

RECOMMENDATIONS OF FSO

Clinical practice recommendations " Chronic cough in adults "

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METHODOLOGY

The recommendations were graded A, B, or C in decreasing order of level of evidence, in conformity with the literature review guide and recommendation scoring system developed by the ANAES (January 2000).

This grading system is intended to clarify the bases for the recommendations. Recommendations for which no grade is given were based on expert opinion (developed by discussion among Task Force members). When no proof is available, every effort should be made to conduct further studies. However, the absence of proof does not mean that a recommendation is irrelevant or unhelpful (e.g., no proof is available for mastectomy in breast cancer or antibiotic therapy in tonsillitis).

INTRODUCTION

The prevalence of chronic cough has been evaluated at 6% of first patient visits to general practitioners, 10% of patient visits to healthcare centers focusing on respiratory disorders, and 10% to 30% of patient visits to pulmonologists.

Chronic cough is defined in the literature as a cough lasting more than 3 to 8 weeks (grade B). Hemming (clearing the throat) may occur as a form of chronic cough. The recommendations reported here pertain only to patients who have been coughing for more than 3 weeks, with no abatement in intensity (opinion of the task force members), in the absence of a known medical reason (de novo cough).

I. DIAGNOSTIC APPROACH TO DE NOVO CHRONIC COUGH

I.1. INTERVIEW AND INVESTIGATIONS ORDERED BY THE GENERAL PRACTITIONER

I.1.1. Establish the diagnosis of de novo chronic cough based on three criteria

The cough has lasted more than 3 weeks, with no tendency to abate, and there are no known causal factors.

I.1.2. Evaluate cough-related incapacitation

Incapacitation manifests as adverse psychosocial effects of the cough (e.g., on the family or at the workplace) and/or as any of the following:

- Insomnia, vomiting, or asthenia due to the cough;
- Rib fractures, acute muscle pain, discovery or worsening of a herniation or prolapse;

Level of proof supplied by the literature	Grade of the recommendation
Level 1 Randomized controlled trials with high statistical power Meta-analysis of randomized controlled trials Decision analysis based on well-conducted studies	Grade A Definitive scientific proof
Level 2 Randomized controlled trials with low statistical power Well-conducted non-randomized comparative trials Cohort studies	Grade B Scientific presumption
Level 3 Case-control studies Comparison with historical controls	Grade C Low level of scientific proof
Level 4 Comparative studies with major sources of bias Retrospective studies Case-series Descriptive epidemiological studies (cross-sectional, longitudinal)	

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- Loss of bladder control, headaches, loss of consciousness;
- Other less common adverse effects (e.g., subconjunctival bleeding, bradycardia, or tachyarrhythmia).

I.1.3. Look for evidence of serious disease

The search for a cause should be conducted rapidly, with the help of the appropriate specialists (otorhinolaryngologist, pulmonologist, gastroenterologist, internal medicine specialist, cardiologist, infectious diseases specialist, or emergency room physician) in patients with any of the following:

- Decline in general health
- Evidence of infection
- Dyspnea upon exertion
- Hemoptysis
- Onset or modification of a cough in a smoker
- Dysphonia, dysphagia, aspiration
- Suspicious lymph node(s) in the neck
- Major abnormalities upon physical examination of the heart and lungs

I.1.4. Look for clinical features that suggest a specific cause

The characteristics of the cough (productive or non-productive, timing, position, etc.) are not specific of a given cause. However, *in combination with other symptoms*, they may suggest one or several causes, thus helping to choose the best initial investigations :

- Asthma: spasmodic cough at night, upon exposure to cold temperatures, upon exertion, or in foggy weather
- Rhinitis: history of sinusitis, sensation of postnasal drip, hemming, runny nose, blocked nose, alterations in the sense of smell
- Gastroesophageal reflux: coughing after eating or when bending forward or lying down

A cough may be multifactorial; therefore, even when the medical history is suggestive, the systematic diagnostic strategy described below should be followed (opinion of the task force members).

A number of important causes must be ruled out.

I.4.1. Drug-induced cough

Factors that increase the likelihood of a drug-induced cough are previous reports of coughing as a side effect of a drug used by the patient and onset of the cough at the time the drug was initiated.

- Definite link, common side effect: angiotensin-converting enzyme inhibitors

- Definite link: angiotensin II receptor antagonists (sartans), beta-blockers, interferon alfa 2b, inhaled drugs
- Limited data in the literature: Morphine and derivatives, methotrexate

I.4.2. Pertussis

Pertussis should be considered when the patient reports contact with a pertussis case or describes severe coughing spells that induce vomiting or episodes of laryngeal spasm and/or post-infectious coughing that seemed unremarkable initially but worsened subsequently and showed no evidence of abatement on day 21.

I.4.3. Smoking

Chronic use of tobacco or cannabis often causes coughing. In adults, the physician must determine whether the cough is merely a consequence of bronchial inflammation or whether it indicates chronic obstructive lung disease or cancer of the airways. The age of the patient, the smoking history, whether the cough started or changed recently, whether other symptoms are present, and the physical findings can help the physician in this task.

The causes discussed below are listed, not by order of frequency, but instead in the order of the anatomic structures that are examined during the systematic etiological evaluation.

