CHEST

Somatic Cough Syndrome (Previously Referred to as Psychogenic Cough) and Tic Cough (Previously Referred to as Habit Cough) in Adults and Children

CHEST Guideline and Expert Panel Report

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BACKGROUND: We conducted a systematic review on the management of psychogenic cough, habit cough, and tic cough to update the recommendations and suggestions of the 2006 guideline on this topic.

METHODS: We followed the American College of Chest Physicians (CHEST) methodologic guidelines and the Grading of Recommendations, Assessment, Development, and Evaluation framework. The Expert Cough Panel based their recommendations on data from the systematic review, patients' values and preferences, and the clinical context. Final grading was reached by consensus according to Delphi methodology.

RESULTS: The results of the systematic review revealed only low-quality evidence to support how to define or diagnose psychogenic or habit cough with no validated diagnostic criteria. With respect to treatment, low-quality evidence allowed the committee to only suggest therapy for children believed to have psychogenic cough. Such therapy might consist of nonpharmacologic trials of hypnosis or suggestion therapy, or combinations of reassurance, counseling, and referral to a psychologist, psychotherapy, and appropriate psychotropic medications. Based on multiple resources and contemporary psychologic, psychiatric, and neurologic criteria (*Diagnostic and Statistical Manual of Mental Disorders*, 5th edition and tic disorder guidelines), the committee suggests that the terms psychogenic and habit cough are out of date and inaccurate.

CONCLUSIONS: Compared with the 2006 CHEST Cough Guidelines, the major change in suggestions is that the terms psychogenic and habit cough be abandoned in favor of somatic cough syndrome and tic cough, respectively, even though the evidence to do so at this time is of low quality.

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ABBREVIATIONS: CHEST = American College of Chest Physicians; DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition

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Summary of Recommendations/Suggestions

1. In adults or children with chronic cough, we suggest that the presence or absence of night time cough or cough with a barking or honking character should not be used to diagnose or exclude psychogenic or habit cough (Grade 2C).

2. In adults with a persistently troublesome chronic cough, we suggest that the presence of depression and/or anxiety not be used as diagnostic criteria for psychogenic cough because patients with a persistently troublesome chronic cough can develop these psychologic symptoms when their coughs remain untreatable (Grade 2C).

3. In adults and children with chronic cough that has remained medically unexplained after a comprehensive evaluation based upon the most current evidence-based management guideline, we recommend that the diagnosis of tic cough be made when the patient manifests the core clinical features of tics that include suppressibility, distractibility, suggestibility, variability, and the presence of a premonitory sensation whether the cough is single or one of many tics (Grade 1C).

4. In adults and children with chronic cough, we suggest against using the diagnostic terms habit cough and psychogenic cough (Ungraded Consensus-Based Statement).

5. In adults and children with chronic cough, we suggest substituting the diagnostic term tic cough for habit cough to be consistent with the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (DSM-5) classification of diseases and because the definition and features of a tic capture the habitual nature of cough (Ungraded Consensus-Based Statement).

Remarks: A simple cough tic in children may respond to suggestion therapy alone, as if it were just a "habit." A cough tic in isolation that persists for more than one year would be referred to by DSM-5 criteria as a chronic vocal tic disorder. This is distinct from Tourette syndrome that involves both motor and vocal tics.

6. When disseminating research findings on tic cough, we suggest adding the parenthetical term (*habit*) (eg, tic cough [*habit*]) for three years, to help smooth the adoption of the new name, avoid confusion in the medical literature, and facilitate bibliographic database searches (Ungraded Consensus-Based Statement).

7. In adults and children, we suggest substituting the diagnostic term somatic cough disorder for psychogenic cough to be consistent with the DSM-5 classification of diseases (Ungraded Consensus-Based Statement).

Remarks: The term "psychogenic" has disappeared from the DSM classification of diseases because functional imaging studies have started showing cerebral correlates for disorders previously thought to be of a pure psychogenic nature.

8. When disseminating research findings on somatic cough disorder, we suggest adding the parenthetical term (*psychogenic*) (eg, somatic cough disorder [*psychogenic*]) for three years, to help smooth the adoption of the new name, avoid confusion in the medical literature, and facilitate bibliographic database searches (Ungraded Consensus-Based Statement).

9. In adults and children, we suggest that the diagnosis of somatic cough disorder can only be made after an extensive evaluation has been performed that includes ruling out tic disorders and uncommon causes and the patient meets the DSM-5 criteria (see Table 1) for a somatic symptom disorder (Grade 2C).

