

**Educational Support For Nurse Led Breathlessness
Intervention Program
As Part of the
Provincial Palliative Care Integration Project**

Halton/Peel

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Unit One

Understanding Breathlessness

Traditionally, dyspnea has been approached using a biomedical framework, such as looking at cause and effect. An alternative approach for assessing and managing dyspnea exists which considers involving the mind, body experience and meaning of the symptom for the individual experiencing the symptom. The community nurse is in an opportune position to apply this as she/he engages caring relationships with individuals and their families. The therapeutic relationship that the nurse engages in with these clients provides the basis of continuity of care, partnership, reciprocity and mutual inquiry which are the foundation of this intervention. Improved patient outcomes can be realized when the meaning of breathlessness can be understood from the perspective of the individual experiencing it (Krishnisamy, Corner, Bredin, Plant and Bailey, 2001).

Definitions

Breathlessness is best understood as symptom which has complex physical psychological emotional and functional influences (O'Driscoll, Corner, Bailey, 1999).

Breathlessness is a subjective experience described as an unpleasant or uncomfortable awareness of the need to breathe (CCO, 2005).

Dyspnea is a subjective experience of breathing discomfort that consists of qualitatively distinct sensations that vary in intensity...dyspnea derives from interactions among physiological, psychological, social, and environmental factors (American Thoracic Society, 1999).

Dyspnea is a subjective experience of difficult labored and uncomfortable breathing that occurs when the demand for ventilation exceeds the individual's ventilation capacity (Brown, Carruero, Janson-Bjerklie, Dodd, 1986).

Background and Statistics

Overall incidence of breathlessness reveals 21-90% (Brurea et al., 2000)

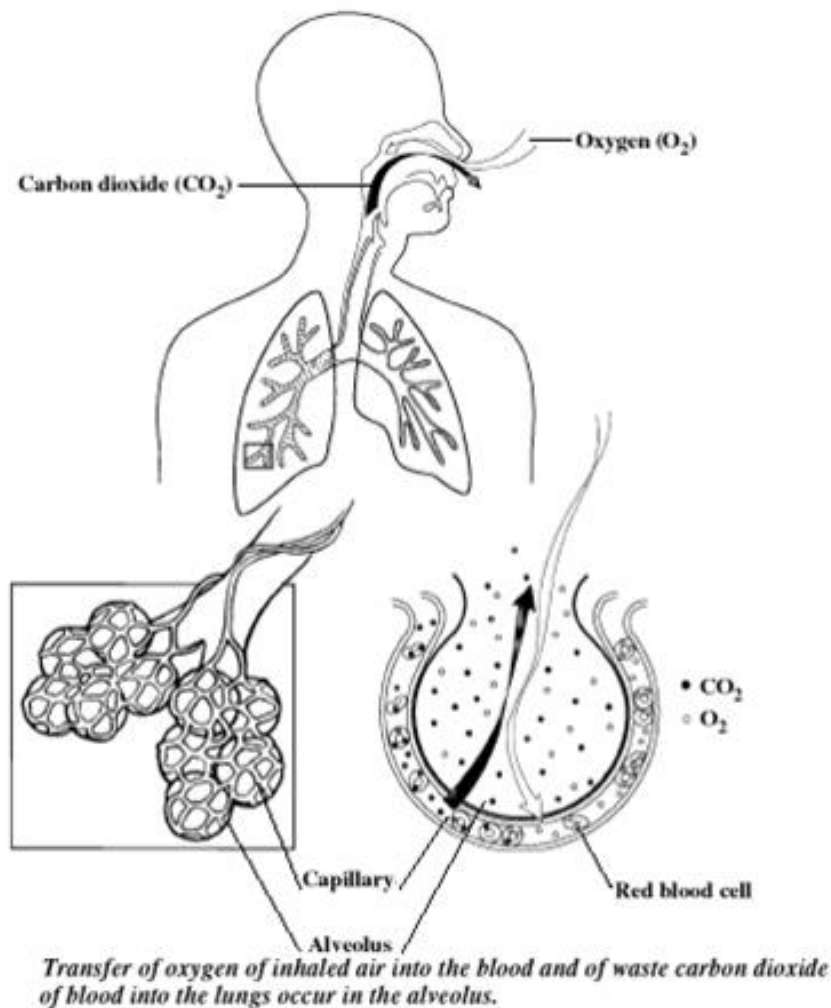
Breathlessness can occur with any cancer but is known to be prevalent in individuals with lung cancer. It is a symptom that can increase as the disease progresses.

