

Original Article



KAAACI Consensus Document on the Goals and Standards of Chronic Cough Clinics in Korea: A Delphi Study

Mi-Yeong Kim ,¹ Hwa Young Lee ,² Kyung Eun Park ,³ Young-Jae Lee ,^{3,4} Yeonhee Kim ,⁵ Ji-Yoon Oh ,⁶ Yu Kyoung Hwang ,⁷ Jiung Jeong ,⁸ Young-Chan Kim ,⁹ Noeul Kang ,¹⁰ Ha-Kyeong Won ,^{7,11} Sun Young Yoon ,¹² Min-Kyung Oh ,¹³ Sang Min Lee ,¹⁴ So Ri Kim ,¹⁵ Sae-Hoon Kim ,¹⁶ Sang-Hoon Kim ,¹⁷ Sang-Heon Kim ,¹⁸ Yoon-Seok Chang ,¹⁶ Byung-Jae Lee ,¹⁰ Lorcan P. McGarvey ,¹⁹ Sang Heon Cho ,²⁰ Woo-Jung Song ,²¹ On behalf of the KAAACI Chronic Cough Working Group

¹Department of Internal Medicine, Busan Paik Hospital, Inje University College of Medicine, Busan, Korea

²Division of Allergy, Department of Internal Medicine, Seoul St Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, Korea

³University of Ulsan College of Medicine, Seoul, Korea

⁴Republic of Korea Air Force, Yangju, Korea

⁵Division of Allergy and Clinical Immunology, Department of Internal Medicine, Soonchunhyang University Seoul Hospital, Seoul, Korea

⁶Division of Allergy, Department of Internal Medicine, Seoul Medical Center, Seoul, Korea

⁷Department of Internal Medicine, Chungbuk National University Hospital, Chungbuk National University College of Medicine, Cheongju, Korea

⁸Department of Internal Medicine, School of Medicine, Kyungpook National University, Daegu, Korea

⁹Division of Allergy and Clinical Immunology, Department of Internal Medicine, Seoul National University Hospital, Seoul, Korea

¹⁰Division of Allergy, Department of Medicine, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

¹¹Department of Internal Medicine, Veterans Health Service Medical Center, Seoul, Korea

¹²Department of Allergy and Pulmonology in Internal Medicine, Chungnam National University Sejong Hospital, Chungnam National University, Sejong, Korea

¹³Department of Pharmacology, Inje University College of Medicine, Busan, Korea

¹⁴Division of Respiratory Diseases and Allergy, Department of Internal Medicine, Dankook University College of Medicine, Cheonan, Korea

¹⁵Division of Respiratory Medicine and Allergy, Department of Internal Medicine, Jeonbuk National University Medical School, Jeonju, Korea

¹⁶Department of Internal Medicine, Seoul National University Bundang Hospital, Seoul National University College of Medicine, Seongnam, Korea

¹⁷Department of Internal Medicine, Eulji General Hospital, Eulji University School of Medicine, Seoul, Korea

¹⁸Department of Internal Medicine, Hanyang University College of Medicine, Seoul, Korea

¹⁹Wellcome-Wolfson Institute for Experimental Medicine, School of Medicine, Dentistry and Biomedical Sciences, Queen's University Belfast, Belfast, UK

²⁰Department of Internal Medicine, Seoul National University College of Medicine, Seoul, Korea

²¹Department of Allergy and Clinical Immunology, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

OPEN ACCESS

Received: Oct 9, 2025

Revised: Jan 13, 2026

Accepted: Feb 11, 2026

Published online: Jun 8, 2026

Correspondence to

Woo-Jung Song, MD, PhD

Department of Allergy and Clinical Immunology, Asan Medical Center, University of Ulsan College of Medicine, 88 Olympic-ro 43-gil, Songpa-gu, Seoul 05505, Korea.
Tel: +82-2-3010-3288
Email: swj0126@amc.seoul.kr

Copyright © 2026 The Korean Academy of Asthma, Allergy and Clinical Immunology · The Korean Academy of Pediatric Allergy and Respiratory Disease

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ORCID iDs

Mi-Yeong Kim

<https://orcid.org/0000-0002-2640-6258>

Hwa Young Lee

<https://orcid.org/0000-0002-1582-2256>

Kyung Eun Park

<https://orcid.org/0009-0006-3459-8508>

Young-Jae Lee

<https://orcid.org/0000-0002-6287-5772>

ABSTRACT

Purpose: Specialist cough clinics operate in various countries to address the complex needs of patients with chronic cough. Despite their increasing recognition and the recent establishment of an international consensus, such as the European Respiratory Society NEUROCOUGH initiative, no formal agreement on the goals and standards of chronic cough clinics has been established in South Korea. To address this gap, the Korean Academy

Yeonhee Kim 
<https://orcid.org/0009-0001-2563-5497>
 Ji-Yoon Oh 
<https://orcid.org/0000-0002-2339-7878>
 Yu Kyung Hwang 
<https://orcid.org/0000-0002-8025-7134>
 Jiung Jeong 
<https://orcid.org/0000-0002-4726-7226>
 Young-Chan Kim 
<https://orcid.org/0000-0002-6726-5957>
 Noeul Kang 
<https://orcid.org/0000-0003-0925-3891>
 Ha-Kyeong Won 
<https://orcid.org/0000-0001-8127-7885>
 Sun Young Yoon 
<https://orcid.org/0000-0002-4205-1434>
 Min-Kyung Oh 
<https://orcid.org/0000-0001-7584-5436>
 Sang Min Lee 
<https://orcid.org/0000-0002-9568-2096>
 So Ri Kim 
<https://orcid.org/0000-0002-6074-9158>
 Sae-Hoon Kim 
<https://orcid.org/0000-0002-2572-5302>
 Sang-Hoon Kim 
<https://orcid.org/0000-0002-4105-0552>
 Sang-Heon Kim 
<https://orcid.org/0000-0001-8398-4444>
 Yoon-Seok Chang 
<https://orcid.org/0000-0003-3157-0447>
 Byung-Jae Lee 
<https://orcid.org/0000-0001-6940-0836>
 Lorcan P. McGarvey 
<https://orcid.org/0000-0002-2860-0302>
 Sang Heon Cho 
<https://orcid.org/0000-0002-7644-6469>
 Woo-Jung Song 
<https://orcid.org/0000-0002-4630-9922>

Disclosure

This consensus statement was supported by the KAAACI. All conflicts of interest were disclosed and appropriately managed.

LMG is the chief investigator of the ERS NEuroCOUGH Clinical Research Collaboration. He has received consulting fees from Bayer, Bellus, GSK, Merck, NeRRc, Nocion, and Trevi; lecture fees from Chiesi, GSK, and Merck; and grant support from Bayer, Bellus, Chiesi, Merck, and Shionogi outside the submitted work.

WJS declares grants from Merck Sharp & Dohme Corp., Daewoong Pharmaceutical, and AstraZeneca, consulting fees from Merck, Bellus, AstraZeneca, Shionogi, and GSK, and lecture fees from Thermo Fischer/

of Asthma, Allergy and Clinical Immunology (KAAACI) and its Chronic Cough Working Group initiated a Delphi study to develop an expert consensus on the objectives, roles, and standards of chronic cough clinics tailored to the Korean healthcare context.

Methods: A Task Force endorsed by KAAACI and composed of members of the Chronic Cough Working Group conducted a 2-round Delphi survey involving 113 clinicians with relevant clinical or research expertise. The panel evaluated 12 statements and 17 diagnostic items. A consensus was defined as > 70% agreement and < 20% disagreement.

Results: Consensus was achieved for all 12 statements (agreement rates, 93.9%–99%), covering clinical care, research, and education. The key agreements were the provision of evidence-based care to improve the quality of life and reduce disease burden; comprehensive assessment of cough characteristics and treatable traits; careful use of neuromodulators or opioid antitussives; appropriate referral to other specialists; and active participation in research and education. A minimum diagnostic test panel, comprising chest radiography, spirometry, paranasal sinus X-ray, and fractional exhaled nitric oxide measurement/blood eosinophil count, was also established.

