Intended for healthcare professionals

Student Practical skills

Practical management of chronic breathlessness

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Breathlessness is a common condition that is often undermanaged and distressing for patients

Medical students and junior doctors are trained in dealing with acute episodes of breathlessness, but chronic breathlessness is often neglected in the curriculum. It is an important condition to be able to recognise so that appropriate treatment can be delivered, but it is often unreported and undermanaged.**1** Breathlessness, or dyspnoea, can be defined as an uncomfortable awareness of breathing.**2** Chronic, refractory breathlessness, which persists in spite of optimal medical management of the underlying condition, is a common feature of advanced heart, lung, and neurological diseases, as well as cancer, and affects up to half of patients admitted to hospital.**3** It can be terrifying for the patient and for those caring for them, including family members and clinical staff. Recognition and management of this distressing symptom, which is similar to pain, should be part of caring for patients.

Recognising breathlessness is important when assessing the severity and prognosis of disease. The degree of breathlessness is a better predictor of mortality in patients with chronic obstructive pulmonary disease and in those with suspected heart disease than other measures, including pulmonary function tests.**4****5** This article provides an overview of the prevalence and causes of breathlessness in chronic disease and tips for medical students and junior doctors on how to improve its management.

What causes breathlessness?

Breathlessness is a perceived experience and is therefore a phenomenon of the central nervous system. The most popular model for the genesis of breathlessness (summarised in figure 1) proposes that feelings of breathlessness arise when there is a mismatch between signals from central and peripheral chemoreceptors, which indicate the demand for breathing, and signals from stretch receptors, vagal receptors, and mechanoreceptors in the lungs, which indicate breathing.⇓**2**

The corticolimbic areas of the brain, as well as input from the respiratory centres in the brainstem responsible for driving respiration, are thought to integrate these signals. This information is modulated by thoughts and emotions, such as anxiety, and sensations, such as pain.[6] This model gives a neurophysiological explanation of why fear worsens the perception of breathlessness, and why empathy and reassurance are helpful in its management.[7]

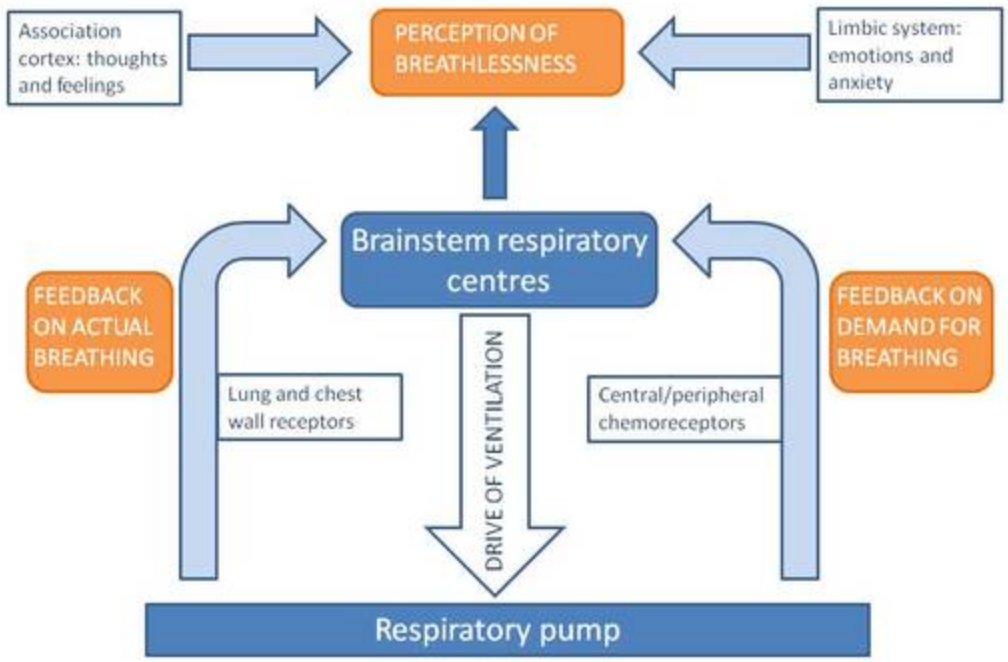

Fig 1 Model which explains the genesis of breathlessness. Adapted from the Cambridge breathlessness intervention service treatment manual[8]

Many patients with advanced disease experience breathlessness, with 60-88% of patients with heart disease, 90-95% of patients with chronic obstructive pulmonary disease, and 10-70% of patients with cancer reporting that they have discomfort when breathing.[9] Breathlessness is extremely distressing for patients and their carers (box 1).