Bredin and colleagues (1999) state that between 10% to 15% of patients with lung cancer have breathlessness at diagnosis and 65% will have the symptom at some point during their illness.

Physiology

Normal Breathing:

1. Breathing is controlled by the medulla oblongata in the brainstem which automatically regulates rate and depth depending on the body's needs at the time.
2. When carbon dioxide levels increase in the blood it reacts with water in the blood to produce carbonic acid.
3. Carbonic acid causes the blood's pH to drop.
4. This sends a signal to the medulla oblongata to send nerve impulses to the diaphragm and the intercostal muscles this increases the rate of breathing.



(Metro Health,2007)

During exercise, the level of CO₂ increases due to increased cellular respiration by the muscles. This stimulates chemoreceptors in the carotid and aortic bodies in the blood system to send nerve impulses to the inspiration centre which in turn sends impulses to

the diaphragm and intercostal muscles through the phrenic and thoracic nerves. The diaphragm and intercostal muscles contract at a higher rate.

During rest, the level of CO₂ is lower, so the breathing rate is lower. It is the build up of CO₂ making the blood acidic that causes a need for increased respiratory rate, rather than lack of oxygen (Wikipedia, 2007).

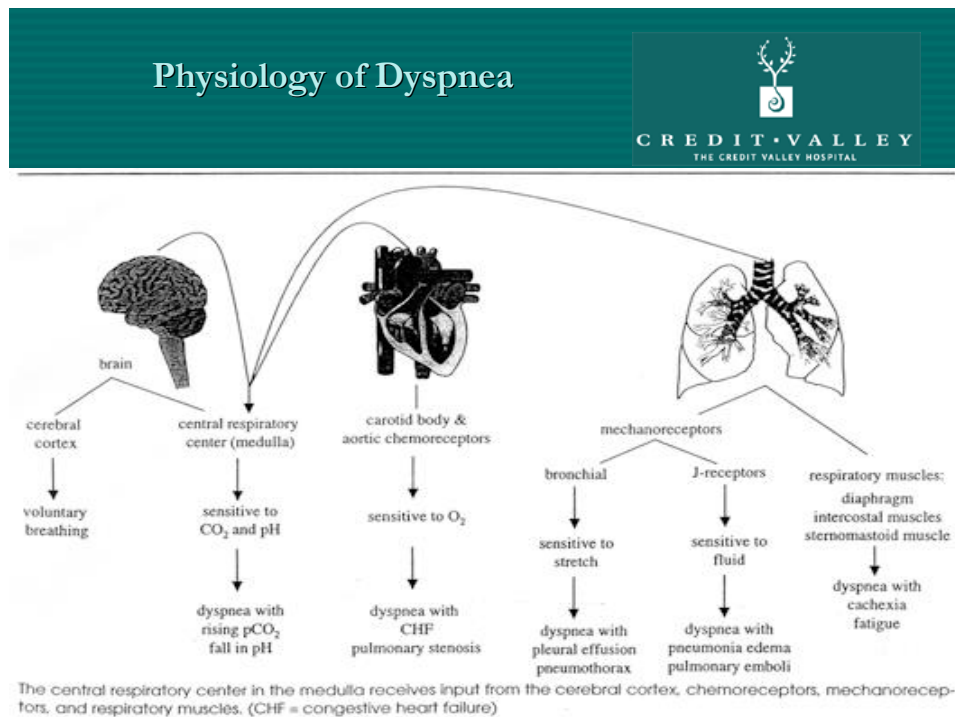
The respiratory center in the medulla oblongata responds to stimuli from four sources:

Chemoreceptors: in the aorta, carotid arteries and medulla sense changes in PO₂, PCO₂, and pH and transmit signals back to the respiratory centre to adjust breathing. The peripheral receptors (those in the carotid and aorta) are most sensitive to changes in PO₂. When PO₂ decreases respirations increase. However, please note hypoxia must be fairly profound before this change in respiratory pattern is seen.