Conclusions: This study presents the first national consensus to define the goals and standards of chronic cough clinics in South Korea. The recommendations reflect a balance between internationally suggested approaches and local healthcare realities. This consensus is expected to provide updates to national guidelines, facilitate standardized care, and support future research and educational initiatives in chronic cough.

Keywords: Chronic cough; consensus; disease management

INTRODUCTION

Cough substantially impairs quality of life and is one of the most common symptoms prompting patients to seek medical attention.¹⁻³ Chronic cough, defined as cough lasting more than 8 weeks, affects approximately 5%–10% of adults in the community.⁴⁻⁶ Although this condition is common, it is often difficult to manage because it may present as an isolated symptom without any obvious clinical signs of an underlying etiology.

The differential diagnosis of chronic cough traditionally considers chronic diseases that are anatomically or neurobiologically linked to cough reflex pathways.^{7,8} These diseases include asthma, upper airway conditions affecting the throat, gastroesophageal reflux disease (GERD), and parenchymal lung disorders. However, in clinical practice, a substantial proportion of patients do not fit neatly into these categories.^{9,12} In such cases, neurogenic mechanisms of cough are often considered, and pharmacologic and non-pharmacologic treatments targeting cough hypersensitivity may be explored.^{13,16} With this shift, chronic cough has been increasingly recognized as a distinct clinical condition in its own right rather than merely a symptom of another disease.^{17,18}

Patients with an unknown underlying cause of chronic cough often experience multiple healthcare visits accompanied by frustration, unmet expectations, and dissatisfaction.¹⁹⁻²¹ This burden is increased by the lack of a clear diagnostic name and the absence of effective treatments. In addition to cases evidently attributed to specific causes such as asthma or structural lung diseases, diagnostic procedures often have limited practicality, feasibility, or diagnostic yield in primary and secondary care. As a result, physicians frequently resort to empirical treatments. However, such treatments may lead to repeated and often ineffective

Immunotek, Celltrion, Merck, AstraZeneca, GSK, Sanofi, and Novartis.

Other authors have none to declare.

use of medications such as proton pump inhibitors, H1-antihistamines, antibiotics, oral corticosteroids, or narcotic antitussives.^{22,23} Such practices may increase healthcare costs and expose patients to unnecessary risks related to long-term medication use.²⁴⁻²⁶ Furthermore, community-based studies in Korea and Taiwan have shown that essential diagnostic tests recommended in clinical guidelines, such as chest radiography and spirometry, are underutilized.²⁷ Moreover, studies in Canada and the UK have indicated that many clinicians are unfamiliar with chronic cough management guidelines.^{28,29}

Another study in Korea has shown that many patients with chronic cough attending referral hospitals express a desire for access to or information regarding cough specialists or dedicated cough clinics.³⁰ In reality, “cough clinics” or “chronic cough clinics” have been independently established by individual physicians in primary, secondary, or tertiary care settings in Korea. However, they typically operate within general allergy, respiratory, or asthma clinics, and there are no established standards or accreditation criteria. Notably, the goals, scope, and minimum standards of cough clinics have not yet been formally defined. Recently, the European Respiratory Society (ERS) NEUROCOUGH Clinical Research Collaboration conducted a Delphi consensus study among international experts to outline the purpose and structure of specialist cough clinics.³¹ Nevertheless, with the variability in healthcare systems, resource availability, and access to care across countries, national standards suitable for the Korean healthcare context should be developed.

In this context, we conducted a Delphi study to develop a consensus on the goals and standards of chronic cough clinics for adults in Korea. This paper presents the findings of the consensus process and discusses their implications for clinical care.

MATERIALS AND METHODS

Study design

With endorsement from the Korean Academy of Asthma, Allergy, and Clinical Immunology (KAAACI), members of the Chronic Cough Working Group convened a Task Force (TF) to conduct this study. The TF consisted of a development committee and an advisory committee. The development committee comprised 14 clinicians and 1 medical student (early career member), who were selected with consideration for balanced regional representation. The advisory committee included 6 senior clinicians experienced in managing chronic cough. All members of both committees had prior research experience or clinical expertise in the field of chronic cough.

The drafting of a proposal outlining the goals, roles, and standards of chronic cough clinics for adult patients was led by the development committee. The following key domains were specified in the proposal: clinical care, research, and education. The clinical domain included diagnostic tests to be routinely performed in all patients presenting with chronic cough. The draft was subsequently reviewed and finalized in consultation with the advisory committee.

Terminology considerations

During the early stages of the project, the TF held active internal discussions regarding the appropriate term to define the target of the consensus. Although the term “specialist cough clinic” has been used in international contexts such as the ERS NEUROCOUGH initiative³¹ and “cough clinic” is commonly used in primary care settings in Korea, the TF concluded that

both terms lack sufficient specificity and applicability. The former was considered narrow or selective due to the emphasis on “specialist,” while the latter was judged to have low specificity in distinguishing clinic functions. Given the intended focus on clinics dedicated to the evaluation and management of chronic cough, particularly cases that are persistent, difficult to resolve, and not attributable to easily treatable conditions, the term “chronic cough clinic” was selected. This terminology could best reflect the scope and purpose of the consensus effort.

Delphi panelists

The potential pool of Delphi panelists was composed of 2 groups: 1) the 62 current members of the KAAACI Chronic Cough Working Group and 2) 73 additional clinicians or researchers in Korea with interest in clinical care or research of chronic cough. Invitations to participate in the Delphi survey were sent to all individuals in both groups. Potential panelists were invited to participate in the Delphi survey via email.

Delphi process

Two rounds of online surveys were conducted over a 2-month period via Google Forms. The panelists were given 2 weeks to complete each round. Each statement was rated on a 7-point Likert scale (1 = strongly agree, 4 = neutral, 7 = strongly disagree), and responses were categorized as positive (1–2), neutral (3–5), or negative (6–7). For items related to the minimum diagnostic test panel, a 5-point Likert scale was used (1 = very relevant, 2 = relevant, 3 = neutral, 4 = not relevant, 5 = never relevant), and responses were categorized as positive (1–2), neutral (3), or negative (4–5).

In the first-round survey, qualitative feedback was also collected for each statement. The TF reviewed this feedback and incorporated it into partial revisions of the statements. In the second round, the panelists were presented with the results of the first-round responses and shown the original and revised versions of each statement. They were then asked to re-evaluate the items to facilitate consensus building.

A consensus was defined a priori as follows: survey rounds were considered valid if > 70% of the invited participants responded. The consensus was deemed to have been reached if > 70% of the respondents provided positive ratings and < 20% gave negative ratings. Agreement was classified as “very high” when 90% or more of the respondents gave positive ratings.

Analysis

All responses were compiled and analyzed using SPSS version 27.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics, including means, standard deviations, and proportions, were calculated for each item. Graphs showing response distributions and agreement rates were generated using Microsoft Excel 2019 (Microsoft Corp., Redmond, WA, USA).

Ethics statements

The study protocol was approved by the Institutional Review Board of Inje University Busan Paik Hospital (IRB No. 2024-12-062). Informed consent was obtained from all participants prior to the online survey, and participant anonymity was strictly maintained.

RESULTS

Delphi study flow

The overall flow of the Delphi process is presented in **Fig. 1**. Through 8 rounds of discussion among members of the development committee, the TF developed 12 preliminary statements and a list of 17 items for the consensus on the minimum diagnostic test panel. The final draft was confirmed by the advisory committee.