I.4.4. ENT disorders

1.4.4.i Sinonasal causes: rhinitis or sinusitis with or without postnasal drip

- The patient should be asked about symptoms of chronic nasal dysfunction (blocked nose, anosmia, rhinorrhea ...). Isolated postnasal drip deserves special attention, because when accompanied with a chronic cough it constitutes the postnasal drip syndrome (grade C).

- Postnasal drip should be looked for by examining the posterior wall of the oropharynx.

1.4.4.ii Causes related to upper aerodigestive tract disorders

- A cough that is accompanied with dysphonia, episodes of aspiration, dysphagia, regurgitation of undigested food, or pharyngeal paresthesia should prompt referral to an otorhinolaryngologist.
- Episodes of acute asphyxia, often inaugurated by a cough, with no loss of consciousness, suggest laryn-

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geal hyperreactivity, which is dominated by laryngeal spasm.

- The physical examination may show cervical lymphadenopathy, a goiter, severe tonsil enlargement, elongation of the uvula, or a lingual thyroid gland. Although these abnormalities do not consistently cause coughing, their presence, even in isolation, should lead to an otorhinolaryngological workup (grade C).

1.4.4.iii Otological causes

They are dominated by disorders of the external auditory canal. However, chronic cough due to otological disorders is exceedingly rare (grade C).

1.4.5. Lower respiratory tract disorders

The patient should be asked about chronic exposure to air pollutants such as tobacco or cannabis smoke or pollutants present at the workplace or in the home.

A number of semiological features may provide diagnostic orientation, although none is pathognomonic:

- Hoarse, barking spells of coughing that may induce vomiting suggest pertussis.
- Coughing with hemoptysis suggests lung cancer.
- A cough accompanied with perception by the patient of intermittent intrathoracic wheezing suggests an asthma equivalent.
- A cough with morning expectoration of mucus suggests smoking-related chronic bronchitis; if the sputum is purulent (greenish), bronchiectasis should be considered.

Auscultation of the lungs may show signs suggesting bronchial disease (wheezing due to obstruction of the large bronchi, sibilant rales indicating asthma, or bubbling humid rales indicating chronic bronchitis) or parenchymatous disease (crepitant rales).

1.4.6. Gastrointestinal disorders

Gastroesophageal reflux disease (GERD) should be suspected in patients with a history of esophagitis and reflux symptoms such as heartburn and/or regurgitation of acid or food. Importantly, 50% to 75% of patients who present with a chronic cough related to GERD have no other symptoms of reflux.

Dysphagia may indicate functional or organic obstruction of the esophagus or a pharyngoesophageal diverticulum.

1.4.7. Cardiological disorders

Occurrence of the cough upon exertion or in the recumbent position concomitantly with dyspnea suggests heart disease.

Physical findings that support a diagnosis of heart disease include tachycardia, arrhythmia, evidence of left ventricular failure, and signs of a cause of left ventricular failure (angina pectoris, hypertension, or valve disease).

1.4.8. Allergic disorders

In patients with allergic disorders, a cough may indicate bronchial inflammation, nasal inflammation with postnasal drip, or both.

1.4.9. Behavioral disorders

Habit cough or psychogenic cough should be considered when a thorough evaluation has ruled out the above-listed disorders and the patient exhibits suggestive personality traits (phobic, obsessive, complacent, unstable, paradoxically contentious, passive, or hostile) or behaviors, most notably denoting anxiety or depression. Support for a behavioral cause may also come from the characteristics of the cough (ritualized, diurnal with no sleep disturbances, resolving spontaneously with no apparent reason, and/or accompanied with hyperventilation).

1.1.5. Strategy for initial management by the general practitioner

Algorithm 1: Chronic cough

Table 1

1.5.1. Suspected drug-induced cough

Stop the drug, after discussion with the physician who prescribed it, and initiate an alternative drug. ACE-inhibitor-related cough stops within 4 to 6 weeks. Re-evaluate the symptom at that time.

