Dyspnoea in Palliative Care

Dyspnoea is the distressing awareness of the process of breathing - either the frequency or the effort involved. It is very frightening and is one of the most common symptoms in palliative care.[1] It is extremely common with advancing disease, and at late stages is present in 90-95% of those with chronic obstructive pulmonary disease (COPD), 60-88% of those with chronic heart failure (CHF) and 10-70% of those with cancer, whilst also being common in end-stage kidney disease and acquired immune deficiency syndrome (AIDS).[2] It is most common and most severe in primary lung cancers, affecting 90%.[3] It is important to realise it is not limited to those with cancer or respiratory disease.

Palliative care has been defined as ‘an approach that improves the quality of life of individuals and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual’. [4] See separate article Palliative Care.

CHF, COPD and advanced neurological or muscular disease are all highly likely to cause dyspnoea as a main symptom, and are amenable to a palliative approach.

Aetiology

The drive to breathe and the stimulus for dyspnoea is quite complex and multifactorial:

- The main driving force of blood gases is $pCO_2$ rather than $pO_2$ (the exception being in COPD) although significant hypoxia can augment the hypercapnic drive.
- Mechanical stimuli such as pulmonary stretch and proprioceptive input from the chest wall and diaphragm are also important.
- Proprioception in the lungs and chest wall provide additional stimulus.
- Pyrexia stimulates the thalamus and can cause tachypnoea.
- Emotions (anxiety, fear, anger, etc) and arousal state also modulate breathing.

It is important to distinguish potentially reversible causes from those which are fixed and irreversible.

<table>
<thead>
<tr>
<th>Causes of dyspnoea</th>
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<tbody>
<tr>
<td>Potentially reversible or partially reversible with further treatment</td>
</tr>
<tr>
<td>Infection</td>
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<tr>
<td>Bronchoconstriction</td>
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<tr>
<td>Pleural or pericardial effusion</td>
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<tr>
<td>Pneumothorax</td>
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<tr>
<td>Pulmonary embolism</td>
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<tr>
<td>Cardiac failure/dysrhythmia/anaemia</td>
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<td>Panic or psychological disorder</td>
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<td>Superior vena cava obstruction</td>
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<td>Lymphangitis</td>
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<tr>
<td>Ascites</td>
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<tr>
<td>Irreversible</td>
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<tr>
<td>Progression of disease (eg, malignant infiltration, fibrosis, congestion) leading to diminished lung function</td>
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<tr>
<td>Progression of neurological or muscular disease preventing adequate ventilation</td>
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</tbody>
</table>
Assessment

Dyspnoea is subjective and, especially in these circumstances, may correlate poorly with objective assessment of lung function including blood gas analysis and airways obstruction. It involves perception of breathlessness and a person's reaction to it, and anxiety may contribute significantly. There is no universally accepted measure of breathlessness in palliative care patients and several scales are in use, most looking at the functional impact of the breathlessness. Self-rating scales may be helpful in assessment and monitoring of response to treatment.[3]

History[3]
Should include information about:

- Previous or pre-existing conditions (comorbidities may exacerbate symptoms).
- Recent treatments - eg, radiotherapy.
- Recent medication changes.

Questions regarding the breathlessness should include:

- Rapidity of onset (insidious and relentless vs sudden) and time course (acute or chronic, intermittent).
- Associated symptoms - eg, cough, haemoptysis, stridor, wheeze, pain, fatigue.
- Relationship to exercise.
- Precipitating factors - eg, posture, exertion, pollen, emotion.
- Impact on simple daily activities - eg, talking, washing, toileting, dressing, sleeping.
- Role of carers.
- Episodes of panic or anxiety.
- Impact on quality of life and any mood disturbance.
- Any known relieving factors.

Examination[3]
Including:

- Assess effort and efficacy of breathing (eg, depth of breathing, use of accessory muscles of respiration, expectoration of secretions).
- Observe the patient at rest and, where appropriate, walking or undertaking a small task.
- Assessment of degree of anxiety. Chest breathing (as opposed to abdominal breathing, with use of the diaphragm) may indicate anxiety.
- Cardiac status (heart rate, rhythm, cardiac murmurs, signs of cardiac failure).
- Clinical signs of infection, effusion, anaemia or cyanosis.
- Examination of the respiratory system based on known disease, looking for signs of stridor and progressive disease.

Investigations
Avoid unnecessary investigation: consider the stage of disease, risk-to-benefit ratio and the wishes of the patient and their family. In primary care, investigations which may be done for non-acute breathlessness include:[3]

- CXR
- Spirometry
- ECG to exclude arrhythmia
- FBC to exclude anaemia
- Pulse oximetry

Management[3]

General
- Try to address breathlessness as soon as distress becomes apparent rather than waiting until it is well-established.
- Endeavour to establish a cause or causes of the dyspnoea.
- Anxiety inevitably accompanies the symptom and can be alleviated by explaining the current situation and management options. Explore ongoing fears (fears of suffocation, choking, dying in sleep are common). Someone should stay with an acutely distressed patient to give reassurance and possibly distraction. If left alone, a call bell should be available.
Useful strategies include:

- Positioning - the most comfortable position is usually sitting upright with support.
- Keeping the room cool.
- Moving air from a fan (hand-held or stationary) or open window helps provide psychological relief.
- Teaching and use of breathing exercises and relaxation methods. Breathing retraining, taught by physiotherapists or clinical nurse specialists.
- Encourage modification of lifestyle in reducing non-essential activities, whilst trying to maintain mobility and independence as far as possible.
- Encourage exertion to the point of breathlessness to build tolerance and maintain fitness - this will vary considerably between individuals. Pulmonary rehabilitation appears to be well-tolerated and to provide symptomatic relief in many patients with severe COPD. It is increasingly being used in a palliative setting.\[^6\]
- Dietary modifications with small frequent drinks and meals being best tolerated. Patients with cancer or end-stage respiratory disease are frequently cachectic and advice from a dietician may be helpful.
- Mouth breathing dries the mouth and oxygen will be very dry unless it has been humidified, so attention to oral hygiene is important.
- Complementary therapies such as aromatherapy, hypnosis and acupuncture may be helpful to some patients but the evidence base is weak\[^7\].