Of the 135 invited panelists, 113 (43.4% female) responded to the Round 1 survey, thereby yielding an 83.7% response rate. Of these respondents, 29.2% (33/113) reported that they were operating a chronic cough clinic. The detailed characteristics of the respondents are shown in **Table 1**. Their affiliated hospitals were evenly distributed across the country and thus represented all provincial-level administrative divisions in South Korea. The most common age group among respondents was in their 40s (50.4%), and 45% had more than 20 years of clinical experience. In addition, 67% reported seeing 5 or more patients with chronic cough per outpatient session. Most respondents were allergists (81%), and the majority worked in tertiary care centers (70.8%), followed by secondary (21.2%) and primary care settings (5.3%). The Round 2 survey was distributed only to those who had completed Round 1, and its final response rate was 87.6%.

Delphi results

A consensus was achieved for all 12 statements concerning the objectives and standards of clinical practice, research, and education in chronic cough clinics. As all items met the predefined consensus criteria (> 70% positive and < 20% negative responses) in Round 1, no major modifications or re-evaluations were required in Round 2. The final consensus statements, along with agreement rates and mean Likert scale scores, are summarized in **Table 2**. More detail response distribution across the Likert scale in Round 1 and 2 surveys for each statement are described in **Supplementary Table S1**. Selected qualitative comments from respondents for each statement are also presented in the accompanying text. The agreement levels for individual items comprising the minimum diagnostic test panel are illustrated in **Fig. 2**.

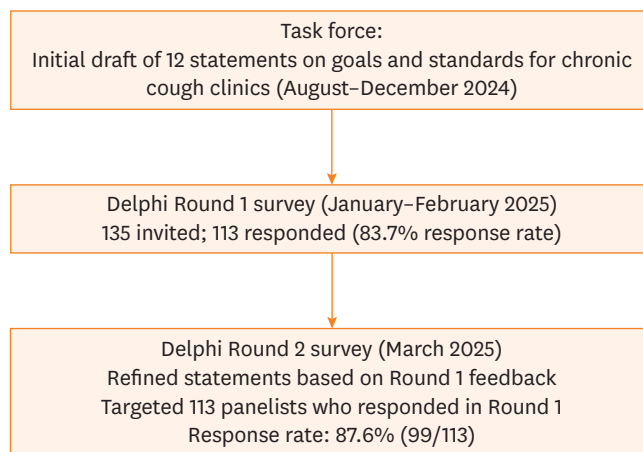


Fig. 1. Flow of the Delphi study.

Table 1. Characteristics of the study respondents (n = 113)

Characteristics	Percentage
Age (yr)	
20–30s	20.4
40s	50.4
50s	23.0
Over 60s	6.2
Clinical experience (yr)	
5–10	12.4
10–20	41.6
Over 20	45.1
Others	0.9
Specialty	
Allergist	80.5
Pulmonologist	12.4
Otolaryngologist	5.3
Others	1.8
Type of institution	
Tertiary	70.8
Secondary	21.2
Primary	5.3
Others	2.7
Chronic cough cases per clinic session	
< 5 patients	31.0
5–15 patients	56.6
> 15 patients	10.6
Others	1.8

Part 1. Goals

Statement 1

Chronic cough clinics aim to manage cough through evidence-based care, improve patients' quality of life, and reduce the social, economic, and psychological burden caused by the condition.

Consensus level: Very high (99% positive responses).

Remark: The respondents emphasized the importance of identifying the underlying cause of cough by using evidence-based approaches while recognizing the need for effective symptom management when complete resolution was not possible. Some respondents stated that specialized chronic cough clinics should be equipped to provide high-quality, comprehensive care that improves patient outcomes and quality of life. Others underscored the necessity of adequate support in terms of human resources, infrastructure, financial allocation, and reimbursement to ensure the sustainable operation of such clinics.

Part 2. Management standards

Statement 2

Chronic cough clinics should provide optimal medical care based on expert knowledge of cough and extensive clinical experience in accordance with the latest domestic and international clinical evidence and guidelines.

Consensus level: Very high (99%, positive responses).

Remark: The respondents noted that well-established biomarkers for diagnosing chronic cough and predicting treatment response remain undefined; they also indicated that the

Table 2. Delphi round 2 results: agreement level and positive response rates for 12 statements on chronic cough clinics

Statements	Likert score (mean $\pm$ SD)	% (Positive response [1–2])
1. Chronic cough clinics aim to manage cough through evidence-based care, improve patients' quality of life, and reduce the social, economic, and psychological burden caused by the condition.	1.2 $\pm$ 0.5	99%
2. Chronic cough clinics should provide optimal medical care based on expert knowledge of cough and extensive clinical experience in accordance with the latest domestic and international clinical evidence and guidelines.	1.2 $\pm$ 0.4	99%
3. (Refined) Chronic cough clinics should be able to identify the cause of the cough while providing specialized treatment to patients with chronic cough that cannot be clearly explained by another condition.	1.3 $\pm$ 0.5	97%
4. (Refined) In chronic cough clinics, cough characteristics such as duration, accompanying symptoms, diurnal and seasonal variation, aggravating factors, hypersensitivity, complications, quality of life, and family history should be thoroughly evaluated and documented.	1.5 $\pm$ 0.7	93.9%
5. In chronic cough clinics, cough severity should be assessed using a standardized scoring tool during initial and follow-up visits. Some of the tools that can easily measure cough severity are the numerical rating scale (NRS, 0–10 points) and the visual analog scale (VAS, 0–100 mm).	1.8 $\pm$ 0.8	94.9%
6. In chronic cough clinics, the assessment of treatable traits and the implementation of trait-based treatment strategies should be primarily considered.	1.4 $\pm$ 0.6	97%
7. Opioid antitussives or central nervous system modulators for the management of chronic cough should be prescribed in accordance with the latest clinical evidence and guidelines. Their potential side effects should be clearly communicated to the patient, and treatment decisions should be made through shared decision-making. Prescriptions should be adjusted on the basis of the patient's response to treatment.	1.4 $\pm$ 0.7	98%
8. In chronic cough clinics, if a specific underlying condition is identified as requiring specialized treatment during the evaluation, the patient should be referred to an appropriate specialist in the relevant field.	1.2 $\pm$ 0.4	94.9%
9. Chronic cough clinics should provide the best possible care based on current standards while actively participating in clinical research that aims to track the long-term prognosis of chronic cough, improve standards of care, and develop new treatment options.	1.3 $\pm$ 0.7	96%
10. Chronic cough clinics should educate primary care physicians to provide appropriate treatment in accordance with the latest clinical evidence and guidelines and to refer patients to a chronic cough clinic when necessary. The core components of this training should include history taking for patients with chronic cough, physical examination, basic diagnostic tests for common causes, initial treatment strategies, and clear criteria for referral to a chronic cough clinic.	1.4 $\pm$ 0.6	98%
11. Chronic cough clinics should provide patient education regarding disease characteristics, diagnostic evaluations, pharmacologic treatment, and lifestyle modifications. They should also provide educational materials related to these topics.	1.3 $\pm$ 0.6	94.9%
12. Chronic cough clinics operating within educational and training institutions, such as university hospitals, should provide clinical education on chronic cough as part of undergraduate medical education; they should also offer residency and fellowship training programs.	1.3 $\pm$ 0.6	94.9%

Each statement was rated on a 7-point Likert scale (1 = strongly agree, 4 = neutral, 7 = strongly disagree). Responses were categorized as positive (1–2), neutral (3–5), or negative (6–7).
SD, standard deviation.

efficacy of currently available therapies in controlling cough is limited. In some cases, individualized management plans should be developed through shared decision-making with patients even when their treatment cannot fully comply with existing guidelines. The respondents also highlighted that the domestic healthcare system has systemic barriers, including limited consultation time and restricted insurance coverage for specific diagnostic tests or medications, which may impede the delivery of appropriate care.

Part 3. Clinical care

Statement 3

Chronic cough clinics should be able to identify the cause of the cough while providing specialized treatment to patients with chronic cough that cannot be clearly explained by another condition.

Consensus level: Very high (97% positive responses).