1.5.2. Suspected pertussis

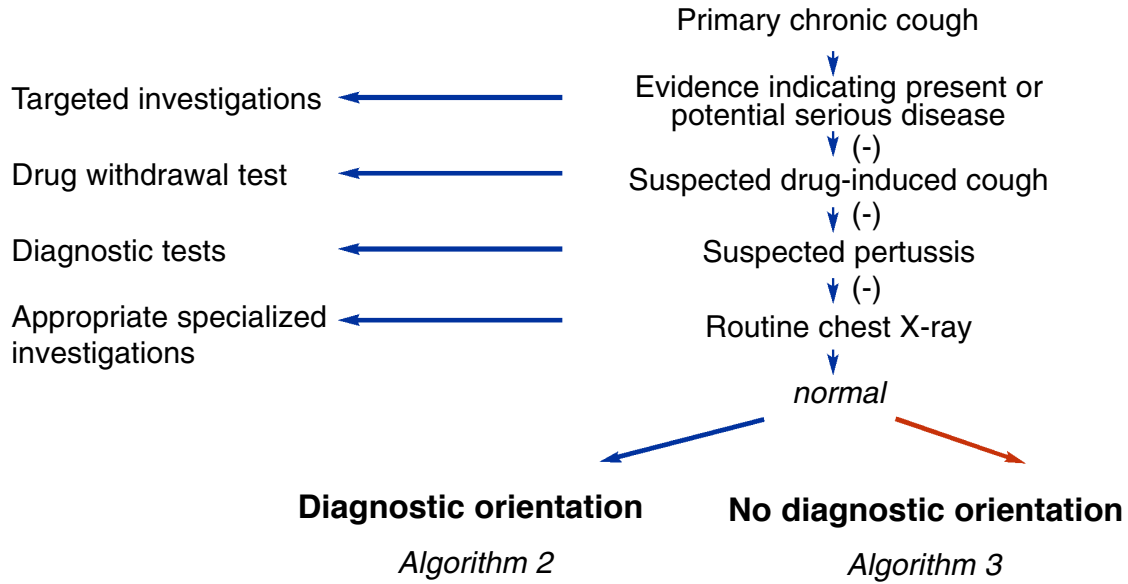
The diagnosis still rests on serological tests. PCR testing is awaited and constitutes the only means of identifying the rare cases of *Bordetella pertussis* persistence. At present, antibiotic therapy with a macrolide is not warranted, unless the patient is in contact with an unvaccinated infant. Antibiotic therapy has no effect on the cough, which is usually resistant to symptomatic treatment but generally resolves within 1 to 2 months.

1.5.3. Chest radiographs (anteroposterior and lateral views)

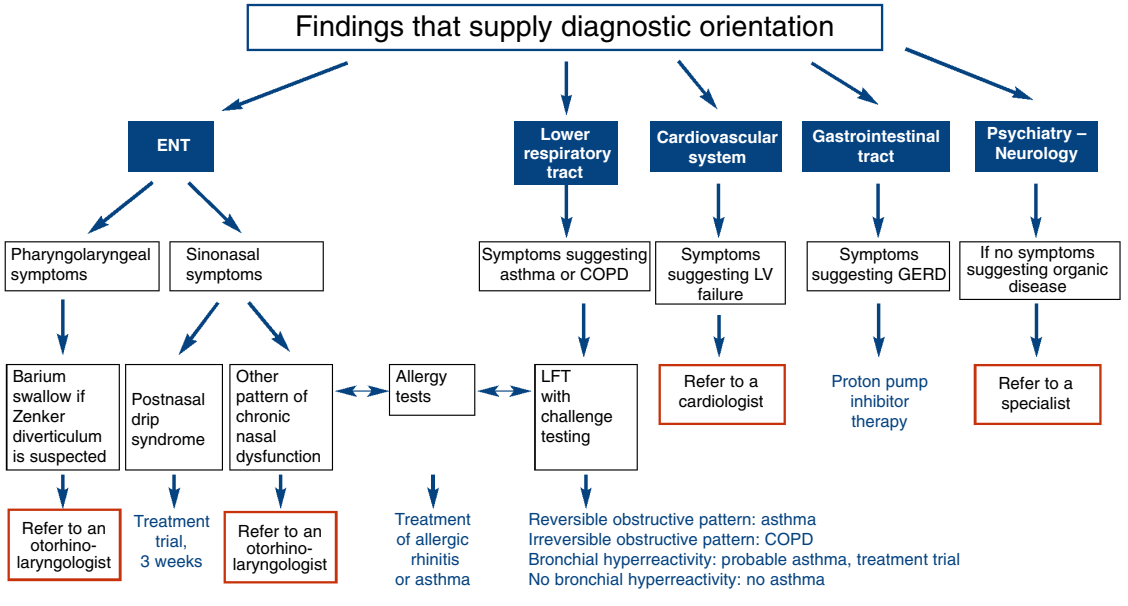
Except when a drug or pertussis is strongly suspected, a chest radiograph should be obtained routinely. Densities in the lung parenchyma, pleural cavity, or

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1. Decision tree for patients with chronic cough



2. Decision tree for patients with chronic cough and diagnostic orientation



COPD: chronic obstructive pulmonary disease; LFT: lung function testing; LV: left ventricular; GERD: gastroesophageal reflux disease

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mediastinum may indicate an infection, tumor, atelectasis, or infarction. Chest radiographs fail to visualize a number of bronchial lesions (bronchiectasis, chronic bronchitis), endobronchial abnormalities (small tumor or radiolucent foreign body), and vascular lesions (pulmonary embolus).

1.5.4. Smokers

In teenagers, who have not been smoking for long, a cough is an unremarkable symptom but provides a valuable opportunity to emphasize the importance of smoking cessation. This should be done at the first visit. The cough should resolve after smoking cessation, after a brief exacerbation. Coughing related to chronic cannabis use raises similar issues.

In adults who are chronic smokers, coughing is common but may reveal the development of chronic obstructive lung disease or cancer of the airways. The patient should be referred at the first visit to an otorhinolaryngologist and a pulmonologist. Subsequently, further referrals should be made if the cough changes in a way that cannot be explained by a simple exacerbation (evidence of viral infection, greenish sputum).

The strategies discussed below are presented, not by order of frequency, but instead according to the anatomic region most likely involved.