Box 1: Views on breathlessness

From patients

"It's like being strangled while you have a big weight pushing down on your chest."

"Will I get much shorter of breath? Can I manage it? Is something terrible going to happen?"

From carers

"It's terrible to see it . . . and you feel so helpless, so useless, so useless, I don't know how you can help really."

"He [the patient] says he can't breathe, but he has enough air to yell at me."[10]

The perception of breathlessness is exacerbated by fear. The anxiety and panic induced by feeling breathless lead to release of adrenaline as part of the “fight or flight” response and an increase in respiratory rate and heart rate.

Breathlessness discourages patients from doing activities that might exacerbate their breathlessness. Similarly, carers often discourage patients from exerting themselves, also fearing the onset of breathlessness. Although understandable, this response is maladaptive and can inadvertently perpetuate the symptom. Becoming increasingly sedentary and staying at home results in muscle deconditioning, social isolation, and depression. The deconditioning of muscles leads to excess production of lactate and carbon dioxide, which can further contribute to breathlessness.

Breathless patients tend to develop an inefficient breathing pattern. At high respiratory rates, there is no time for full expiration. This results in “breath stacking,” or dynamic hyperinflation, which contributes substantially to the perception of uncomfortable breathing. Figure 2 illustrates the “vicious cycles” that commonly occur in breathlessness.⇓

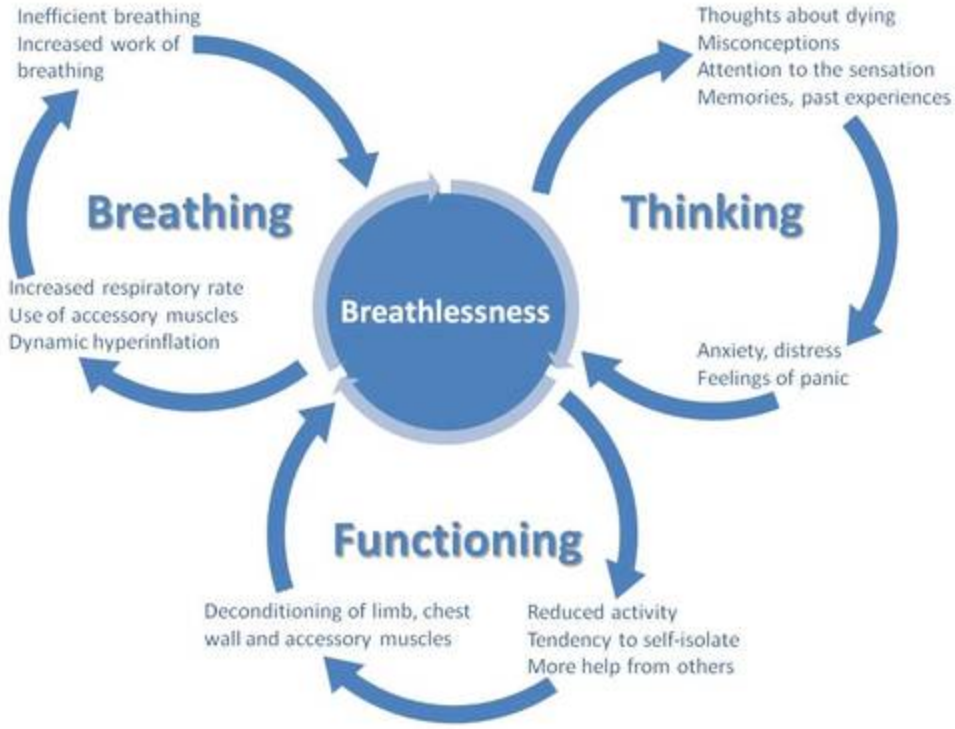

Fig 2 “Vicious cycles” that commonly exacerbate breathlessness Adapted from *Managing Breathlessness in Clinical Practice*[6]

Evidence shows that chronic breathlessness is under-reported by patients and their doctors and undermanaged in patients with cancer and those who do not have cancer.[11](12) The onset of breathlessness in chronic disease is often gradual. Initially, patients may not realise that it is relevant to their condition and may not consider it important enough to mention to their carers and doctors. Patients also tend to hide their breathlessness because they are embarrassed to be short of breath in front of other people. Even severe breathlessness may not be obvious to healthcare professionals, especially when the patient is at rest, unless they ask about it. To compound this, doctors may fail to recognise the signs of breathlessness and may be poorly equipped to deal with it, which may result in patients not being asked about their breathlessness. Even if breathlessness is reported by the patient, doctors may not record it, and patients are often not offered advice on management or treatment.[11]

Gysels and Higginson describe these problems as contributing to the "invisibility of breathlessness."[12] This "invisibility" means that breathlessness can be a major source of anxiety and tension for patients and their carers, as both feel frustrated and helpless by a seemingly untreatable symptom.

