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Review

Adult and paediatric cough guidelines: Ready for an overhaul?

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ABSTRACT

Cough is one of the most common reasons that patients seek medical attention. Cough guidelines from numerous countries and societies are available to assist the clinician to investigate and manage patients with cough. We review some of the recent progress in the field of cough that may lead to revision of these guidelines. In adults with chronic cough, new causes such as obstructive sleep apnoea have been identified. A new terminology, cough hypersensitivity syndrome (CHS), has been proposed for patients with chronic cough, which emphasises cough reflex hypersensitivity as a key feature. New therapeutic options are now available, particularly for patients with refractory or idiopathic chronic cough, which include gabapentin, speech pathology management and morphine. There has been great progress in the assessment of cough with the development of validated quality of life questionnaires and cough frequency monitoring tools. In children, common aetiologies differ from adults and those managed according to guidelines have better outcomes compared to usual care. New diagnostic entities such as protracted bacterial bronchitis have been described. Paediatric-specific cough assessment tools such as the Parent/Child Quality of Life Questionnaire will help improve the assessment of patients. Further research is necessary to improve the evidence base for future clinical guideline recommendations. Guidelines in future should also aim to reach a wider audience that includes primary care physicians, non-specialists and patients.

1. Introduction

Cough is a prevalent worldwide health problem. A recent survey of >10,000 subjects from specialist clinics evaluating adult patients with chronic cough from America, Europe and Asia highlighted that patients experiencing chronic cough have a strikingly similar clinical phenotype regardless of the country of origin. Patients present most commonly in middle or late age and women are twice as likely as men to suffer from chronic cough [1]. The prevalence of cough in the community has been estimated to be as high as 12% [2] and cough is one of the most common reasons for patients to consult their doctor [3,4]. Cough has been traditionally divided into acute, sub-acute and chronic categories according to its duration [5]. Acute cough and sub-acute cough typically present to primary care physicians and are usually caused by viral upper respiratory tract infections, whereas chronic cough is often referred to secondary care physicians and can be caused by a wide range of conditions. Patients often have to visit their doctor on multiple occasions before referral to an appropriate specialist and misdiagnosis is common [6]. [7] Regardless of the cause and category, cough can be very disruptive to the individual and those around them, such as parents [8], and it is often associated with an impaired health-related quality of life [6,9]. It can be associated with absence from work, social embarrassment and severe adverse effects, for example, urinary incontinence [10].

The assessment and management of cough can vary widely between clinicians [11] and there is variation in treatment success outcomes between clinics, ranging from 60% to 95% [12]. This variation may reflect the paucity of effective tools to investigate patients, and also of treatment options. The American College of Chest Physicians (ACCP) cough guidelines were one of the first to be published by an international society in 1998 [13] and many others have been published subsequently in an attempt to standardise practice and improve outcomes. The focus of most guidelines has

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been the secondary case setting, with some attention to patients with acute cough in primary care. The algorithm for most adult cough guidelines is based on investigating patients according to the anatomic diagnostic protocol [14], which evaluates patients for asthma, gastro-oesophageal reflux disease (GORD) and rhinitis before rarer causes. In paediatrics, aetiology-based management is emphasised with avoidance of an empiric approach.

There has been little focus on developing protocols for specialist cough clinics in tertiary care, although this is the setting where most clinical research is conducted that will ultimately influence future clinical guidelines. A limitation for developers of cough guidelines is the lack of a strong evidence base to make recommendations, and a key issue in the field has been the lack of investment in basic science relative to other pulmonary conditions, to understand the mechanisms of cough. Nevertheless, there have been some significant developments that may warrant revision of current guidelines. A good example is the progress in therapeutic options for adult patients with refractory or idiopathic chronic cough. In children there has been the recognition of protracted bacterial bronchitis, an important cause of persistent cough. A number of validated outcome tools are now available that have improved the assessment of cough. This review will focus on guidelines published in English and some examples of recent progress in the field of cough that may lead to revision of both adult and paediatric cough guidelines.