1.5.5. Suspected otorhinolaryngological cause

1.5.5.i Sinonasal symptoms

1) The best management of postnasal drip syndrome is not agreed on in France. Based on data in the literature, the task force recommends first-line therapy with brompheniramine plus pseudoephedrine for 3 weeks (grade C).

If this treatment fails, the patient should be referred to an otorhinolaryngologist. Systemic corticosteroid treatment can cause lesions to resolve and therefore should not be given before the otorhinolaryngologist visit. The sinuses should be imaged using computed tomography instead of standard radiography (grade A).

2) Patients with other patterns of chronic nasal dysfunction should be referred to an otorhinolaryngologist. Again, systemic corticosteroid treatment should not be given before the visit. Before the otorhinolaryngologist visit, schedule a computed tomography scan of the sinuses to look for a specific cause (e.g., sinonasal polyposis, chronic sinusitis, or Wegener granulomatosis).

The interpretation of CT scans of the sinuses requires confrontation with the medical history and nasal endoscopy findings.

1.5.5.ii In patients with symptoms indicating involvement of the upper aerodigestive tract

The first step is an otorhinolaryngological examination to look for a tumor. When a Zenker diverticulum is suspected, the general practitioner should obtain a barium swallow before the visit with the otorhinolaryngologist.

Dysphonia is the main symptom in patients with chronic laryngitis. The cough is typically irritative and increases during speech.

Laryngitis may result from pharyngolaryngeal reflux related to GERD; typically, the posterior larynx shows inflammatory lesions (hyperemia, granulomas, ulcers) or, more often, edema (Grade C). The voice may be hoarse and fatigable, and hemming and globus are common.

Specific laryngeal infections that may cause a chronic cough include tuberculosis and mycotic infections (candidiasis, histoplasmosis).

Algorithm 2: Chronic cough with signs providing diagnostic orientation

1.5.6. Evidence suggesting lower respiratory tract disease

When asthma is suspected, a definitive diagnosis must be made, given the need for long-term treatment in this condition. Lung function tests should be done to look for an obstructive pattern that resolves after bronchodilator inhalation. When obstruction does not occur, bronchial hyperreactivity should be looked for routinely. Absence of bronchial hyperreactivity rules out asthma. Presence of bronchial hyperreactivity strongly suggests, but does not establish, that the cough is an equivalent of asthma (grade A). In this situation, the patient should receive a trial of treatment with asthma medications (inhaled corticosteroid and/or bronchodilator) (grade C).

When COPD is suspected, lung function tests must be obtained to determine the severity stage (GOLD classification), which dictates the management strategy (grade C). Every effort must be made to persuade the patient to stop smoking, as this is the only truly effective treatment of the cough (grade A).

When lung cancer is suspected (recent and unexplained change in the coughing pattern in a smoker) or

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another lower respiratory tract disease is considered, the patient should be referred to a specialist (grade C).

1.5.7. Evidence suggesting gastrointestinal disease

In patients with digestive symptoms of GERD (heartburn or regurgitations), the decision to perform endoscopy before starting treatment depends on the presence of worrisome manifestations (dysphagia, weight loss, anemia), risk factors (age > 50 years), and severe symptoms (grade C).

In patients who have non-severe digestive symptoms of GERD or a history of moderate esophagitis without Barrett syndrome, there is widespread agreement that medications for GERD can be started immediately, as described in the section on treatment (grade C).

1.5.8. Evidence suggesting cardio-vascular disease

A cough that occurs upon exertion and is accompanied with dyspnea, orthopnea, tachycardia, and abnormalities upon auscultation of the heart suggest left ventricular failure and should lead to referral to a specialist (grade C).

1.5.9. Evidence suggesting an allergic disorder

When the medical history is suggestive, tests for multiple allergens should be performed as the first diagnostic step. If the results are positive, the patient should be referred to a specialist for a workup including skin tests for common airborne allergens (housemites, pollens, animal dander, and molds). Assays of randomly selected specific IgE antibodies are not recommended. Multi-allergen tests in which several allergens are present in the same reagent or on the same solid phase (CLA) are not screening tests. They cannot be used in combination with other biological tests. (grade A)

1.5.10. Evidence suggesting a behavioral disorder

The physician should seek to evaluate the emotional impact of the chronic cough with the patient, while framing the symptom within the mechanisms that drive the patient's personality, which the general practitioner is usually well aware of. Early referral to a psychiatrist may be in order to avoid a cascade of unnecessary investigations. The diagnostic hypothesis should be explained to the patient, in a way that emphasizes the expected treatment benefits and without making the patient feel that he or she is no longer clinically interesting or is fabricating the symptom.

Algorithm 3: Chronic cough with no diagnostic orientation - Table 3

1.5.11. No diagnostic orientation

When no cause is identified, the following steps should be taken in succession and separately:

1) Trial of treatment for occult postnasal drip (grade C).

2) If this fails, lung function tests.

If the results show a reversible obstructive pattern, initiate long-term treatment for asthma.

If the results show bronchial hyperreactivity but no obstruction, give a 1-month trial of treatment with inhaled corticosteroids and/or bronchodilators.

