

Diagnosis and assessment of chronic cough in adults

– a brief guide and clinical algorithm for primary care

Chronic cough is defined as a cough that lasts longer than eight weeks; this is abnormal and should be investigated and managed. It can be a sign of serious disease or may be associated with a range of upper, middle and lower airway diseases. **Chronic cough can be distressing with side effects such as stress urinary incontinence, overuse injuries and laryngeal trauma which may cause social isolation.**

Chronic cough may be caused or made worse by the following medical conditions:

Systemic

- Cigarette smoke
- Occupational irritants
- ACE inhibitors

Upper airway

- Chronic rhinitis
- Chronic sinusitis

Middle airway

- Laryngeal hypersensitivity
- Vocal cord dysfunction/ ILO (intermittent laryngeal obstruction)
- GORD/dysmotility
- Post infectious

Lower airway

- Asthma/Eosinophilic bronchitis
- Chronic non-eosinophilic bronchitis
- ILD
- COPD
- Bronchiectasis
- Heart failure
- Lung cancer
- Post infectious (including pertussis)

Key messages for health professionals:

- Chest X-ray and spirometry should be conducted in all patients
- A CT chest scan should be considered:
 - When the chest X-ray is abnormal
 - If the patient has a chronic cough regularly productive of sputum, especially when it's purulent, consider bronchiectasis
 - Following an episode of haemoptysis or change in cough in a current or former smoker, consider lung cancer
 - A dry cough may be the first presentation for someone with interstitial lung disease, consider this in a current or former smoker, someone with industrial exposure or a history of connective tissue disease or inflammatory arthritis.
- Optimally investigate and treat the conditions that are associated with chronic cough
- Asthma is associated with approximately a third of adults with chronic cough, however, it is rarely the only symptom and it is important to confirm presence through appropriate investigations. Perform spirometry before and after salbutamol (ensure bronchodilators are withheld beforehand). If this does not support a diagnosis of asthma, consider home peak flow monitoring or ordering an exhaled nitric oxide (FeNO) test or an asthma challenge test from a lung function lab. A treatment trial with inhaled corticosteroids should be supported with objective measures
- Only use proton pump inhibitors for cough if there is evidence of heartburn or GORD
- If cough is due to throat irritation, advise sipping water or swallowing whole teaspoons of honey (the act of swallowing inhibits cough). Saline nose spray may also provide relief.

Referral pathways - see algorithm for adults

- Respiratory physician – for management of lower airway disease and investigation of unexplained/refractory chronic cough
- ENT – for investigation and management of laryngeal and nasal or sinus disease
- Gastroenterologist – for management of refractory reflux
- Speech pathology for cough suppression therapy – for patients who have been reviewed by ENT or respiratory physician.

In adults with chronic cough (>8 weeks):

1. Take a history relevant to the cough, look for red flags **See Table A**
2. In all patients do a chest x-ray (CXR) and spirometry pre and post bronchodilator (consider measuring exhaled nitric oxide)
3. Address possible distress and side effects such as stress urinary incontinence, laryngeal trauma and overuse injuries

Abnormal Chest X-ray or red flags

- Consider CT chest
- Refer to Respiratory Specialist

Take a cough history

- Determine duration of cough
- Onset and variability
- Is the cough productive of sputum?
- Are there features of cough hypersensitivity, urge to cough, nonspecific cough triggers (cold air, strong smells, dust)?
- History of smoking?
- Occupational exposure?
- Use of ACE inhibitors?

Are “red flags” pointing to specific cause present? **See Table A**

Yes

Pursue diagnosis and manage as appropriate. **See Table C**

No

Is cough associated/triggered by specific disease?

- Approach this by applying a probability algorithm, considering the most important or frequent conditions based on probability.
- Focus on high yield investigations

No

- Asthma/cough variant asthma/eosinophilic bronchitis
 - Variable symptoms, worse in morning and night, wakes from sleep, exertional breathlessness
 - Diagnosis requires measuring variable airflow obstruction; spirometry pre+ post bronchodilator, or peak flow variability, or bronchial provocation challenge. FeNO >49ppb greater odds of cough responding to Inhaled Corticosteroid (ICS).
 - A diagnosis of asthma predicts response to ICS, if empiric trial, response should be seen in 4 weeks.
- Chronic rhinitis/sinusitis
 - Nasal symptoms, post-nasal drip, face pain
 - consider RadioAllergo Sorbent Test (RAST) / Skin Prick Test (SPT), anterior rhinoscopy, anterior rhinoscopy
 - Chronic sinusitis – consider CT
- Laryngeal hypersensitivity/inducible laryngeal obstruction
 - Often dry cough, voice disturbance, screening questionnaires available (these are not diagnostic alone).
 - Refer to ENT or respiratory physician.
- Symptomatic Gastro-Oesophageal Reflux Disease (GORD)
 - If no symptoms, oesophageal manometry, 24hr pH studies or gastroscopy needed to confirm diagnosis.
 - Empiric proton pump inhibitors are ineffective in the absence of GORD symptoms or confirmed disease.
- Chronic cough may be the first symptom in presentation of interstitial lung disease, lung cancer, COPD, bronchiectasis, cardiac failure. Consider and investigate.
- Chronic bronchitis, cough with sputum. Investigate for COPD or bronchiectasis.
- Post infectious cough – whooping cough serology, consider and investigate for asthma, COPD, bronchiectasis.