2. Cough in adults

2.1. An overview of international cough guidelines

The ACCP Guideline published in 1998 was the first published cough guideline [13] and it was subsequently revised in 2006 [5]. It is a comprehensive review of both adult and paediatric patients and covers all categories of cough and cough due to a range of chronic lung diseases. The ACCP Guidelines were written by a large panel of international experts in the field. It is an authoritative review, and some of its many achievements include embedding the anatomic diagnostic protocol into clinical practice for chronic cough, and highlighting the lack of evidence to support the use of currently available over-the-counter anti-tussive medications in acute cough. In contrast, the European Respiratory Society and British Thoracic Society Guidelines are briefer and focus on the patient with unexplained cough. The management of patients in these guidelines is based on the anatomic diagnostic protocol, similar to the ACCP Guidelines. A summary of international cough guidelines is provided in Table 1. This was limited to guidelines published in the English language. International guidelines share many similarities because they assess patient according to the anatomic diagnostic protocol, but there are some important differences. For example, the prevalence of gastroesophageal reflux-related cough is much lower in Asia and this therefore impacts the assessment of patients in that setting [15]. Atopic cough has been largely recognised in Asia and there are some differences in its definition [16]. There are also significant differences between countries in the prevalence upper airway cough syndrome and this has been discussed elsewhere [17]. Although idiopathic chronic cough is now generally well recognised, there is no consensus on its prevalence.

2.2. New causes

There has been significant progress in the field of cough over the last ten years that may justify an update of guidelines [30]. In chronic cough, a number of new causes have been identified. Chronic cough can be the sole presenting feature of Obstructive Sleep Apnoea [31,32]. The presence of nocturnal cough, gastro-oesophageal reflux, snoring and obesity should alert the physician to the possibility of Obstructive Sleep Apnoea and an overnight oximetry study is sufficient in many patients to establish the diagnosis. Treatment with continuous positive airway pressure (CPAP) therapy seems to be effective in alleviating cough [33]. Enlarged tonsils have also been associated with chronic cough [34], and in patients where other causes of cough have been investigated and excluded tonsillectomy may be of benefit. A group of Japanese investigators have also recently described sensitisation with basidiomycetes fungi as a cause of cough in adults [35] and preliminary studies suggest that treatment with anti-fungal medication may be helpful [36]. Other rare causes of chronic cough reported include cervical spondylosis [37] and heterotopic salivary gland at the base of the tongue [38].

More recently, there has been increasing recognition of the importance of cough reflex hypersensitivity in most patients with chronic cough [39]. A recently published European Respiratory Society Taskforce document has proposed the term 'cough hypersensitivity syndrome' (CHS) to be used for patients with chronic cough [40]. CHS is defined as a 'clinical syndrome characterised by troublesome coughing often triggered by low levels of thermal, mechanical, or chemical exposure'. Although CHS is a promising initiative that may lead to more focus on sensory mechanisms in patients with cough, further work is necessary to develop diagnostic tests for cough reflex hypersensitivity and demonstrate this approach leads to clinical benefit.

Table 1
International cough guidelines.

Society/Country	Year	Type of cough	Adult/ Paediatric	Pages	Citations[a]
American College of Chest Physicians [5].	2006[b]	Acute, sub-acute and chronic	Both	287	550[c]
Association for Palliative Medicine of Great Britain and Ireland [18].	2012	Cough in palliative care	Adult	7	15
Australian Cough Guidelines [19].	2010	Chronic	Both	6	39
Thoracic Society of Australia and New Zealand [20].	2006	Chronic	Paediatric	6	129
Belgian primary care clinical guideline [21].	2008	Chronic	Paediatric	9	13
British Thoracic Society [22].	2008	Acute and chronic	Paediatric	15	121
British Thoracic Society [23].	2006	Acute and chronic	Adult	24	257
Canadian Thoracic Society (A "toolkit", not a full guideline) [24].	2006	Acute, sub-acute and chronic	Both	4	n/a
Chinese Thoracic Society [25].	2009	Acute, sub-acute and chronic	Adult	12	10
European Academy of Allergy and Clinical Immunology [26].	2013	Workplace related cough	Adult	13	2
European Respiratory Society [27].	2004	Chronic	Both	12	495
German Respiratory Society [28].	2004	Acute and chronic	Adult	10	20
Japanese Respiratory Society [16].	2006	Acute, sub-acute and chronic	Both	51	116
UK task group [29].	2010	Cough in lung cancer	Adult	8	24

Is there a need to update guidelines?

[a] Citations from Google scholar.

[b] Update is underway and initial publications expected 2015, first edition published 1998.

[c] This number relates to the number of citations for the executive summary published in 2006, which is 23 pages long. The entire guidance (the executive summary plus each individual publication that makes up the full guidance; 287 pages) has 3608 citations.

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