3) If this fails or the lung function tests are normal, consider GERD and start a trial of treatment for this condition. A good treatment response establishes that the cough was due to GERD.

Whether endoscopy and esophageal pH recording are helpful remains controversial. Neither test is indispensable to the diagnosis or to the initiation of GERD treatment. Endoscopy, when performed, should be done without proton pump inhibitor therapy, which masks alterations due to peptic esophagitis.

4) When the above-described treatments fail despite being well-conducted and faithfully observed, the task force recommends referral to a pulmonologist first, then if needed to an otorhinolaryngologist and finally to a gastroenterologist for second-line investigations.

When no organic cause is found and a behavioral cause is ruled out, patients with incapacitating non-productive cough can be considered for symptomatic cough-suppressant therapy.

1.5.12. Identification of more than one cause

Chronic cough may be related to multiple causes. Therefore, several treatments can be used in combination as a second-line strategy (grade C).

I.2. PHYSICAL EXAMINATION AND WORKUP BY THE SPECIALIST

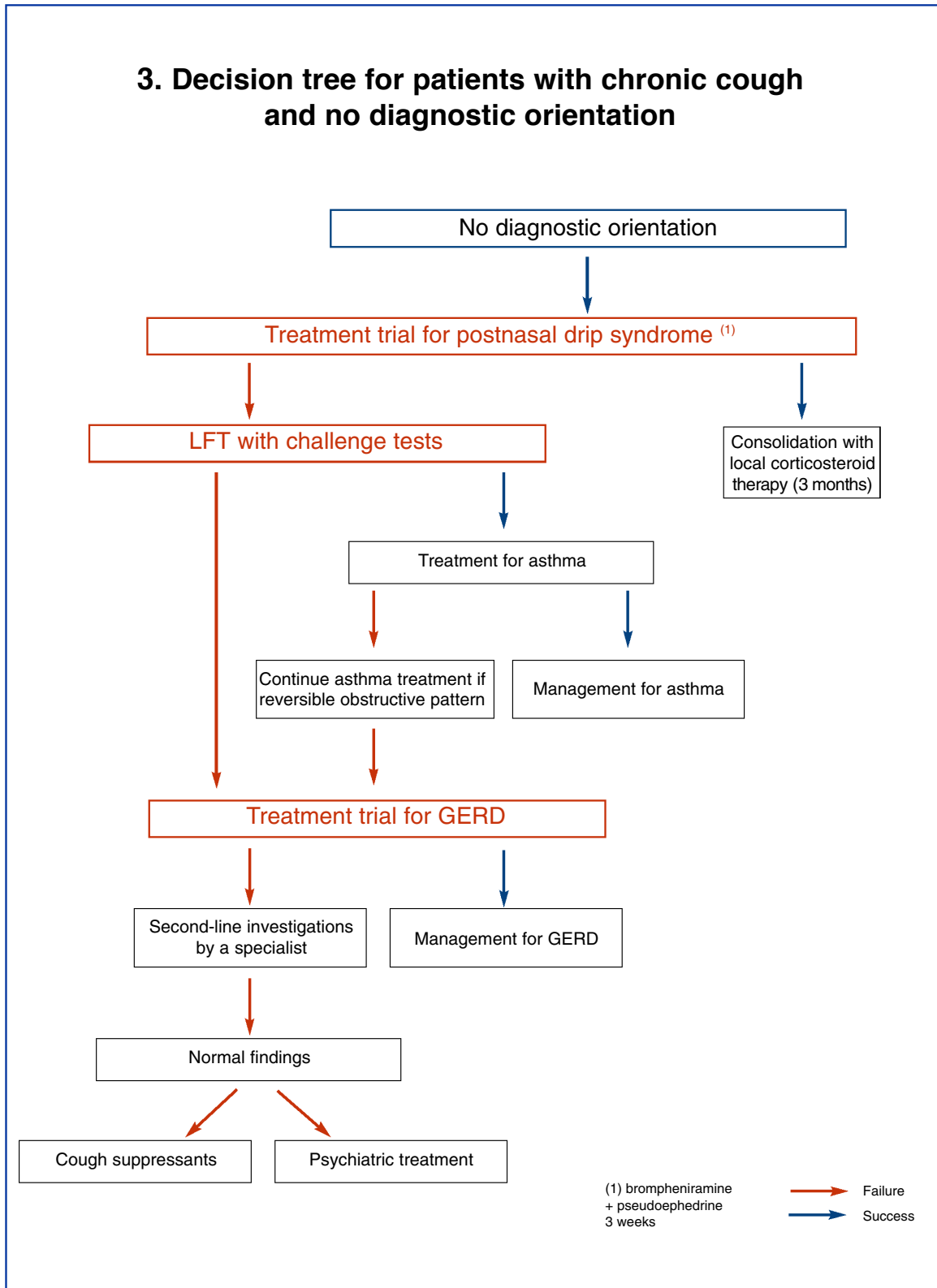
I.2.1. Evidence suggesting otorhinolaryngological disease

2.1.1. Nasal disorders

- The diagnosis of sinonasal disease rests at present on

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3. Decision tree for patients with chronic cough and no diagnostic orientation



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three sources of information: the medical history, computed tomography, and nasal endoscopy. Tumor detection is the main objective.