Remark: This statement was revised from its original version, which primarily emphasized the management of refractory chronic cough. However, the respondents noted that chronic

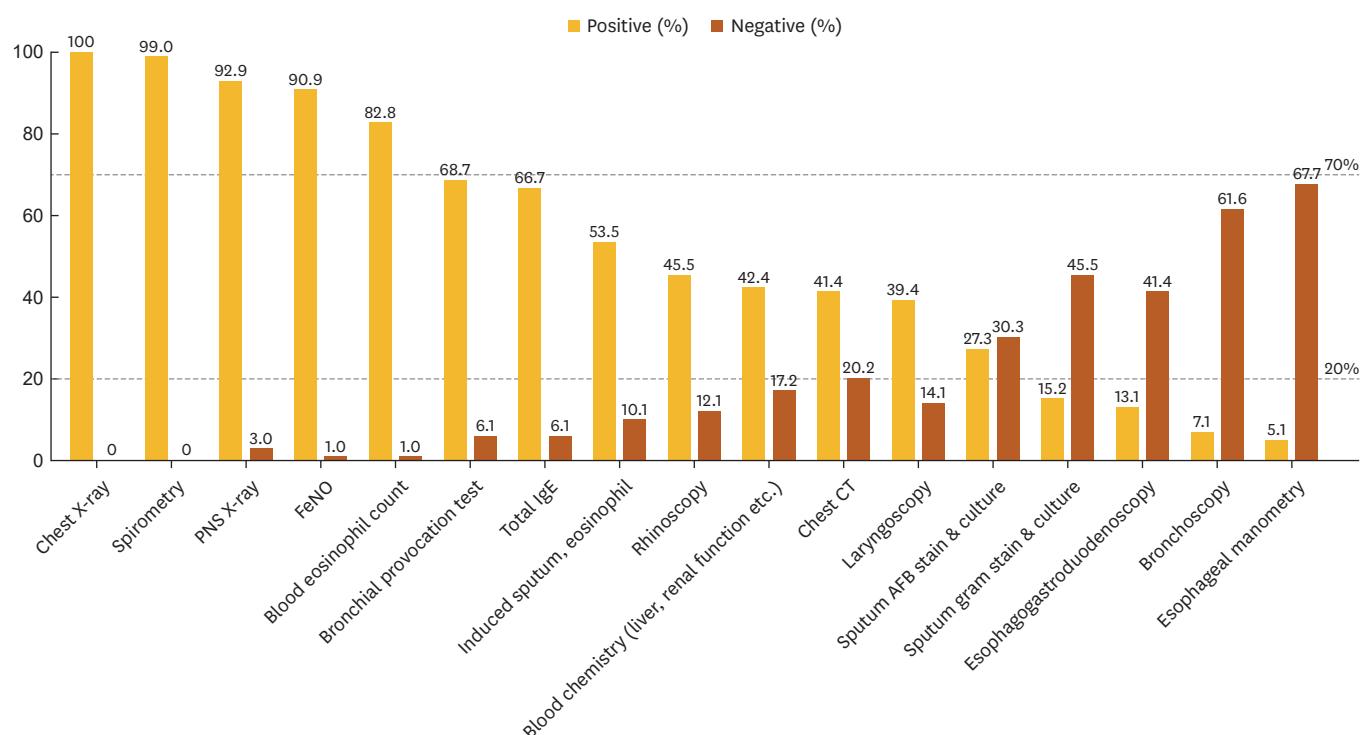


Fig. 2. Agreement on diagnostic tests to be routinely performed or considered in chronic cough clinics. Bar chart showing the proportion of Delphi Round 2 panelists who agreed (yellow bars) or disagreed (brown bars) with the inclusion of each diagnostic test as part of routine assessment in chronic cough clinics. A 5-point Likert scale was used (1 = very relevant, 2 = relevant, 3 = neutral, 4 = not relevant, 5 = never relevant). Responses were categorized as positive (1–2), neutral (3), or negative (4–5). Items were arranged in decreasing proportion of positive responses. PNS, paranasal sinus; FeNo, fractional exhaled nitric oxide; IgE, immunoglobulin E; CT, computed tomography; AFB, acid-fast bacilli.

cough clinics should be equipped to evaluate and manage patients with identifiable causes of cough. The TF accepted this feedback and revised the statement to reflect a broader and more comprehensive clinical role.

The respondents emphasized the urgent need to develop and implement new treatment options for refractory chronic cough.³² They also highlighted the limited availability of institutions offering non-pharmacological cough control therapy, the importance of patient education on lifestyle modification, and the need for revisions to the national health insurance reimbursement system to support these interventions.

Statement 4

In chronic cough clinics, cough characteristics such as duration, accompanying symptoms, diurnal and seasonal variation, aggravating factors, hypersensitivity, complications, quality of life, and family history should be thoroughly evaluated and documented.

Consensus level: Very high (93.9% positive responses).

Remark: This statement was revised in response to suggestions that in addition to typical cough features, annual variations such as seasonal changes and effects of humid or dry air should be assessed and recorded. The respondents emphasized that adequate consultation time should be provided to perform comprehensive history taking and accurately characterize the patient's cough. They also highlighted that appropriate consultation fees or reimbursement should be set to support such detailed clinical assessments.

Statement 5

In chronic cough clinics, cough severity should be assessed using a standardized scoring tool during initial and follow-up visits. Some of the tools that can easily measure cough severity are the numerical rating scale (NRS, 0–10 points) and the visual analog scale (VAS, 0–100 mm).

Consensus level: Very high (94.9% positive responses).

Remark: When this statement was presented, the NRS and VAS were introduced as examples of tools used to assess cough severity. The respondents noted that although these tools help patients rate the severity of their cough, some individuals may find them difficult to use, thereby limiting their practicality and comparability across patients. Despite being subjective measures, these tools were considered useful for tracking changes in symptoms of individual patients over time. The respondents also emphasized that objective assessment tools that can quantify cough frequency and intensity should be further developed.

Statement 6

In chronic cough clinics, the assessment of treatable traits and the implementation of trait-based treatment strategies should be primarily considered.

As suggested by current expert opinion and clinical guidelines, the major treatable traits of chronic cough are listed below in no particular order. These traits may be revised or expanded in the future as new evidence emerges:

- 1) Eosinophilic airway inflammation
- 2) Airflow obstruction
- 3) Cough reflex hypersensitivity
- 4) Upper respiratory disease
- 5) Cough-inducing medications (*e.g.*, ACE inhibitors)
- 6) Obesity
- 7) Sleep apnea
- 8) Esophageal motility disorder
- 9) Gastroesophageal reflux
- 10) Pulmonary parenchymal disease
- 11) Laryngeal dysfunction
- 12) Smoking

Consensus level: Very high (97% positive responses).

Remark: The respondents largely supported a treatable traits approach. The list of 12 traits was initially proposed by the TF, and the original version of the statement received predominantly positive responses. However, some panelists noted that certain traits still lacked robust evidence. They also emphasized that chronic cough is often attributed to multiple contributing factors rather than a single identifiable cause.

Statement 7

Opioid antitussives or central nervous system modulators for the management of chronic cough should be prescribed in accordance with the latest clinical evidence and guidelines. Their potential side effects should be clearly communicated to the patient, and treatment decisions should be made through shared decision-making. Prescriptions should be adjusted on the basis of the patient's response to treatment.

Consensus level: Very high (98% positive responses).

Remark: The respondents agreed with the importance of carefully assessing treatment response when prescribing these medications to determine whether continuation is appropriate or whether the patient's condition requires re-evaluation. Some respondents expressed concern that the early use of such agents may temporarily suppress symptoms and reduce patient motivation to undergo further diagnostic testing; consequently, the identification of the underlying cause may be potentially delayed. They also noted that access to central nervous system modulators (such as gabapentin or pregabalin) may be limited in Korea because of their classification as non-reimbursable medications.

Statement 8

In chronic cough clinics, if a specific underlying condition is identified as requiring specialized treatment during the evaluation, the patient should be referred to an appropriate specialist in the relevant field.

Consensus level: Very high (94.9% positive responses).

