Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL GUIDELINE CLEARINGHOUSE

General

Guideline Title

Classification of cough as a symptom in adults and management algorithms: CHEST guideline and Expert Panel report.

Bibliographic Source(s)

Irwin RS, French CL, Chang AB, Altman KW, CHEST Expert Cough Panel. Classification of cough as a symptom in adults and management algorithms: CHEST guideline and Expert Panel Report. Chest. 2018 Jan;153(1):196-209. [35 references] PubMed

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

NEATS Assessment

National Guideline Clearinghouse (NGC) has assessed this guideline's adherence to standards of trustworthiness, derived from the Institute of Medicine's report Clinical Practice Guidelines We Can Trust.

= Poor = Fair = Good = Very Good = Excellent

Assessment	Standard of Trustworthiness
YES	Disclosure of Guideline Funding Source
	Disclosure and Management of Financial Conflict of Interests
	Guideline Development Group Composition
YES	Multidisciplinary Group
UNKNOWN	Methodologist Involvement

▮▮▮▮▯	Patient and Public Perspectives
	Use of a Systematic Review of Evidence
▮▮▮▮▮	Search Strategy
▮▮▮▮▮	Study Selection
▮▮▮▮▮	Synthesis of Evidence
	Evidence Foundations for and Rating Strength of Recommendations
▮▮▮▮▯	Grading the Quality or Strength of Evidence
▮▮▯▯▯	Benefits and Harms of Recommendations
▮▮▮▮▮	Evidence Summary Supporting Recommendations
▮▮▮▮▮	Rating the Strength of Recommendations
▮▮▮▮▮	Specific and Unambiguous Articulation of Recommendations
▮▯▯▯▯	External Review
▮▮▮▮▮	Updating

Recommendations

Major Recommendations

The grades of recommendation (1A–2C, consensus-based [CB]) and the approach to rating the quality of evidence are defined at the end of the "Major Recommendations" field.

> For adult patients complaining of cough, the Expert Panel suggests that acute cough be defined as being <3 weeks in duration (Grade 2C).
> For adult patients complaining of cough, the Expert Panel suggests that subacute cough be defined as being between 3 and 8 weeks in duration (Grade 2C).
> For adult patients complaining of cough, the Expert Panel suggests that chronic cough be defined as being >8 weeks in duration (Grade 2C).
> For adult patients seeking medical care complaining of cough, the Expert Panel suggests that estimating the duration of cough is the first step in narrowing the list of potential diagnoses (Grade 2C).
> For adult patients around the globe complaining of cough, the Expert Panel suggests that the cough be managed using evidence-based guidelines that are based upon duration of cough (Grade 2C).

Definitions

American College of Chest Physicians (CHEST) Grading System

Grade of Recommendation	Balance of Benefit vs. Risk and Burdens (Strength of the Recommendation: Level 1 or 2)	Methodologic Strength of Supporting Evidence (Quality of Body of Evidence: A, B, C, or CB)	Implications
Graded evidence-based guideline recommendations			
Strong recommendation, high-quality evidence (1A)	Benefits clearly outweigh risk and burdens or vice versa	Consistent evidence from randomized controlled trials (RCTs) without important limitations or exceptionally strong evidence from observational studies	Recommendation can apply to most patients in most circumstances. Further research is very unlikely to change confidence in the estimate of effect.
Strong recommendation, moderate-quality evidence (1B)	Benefits clearly outweigh risk and burdens or vice versa	Evidence from RCTs with important limitations (inconsistent results, methodologic flaws, indirect or imprecise), or very strong evidence from observational studies	Recommendation can apply to most patients in most circumstances. Higher-quality research may well have an important impact on confidence in the estimate of effect and may change the estimate.
Strong recommendation, low- or very-low-quality evidence (1C)	Benefits clearly outweigh risk and burdens or vice versa	Evidence for at least one critical outcome from observational studies, case series, or from RCTs with serious flaws or indirect evidence	Recommendation can apply to most patients in many circumstances. Higher-quality research is likely to have an important impact on confidence in the estimate of effect and may well change the estimate.
Weak recommendation, high-quality evidence (2A)	Benefits closely balanced with risks and burden	Consistent evidence from RCTs without important limitations or exceptionally strong evidence from observational studies	The best action may differ depending on circumstances or patient's or societal values. Further research is very unlikely to change confidence in the estimate of effect.
Weak recommendation, moderate-quality evidence (2B)	Benefits closely balanced with risks and burden	Evidence from RCTs with important limitations (inconsistent results, methodologic flaws, indirect or imprecise) or very strong evidence from observational studies	Best action may differ depending on circumstances or patient's or societal values. Higher-quality research may well have an important impact on confidence in the estimate of effect and may change the estimate.
Weak recommendation, low- or very-low-quality evidence (2C)	Uncertainty in the estimates of benefits, risks, and burden; benefits, risk, and burden may be closely balanced	Evidence for at least one critical outcome from observational studies, case series, or RCTs, with serious flaws or indirect evidence	Other alternatives may be equally reasonable. Higher-quality research is likely to have an important impact on confidence in the estimate of effect and may well change the estimate.
Nongraded consensus-based suggestions			
Consensus-based (CB)	Uncertainty due to lack of evidence but expert opinion that benefits outweigh risk and burdens or vice versa	Insufficient evidence for a graded recommendation	Future research may well have an important impact on confidence in the estimate of effect and may change the estimate.