- Chronic nasal dysfunction with multiple symptoms often indicates diffuse involvement of the sinonasal mucosa, which may fall in any of three categories characterized by edema, suppuration, or a crusty discharge, respectively.

Lower respiratory tract disease is a common concomitant of these disorders. A specific workup for each of these conditions should be performed with the help of the appropriate specialists:

- Edematous disorder: tests for asthma and bronchial hyperreactivity and tests for allergies
- Suppurative disorder: investigations for bronchiectasis, immune deficiency, cystic fibrosis, primary ciliary dyskinesia, or diffuse panbronchiolitis
- Crusty discharge: tests for Wegener disease, sarcoidosis, Churg-Strauss disease.

When none of these disorders is found, a diagnosis of isolated sinonasal disease can be given: sinusitis related to a dental condition, mycotic infection, chronic edematous or purulent rhinitis, ozena, or unclassifiable chronic sinonasal disease.

- In patients with postnasal drip who fail to respond to the treatment trial given by the general practitioner, two situations may occur:

- Despite the atypical symptoms, the otorhinolaryngological evaluation shows one of the three categories of conditions described in the section on chronic nasal dysfunction with multiple symptoms (see above)
- Findings are normal from nasal endoscopy and computed tomography of the sinuses: look for non-ENT causes
- Another condition of monosymptomatic chronic nasal dysfunction is found: among these conditions, only chronic nasal obstruction with mouth breathing may perpetuate a chronic cough and deserves to be treated.

2.1.2. Disorders of the upper aerodigestive tract

2.1.2.i Standard physical examination

Examination with a tongue depressor and indirect laryngoscopy with a mirror and subsequently during nasofibroscope, digital examination of the pharynx, and palpation of the neck are the main steps of the examination. An abnormality of the aerodigestive tract wall, most notably a tumor, should be sought

first, as well as cranial nerve impairment responsible for alterations in muscle mobility.

The examination may find evidence of chronic laryngitis, which may indicate pharyngolaryngeal reflux (edema, erythema, and granulomas confined to the posterior laryngeal margin) related to GERD (grade C).

When a tumor is suspected, panendoscopy with biopsy collection should be performed after CT of the neck or of the neck and chest.

2.1.2.ii Fiberoptic endoscopic evaluation of swallowing

Fiberoptic endoscopic evaluation of swallowing is the second investigation to be performed if indicated by the clinical setting (grade C).

The following investigations should be performed as appropriate: rigid endoscopy, morphological or dynamic imaging studies (CT of the neck and/or chest, pharyngoesophageal videogram, manometry), manometry, muscle biopsies, electromyography of the larynx, an anticholinesterase test, and neurological evaluation.

2.1.2.iii Other investigations

When tracheoesophageal fistula is suspected, together with fiberoptic endoscopic evaluation of the pharynx, larynx, and trachea, endoscopy of the upper aerodigestive tract is the key investigation, if needed in combination with a methylene blue test and a barium swallow.

Chronic cough may be associated with vocal fold dysfunction, which designates a group of disorders including laryngeal spasm, laryngeal dyskinesia, pseudoasthma, and irritable larynx syndrome. A decrease in the threshold for laryngeal or tracheal reflexes has been suggested (grade C).

I.2.2. Evidence suggesting lower respiratory tract disease

2.2.1. Two investigations may be ordered by the general practitioner or pulmonologist:

- Obtaining chest radiographs (anteroposterior and lateral views) is an indispensable step in the management of chronic cough (grade C). The nature of the radiological abnormalities, where found, guides the selection of specialized investigations (grade A).
- Lung function testing includes spirometry, with a reversibility test when an obstructive pattern is found. Bronchial obstruction is considered reversible when

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the FEV1 improves by at least 12% and 200 ml versus baseline. When no obstruction is found, nonspecific bronchial hyperreactivity should be sought using metacholine, carbachol, or histamine (grade A).

2.2.2. Two investigations are best ordered by the pulmonologist:

- Computed tomography of the chest is appropriate as a first-line investigation in patients with chronic bronchial suppuration and as a second-line investigation in patients with negative results of previous etiological investigations. Bronchiectasis should be looked for. Furthermore, computed tomography may disclose abnormalities in the tracheobronchial architecture, in the mediastinum, or in the pulmonary interstitial tissue. (grade A)

- Flexible bronchoscopy is appropriate as a first-line investigation when the clinical findings suggest an endobronchial lesion, most notably a malignant tumor (hemoptysis, recent-onset cough in a heavy smoker). When performed as a second-line investigation in patients with negative findings from previous etiological tests, flexible bronchoscopy may provide the diagnosis in 25% of cases (tracheobronchial disease, broncholithiasis) (grade C). Flexible bronchoscopy permits bronchial biopsy collection and/or bronchoalveolar lavage to look for granulomas, lymphocytic alveolitis, or eosinophilic alveolitis (grade A).

2.2.3. Induced sputum

Induced sputum is a non-invasive method for evaluating bronchial inflammation. It is still restricted to a few specialized centers. Bronchial eosinophilia can be detected using this method.

