Cough

Introduction

Cough is a forced expulsive manoeuvre usually against a closed glottis, which is associated with a characteristic sound. It usually has a protective function in maintaining patency and cleanliness of the airways.

The impact of cough on patients and relatives is often underestimated. Patients may need symptomatic treatment when cough is persistent, distressing or affecting sleep and/or quality of life. An assessment of the pattern and character of the patient’s cough is essential to optimise treatment. Acute cough is defined as duration of <3 weeks, sub-acute as 3 to 8 weeks, chronic as >8 weeks. For information on the nature of cough, refer to the Management section.

Assessment

• Ask the patient to rate cough frequency, severity and level of associated distress or anxiety.
• Explore:
  - understanding the reasons for cough
  - fears (including fear of choking)
  - impact on:
    - functional abilities (including continence)
    - quality of life
    - family and carers.
• Clarify:
  - pattern, character and duration of cough
  - precipitating/alleviating factors for cough
  - associated symptoms
  - occupational history.
• Look for any potentially reversible causes of cough such as:
  - infection
  - pleural or pericardial effusion
  - pulmonary embolism
  - gastro-oesophageal reflux
  - bronchospasm.
• Determine if treatment of the underlying disease is appropriate. Seek advice if in doubt.
• Assess character of sputum and consider sputum culture if necessary. Refer to table below.
- Consider appropriate imaging.

**Management**

- If stridor is present, seek specialist advice. Give high-dose steroids in divided doses: † dexamethasone 16mg orally or subcutaneously, or prednisolone 60mg orally. Consider gastric protection with PPI or H₂ antagonist.
- Consider treating any potentially reversible causes.
- Optimise current therapy (non-drug management and medication); in particular, ensure adequate analgesia as pain may inhibit effective coughing.
- Acknowledge fear and anxieties, and provide supportive care. Offer written information and verbal explanation.
- Consider referral to physiotherapy services if difficulty in expectorating retained secretions.
- Agree a self-management plan which could include:
  - cough diary
  - smoking cessation advice
  - improved ventilation such as opening a window, putting on a fan
  - coping strategies such as:
    - positioning and posture
    - relaxation
    - controlled breathing technique and effective coughing techniques, for example huffing.
- Seek specialist advice for the small number of patients who may require suction or a cough assist machine.

**Specific advice on managing a dry (non-productive) cough**

- A persistent refractory cough may prompt the initial diagnosis of a primary lung malignancy or pulmonary metastases and specific chemotherapy/radiotherapy may be appropriate, depending on histology and fitness.
- Post-radiotherapy lung damage, pneumonitis and lymphangitis (which can be associated with breathlessness and cyanosis) may respond to steroid therapy. Seek oncology advice.

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† Indicates this use is off licence
QT Indicates this medication is associated with QT prolongation

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Management of a dry (non-productive) cough

<table>
<thead>
<tr>
<th>Nature of cough</th>
<th>Possible cause</th>
<th>Potential treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset related to the commencement of medication</td>
<td>Angiotensin-converting-enzyme (ACE) inhibitors</td>
<td>Discontinue or switch to alternative medication</td>
</tr>
<tr>
<td>Rapid onset of cough, associated with dyspnoea</td>
<td>Pleural effusion</td>
<td>Consider pleural drainage and pleurodesis</td>
</tr>
<tr>
<td></td>
<td>Pericardial effusion</td>
<td>Consider pericardiocentesis and pericardiosclerosis</td>
</tr>
<tr>
<td>Barking cough (short duration)</td>
<td>Pulmonary embolism (usually dry cough but may have haemoptysis)</td>
<td>Consider merits of anticoagulation with low molecular weight heparin (LMWH)</td>
</tr>
<tr>
<td></td>
<td>Pharyngitis/tracheobronchitis/early pneumonia</td>
<td>Consider antibiotics, humidify room air</td>
</tr>
<tr>
<td>Harsh croup (coarse)</td>
<td>Laryngitis</td>
<td>Humidify room air, advise resting of voice</td>
</tr>
<tr>
<td>Bovine cough</td>
<td>Recurrent laryngeal nerve palsy (from intrathoracic compression or disease)</td>
<td>Consider referral to ear, nose and throat (ENT) for possible vocal cord injection</td>
</tr>
<tr>
<td>Hard brassy cough (with or without wheeze or stridor)</td>
<td>Tracheal compression from thoracic lesions or nodes, superior vena cava obstruction (SVCO)</td>
<td>Consider radiotherapy, steroids, stenting (refer to the SVCO section in the Breathlessness guideline)</td>
</tr>
<tr>
<td>Wheezy cough</td>
<td>Airflow obstruction - asthma, chronic obstructive pulmonary disease (COPD)</td>
<td>Optimise inhaled therapy, consider steroids</td>
</tr>
</tbody>
</table>