Remark: The respondents particularly emphasized the importance of collaboration with specialists in otolaryngology and gastroenterology. They also highlighted that a multidisciplinary approach should be developed in the evaluation and management of patients with refractory chronic cough.

Part 4. Research

Statement 9

Chronic cough clinics should provide the best possible care based on current standards while actively participating in clinical research that aims to track the long-term prognosis of chronic cough, improve standards of care, and develop new treatment options.

Consensus level: Very high (96% positive responses).

Remark: The respondents emphasized the importance of conducting systematic research by establishing patient cohorts and collaborative networks of specialized clinics. Given the challenges in generating clinical data and evidence for this patient population, the respondents considered that such efforts were essential.

Part 5. Education

Statement 10

Chronic cough clinics should educate primary care physicians to provide appropriate treatment in accordance with the latest clinical evidence and guidelines and to refer patients to a chronic cough clinic when necessary. The core components of this training should include history taking for patients with chronic cough, physical examination, basic diagnostic tests for common causes, initial treatment strategies, and clear criteria for referral to a chronic cough clinic.

Consensus level: Very high (98% positive responses).

Remark: Some respondents noted that primary care providers often face practical challenges in performing certain diagnostic tests recommended by clinical guidelines. To address

these limitations, chronic cough clinics should provide appropriate training and support to primary care physicians, thereby enabling them to deliver evidence-based care within the constraints of their clinical settings.

Statement 11

Chronic cough clinics should provide patient education regarding disease characteristics, diagnostic evaluations, pharmacologic treatment, and lifestyle modifications. They should also provide educational materials related to these topics.

Consensus level: Very high (94.9% positive responses).

Remark: The respondents emphasized that standardized educational materials should be developed and utilized. Patients should also be clearly informed that chronic cough often requires long-term management. They considered these efforts as essential for enhancing patient understanding and adherence to treatment.

Statement 12

Chronic cough clinics operating within educational and training institutions, such as university hospitals, should provide clinical education on chronic cough as part of undergraduate medical education; they should also offer residency and fellowship training programs.

Consensus level: Very high (94.9% positive responses).

Remark: The respondents agreed that cough should receive greater attention in medical school curricula and clinical training. They expressed their expectation that chronic cough clinics would serve as key centers for enhancing education and developing clinical expertise in this field.

Part 6. Minimum diagnostic test panel

The respondents reached the consensus on a set of minimum diagnostic tests that should be routinely performed or reviewed for all patients attending chronic cough clinics. These tests included chest radiography (100%), spirometry (99%), paranasal sinus X-ray (92.9%), fractional exhaled nitric oxide (FeNO) measurement (90.9%), and blood eosinophil count (82.8%).

Although bronchial provocation testing and total serum immunoglobulin E levels did not meet the predefined consensus threshold, they were positively viewed by 68.7% and 66.7% of the respondents, respectively. Conversely, other procedures such as esophagogastroduodenoscopy, bronchoscopy, and esophageal manometry received low agreement levels (< 20%); they even received negative opinions on their routine use from 41.4%, 61.6%, and 67.7% of the respondents, respectively.

Remark: The respondents noted that in cases where a consensus was not reached, diagnostic tests should be selected on the basis of the patient's current symptoms and clinical judgment.

DISCUSSION

This Delphi study represents the first Korean consensus and standardization effort to define the goals, standards, and roles of chronic cough clinics across the domains of clinical care,

research, and education. Through 8 rounds of committee meetings, the TF developed the items considered relevant in the Korean context while incorporating the content from the ERS NEUROCOUGH Delphi study.³¹ After 2 rounds of the Delphi study, high consensus levels (93.9%–99%) were achieved across all 12 statements. We believe that these results reflect the harmonization between the international consensus and the Korean healthcare environment, thereby addressing patient and expert demands for dedicated chronic cough clinics while aligning with global trends.

Chronic cough has unique clinical guidelines and cough-specific assessment tools, utilizing treatment algorithms distinct from those for asthma or COPD.^{13,33–35} This reflects the characteristics of chronic cough as a unique condition and supports the evolving paradigm of chronic cough as a disease entity.^{14,15,17,18} Although chronic cough can be a symptom of conditions such as asthma, GERD, or bronchiectasis, it can also represent a condition unexplained by other diseases, with cough hypersensitivity as the main pathophysiology and a potentially key treatable trait. Chronic cough was historically regarded almost exclusively as a symptom^{36,37}; however, with research advances and new drug development, it has recently been conceptualized as a disease. In this context, chronic cough clinics, such as pain clinics, allergy clinics, or asthma clinics, are expected to serve a unique role and form an important network of units addressing unmet patient needs.

Our consensus statements reflect several unique aspects of the Korean healthcare system that influence chronic cough management. First, insurance reimbursement limitations pose considerable challenges, particularly for central neuromodulators such as gabapentin and pregabalin, which remain non-reimbursable although their efficacy in treating refractory chronic cough has been established.^{38,39} Narcotic antitussives are often considered for treating refractory chronic cough.⁹ However, this condition lacks not only an International Classification of Diseases (ICD) code⁴⁰ but also has no officially approved medications within the regulatory framework. Therefore, this restriction may limit treatment options for patients who could benefit from these medications. Second, the time constraints inherent in the Korean healthcare system present practical barriers to comprehensive history-taking, which is necessary to characterize cough patterns, identify triggers, and assess the effects on the quality of life. The respondents emphasized that adequate consultation time and appropriate reimbursement are prerequisites for delivering thorough clinical assessments.

The consensus on the minimum diagnostic test panel reflects the Korean healthcare context, thereby incorporating readily accessible tests such as paranasal sinus X-rays and FeNO measurements. This pragmatic approach based on the consensus balances international guidelines with local feasibility; therefore, the recommended evaluations remain accessible to most patients within the Korean healthcare system while prioritizing evidence-based diagnostic approaches. The strong agreement on including type 2 inflammation markers (blood eosinophils and FeNO) is particularly noteworthy because T2 inflammation affects approximately 30% of adult patients with chronic cough and represents one of the most evidence-based treatable traits.⁴¹ Unlike some other treatable traits, T2 inflammation can be objectively diagnosed through established methods (blood/sputum eosinophils and FeNO),⁴² and it can be controlled with inhaled corticosteroids or leukotriene receptor antagonists.⁴³ However, our consensus does not rule out the value of specialized tests not routinely recommended, such as induced sputum, bronchoscopy, laryngoscopy, or esophageal manometry. Their use should be determined by accessibility and clinical indications.

One notable point of divergence from the ERS NEUROCOUGH consensus was the inclusion of paranasal sinus X-rays in our minimum diagnostic test panel.³¹ Specifically, paranasal sinus X-rays received a high proportion of positive responses and were included in our recommendations. This finding likely reflected the empirical differences in chronic cough management between Korea and Europe; Korean practice patterns more closely resemble those of the US.^{44,45} In addition, the high proportion of allergy specialists among the Delphi respondents could partly explain the higher preference for paranasal sinus X-ray in the responses. Although rhinitis and sinusitis have been recognized as common comorbidities in patients with chronic or subacute cough,^{23,46} additional evidence should be obtained to support the notion that treating these conditions directly improves cough outcomes.⁴⁷⁻⁴⁹ Furthermore, the use of paranasal sinus X-rays in guiding treatment decisions for cough improvement has not been validated. Reflecting this evidence gap, the ERS chronic cough guidelines did not address any treatment for rhinitis or rhinosinusitis as a population, intervention, comparison, outcome (PICO) question.¹³ Therefore, these empirical practice variations and their clinical validity should be further investigated through prospective studies to determine whether routine sinus imaging contributes meaningfully to chronic cough management outcomes.

Of note, we did not include speech-language therapy in this consensus, as formal treatment programs for chronic cough are not currently available in Korea. However, future updates will be necessary once these therapeutic interventions are formally introduced and implemented.