10. In children with chronic cough diagnosed with somatic cough disorder (previously referred to as psychogenic cough), we suggest non-pharmacological trials of hypnosis or suggestion therapy or combinations of reassurance, counseling, or referral to a psychologist and/or psychiatrist (Grade 2C).

Cough occurring in the absence of identified medical disease and that does not respond to medical treatment has sometimes been labeled as psychogenic cough, habit cough, or tic cough. Although these putative disorders should be differentially diagnosed from other forms of chronic cough, such as chronic refractory cough, unexplained cough, upper airway cough syndrome, vocal cord dysfunction syndrome, and cough hypersensitivity syndrome, there are currently no guidelines on how this differentiation should occur. This current guideline aims to assist the clinician when managing a patient with suspected psychogenic, habit, or tic cough.

The current American College of Chest Physicians (CHEST) Expert Panel reviewed the 2006 Cough Guidelines on psychogenic and habit cough[1] and

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always should be sought for any medical condition. The complete disclaimer for this guideline can be accessed at http://www.chestnet.org/Guidelines-and-Resources/Guidelines-and-Consensus-Statements/CHEST-Guidelines.

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conducted a systematic literature review[2] to develop the current updated recommendations and suggestions. The 2006 guidelines found that there was inconsistent methodology in previous studies of psychogenic cough and habit cough, and clinical characteristics of cough reported in previous articles were not systematically or prospectively studied.[1] Because of this, the 2006 guidelines could only make suggestions based on expert opinion. In this regard, the 2006 panel concluded that the diagnosis of these conditions could only be made once other associated diseases including rare conditions had been excluded and if cough improved following behavior modification or psychiatric therapy.

As there is limited research into psychogenic cough, the current Cough Expert Panel believed it would be beneficial to perform a systematic review to update the recommendations and suggestions of the 2006 guideline. The specific aims were to (1) determine how psychogenic, habit, and tic cough should be defined and diagnosed; (2) determine the differences between children and adults in terms of associated factors, cough characteristics, etiologies, and prognosis; and (3) make recommendations and/or suggestions regarding behavioral and/or pharmacologic treatments. Although knowledge of the content within this guideline should be useful for all adult and pediatric practitioners dealing with patients with chronic cough, the target audience for the recommendations and suggestions are experts with the necessary knowledge, resources, and expertise in managing patients with chronic cough.

Materials and Methods

The methodology used by the CHEST Guideline Oversight Committee to select the Expert Cough Panel Chair and the international panel of experts, perform the synthesis of the evidence, and develop the recommendations and suggestions has been published.[3,4] Key questions and parameters of eligibility were developed for this topic. Existing guidelines, systematic reviews, and primary studies were assessed for relevance and quality and were used to support the evidence-based graded recommendations or suggestions. A highly structured consensus-based Delphi approach was used to provide expert advice on all guidance statements. The total number of eligible voters for each guidance statement varied based on the number of managed individuals recused from voting on any particular statements because of their potential conflicts of interest. Transparency of process was documented. Further details of the methods have been published elsewhere.[3,4]

Consistent with recommendations from the Institute of Medicine,[5] the Panel conducted a comprehensive, systematic review of the literature[2] to provide the evidence base for this guideline. This systematic review followed an a priori established protocol and summarized the evidence supporting different cough management options in adults and children with psychogenic, tic, and habit cough. MEDLINE, EMBASE, the Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, and Scopus were searched from the earliest inception of each database to September 2013. Since the publication of this review, the databases have been periodically searched to look for additional substantive articles. From September 2013 to January 9, 2015, an additional 135 citations were discovered by the search string of the systematic review that formed the basis for this guideline[2]; none revealed any new or relevant information that affected our results or conclusions.

Guideline Framework

CHEST has adopted the GRADE framework (The Grading of Recommendations, Assessment, Development, and Evaluation). This framework separates the process of rating the quality of evidence from that of determining the strength of recommendation. The quality of evidence is based on the five domains of risk of bias, inconsistency, indirectness, reporting bias, and imprecision.[6] The quality of evidence (ie, the confidence in estimates) is rated as high (A), moderate (B), or low or very low (C). The strength of recommendation is determined based on the quality of evidence, balance of benefits and harms, patients' values and preferences, and availability of resources.[7] Recommendations can be strong or weak.