The latest Cochrane Review is pending, but the last one in 2008 concluded that there was evidence that chest wall vibration, neuro-electrical muscle stimulation, breathing retraining and walking aids were effective non-pharmacological interventions for relieving breathlessness in advanced stages of disease. There was mixed evidence for acupressure and acupuncture, and insufficient evidence for relaxation techniques, counselling and psychotherapy.\[^8\]

### Medical interventions

Physical interventions may help to relieve or even reverse the cause of the dyspnoea. The degree of intervention desired by the patient will vary and management decisions should be made with them and their families. Discussing possible eventualities can help patients make important, informed decisions about their future care such as the need for emergency hospital admissions, use of artificial ventilation and aggressive treatment of infections.

### Primary care

Treatment of reversible or partially reversible causes of dyspnoea. For example:

- Optimising treatment of asthma, COPD, heart failure.
- Infections will aggravate dyspnoea and treatment of the infection will improve matters where the patient is not strictly terminal.

### Secondary care

Refer to secondary care, where appropriate, for:

- Blood transfusion - anaemia can exacerbate dyspnoea on exertion, and blood transfusion can be justified on this basis. One study looking at practice in six British hospices found that patients received blood transfusions in about 6% of all hospice admissions.\[^9\]
• Treatment of the underlying disease - for example:
  • Pleural effusion tapping - for recurrent effusion, pleurodesis is often effective, but it is a painful procedure. Some centres are pioneering the use of implantable access devices for recurrent tapping. [10]
  • Tapping ascites can relieve pressure on the diaphragm and improve ventilation.
Further reading & references

- Superficial venous embolism and pneumothorax may justify admission to hospital for active treatment.

Drugs³
In some situations, physical interventions may not be possible. This is especially true of neuromuscular disease. Nonetheless, medication (including oxygen) may be useful in reducing symptoms.

Opiates
Reluctance about the use of morphine for palliation of dyspnoea is common, especially in non-malignant disease (COPD in particular), for fear of causing respiratory depression. Oral and parenteral opiates are widely accepted as providing good symptom relief, and the risk of significant respiratory depression appears to be negligible.¹¹,¹²

- Oral morphine is widely used to manage dyspnoea, although the mechanism of action is not fully understood. The anxiolytic and antitussive effects of diamorphine make it ideal for lung cancer.
- Expert opinion is that oral morphine can be used safely for the management of dyspnoea, even with COPD, if the patient is started on a low dose, and it is titrated according to response and side-effects. Patients not already receiving morphine should start at doses of 5 mg 4-hourly/prn. For those already on morphine, whether for pain or dyspnoea, the overall dose may need to be increased by 30% to 50%.
- When the oral route is no longer available, administration by continuous subcutaneous infusion is acceptable. It may be combined with a benzodiazepine. The use of nebulised opiates is not recommended.³
- In extreme dyspnoea and distress, intravenous or subcutaneous diamorphine is often used for more rapid relief than by the oral route.
- Consider concomitant use of anti-emetics and laxatives where required.

Anxiolytics
There is as much reason to be cautious about respiratory depression with benzodiazepines as with opiates but they are commonly used to treat dyspnoea in palliative care. There is no evidence for a beneficial effect of benzodiazepines for the relief of dyspnoea associated with cancer or COPD.¹ However, guidelines continue to recommend their use for reducing anxiety associated with breathlessness, as they reduce the hypoxic or hypercapnic ventilatory responses, and the emotional response to dyspnoea.³ They should be used as second- or third-line where opioids and non-pharmacological interventions have failed.

Diazepam, lorazepam and midazolam are most frequently used. Selection is dependent on the stage of terminal disease, the severity of anxiety, and the desired onset of action. Lorazepam can be given sublingually (0.5 mg 4-6 hourly); midazolam is usually used subcutaneously (5-20 mg over 24 hours).

Tricyclic antidepressants and selective serotonin reuptake inhibitors (SSRIs) may be helpful, especially for panic attacks.

Oxygen therapy
The role of oxygen therapy for palliation of dyspnoea is unclear, and there is as yet no convincing evidence of benefit.¹⁴,¹⁵

- Currently recommendations suggest oxygen should be used only where the patient is shown to be hypoxic.
- A patient’s need for oxygen therapy should be clinically assessed including potential risks from the oxygen use (for example, a smoker in the household). A trial of short-burst oxygen therapy may be initiated in primary care, preferably after discussion with a specialist, and should be tailored to a person’s needs. Short-burst oxygen therapy should be initiated at 2 L/minute for an initial duration of treatment of between 15 and 30 minutes (although others suggest continuing until benefit is felt).
- Either a mask or nasal cannulae may suit patient preference and comfort.

Respiratory secretions
First-line treatment is hyoscine butylbromide 20 mg subcutaneously hourly as required in the final stages of life. Glycopyrronium bromide 200 micrograms 6- to 8-hourly as required and hyoscine hydrobromide 400 micrograms 2-hourly are other options.

Further reading & references

- Palliative care - dyspnoea; NICE CKS, November 2012
- WHO Definition of Palliative Care; World Health Organization


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