As reflected in this Delphi study, education represents a crucial role of chronic cough clinics beyond clinical care. With appropriate education for patients and community physicians, the overall standard of care can be improved eventually. However, in reality, educational opportunities remain relatively limited because chronic cough is not classified as a disease entity and has no approved medications. Furthermore, medical students and young healthcare professionals should be provided with emerging knowledge for future advances in the field, given the high prevalence of cough-related health issues. The educational priorities were reflected not only in the NEUROCOUGH survey³¹ but also in our Korean consensus, indicating a shared international recognition of education's transformative potential in chronic cough management.

This study has several limitations. Although our consensus provides practical guidance on cough assessment, medication decisions, and diagnostic test selection, it does not include specific implementation plans. As such, it only describes the direction rather than presents an operational blueprint. Additionally, we did not incorporate patient perspectives, which are crucial for understanding the lived experience of chronic cough and ensuring patient-centered care delivery. We also did not perform cost-effectiveness analyses and identify specific performance indicators, thereby limiting immediate clinical application. Another limitation is that this study focused exclusively on adult chronic cough. Pediatric chronic cough may involve a different pathophysiology and requires distinct management approaches compared with those of adult chronic cough.^{13,33,50} Therefore, the results of this study should be interpreted as applicable specifically to chronic cough clinics serving adult populations although many aspects related to education and research may be broadly relevant across age groups.

Despite these limitations, this study has notable strengths. The high response rates (83.7% in Round 1, 87.6% in Round 2) and nationwide representation in all provinces ensure

its potentially broad applicability. The multidisciplinary participation from allergists, pulmonologists, and otolaryngologists reflects the collaborative nature of chronic cough management. The systematic Delphi methodology and achievement of high consensus levels (93.9%–99%) in all statements demonstrate the strong professional agreement on core principles and future directions. Importantly, this consensus serves as a basis for the next revision of Korean chronic cough guidelines,³³ particularly on aspects that cannot be addressed through traditional PICO questions, such as the minimum diagnostic test panel and cough assessment tools. These consensus-based recommendations fill critical gaps where evidence synthesis alone is insufficient, thus providing practical guidance derived from the collective expert experience.

Several steps are needed to translate these consensus statements into practice: development of detailed clinical protocols, establishment of quality indicators for clinic certification, creation of standardized educational materials, and systematic incorporation of patient-reported outcomes. Furthermore, advocating for policy changes, including ICD coding for refractory chronic cough and regulatory pathways for emerging therapies, is essential for sustainable implementation.

In this study, we examined the roles of chronic cough clinics and the minimum set of investigations routinely required for their operation. Our Delphi findings indicated that the essential tests are relatively simple and can be performed promptly, although some (*e.g.*, FeNO) are not yet reimbursed. Additional investigations may be arranged through affiliated hospitals or by referral to institutions with the appropriate facilities. We believe that, beyond equipment, what matters most are the clinic's goals, roles, delivery of standard care, patient education, training of students and young healthcare professionals, collaboration with primary care, and the professional knowledge and dedication needed to sustain these activities. This underscores the importance of healthcare professionals with such expertise and commitment.

In conclusion, this Delphi study establishes the first Korean consensus on the goals and standards of chronic cough clinics and shows the high agreement achieved among clinical care, research, and education domains. The consensus statements provide a structured framework that harmonizes international practices with Korean healthcare realities, thus addressing the evolving paradigm of chronic cough as a distinct disease entity and the practical needs of clinicians and patients.

ACKNOWLEDGMENTS

This guideline has been officially reviewed and endorsed by KAAACI and reflects the official position of the Academy.

We would like to thank the members who contributed to the Delphi study: Bomi Seo (Seongnam Citizens Medical Center, Seongnam); Byung-Keun Kim (Korea University Anam Hospital, Seoul); Chan-Sun Park (Inje University Haeundae Paik Hospital, Busan); Chang-Gyu Jung (Keimyung University Dongsan Hospital, Daegu); Cheolwoo Kim (Inha University Hospital, Incheon); Da-Woon Sim (Chonnam National University Hospital, Gwangju); Dong-Ho Nahm (Ajou University Hospital, Suwon); Doo-Hee Han (Seoul National University Hospital, Seoul); Eun-Jung Jo (Pusan National University Hospital, Busan);

Eunyong Shin (Anyang Sam Hospital, Anyang); Gwanghui Ryu (Samsung Medical Center, Seoul); Gun-Woo Kim (Suncheon St. Carollo Hospital, Suncheon); Hae-Sim Park (Ajou University Hospital, Suwon); Hayoung Choi (Hallym University Kangnam Sacred Heart Hospital, Seoul); Heung-Woo Park (Seoul National University Hospital, Seoul); Hyo-In Rhyou (Inje University Haeundae Paik Hospital, Busan); Hye-Jung Park (Gangnam Severance Hospital, Seoul); Hyunkyung Oh (Severance Hospital, Seoul); Hyun Lee (Hanyang University Seoul Hospital, Seoul); Hyun-Seob Jeon (St. Vincent's Hospital, Suwon); Jaechun Lee (Jeju National University Hospital, Jeju); Jae-Hyuk Jang (Ajou University Hospital, Suwon); Jae-Woo Kwon (Kangwon National University Hospital, Chuncheon); Jae-Won Jeong (Inje University Ilsan Paik Hospital, Goyang); Jae-Hyun Lee (Severance Hospital, Seoul); Ji-Hyun Oh (Kosin University Gospel Hospital, Busan); Jihye Kim (The Soom Internal Medicine Clinic, Seoul); Ji-Ho Lee (Yonsei University Wonju Severance Christian Hospital, Wonju); Ji-Su Shim (Ewha Womans University Seoul Hospital, Seoul); Ji-Young Kang (Jeju National University Hospital, Jeju); Jin An (Kyung Hee University Hospital at Gangdong, Seoul); Jin-Young Min (Kyung Hee University Hospital, Seoul); Junehyuk Lee (Soonchunhyang University Bucheon Hospital, Bucheon); Jung-Hyun Kim (Soonchunhyang University Seoul Hospital, Seoul); Jung-Won Park (Severance Hospital, Seoul); Jae-Woo Jung (Chung-Ang University Hospital, Seoul); Joo-Hee Kim (Hallym University Sacred Heart Hospital, Anyang); Ju-Young Kim (Bundang Jesaeng General Hospital, Seongnam); Soon Seog Kwon (Bucheon St. Mary's Hospital, Bucheon); Kyoung-Hee Sohn (Kyung Hee University Hospital, Seoul); Kyoung-Min Moon (Chung-Ang University Hospital, Seoul); Kyung-Min Ahn (Ewha Womans University Seoul Hospital, Seoul); Seung-Eun Lee (Pusan National University Yangsan Hospital, Yangsan); Young-Mok Lee (Gf Internal Medicine Clinic, Seoul); Yong-Won Lee (Catholic Kwandong University International St. Mary's Hospital, Incheon); Young-Hee Lim (Ansan Sarang Hospital, Ansan); Mi-Ae Kim (Cha Bundang Medical Center, Seongnam); Min-Hye Kim (Ewha Womans University Seoul Hospital, Seoul); Mi-Jung Oh (Bundang Jesaeng General Hospital, Seongnam); Min-Seok Chang (Yonsei University Wonju Severance Christian Hospital, Wonju); Min-Suk Yang (Seoul Metropolitan Government - Seoul National University Boramae Medical Center, Seoul); Young Hee Nam (Dong-A University Hospital, Busan); Oh-Young Kwon (Dream Kwon Internal Medicine Clinic, Seoul); Sang-Chul Park (Hallym University Kangnam Sacred Heart Hospital, Seoul); Sang-Pyo Lee (Gachon University Gil Medical Center, Incheon); Seon-Tae Kim (Gachon University Gil Medical Center, Incheon); Sohee Lee (Seoul National University Hospital Healthcare System Gangnam Center, Seoul); Soo-Jie Chung (Hallym University Dongtan Sacred Heart Hospital, Hwaseong); So-Young Park (Veterans Health Service Medical Center, Seoul); So-Young Park (Chung-Ang University Gwangmyeong Hospital, Gwangmyeong); Sujeong Kim (Kyungpook National University Hospital, Daegu); Sung-Woo Park (Soonchunhyang University Bucheon Hospital, Bucheon); Sung-Yoon Kang (Gachon University Gil Medical Center, Incheon); Sun-Young Paik (Seoul National University Hospital, Seoul); Tae-Bum Kim (Asan Medical Center, Seoul); Taehoon Lee (Ulsan University Hospital, Ulsan); Won-Jin Lee (Pusan National University Hospital, Busan); Yeon-Mok Oh (Asan Medical Center, Seoul); Yeong-Hun Choe (Chonbuk National University Hospital, Jeonju); Young-Il Koh (Chonnam National University Hospital, Gwangju); Young-Koo Jee (Dankook University Hospital, Cheonan); Young-Min Ye (Ajou University Hospital, Suwon); Youngsang Yoo (Gangneung Asan Hospital, Gangneung); Yong-Chul Lee (Chonbuk National University Hospital, Jeonju); Yu-Ri Kang (Soonchunhyang University Cheonan Hospital, Cheonan); Youlim Kim (Konkuk University Medical Center, Seoul); Yun-Jeong Eun (Seoul National University Bundang Hospital, Seongnam); Yunjeong Bae (Chungbuk National University Hospital, Cheongju).