State of the Available Evidence

The systematic review[2] only identified low-quality evidence to support a particular strategy to define and treat psychogenic, habit, and tic cough. Therefore, for diagnosis and management recommendations, the Panel heavily depended on patient values, preferences, and availability of potential therapies. The Panel considered available diagnostic criteria and reviewed the contemporary psychiatric and neurology literature and how it dealt with various terms. The Panel also made several suggestions for future research and terminology.

Results

The recommendations and/or suggestions that follow are based upon a recently published systematic review[2] that included the comprehensive search of multiple databases without language restriction. The review identified a total of 18 uncontrolled studies that had enrolled 223 patients, 96% consisting of children or adolescents, 54% of whom were female.

Evidence and Recommendations

Clinical research question: In adults and children with presumed psychogenic cough, habit cough, or tic cough, what are the most effective pharmacologic and nonpharmacologic therapies?

Summary of the Evidence and Interpretation

Of the three cough descriptors embodied within the clinical question, psychogenic cough was the diagnosis most commonly used in the studies of the systematic review.[2] The search reported that there was low-quality evidence because of lack of control groups or use of any validated cough assessment tool, the retrospective nature of all the studies, heterogeneity of definitions and diagnostic criteria, and the very high likelihood of reporting bias.

Although some articles in the literature, particularly those reporting on patients in the pediatric age group, have suggested that a barking or honking quality of cough[1,8] and absence of cough at night[1,8] are criteria that strongly suggest the presence of a psychogenic, habit, and tic cough, these features were not consistently reported as being present or sought in diagnosing these conditions in this review. For example, barking or honking was present in only eight of the 18 studies, and coughing during sleep was noted in only three studies.[2] Because the absence of cough with a barking or honking character or the presence of cough during sleep did not deter investigators from making the diagnosis of psychogenic or habit cough, it appears that these three cough-associated clinical presentations are not sensitive screening findings for psychogenic or habit cough. Although cough character and timing have not been prospectively studied in psychogenic or habit cough, there are data in the literature that suggest that these three findings lack specificity for the diagnoses of psychogenic or habit cough. Barking cough has been reported in other childhood conditions, such as tracheomalacia[9]; in a prospective study in adults,[10] it has been reported that a barking or honking cough can be due to a variety of diseases, such as bronchiectasis, gastroesophageal reflux disease, and postnasal drip syndrome (ie, now referred to as upper airway cough syndrome). Although sleep disruption can occur because of coughing, it has been reported in prospective studies in adults that cough due to a variety of diseases, such as chronic bronchitis and gastroesophageal reflux disease, is unlikely to occur once patients fall asleep.[11,12] Although the biologic explanations are poorly understood, this is most likely due to the observed suppression effect that sleep has on cough.[13]

Although the potential diagnostic usefulness of other clinical criteria to assist in making the diagnosis of psychogenic cough is not known, the literature in adults suggests that the mere presence of depression and/or anxiety in patients with chronic unexplained cough not be used to make a definitive diagnosis of a psychologic condition. For example, epidemiologic studies have associated depression and/or anxiety, or symptoms characterizing these conditions, in association with chronic cough in the general population.[14,15] Prospective observational studies have shown that physical and psychologic adverse occurrences from chronic coughing that affect quality of life can be improved with successful treatment.[16,17] Additionally, there are prospective observational studies that suggest that depression and anxiety and/or the symptoms that characterize these conditions improve when the previously troublesome chronic cough improves.[18,19] Therefore, based upon low-quality studies, little evidence exists to support how to define or diagnose psychogenic or habit cough.[2]

1. In adults or children with chronic cough, we suggest that the presence or absence of night time cough or cough with a barking or honking character should not be used to diagnose or exclude psychogenic or habit cough (Grade 2C)**.**

2. In adults with a persistently troublesome chronic cough, we suggest that the presence of depression and/or anxiety not be used as diagnostic criteria for psychogenic cough because patients with a persistently troublesome chronic cough can develop these psychologic symptoms when their coughs remain untreatable (Grade 2C)**.**