Clinical Algorithm(s)

The following clinical algorithms are provided in the original guideline document:

Acute cough algorithm for the management of patients ≥ 15 years of age with cough lasting < 3 weeks
Subacute cough algorithm for the management of patients ≥ 15 years of age with cough lasting 3 to 8 weeks
Chronic cough algorithm for the management of patients ≥ 15 years of age with cough lasting > 8 weeks

Scope

Disease/Condition(s)

Acute (<3 weeks), subacute (3-8 weeks) and chronic (>8 weeks) cough

Guideline Category

Diagnosis

Management

Treatment

Clinical Specialty

Allergy and Immunology

Family Practice

Internal Medicine

Pulmonary Medicine

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Respiratory Care Practitioners

Guideline Objective(s)

To answer the following key clinical question: Are the American College of Chest Physicians (CHEST) 2006 classifications of acute, subacute and chronic cough and associated management algorithms in adults that were based on durations of cough useful?

Target Population

Adult patients complaining of cough

Interventions and Practices Considered

1. Classification of cough based on duration: acute (<3 weeks), subacute (between 3 and 8 weeks), chronic cough (>8 weeks)
2. Estimating cough duration to narrow potential diagnoses
3. Use of evidence-based guidelines that are based upon duration of cough

Major Outcomes Considered

Final diagnosis based on favorable response of cough to treatment

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Literature Search

The methods used for this systematic review conformed to those outlined in the article "Methodologies for the Development of CHEST Guidelines and Expert Panel Reports" (see the "Availability of Companion Documents" field). Librarians from the University of Massachusetts Medical School undertook searches to answer the question for acute, subacute, and chronic cough. For chronic cough, articles were identified from searches of electronic databases (PubMed and SCOPUS) commencing from their initiation through February 23, 2016. PubMed was relied on to pick up any Cochrane systematic reviews for chronic cough. For acute and subacute cough, articles were identified from searches of PubMed, SCOPUS, and the Cochrane Database of Systematic Reviews from their initiation through February 23, 2016. The reference lists of retrieved articles were examined for additional citations. The search terms used are presented in e-Tables 1 and 2 in the online supplement (see the "Availability of Companion Documents" field). The titles and abstracts of the search results were independently evaluated by two reviewers to identify potentially relevant articles. The full texts of all potentially relevant articles were retrieved, and two reviewers independently reviewed all retrieved studies. Although a third reviewer was available to adjudicate any disagreements, there were no disagreements. Because a review of articles published before 2006 used a variety of definitions of acute and chronic cough, and subacute cough had not yet been defined, and because the American College of Chest Physicians (CHEST) management algorithms for cough were not published until 2006, the authors decided to include only articles published in 2006 and afterward in their analysis.

See the Online Supplement for additional information on search strategy (see the "Availability of Companion Documents" field).