We acknowledge the intellectual support of the European Respiratory Society NEuroCOUGH CRC in the conception and design of this study, and we thank the chairs of the NEuroCOUGH CRC and its Science Committee: Lieven Dupont (University Hospital Leuven, Katholieke Universiteit Leuven, Leuven, Belgium), Alyn H. Morice (Hull York Medical School, University of Hull, Castle Hill Hospital, Cottingham, UK), Sean Parker (North Tyneside General Hospital, North Shields, UK), Marta Dabrowska (Medical University of Warsaw, Warsaw, Poland), and Surinder Birring (King's College London, London, UK).

This project was supported by the Korean Academy of Asthma, Allergy and Clinical Immunology (KAAACI). The KAAACI had no role in the design, conduct, or interpretation of the study.

SUPPLEMENTARY MATERIAL

Supplementary Table S1

Response distribution across the Likert scale in Round 1 and 2 survey

REFERENCES

1. Won HK, Lee JH, An J, Sohn KH, Kang MG, Kang SY, et al. Impact of chronic cough on health-related quality of life in the Korean adult general population: the Korean National Health and Nutrition Examination Survey 2010–2016. *Allergy Asthma Immunol Res* 2020;12:964–79. [PUBMED](#) | [CROSSREF](#)
2. An J, Lee JH, Won HK, Kang Y, Kwon HS, Lee JS, et al. Cough presentation and cough-related healthcare utilization in tertiary care: analysis of routinely collected academic institutional database. *Lung* 2022;200:431–9. [PUBMED](#) | [CROSSREF](#)
3. Kang N, Won HK, Lee JH, Shim JS, Kang SY, Park HK, et al. Health-related quality of life and its determinants in chronic cough: the Korean Chronic Cough Registry study. *Allergy Asthma Immunol Res* 2023;15:348–60. [PUBMED](#) | [CROSSREF](#)
4. Song WJ, Chang YS, Faruqi S, Kim JY, Kang MG, Kim S, et al. The global epidemiology of chronic cough in adults: a systematic review and meta-analysis. *Eur Respir J* 2015;45:1479–81. [PUBMED](#) | [CROSSREF](#)
5. McGarvey L, Morice AH, Martin A, Li VW, Doane MJ, Urdaneta E, et al. Burden of chronic cough in the UK: results from the 2018 National Health and Wellness Survey. *ERJ Open Res* 2023;9:00157–2023. [PUBMED](#) | [CROSSREF](#)
6. Guilleminault L, Li VW, Fonseca E, Martin A, Schelfhout J, Ding H, et al. Prevalence and burden of chronic cough in France. *ERJ Open Res* 2024;10:00806–2023. [PUBMED](#) | [CROSSREF](#)
7. Irwin RS, Rosen MJ, Braman SS. Cough. A comprehensive review. *Arch Intern Med* 1977;137:1186–91. [PUBMED](#) | [CROSSREF](#)
8. Chung KF, Pavord ID. Prevalence, pathogenesis, and causes of chronic cough. *Lancet* 2008;371:1364–74. [PUBMED](#) | [CROSSREF](#)
9. Oh JY, Kang SY, Kang N, Won HK, Jo EJ, Lee SE, et al. Characterization of codeine treatment responders among patients with refractory or unexplained chronic cough: a prospective real-world cohort study. *Lung* 2024;202:97–106. [PUBMED](#) | [CROSSREF](#)
10. Kukielka P, Moliszewska K, Białek-Gosk K, Grabczak EM, Dąbrowska M. Prevalence of refractory and unexplained chronic cough in adults treated in cough centre. *ERJ Open Res* 2024;10:00254–2024. [PUBMED](#) | [CROSSREF](#)
11. Zhang M, Morice AH, Si F, Zhang L, Chen Q, Wang S, et al. New insights into refractory chronic cough and unexplained chronic cough: a 6-year ambispective cohort study. *Allergy Asthma Immunol Res* 2023;15:795–811. [PUBMED](#) | [CROSSREF](#)
12. Domínguez-Ortega J, Virchow JC, Guilleminault L, Antonelli Incalzi R, Beyer AP, Ke X, et al. Prevalence and burden of possible refractory chronic cough in four European countries. *ERJ Open Res* 2025;11:00888–2024. [PUBMED](#) | [CROSSREF](#)