I.2.3. Evidence suggesting cardio-vascular disease

The physical examination, chest radiographs, and electrocardiogram are often sufficient to establish the diagnosis. Echocardiography should be performed in doubtful cases (grade C).

I.2.4. Evidence suggesting gastrointestinal disease

The hepatogastroenterologist must decide whether to perform endoscopy and/or esophageal pH monitoring. Endoscopy is indispensable in patients with worrisome symptoms. Otherwise, it rarely contributes useful information, as the prevalence of esophagitis is low (grade C). Neither can endoscopy establish a link between a cough and GERD (grade A).

Esophageal pH monitoring can show abnormal esophageal exposure to acid. Evidence of a close chronological link between reflux episodes and coughing should be sought. Such evidence is rarely found when the coughing spells occur either very rarely or very often. When performed without proton pump inhibitor therapy, pH monitoring can determine whether such treatment is needed. In patients with persistent coughing despite well-conducted proton-pump inhibitor therapy, pH monitoring may show persistent acid reflux requiring the use of higher dosages.

Whether non-acid or weakly acid reflux can cause coughing is controversial. Esophageal pH monitoring fails to detect these patterns of reflux (grade B). Esophageal intraluminal impedance testing is the only means of identifying non-acid or weakly acid reflux. However, this technique is available only at a few specialized centers.

I.2.5. Evidence suggesting an allergic disorder

When the medical history suggests an allergic cause to asthma or rhinitis, tests may be useful for identifying one or more airborne allergens.

2.5.1. Skin prick tests

Skin prick tests are extremely accurate and reliable. Immediate responses should be evaluated comparatively with a positive control and a negative control. A response to the negative control indicates dermographism, which precludes interpretation of prick tests. Antihistamines should be stopped several days before testing. Positive tests do not necessarily indicate allergy, as over 25% of individuals in the general population have positive skin tests but no symptoms.

2.5.2. Specific IgE assays in serum

The total IgE titer is of no use for determining whether a cough is related in part to an allergic disorder. Total IgE assay is not a screening test.

Specific IgE assays should not be performed as first-line investigations or as routine tests. They are mainly useful when the clinical examinations and the skin tests yield discordant results, when the suspected allergen is uncommon and therefore not available as a skin test preparation, or when skin tests cannot be performed (extensive skin disease) or interpreted (antihistamine treatment that cannot be stopped).

I.2.6. Evidence suggesting a behavioral disorder

No test can provide diagnostic orientation. The inter-

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view (if appropriate with the patient's usual doctor) can help in the diagnosis.

II. PLACE AND EFFECTIVENESS OF TREATMENTS FOR COUGH

II.1. COUGH SUPPRESSANTS

Cough suppressants should be reserved for patients with incapacitating non-productive cough whose cause is either unknown or not readily amenable to curative therapy. The medical benefits from cough suppressant therapy are often small or inadequate. Non-negligible adverse effects may arise. Therefore, the decision to prescribe cough suppressants should be made only after a careful evaluation of the risk-benefit ratio.

II.2. SPECIFIC TREATMENTS

II.2.1. TREATMENTS FOR CHRONIC SINONASAL DYSFUNCTION

The efficacy of treatments for chronic postnasal drip has not been established in France. Treatments that are widely used in practice include saline nasal cavity lavage, local corticosteroids, and local or systemic antihistamines. Studies in the English-language literature support the use of a first-generation antihistamine (brompheniramine 6 mg bid) combined with a decongestant (pseudoephedrine 60 mg tid) (grade C). In France, these medications are licensed for use in other conditions. Both medications can induce side effects. Their off-label use requires careful attention to their contraindications.

Except in some cases of documented chronic sinusitis in which isolated postnasal drip may be the presenting symptom, antibiotic therapy is not recommended.

The place and efficacy of treatments for other patterns of chronic sinonasal dysfunction as part of cough management has not been addressed specifically in published studies but deserves to be investigated.

II.2.2. TREATMENT OF UPPER AERODIGESTIVE TRACT DISORDERS

Pharmacotherapy is rarely appropriate for treating upper aerodigestive tract disorders. Exceptions include myositis and polymyositis (corticosteroids and

immunoglobulins) and myasthenia. The frequency and respiratory impact of aspiration episodes dictate the treatment modalities.

In many patients, swallowing and phonation rehabilitation (postural maneuvers, work on the reflex phases, and use of appropriate food textures) must be combined with chest physiotherapy.

II.2.3. TREATMENT OF LARYNGITIS

The main goal when treating laryngitis is to act on the causes and contributive factors.

When laryngeal lesions suggesting GERD are found, GERD treatment can be initiated as a first-line measure. The benefits from GERD treatment are inconsistent and remain to be evaluated.

II.2.4. TREATMENT OF ASTHMA AND NON-SPECIFIC BRONCHIAL HYPERREACTIVITY

2.4.1. The treatment of chronic cough with reversible obstruction, which usually indicates persistent mild to moderate asthma, rests on three measures

- Inhaled corticosteroid therapy to control the bronchial inflammation is the main long-term treatment for persistent asthma; the daily dosage (200 to 1000 μg) varies with the severity of the asthma.