Mechanoreceptors: are located in the diaphragm and chest wall and they sense changes in the work of breathing. When an increased work load is sensed, the respiratory centre stimulates the diaphragm and respiratory muscles and attempts to expand the lungs.

Vagal receptors: in the airways and lungs also influence breathing. Afferent impulses are generated when 1) stretch receptors in the lungs are stimulated as the lungs expand. 2) irritant receptors in the bronchial wall are stimulated or 3) C fibres in the interstitium of the lungs respond to an increase in pulmonary interstitial or capillary pressure.

Cortical areas within the brain: affect breathing by allowing individuals to consciously increase or decrease their respiratory rate. It also appears the chemoreceptors, mechanoreceptors, and respiratory centre, send messages to the higher brain centres leading to a cognitive awareness of the ventilatory demand.



Pathophysiology of Dyspnea

Precise origin of the sensation remains unknown.

- 1) Increased effort to overcome a certain load (For example, obstructive or restrictive lung disease pleural effusion).
- 2) Increase in respiratory muscle required to maintain a normal workload (Muscle wasting, cachetic).
- 3) Increase in ventilatory requirements (Hypoxemia, hypercapnia, metabolic acidosis, and anemia).

In many cancer patients, different proportions of the three abnormalities may coexist, thereby making the pathophysiologic interpretation of the intensity of dyspnea more complex.

The etiology of breathlessness is very complex.

Breathlessness can be classified by the time course: it is acute, subacute, and progressive.

Or by etiology, direct effects of the tumour, effects of the treatment or, indirect effects.

- **Direct effect of the tumor**
 - Primary or metastatic tumor
 - Pleural effusion
 - SVC
 - Carcinomatous lymphangitis
 - Atelectasis
 - Phrenic nerve palsy
 - Tracheal obstruction
 - Carcinomatous infiltration of the chest wall
- **Effects of therapy**
 - Radiation fibrosis
 - Bleomycin, methotrexate, cyclophosphamide induced fibrosis
 - Adriamycin induced cardiomyopathy
 - Post pneumectomy
- **Indirect cancer related**
 - Anemia
 - Cachexia
 - Rib fracture
 - Fever
 - Asthma
 - Pulmonary emboli

Heart failure

Obesity

Psychosocial distress

Cancer related dyspnea usually is multifactorial resulting from cancer and perhaps exacerbated by cancer therapy or other factors.

Impacts of Breathlessness

The literature reveals that there are many unmet needs in relation to symptom management for individuals with cancer and their families. Breathlessness is frequently seen as a presenting symptom in lung cancer and a sign of advancing tumour.

The experience of dyspnea is debilitating because it interferes with an individual's activities of daily living, such as their physical and psychological functioning. Difficulty breathing causes people to stop the activity in which they were engaged in. Dyspnea results in increased tension and apprehension or anxiety. Chronic dyspnea causes fatigue.

Dyspnea leads to multiple threats and barriers to normal life and can have a devastating effect on physical functioning, personal and sexual behaviours, self care, household and work activities and social roles. In addition, dyspnea negatively affects emotions and decreases comfort and peace of mind.



The Language of Dyspnea

Patients may use different phrases or words to explain what they are feeling. In the literature, breathlessness has been defined as “difficulty breathing, uncomfortable breathing and unpleasant subjective sensations.” Patients may use some of the following:

- Part of the way toward choking
- Going to take your last breath
- Breathing through cotton wool
- Wishing you could get more breath, getting exhausted
- It frightened the life out of me-like a suffocation
- It feels like I’m not going to breathe again
- Breathing while you’re drinking a glass of water or have your mouth half full.(Corner et al.,1995; Krishnasamy et al.,2001)

Unit Two Assessment

It is important to determine the etiology of dyspnea as dyspnea (or worsening breathlessness) is frequently multifactorial and a result of the occurrence of several factors. Assessment for this symptom tends to be generally poorly conducted and is therefore frequently inadequately treated because the symptom is so subjective and under-reported.