Medical students can learn from patients with chronic breathlessness. You should be proactive about finding out about the cause of the patient's symptoms. It is also valuable to understand the mechanism by which breathlessness is perpetuated, driven by a range of potentially avoidable vicious cycles (fig 2).

How can chronic breathlessness be managed?

The model illustrated in figure 1 provides both a large array of potential therapeutic targets and explanations for how pharmacological and non-pharmacological treatments might work. Despite the fact that many doctors consider chronic breathlessness to be untreatable, treatments are available and the evidence base to support them is growing.

Some evidence shows that low dose opioids are helpful in palliating breathlessness.[13] Opioids are indicated in patients who are severely breathless—that is, those who are breathless at rest or on slightest exertion. Doses as low as 1-2 mg of oral morphine taken daily can be effective, and junior doctors should discuss its suitability for a patient with a registrar or consultant. Evidence for the use of other drugs, such as benzodiazepines and oxygen, is less conclusive. In patients who are only mildly hypoxaemic, oxygen is no more effective than "medical air" in relieving breathlessness.[14]

By contrast, there is increasing evidence for non-pharmacological strategies to manage breathlessness. Non-pharmacological treatments are particularly indicated for people who are breathless on exertion. A systematic review and meta-analysis of trials of non-pharmacological techniques to manage breathlessness showed that techniques that aim to reduce muscle deconditioning (neuromuscular electrical stimulation and chest wall vibration) are supported by high strength evidence.[15] Other evidence-based techniques include the use of walking aids, breathing training, and relaxation training. An intervention that is increasingly being used is the handheld fan, which patients direct over their nose and upper lip. This cheap, easy to use, and widely available patient controlled device can relieve the sensation of breathlessness.[16] It has been shown that cold stimulation of the face reduces breathlessness induced in healthy people and that this effect is reduced when the nasal area is anaesthetised.[17][18] It is important to explain the evidence behind interventions such as the fan to maximise the benefit to the patient.[19] An intervention is more likely to be complied with and to provide reassurance —particularly needed in breathlessness—if the patient is confident that it will be helpful. The fan is also successful because it is operated by patients whenever they need to use it, giving them a sense of control over what is often an overwhelming symptom.

The first specialist breathlessness intervention service was set up in Cambridge in 2003, and similar services have been introduced in London and in other countries. These services are usually based in palliative care or respiratory medicine departments. They consist of multidisciplinary teams including physiotherapists, occupational therapists, and doctors.

Patients and their carers are assessed in their homes or in clinics and are encouraged to help develop self management strategies for dealing with their breathlessness, including a combination of the techniques mentioned above. These techniques are mainly non-pharmacological. Although interventions are palliative, the patients are seen relatively early on in the course of their disease—much earlier than at the end of life stage. Attempts to manage breathlessness can be made alongside any disease modification. Two randomised

controlled trials provide evidence for the effectiveness of these breathlessness intervention services in benefitting patients with cancer and other types of advanced disease.[19][20]

Breathlessness is a subjective experience and is therefore difficult to measure. It is perhaps for this reason that there has been relatively little research into the management of breathlessness, although research is increasing. More evidence for current treatments is required, as well as the development of new therapies.

Role of the junior doctor in the identification and management of chronic breathlessness

Although allied health professionals have particular expertise in managing breathlessness, junior doctors can take steps to identify and manage breathlessness in their patients.

Identify breathlessness

Ask patients if they are breathless and record it in the notes. Take a thorough breathlessness history (box 2). This can be helpful to the patient and the carer because the distressing symptom is recognised and validated.

Consider the cause of the breathlessness

Consider any reversible causes of breathlessness, such as infections, pulmonary embolism, anaemia, or arrhythmia.

Reduce anxiety

Deal with any misconceptions that the patient or carer may have. For example, many patients fear they will “die gasping for breath.” Although an understandable fear, in the terminal phase reduced ventilator demand and potentially increasing carbon dioxide mean that in practice patients tend to become less symptomatic.