13. Morice AH, Millqvist E, Bieksiene K, Birring SS, Diczpinigaitis P, Domingo Ribas C, et al. ERS guidelines on the diagnosis and treatment of chronic cough in adults and children. *Eur Respir J* 2020;55:1901136. [PUBMED](#) | [CROSSREF](#)
14. Chung KF, McGarvey L, Song WJ, Chang AB, Lai K, Canning BJ, et al. Cough hypersensitivity and chronic cough. *Nat Rev Dis Primers* 2022;8:45. [PUBMED](#) | [CROSSREF](#)
15. Song WJ, Manian DV, Kim Y, Zhang M, Morice AH. Cough reflex hypersensitivity as a key treatable trait. *J Allergy Clin Immunol Pract* 2025;13:469-78. [PUBMED](#) | [CROSSREF](#)
16. Jun H, Park JY, Oh JY, Won HK, Kang SY, Park SY, et al. Exploring traits associated with central sensitization features in patients with chronic cough. *Allergy Asthma Immunol Res* 2024;16:690-700. [PUBMED](#) | [CROSSREF](#)
17. Chung KF, Mazzone SB, McGarvey L, Song WJ. Chronic cough as a disease: implications for practice, research, and health care. *Lancet Respir Med* 2025;13:110-2. [PUBMED](#) | [CROSSREF](#)
18. Turner RD, Birring SS. Chronic cough as a disease. *ERJ Open Res* 2024;10:00459-2024. [PUBMED](#) | [CROSSREF](#)
19. Brindle K, Morice A, Carter N, Sykes D, Zhang M, Hilton A. The "vicious circle" of chronic cough: the patient experience - qualitative synthesis. *ERJ Open Res* 2023;9:00094-2023. [PUBMED](#) | [CROSSREF](#)
20. Won HK, Song WJ. Impact and disease burden of chronic cough. *Asia Pac Allergy* 2021;11:e22. [PUBMED](#) | [CROSSREF](#)
21. Yu CJ, Song WJ, Kang SH. The disease burden and quality of life of chronic cough patients in South Korea and Taiwan. *World Allergy Organ J* 2022;15:100681. [PUBMED](#) | [CROSSREF](#)
22. Zeiger RS, Schatz M, Hong B, Li Q, Stern JA, Takhar HS, et al. Patient-reported burden of chronic cough in a managed care organization. *J Allergy Clin Immunol Pract* 2021;9:1624-1637.e10. [PUBMED](#) | [CROSSREF](#)
23. Jo EJ, Lee JH, Won HK, Kang N, Kang SY, Lee SE, et al. Baseline cohort profile of the Korean Chronic Cough Registry: a multicenter, prospective, observational study. *Lung* 2023;201:477-88. [PUBMED](#) | [CROSSREF](#)
24. Birring SS, Currie CJ, Holden SE, Jenkins-Jones S, Berni ER, Jones B, et al. The financial burden of treating patients presenting with acute and chronic cough. *Curr Med Res Opin* 2021;37:2175-84. [PUBMED](#) | [CROSSREF](#)
25. Cho PSP, Shearer J, Simpson A, Campbell S, Pennington M, Birring SS. Healthcare utilization and costs in chronic cough. *Curr Med Res Opin* 2022;38:1251-7. [PUBMED](#) | [CROSSREF](#)
26. Smith JA, Stein N, Migas S, Bokowski S, Williams C, Baker P, et al. An observational study to understand burden and cost of care in adults diagnosed with refractory chronic cough (RCC) or unexplained chronic cough (UCC). *Respir Res* 2024;25:265. [PUBMED](#) | [CROSSREF](#)
27. Song WJ, Yu CJ, Kang SH. Cough characteristics and healthcare journeys of chronic cough patients in community-based populations in South Korea and Taiwan. *Lung* 2022;200:725-36. [PUBMED](#) | [CROSSREF](#)
28. Kum E, Brister D, Diab N, Wahab M, Abraham T, Sahakian S, et al. Canadian health care professionals' familiarity with chronic cough guidelines and experiences with diagnosis and management: a cross-sectional survey. *Lung* 2023;201:47-55. [PUBMED](#) | [CROSSREF](#)
29. Morice A. A survey of UK respiratory specialists' opinion on the management of chronic cough. *ERJ Open Res* 2024;10:00021-2024. [PUBMED](#) | [CROSSREF](#)
30. Kang SY, Won HK, Lee SM, Kwon JW, Kim MH, Jo EJ, et al. Impact of cough and unmet needs in chronic cough: a survey of patients in Korea. *Lung* 2019;197:635-9. [PUBMED](#) | [CROSSREF](#)
31. Song WJ, Dupont L, Birring SS, Chung KF, Dąbrowska M, Diczpinigaitis P, et al. Consensus goals and standards for specialist cough clinics: the NEUROCOUGH international Delphi study. *ERJ Open Res* 2023;9:00618-2023. [PUBMED](#) | [CROSSREF](#)
32. Matsumoto H, Kanemitsu Y, Ohe M, Tanaka H, Terada K, Nishi K, et al. Real-world usage and response to gefapixant in refractory chronic cough. *ERJ Open Res* 2025;11:01037-2024. [PUBMED](#) | [CROSSREF](#)
33. Song DJ, Song WJ, Kwon JW, Kim GW, Kim MA, Kim MY, et al. KAAACI evidence-based clinical practice guidelines for chronic cough in adults and children in Korea. *Allergy Asthma Immunol Res* 2018;10:591-613. [PUBMED](#) | [CROSSREF](#)
34. Irwin RS, French CL, Chang AB, Altman KW, Adams TM, Azoulay E, et al. Classification of cough as a symptom in adults and management algorithms: CHEST guideline and expert panel report. *Chest* 2018;153:196-209. [PUBMED](#) | [CROSSREF](#)
35. Gibson P, Wang G, McGarvey L, Vertigan AE, Altman KW, Birring SS, et al. Treatment of unexplained chronic cough: CHEST guideline and expert panel report. *Chest* 2016;149:27-44. [PUBMED](#) | [CROSSREF](#)
36. Morice AH, Fontana GA, Sovijarvi AR, Pistolesi M, Chung KF, Widdicombe J, et al. The diagnosis and management of chronic cough. *Eur Respir J* 2004;24:481-92. [PUBMED](#) | [CROSSREF](#)

37. Irwin RS, Baumann MH, Bolser DC, Boulet LP, Braman SS, Brightling CE, et al. Diagnosis and management of cough executive summary: ACCP evidence-based clinical practice guidelines. *Chest* 2006;129:1S-23S. [PUBMED](#) | [CROSSREF](#)
38. Ryan NM, Birring SS, Gibson PG. Gabapentin for refractory chronic cough: a randomised, double-blind, placebo-controlled trial. *Lancet* 2012;380:1583-9. [PUBMED](#) | [CROSSREF](#)
39. Vertigan AE, Kapela SL, Ryan NM, Birring SS, McElduff P, Gibson PG. Pregabalin and speech pathology combination therapy for refractory chronic cough: a randomized controlled trial. *Chest* 2016;149:639-48. [PUBMED](#) | [CROSSREF](#)
40. Shin MH, Lee YJ, Park KE, Kim Y, Won HK, Ahn KM, et al. ICD-10 diagnostic coding patterns and clinical correlates in refractory chronic cough: analysis from the Korean Chronic Cough Registry. *Lung* 2025;203:81. [PUBMED](#) | [CROSSREF](#)
41. Lee JH, Lee JH, Park SY, Koskela HO, Song WJ. Is fractional exhaled nitric oxide a treatable trait in chronic cough: a narrative review. *J Thorac Dis* 2023;15:5844-55. [PUBMED](#) | [CROSSREF](#)
42. Song WJ, Kim HJ, Shim JS, Won HK, Kang SY, Sohn KH, et al. Diagnostic accuracy of fractional exhaled nitric oxide measurement in predicting cough-variant asthma and eosinophilic bronchitis in adults with chronic cough: a systematic review and meta-analysis. *J Allergy Clin Immunol* 2017;140:701-9. [PUBMED](#) | [CROSSREF](#)
43. Kim Y, Birring SS, McGarvey L, Morice AH, Song WJ. How will a treatable traits approach reshape clinical practice in chronic cough? *Allergy Asthma Immunol Res* 2025;17:304-16. [PUBMED](#) | [CROSSREF](#)
44. Kim SH, Kim SH, Song WJ, Kwon JW, Kim MH, Kim KM, et al. Allergists' perceptions and practices on the management of chronic cough in Korea: a questionnaire survey. *Korean J Asthma Allergy Clin Immunol* 2012;32:239-53.
45. Sanu A, Eccles R. Postnasal drip syndrome. Two hundred years of controversy between UK and USA. *Rhinology* 2008;46:86-91. [PUBMED](#)
46. Kang SY, Kim GW, Song WJ, Chang YS, Cho SH. Chronic cough in Korean adults: a literature review on common comorbidity. *Asia Pac Allergy* 2016;6:198-206. [PUBMED](#) | [CROSSREF](#)
47. Lee JH, Lee JW, An J, Won HK, Park SY, Lee JH, et al. Efficacy of non-sedating H1-receptor antihistamines in adults and adolescents with chronic cough: a systematic review. *World Allergy Organ J* 2021;14:100568. [PUBMED](#) | [CROSSREF](#)
48. Bandargal S, Lee DJ, Chen T, Katsnelson O, Kishibe T, Song C, et al. Therapeutic potential of intranasal corticosteroids for chronic cough. *Ear Nose Throat J* 2024;1455613241307552. [PUBMED](#) | [CROSSREF](#)
49. Lee JH, Oh JY, Kwon HS, Kim TB, Cho YS, Song WJ. Effects of bepotastine, a non-sedating H1-antihistamine, for the treatment of persistent cough and allergic rhinitis: a randomised, double-blind, placebo-controlled trial. *ERJ Open Res* 2023;9:00448-2023. [PUBMED](#) | [CROSSREF](#)
50. Chang AB, Irwin RS, O'Farrell HE, Dicpinigaitis PV, Goel S, Kantar A, et al. Cough hypersensitivity syndrome: why its use is inappropriate in children. *J Clin Med* 2023;12:4879. [PUBMED](#) | [CROSSREF](#)