized to their care, had a phone contact with the patient at 2 and at 6 weeks later and saw the patient again 4 and 8 weeks after the first visit (Figure 1). The assessment and management algorithm used by the CREs is shown in the figure [3]. Physicians saw the patients randomized to them initially and managed their patients as they saw fit. The details of their management have been reported previously [5].

At 8 weeks and at 6 months outcomes were similar in the patients cared for by CREs and by physicians [3,14]. In both groups, cough-specific QOL and symptoms improved. Despite cough being present for a median of 18 months (average of 5.5 years) prior to assessment in the clinic, cough improved or resolved in approximately two thirds of the referrals at 8 weeks and the improvements were still present a



6 months [3,14]. The use of CREs eliminated the wait list for chronic cough patients and care by CREs was approximately half the cost of care by physicians [3,5].

The AHS chronic cough clinic is now in its 12<sup>th</sup> year. Over that time, a dozen different CREs have participated in the clinic and more than 2,500 patients have been referred to and managed through the clinic. The clinic continues to provide prompt care to chronic cough patients in a cost-effective fashion [3]. Moreover, the clinic decants patients from the wait lists of the local respiratory physician specialists reducing wait times for respirology consultation for other conditions [5].

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