Teach some simple methods to reduce breathlessness

Help to give patients a sense of control over their breathlessness—this will alter their experience of breathlessness.

Enable face cooling. If possible, position patients near a window and try to source a small handheld fan. These are cheap so the patient’s family could buy one and bring it to the hospital. Explain how the fan works and how best to use it (Box 3).

Teach a recovery breathing technique (Box 4). Knowing that they can recover their breathing gives patients confidence that they can deal with their breathlessness, and this in turn reduces their fear of becoming breathless.

Promote activity

Explain to patients that making themselves moderately breathless by being active is not harmful and it will help their symptoms in the long term by reducing deconditioning.

Provide carer support

Witnessing intractable breathlessness invariably leads to carer distress. Dealing with carers’ anxiety and misconceptions, as well as educating them about the importance of encouraging people to be active even if it causes breathlessness, can be of therapeutic value to patients and carers.

Ask for help

Suggest to your senior doctors that they consider referring patients with persistent, intractable breathlessness to

the palliative care team or specialist breathlessness intervention service, if available.

Box 2: Taking a breathlessness history

Medical students can learn a lot from patients with chronic breathlessness as they practise taking a good breathlessness history. Key areas you should cover when asking patients about their breathlessness are:

- Onset—when did their breathlessness start?
- History of any underlying illness
- Any associated symptoms
- Exacerbating and relieving factors
- Exercise tolerance (if the patient is breathless at rest or on the slightest exertion, this indicates that pharmacological treatment with opioids may be needed)

Impact on life

- Activity levels now compared with before the onset of breathlessness
- Social limitations
- “What extra help do you need?”

Anxiety

- “Does feeling anxious make your breathlessness worse?”

Feelings

- “How does your breathlessness make you feel?”
- Reactions of family/friends/carers

Understanding

- “What do you think is causing the breathlessness?”
- “Do you think that being breathless is harmful?”
- “Do you think you will always be breathless?”

Currently used strategies

- Is the patient taking any drugs to help with the breathlessness?
- Does he or she have any “coping strategies” that help relieve breathlessness?

- Has he or she been given information or advice about managing breathlessness?

Systems review

- Family history or other experience of breathlessness
- If the patient has an informal carer, consider asking this person about:
    - The psychological and social impact of the patient's breathlessness
    - Any specific concerns or fears the patient might have
    - Whether the patient feels he or she is receiving adequate support

Box 3: Explaining how to use the handheld fan

- Demonstrate use of the fan by holding it about 15 cm from your face and aiming it so that you can feel cool air on your upper lip and around your nose (fig 3). Let the patient use the fan in front of you and monitor this first usage, correcting the patient's technique if necessary.⇓
- Explain to the patient that the cool air passes over sensory receptors in the nose. These receptors send signals to the brain that reduce the feeling of breathlessness.
- Explain that the fan will not cure the breathlessness but will help speed up the recovery time from episodes of breathlessness.

Patient information leaflets and videos on the use of the fan are on the Cambridge Breathlessness Intervention Service website: www.cuh.org.uk/breathlessness-intervention-service-bis.

Fig 3 Use of the handheld fan

Box 4: Teaching a recovery breathing technique

The *Cambridge Breathlessness Intervention Service Manual*[21] recommends teaching patients the following routine:

- Remind yourself that you have been breathless before; that although being breathless is extremely unpleasant, it is not in itself harmful; and that the episode of breathlessness will end
- Get into a position that you know helps relieve the breathlessness
- Commonly used positions entail leaning forward and resting on the forearms so that the shoulder girdle is held steady, as in figure 4. (This is called fixing the shoulder girdle.) Explain that leaning forward allows the diaphragm to move downwards more easily when breathing in, giving more space for the lungs as there is less restriction by the abdomen. Steadying the shoulders allows muscles to work efficiently to move the ribs and aid air entry
- Use a fan
- Focus on breathing out and, if it helps, narrow your lips. Imagine blowing the seeds off a dandelion head
- Remind yourself that you are OK and that you are in control
- It can be helpful to think of the three Fs:

  Forward lean position

  Fan

  Focus on the outbreath

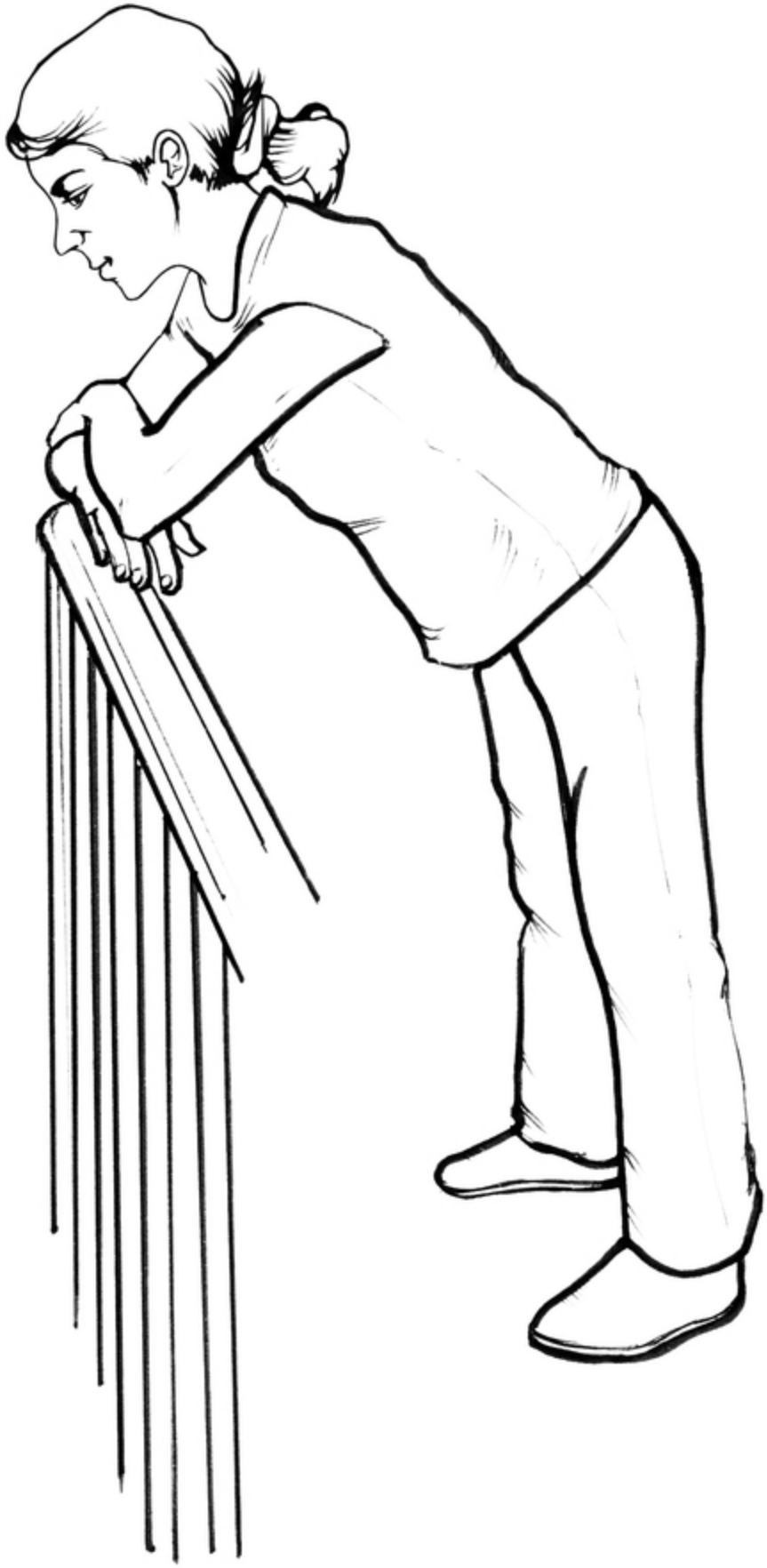

Fig 4 Breathing methods and positions to ease breathlessness. From Breathlessness Intervention Service

Pct. Fact sheet 2**22**

The bottom line

Breathlessness is a major problem in advanced disease: it is common, distressing, and neglected by health professionals. It can often be left to junior doctors and nurses to recognise and manage chronic refractory breathlessness. The pathophysiology of breathlessness is increasingly understood, and there is growing evidence for interventions that tackle breathlessness, which are largely non-pharmacological. Junior doctors have a role in managing intractable breathlessness and can learn several simple and effective approaches, such as the recovery breathing technique. You can contact allied health professionals and your local palliative care service either for advice or for direct clinical care.

Notes

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Footnotes

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