Number of Source Documents

- With respect to acute cough, only three studies met the criteria for quality assessment, and all had a high risk of bias.
- With respect to subacute cough, only two studies met the criteria for quality assessment, and all

had a high risk of bias.
- With respect to chronic cough, although all studies were prospective and none mentioned any harms, 11 studies met the criteria for quality assessment and all had a high risk of bias.

Refer to Figures 1 and 2 in the original guideline document for selections of studies that address the key clinical question.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

See the "Rating Scheme for the Strength of the Recommendations" field.

Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Quality Assessment

Included articles underwent methodological assessment. Quality assessment was carried out if the articles met the following criteria: (1) they were published during 2006 or later; (2) they defined acute, subacute, or chronic cough (or a combination of the three) based on the duration, as described in the methods sections of the articles, and reported the actual durations in the results sections of the articles; and (3) they reported the spectrum and frequency of causes of cough in the study subjects based on response to treatment as described in the results sections of the articles. For randomized controlled trials, quality assessment was carried out with the Cochrane Risk of Bias Tool. For observational studies, quality assessment was performed with the Cochrane risk of bias tool for cohort studies. For systematic reviews, quality assessment was done with the Documentation and Appraisal Review Tool.

Methods Used to Formulate the Recommendations

Expert Consensus (Delphi)

Description of Methods Used to Formulate the Recommendations

The authors used the published methodology of the American College of Chest Physicians (CHEST) Guideline Oversight Committee to select the Expert Cough Panel Chair and the International Panel of Experts to perform a systematic review, synthesize evidence, and develop recommendations and practice management suggestions. After generating the key clinical question for this systematic review, Population, Intervention, Comparison, Outcome (PICO) elements were derived to inform the literature review. The question was formulated after polling the existing writing group for key clinical questions related to how best to classify cough. The writing committee unanimously chose to focus on the durations of acute, subacute, and chronic cough and how they had been defined in the 2006 Cough Guidelines. The resultant PICO elements that formed the basis of the subsequent systematic review are presented in Table 1 in the original guideline document.

Practice Recommendations/Suggestions

The findings of this systematic review were used to support the evidence-graded recommendations or suggestions. A structured consensus-based modified Delphi approach was used to provide expert advice on guidance statements. In this regard, for a recommendation or suggestion to be approved by the Expert Cough Panel, 75% of the eligible panel members had to vote, and 80% of those voting had to strongly agree or agree with the statement. In the context of practice recommendations, a strong recommendation applies to almost all patients, whereas a weak recommendation is conditional and applies to only some patients. The strength of recommendation here is based on consideration of three factors: balance of benefits to harms, patient values and preferences, and resource considerations. Harms incorporate risks and burdens to the patients that can include convenience or lack of convenience, difficulty of administration, and invasiveness. These, in turn, impact patient preferences. A patient representative who had been a member of the Cough Panel provided patient-centered input for this guideline and approved of the suggestions contained herein. The resource considerations go beyond economics and should also factor in time and other indirect costs. The authors of these recommendations or suggestions have considered these parameters in determining the strength of the recommendations or suggestions and associated grades.

Rating Scheme for the Strength of the Recommendations

American College of Chest Physicians (CHEST) Grading System

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Strong recommendation, low- or very-low-quality evidence (1C)	Benefits clearly outweigh risk and burdens or vice versa	Evidence for at least one critical outcome from observational studies, case series, or from RCTs with serious flaws or indirect evidence	Recommendation can apply to most patients in many circumstances. Higher-quality research is likely to have an important impact on confidence in the estimate of effect and may well change the estimate.
Weak recommendation, high-quality evidence (2A)	Benefits closely balanced with risks and burden	Consistent evidence from RCTs without important limitations or exceptionally strong evidence from observational studies	The best action may differ depending on circumstances or patient's or societal values. Further research is very unlikely to change confidence in the estimate of effect.
Weak recommendation, moderate-quality evidence (2B)	Benefits closely balanced with risks and burden	Evidence from RCTs with important limitations (inconsistent results, methodologic flaws,	Best action may differ depending on circumstances or patient's or societal values. Higher-quality research may well have an