Medication

- In addition to the advice described in the above table, consider treatment to suppress a dry cough:
  - simple linctus
  - † morphine (monitor for side effects, including opioid toxicity)
    - opioid naive – 2mg orally, 4 to 6 hourly if required (6 to 8 hourly if frail or in renal/hepatic impairment, start low go slow.)
    - already on morphine – continue and use the existing immediate-release breakthrough analgesic dose (oral if able or subcutaneous equivalent) for the relief of cough. A maximum of 6 doses can be taken in 24 hours for all indications
(pain, breathlessness and cough). Titrate both regular and breakthrough doses as required.

- Specialist referral if symptoms persist for consideration of other treatments.

**Specific advice on managing a moist (productive of mucus, sputum or saliva) cough**

<table>
<thead>
<tr>
<th>Nature of cough</th>
<th>Possible cause</th>
<th>Potential treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productive</td>
<td>COPD (no infection)</td>
<td>Optimise inhaled therapy, consider steroids</td>
</tr>
<tr>
<td></td>
<td>Infection, pneumonia or both</td>
<td>Consider antibiotics as per local guidelines (assess realistic level of intervention – intravenous (IV) or oral)</td>
</tr>
<tr>
<td></td>
<td>COPD exacerbation</td>
<td>Consider antibiotics (assess realistic level of intervention – IV or oral) and steroids</td>
</tr>
<tr>
<td></td>
<td>Tracheo-oesophageal fistula</td>
<td>Consider specialist advice for possible stenting</td>
</tr>
<tr>
<td></td>
<td>Aspiration of saliva</td>
<td>Antimuscarinics/anticholinergics, antibiotics</td>
</tr>
<tr>
<td></td>
<td>Gastro-oesophageal reflux</td>
<td>Proton pump inhibitors (PPIs) and prokinetic, for example domperidone and metoclopramide</td>
</tr>
<tr>
<td></td>
<td>Cardiac failure</td>
<td>Optimise medical management</td>
</tr>
<tr>
<td>After food</td>
<td>Fatigue or weakness causing poor swallow</td>
<td>Assessment by speech and language therapist and dietician</td>
</tr>
<tr>
<td>Weak ineffective</td>
<td>Motor neurone disease (MND)/amyotrophic lateral sclerosis (ALS) causing excessive saliva production</td>
<td>Consider antisecretory, for example hyoscine to achieve acceptable moisture levels. Titrate carefully. Consider suction or cough assist machine</td>
</tr>
<tr>
<td>Precipitated by supr pharyngeal secretions</td>
<td>Postnasal drip</td>
<td>Nasal steroids</td>
</tr>
<tr>
<td></td>
<td>Sinusitis/allergies</td>
<td>Nasal decongestant spray, antihistamine, nasal steroids</td>
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**Character of sputum**
### Quality of sputum

<table>
<thead>
<tr>
<th>Quality of sputum</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purulent</td>
<td>Infection</td>
</tr>
<tr>
<td>Non-infective, jelly-like, clear</td>
<td>Excess saliva or mucus</td>
</tr>
<tr>
<td>Bronchorrhoea (Mucus &gt;100ml/day)</td>
<td>Broncho-alveolar cancer, asthma, tuberculosis (TB)</td>
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<tr>
<td>Frothy</td>
<td>Left ventricular failure, alveolar cell cancer</td>
</tr>
<tr>
<td>Blood-stained</td>
<td>Infection, including TB, pulmonary embolus, tumour</td>
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</tbody>
</table>

### Medication

- In addition to the advice described in the table above, consider treatment to aid expectoration:
  - mucolytics - to reduce sputum viscosity, for example carbocisteine as required. Stop if no benefit after a 4-week trial.
  - nebulised † sodium chloride 0.9% 2.5ml to 5ml as required - to help loosen secretions.
- When a patient with a moist cough reaches end of life, drying of secretions may be necessary. Refer to Care in the Last Days of Life guideline.

### Practice points

- Non-drug management techniques that help patients and families cope are essential. Using a self-management plan can help with symptom relief.
- As the illness progresses, medication to relieve cough may become more necessary.
- Starting opioids at a low dose and titrating carefully is safe and does not cause respiratory depression in patients with cancer, airways obstruction or heart failure.

### Resources

- Palliative Care Formulary (PCF6)
- Macmillan Cancer Support
- Roy Castle Lung Foundation
- Cancer Research UK
- Marie Curie cancer care
- Chest Heart and Stroke Scotland
- British Lung Foundation
- British Heart Foundation
- NHS Inform palliative care zone
- My Condition, My Terms, My Life – Self Management
References