Summary of the Evidence and Interpretation

Because the systematic review determined that there was little consistency on how best to define or diagnose psychogenic, habit, or tic cough,[2] the Committee referred to the contemporary psychiatric and neurology literature and how it dealt with these terms. According to the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (DSM-5),[20] there is no mention of habit disorders, but there is mention of tic disorders. Because the term "habit disorders" had traditionally been used in psychiatry to refer to tic disorders (including Tourette syndrome), trichotillomania, complex motor stereotypes, and skin picking, there is a precedence for merging the concepts of habit cough and tic cough into one name, tic cough, a DSM-5-recognized disorder.[20] The Committee is comfortable substituting the term tic cough for habit cough because the definition and features of a tic appear to capture the essence of what clinicians are referring to when they have used the term habit cough. The definition of a tic is a repetitive movement or phonic production that involves discrete muscle groups; tics are fragments of normal motor actions or vocalizations that are misplaced in context.[21] The core clinical features of tics include suppressibility, distractibility, suggestibility, variability, and the presence of a premonitory sensation.[21]

On the basis of the preceding considerations, the Committee believes that the term habit cough should be abandoned in favor of tic cough. To continue to use the word habit as it is used in lay terms is inaccurate and confusing and, therefore, problematic, because the lay definition is not faithful to what contemporary psychiatry or psychology believes is at the root of the disorder. In the lay sense, the term habit refers to behavior

patterns that are frequently repeated, such as taking an afternoon nap. Moreover, they are often given a positive or negative connotation (eg, smoking is a bad habit, whereas daily consumption of fruit or vegetables is a good habit). The Committee also believes that the definition of a tic cough should be a chronic cough that shares the core clinical features of tics and that may be seen alone (as in chronic vocal tic disorder)[20] or in the context of many tics in an individual with Tourette syndrome[20] or primary school-aged children with high-functioning autism.[22] Although many individuals can just present with single tics, such as a blinking, sniffing, or coughing tic, coughing is a very common vocal tic in individuals with tic disorders, and it can be the only manifestation of a tic disorder. It would be expected that pharmacologic and behavioral therapies shown to be helpful for vocal tics would be effective for a cough tic because a cough tic qualifies as a vocal tic. Such therapies[23,24] are distinct from those that would be prescribed for a conversion reaction.[25]

Although the term psychogenic also does not appear in the DSM-5,[20] the term "psychogenic cough" as it is currently used in psychiatry and neurology usually refers to a somatization disorder. Somatization refers to the transfer of psychologic distress into a physical symptom.[25,26] To be consistent with the DSM-5 classification of diseases, the Cough Panel believes that the closest diagnosis of a somatizing patient with a cough is "somatic cough disorder."[20] The DSM-5 criteria for a somatic symptom disorder can be found in Table 1. On the basis of the preceding considerations, the Committee believes that the term psychogenic cough should be abandoned in favor of somatic cough disorder. Somatic cough disorder is not to be confused with malingering, which is considered separately from psychogenic disorders, because it implies direct gain (financial or emotional) due to feigning of an illness.[20] It should also not be confused with a conversion disorder, because conversion implies that a quasi-neurologic symptom is present that cannot be explained by an underlying neurologic disorder.[20,25]

3. In adults and children with chronic cough that has remained medically unexplained after a comprehensive evaluation based upon the most current evidence-based management guideline, we recommend that the diagnosis of tic cough be made when the patient manifests the core clinical features of tics that include suppressibility, distractibility, suggestibility, variability, and the presence of a premonitory sensation whether the cough is single or one of many tics (Grade 1C)**.**

4. In adults and children with chronic cough, we suggest against using the diagnostic terms habit cough and psychogenic cough (Ungraded Consensus-Based Statement)**.**

5. In adults and children with chronic cough, we suggest substituting the diagnostic term tic cough for habit cough to be consistent with the DSM-5 classification of diseases and because the definition

TABLE 1] DSM-5 Criteria for Somatic Symptom Disorder

Diagnostic Criteria
A. One or more somatic symptoms that are distressing or result in significant disruption of daily life.
B. Excessive thoughts, feelings, or behaviors related to the somatic symptoms or associated health concerns as manifested by at least one of the following:
1. Disproportionate and persistent thoughts about the seriousness of one's symptoms.
2. Persistently high level of anxiety about health or symptoms.
3. Excessive time and energy devoted to these symptoms or health concerns.
C. Although any one somatic symptom may not be continuously present, the state of being symptomatic is persistent (typically more than 6 mo).
Specify if:
Persistent: A persistent course is characterized by severe symptoms, marked impairment, and long duration (more than 6 mo).
Specify current severity:
Mild: Only one of the symptoms specified in Criterion B is fulfilled.
Moderate: Two or more of the symptoms specified in Criterion B are fulfilled.
Severe: Two or more of the symptoms specified in Criterion B are fulfilled, plus there are multiple somatic complaints (or one very severe somatic symptom).

DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition. Reprinted with permission from the American Psychiatric Association.[20]

and features of a tic capture the habitual nature of cough (Ungraded Consensus-Based Statement)**.**

Remarks: A simple cough tic in children may respond to suggestion therapy alone, as if it were just a "habit." A cough tic in isolation that persists for more than one year would be referred to by DSM-5 criteria as a chronic vocal tic disorder. This is distinct from Tourette syndrome that involves both motor and vocal tics.

6. When disseminating research findings on tic cough, we suggest adding the parenthetical term (*habit*) (eg, tic cough [*habit*]) for three years, to help smooth the adoption of the new name, avoid confusion in the medical literature, and facilitate bibliographic database searches (Ungraded Consensus-Based Statement)**.**

7. In adults and children, we suggest substituting the diagnostic term somatic cough disorder for psychogenic cough to be consistent with the DSM-5 classification of diseases (Ungraded Consensus-Based Statement)**.**

Remarks: The term "psychogenic" has disappeared from the DSM classification of diseases because functional imaging studies have started showing cerebral correlates for disorders previously thought to be of a pure psychogenic nature.

8. When disseminating research findings on somatic cough disorder, we suggest adding the parenthetical term (*psychogenic*) (eg, somatic cough disorder [*psychogenic*]) for three years, to help smooth the adoption of the new name, avoid confusion in the medical literature, and facilitate bibliographic database searches (Ungraded Consensus-Based Statement)**.**

9. In adults and children, we suggest that the diagnosis of somatic cough disorder can only be made after an extensive evaluation has been performed that includes ruling out tic disorders and uncommon causes and the patient meets the DSM-5 criteria (see Table 1) for a somatic symptom disorder (Grade 2C)**.**

Summary of the Evidence and Interpretation

With respect to treatment options that primarily addressed what the authors referred to as psychogenic cough,[2] pharmacologic interventions were reported to be generally ineffective, whereas several nonpharmacologic strategies (eg, hypnosis, suggestion therapy) or combinations of reassurance, counseling, relaxation techniques, referral to a psychologist, psychotherapy, and appropriate medications (eg, tranquilizers, anxiolytics, and antidepressants) were reported to be potentially helpful in children. Because of these limitations, the systematic review concluded that only low-quality evidence exists to support any particular treatment of psychogenic or habit cough.[2]

10. In children with chronic cough diagnosed with somatic cough disorder (previously referred to as psychogenic cough), we suggest non-pharmacological trials of hypnosis or suggestion therapy or combinations of reassurance, counseling, or referral to a psychologist and/or psychiatrist (Grade 2C)**.**

Areas for Future Research

To advance the field, there are a number of potential research endeavors that should be undertaken. They are enumerated here:

- Rigorous longitudinal observational studies with standardized diagnostic and treatment protocols are needed to help identify if there is a clinical and psychologic profile of patients who are likely to have somatic cough disorder and to understand how and why successful treatment options might be working.
- Because somatic cough disorder is not a commonly diagnosed disorder in adults, there is a need to create and maintain a registry of patients with this disorder from which research subjects can be recruited to participate in multicenter randomized controlled trials.
- There is a need for randomized controlled trials of patients with somatic cough disorder because there is a lack of comparative efficacy treatment trials.[2]
- Because somatic cough disorder is not commonly diagnosed in adults, there is a need for outcomes of n-of-1 randomized controlled trials[27,28] to establish efficacy of pharmacologic treatments in individual patients.
- There is a need to further explore the role of functional imaging studies (eg, MRI) in patients diagnosed with somatic cough syndrome and tic cough.
- There is a need to establish if the pharmacologic and behavioral therapies for other vocal tics are as effective or different in cough tic.

Conclusions

Since publication of the 2006 CHEST Cough Guidelines,[1] the field of psychogenic, habit, and tic cough has advanced based upon the results of the recent systematic review on the topic.[2] Compared with the 2006 publication, the major change in recommendations is that the terms habit and psychogenic cough be abandoned because they are out of date and inaccurate. Although

the other recommendations are similar to those made in the 2006 guidelines,[1] the strength of the evidence for the recommendations and suggestions made in this guideline has increased. This article has also identified gaps in our knowledge and areas for future research.

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Endorsements: This guideline has been endorsed by the American Association for Respiratory Care, the Canadian Thoracic Society, and the Irish Thoracic Society.

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Additional information: The e-Appendix can be found in the Supplemental Material section of the online article.

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