Grade of Recommendation	Balance of Benefit vs. Risk and Burdens (Strength of the Recommendation: Level 1 or 2)	Methodologic Strength of Supporting Evidence (Quality of Body of Evidence: A, B, C, or CB)	Implications
		indirect or imprecise) or very strong evidence from observational studies	important impact on confidence in the estimate of effect and may change the estimate.
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Nongraded consensus-based suggestions			
Consensus-based (CB)	Uncertainty due to lack of evidence but expert opinion that benefits outweigh risk and burdens or vice versa	Insufficient evidence for a graded recommendation	Future research may well have an important impact on confidence in the estimate of effect and may change the estimate.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Refer to the "Methodologies" documents for information on the review processes (see the "Availability of Companion Documents" field).

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Although the classification and management of acute, subacute, and chronic cough based on its duration were proposed in the 2006 guidelines, it was not known until this systematic review that the definitions were being used around the globe and that the management algorithms would accurately predict the most common causes of acute, subacute, and chronic cough.

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

American College of Chest Physician guidelines are intended for general information only, are not medical advice, and do not replace professional medical care and physician advice, which 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 .

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

Irwin RS, French CL, Chang AB, Altman KW, CHEST Expert Cough Panel. Classification of cough as a symptom in adults and management algorithms: CHEST guideline and Expert Panel Report. Chest. 2018 Jan;153(1):196-209. [35 references] PubMed

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2018 Jan

Guideline Developer(s)

American College of Chest Physicians - Medical Specialty Society

Source(s) of Funding

The authors have reported to *CHEST* that no funding was received for this study.

Guideline Committee

American College of Chest Physicians (CHEST) Expert Cough Panel

Composition of Group That Authored the Guideline

Authors: Richard S. Irwin, MD, Master FCCP; Cynthia L. French, PhD, RN, ANP-BC, FCCP; Anne B. Chang, MBBS, PhD, MPH; Kenneth W. Altman, MD, PhD

Financial Disclosures/Conflicts of Interest

Financial/Nonfinancial Disclosures

The authors have reported to *CHEST* the following: R. S. I. and C. L.F. are codevelopers of the Cough Quality of Life Questionnaire and have received less than $400 each in the past 6 years to support its further development. Although R. S. I. is the Editor in Chief of *CHEST*, the review and all editorial decisions regarding this manuscript were independently made by others. K. W. A. discloses consultations with KayPentax, receiving $300, Bayer, receiving $800, and 5AM Ventures, receiving $550, which was all donated to the American Laryngological Association. None declared (A. B. C.).

Guideline Endorser(s)

American College of Allergy, Asthma and Immunology - Medical Specialty Society

American Thoracic Society - Medical Specialty Society

Asian Pacific Society of Respirology - Disease Specific Society

Canadian Thoracic Society - Medical Specialty Society

Irish Thoracic Society - Medical Specialty Society

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the CHEST Journal Web site . Also available to CHEST Journal subscribers through the CHEST app for iOS and Android.

Availability of Companion Documents

The following are available:

Classification of cough as a symptom in adults and management algorithms. Online supplement. CHEST. 2018 Jan. 3 p. Available from the CHEST Journal Web site .
Lewis SZ, Diekemper RL, French CT, Gold PM, Irwin RS. Methodologies for the development of the management of cough: CHEST guideline and Expert Panel report. Chest. 2014 Jul;146(5):1395-402. Available from the CHEST Journal Web site .
Lewis SZ, Diekemper RL, Ornelas J, Casey KR. Methodologies for the development of CHEST guidelines and Expert Panel reports. Chest. 2014 Jul;146(1):182-92. Available from the CHEST Journal Web site .
Irwin RS, French CT, Lewis SZ, Diekemper RL, Gold PM. Overview of the management of cough: CHEST guideline and Expert Panel report. Chest. 2014(4):885-9. Available from the CHEST Journal Web site .

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on March 15, 2018. The guideline developer agreed to not review the content.

This NEATS assessment was completed by ECRI Institute on March 20, 2018. The guideline developer agreed to not review the content.

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