- Eliminating or avoiding the allergen that was identified by the clinical examination, skin tests, and, if needed, laboratory tests as an initiating or exacerbating factor is possible for most of the household allergens but may be difficult or impossible for other allergens. Should this measure fail, immunotherapy or specific desensitization may be considered in patients with stable asthma that causes intermittent or mild persistent symptoms. These treatments should be discussed on a case-by-case basis; patients with sensitization to multiple allergens are not candidates for immunotherapy or desensitization.

- Bronchodilators are used to relieve bronchospasm by stimulating the beta2 adrenoceptors. Short-acting inhaled beta2 stimulants (fenoterol, pirbuterol, salbutamol, terbutaline) are indicated only when rapid relief of acute symptoms is needed. Long-acting inhaled beta2 stimulants (salmeterol, formoterol) are indicated only as adjuncts to long-term inhaled corticosteroid therapy. Corticosteroids and long-acting beta2 stimulants can be combined in the same inhaled preparation (e.g., salmeterol + fluticasone; formoterol + budesonide).

- Other medications such as sustained-release theophylline or antileukotriene agents constitute an alter-

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native in patients with persistent mild asthma. Antileukotriene agents should be given in combination with corticosteroid therapy in patients with persistent moderate asthma.

- The management of asthma also relies on patient education and regular medical follow-up to assess disease control. Disease control is considered satisfactory when the diurnal and nocturnal symptoms resolve, the peak flow is normal and stable, the patient no longer feels the need to use fast-acting beta2 stimulants, and the patient reports living a normal life.

2.4.2. *The treatment of chronic cough with nonspecific bronchial hyperreactivity rests on inhaled corticosteroids and/or bronchodilators*

If the cough is an asthma symptom, resolution should occur within 1 month of treatment initiation.

II.2.5. TREATMENT OF ALLERGIC DISORDERS

Pharmacological treatment for allergic asthma or allergic rhinitis should be given, according to the nature of the main clinical manifestations.

When an allergen is identified and specific treatment is prescribed (allergen eviction), effectiveness is usually evaluated after 4 weeks (grade A). However, 6 months or at least two allergen seasons must elapse before the effectiveness of allergen eviction and immunotherapy can be reliably assessed.

II.2.6. TREATMENT OF GERD

The effectiveness of diet and habit changes remains unproven. Postural measures may be used in patients with nocturnal reflux. Proton pump inhibitors constitute the first-line treatment and should be started in twice the daily dosage recommended for esophagitis, in two daily doses, one in the morning and the other in the evening. Concomitant use of a prokinetic agent makes good pharmacological sense but has not been proven to generate additional benefits. Treatment should be given for 2 months. There is no evidence that continuing the treatment for longer than 2 months increases the response rate. If the cough responds well to GERD treatment, a therapeutic window is reasonable to evaluate the risk of relapse, the time to relapse, and the dependency on GERD treatment. If a relapse occurs, long-term treatment is in order, and the lowest effective dosage of proton pump inhibitor should be determined.

Persistence of the cough after 2 months of treatment

may indicate inadequate control of esophageal acidity. In patients with persistent acid exposure, particularly when the coughing episodes are chronologically linked to acid reflux episodes (pH monitoring under treatment), an increase in the proton pump inhibitor dosage has been suggested as a useful measure. Additional factors should be looked for and taken into account, most notably sleep apnea syndrome, which worsens nocturnal gastroesophageal reflux (grade C). Surgical antireflux treatment can be considered in patients with incapacitating respiratory symptoms that recur at each attempt to discontinue antireflux medications. Surgery is appropriate only in patients with a low operative risk, documented GERD, and a strongly suspected or firmly established link between the GERD and the respiratory symptoms.

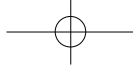
II.2.7. TREATMENT OF BEHAVIORAL AND PERSONALITY DISORDERS

The physician must try to understand the meaning and purpose of maintaining the cough symptom and should discuss the absence of proven organic disease with the patient. With the patient's consent, and according to specific needs, the physician should contact the family, taking the patient's history into account. Treatment options (medications and psychotherapy) should be discussed.

Pharmacotherapy, with either an anti-anxiety agent or an antidepressant, can be given for a short period. The long-term outcome depends on the acceptance and quality of the therapeutic relationship developed around the cough symptom.

CONCLUSION / Perspectives

Chronic cough is a common reason for physician visits. This common symptom can reveal a wide diversity of disorders. The primary goal of management is identification of the cause. The present document recommends a systematic strategy for obtaining diagnostic orientation. Each clinical situation should lead to a specific management strategy that is first implemented by the general practitioner but may subsequently require referral to a specialist. Appropriate hierarchization and good timing of the investigations and therapeutic trials are essential to ensure that the management is optimal in terms of the risk-benefit ratio and cost-efficacy ratios.



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The management of a chronic cough usually rests on the physical examination, and investigations are not always necessary. Trials of treatment may be more effective than batteries of investigations. Thus, medications can be viewed as diagnostic tools. There is a pressing need for instruments designed to evaluate

chronic cough (e.g., 24-hour recordings and self-questionnaires). Such instruments are needed to establish the diagnostic efficacy of treatment trials and to allow controlled studies of the treatment strategies suggested in the present recommendations.