Has the cough resolved by optimally managing specific diseases associated with chronic cough? (**summarised in Table C**).

Yes

Follow-up to check cough recurrence and for trial off treatment.

Cough resolved?

No

No

Unexplained/refractory chronic cough.
Refer to cough specialist clinic/practitioner.

Table A: ‘Red Flags’ and ‘cough pointers’ (indicators of serious pathology)

- Haemoptysis
- Smoking/vaping (especially new/changed cough, cough with voice disturbance)
- Prominent dyspnoea (especially at rest or at night)
- Chronic productive cough with substantial sputum production
- Hoarseness
- Recurrent pneumonia
- Systemic symptoms: fever, weight loss
- Swallowing difficulties (including choking/vomiting)
- Abnormal chest radiograph
- Physical signs on chest examination, wheeze, crackles or the presence of clubbing.

Table C: Recommendation refers to the efficacy of treatment on cough occurring in association with the conditions

Recommendations for ADULTS	Level of Evidence*	Strength of Recommendation†
COUGH WITH ALLERGIC RHINITIS Treatment according to current rhinitis management guidelines involving nasal corticosteroid spray, nasal antihistamine spray, combination corticosteroid/antihistamine nasal spray.	Good	Weak
COUGH WITH CHRONIC RHINOSINUSITIS Treatment according to current chronic sinusitis management guidelines involving nasal corticosteroid spray, large volume saline irrigation, long term antibiotic therapy (e.g. macrolide for 3 months).	Poor/Good	Weak
COUGH WITH LARYNGEAL HYPERSENSITIVITY Treatment with speech pathology management	Good	Strong
COUGH WITH VOCAL CORD DYSFUNCTION/INTERMITTENT LARYNGEAL OBSTRUCTION Treatment with speech pathology management	Good	Strong
COUGH WITH GORD/DYSMOTILITY Treatment(s) for GORD in adults with cough alone and no other symptoms of GORD with PPI therapy. When other symptoms of GORD use appropriate clinical guidelines.	Good	Strong against use of PPI for cough alone
COUGH WITH ASTHMA Treatment according to current asthma management guidelines involving education, inhaled bronchodilators, inhaled corticosteroids The use of leukotriene receptor antagonists – alone or with inhaled corticosteroids	Excellent/Good Good	Strong Weak
COUGH WITH EOSINOPHILIC BRONCHITIS Treatment with inhaled corticosteroids The use of leukotriene receptor antagonists – alone or with inhaled corticosteroids	Satisfactory Satisfactory	Strong Weak

Recommendations for ADULTS cont.	Level of Evidence*	Strength of Recommendation†
COUGH WITH CHRONIC BRONCHITIS WITHOUT AIRFLOW OBSTRUCTION The use of mucolytic therapy and/or macrolide antibiotic therapy	Poor	Weak
COUGH WITH INTERSTITIAL LUNG DISEASE Treatment according to current ILD guidelines	Poor	Weak
COUGH WITH COPD Treatment according to current COPD management guidelines involving education and self-management, smoking cessation, pulmonary rehabilitation and treatment of exacerbations. Addition of combination inhaled long-acting bronchodilators and corticosteroids may reduce cough severity.	Excellent Good	Strong Weak
Unexplained chronic cough in ADULTS	Level of Evidence*	Strength of Recommendation†
An empiric treatment trial supervised by a specialist cough clinic using validated, objective measures of cough severity (cough severity scales, the cough severity diary, quality of life measures (Leicester cough questionnaire (LCQ), cough specific quality of life questionnaire), objective cough recording devices and cough reflex sensitivity challenges)	Satisfactory	Weak
Cessation of smoking, nicotine containing cigarettes or e-cigarettes	Excellent	Strong
Identify and minimise environmental/occupational exposures	Satisfactory	Weak
Cessation of Angiotensin-converting Enzyme (ACE) inhibitors	Satisfactory	Strong
Speech and language therapy (Laryngeal hypersensitivity/intermittent laryngeal obstruction/vocal cord dysfunction/refractory chronic cough/unexplained chronic cough)	Excellent	Strong
Inhaled corticosteroids or leukotriene receptor antagonist empiric treatment trial	Poor	Weak
Macrolide antibiotics	Satisfactory	Weak against
Acid suppressive therapy, proton pump inhibitors or H2 antagonists empiric treatment trial	Excellent	Strong against
Neuromodulators (amitriptyline, gabapentin, pregabalin) treatment trial	Satisfactory	Weak
Opioids empiric treatment trial	Satisfactory	Weak against

* NHMRC additional levels of evidence and grades for recommendations for developers of guidelines. †The GRADE (Grading of Recommendations Assessment, Development and Evaluation) system was used to grade the strength of recommendations.

Adapted from the Cough in Children and Adults: Diagnosis, Assessment and Management (CICADA) Australian Chronic Cough Position Statement 2022 Update.