The assessment of breathlessness must be holistic and include the physical, social and emotional components. Breathlessness can be a very frightening experience and it can cause profound anxiety and stress.

Dyspnea assessment

PPS:

This is a valid and reliable tool to guide the assessment of the palliative patient's functional performance.

The PPS provides a framework for measuring progressive decline over the course of illness. It serves as a communication tool for the team. It can also be used to reassess care and care requirements. For example patients who score between 0-40% usually require increased hands-on nursing and their family members often need more support compared to those patients with higher PPS scores (See Appendix A).

Level of distress:

Individuals with lung cancer have been reported to have heightened levels of psychological distress (Sarna et al., 2005), however, it is important to determine the level of distress a patient is experiencing. For example, a patient with longstanding dyspnea may rate severity as 7/10 but may have little distress in relation to how long they have had the symptom. In contrast a patient, who has not previously experienced dyspnea, may rate as a 3/10, but may be very distressed.

Objective observation may alert the nurse that the client is having difficulty breathing; however the degree of distress is subjective. The most simplistic and concise method of assessing this is to simply ask the patient:

“Are you distressed?”

“How distressed are you?” and ask them to identify:

- not at all
- somewhat
- very much

Onset, Duration and Severity:

Is onset new? Or a change to the usual pattern? A patient with chronic COPD may have lived with dyspnea for sometime and developed compensation mechanisms, whereas new onset may indicate the need for emergency medical intervention.

ESAS

The Edmonton Symptom Assessment System (ESAS) is a valid and reliable self-assessment tool that monitors nine common symptoms experienced by cancer patients; pain, tiredness, nausea, depression, anxiety, drowsiness, appetite, well being and breathlessness (See Appendix B)

On a scale of 0-10 with 0 being no shortness of breath and 10 being the worst possible shortness of breath, how do you rate your shortness of breath? Is the onset sudden or progressive?

Is the pattern constant or intermittent?

According to the collaborative care plan, the severity of dyspnea can be categorized according to ESAS scores as follows:

Mild Dyspnea

ESAS (0-3)

- Usually can sit and lie quietly
- May be intermittent or persistent
- Worsens with exertion
- No anxiety or mild anxiety during shortness of breath
- Breathing not observed as laboured
- No cyanosis

Moderate Dyspnea

ESAS (4-6)

- Usually persistent
- May be new or chronic
- Shortness of breath worsens if walking or with exertion; settles partially with rest
- Pauses while talking every 30 sec
- Breathing mildly laboured

Progressive Severe Dyspnea

ESAS (7-10)

- Often acute or chronic
- Worsening over days/weeks
- Anxiety present
- Often; awakes suddenly with shortness of breath
- May have cyanosis
- May have onset of confusion
- Laboured breathing awake and asleep
- Pauses while talking q 5-15 sec

Acute Exacerbation or Very Severe Dyspnea (Treat as a medical emergency)

- Sudden onset (minutes to hours)
- High anxiety and fear
- Agitation with very laboured respirations
- Air hunger-pauses while talking or unable to speak
- Exhausted
- Total concentration on breathing
- Cyanosis usually
- May be cold /clammy
- May or may not have respiratory congestion
- May or may not have acute chest pain
- May or may not be diaphoretic
- May or may not be confused

Precipitating and relieving factors:

What things make you breathless?

The oxygen cost diagram is a visual analogue scale consisting of a 100mm vertical line. Everyday activities such as walking, shopping, and bed making are listed at various points along the line. The activities are listed proportionately to the oxygen cost e.g. the amount of oxygen needed to perform the activity. The oxygen cost diagram quantifies breathlessness severity. It puts a number to the breathlessness symptom and it can be used to evaluate response to treatment or to assess changes in breathlessness. (McGavin, Artvinli, Naoe, & McHardy, 1978)

What do you do to improve your breathlessness?

- modify activity
- positioning
- breathing exercises
- medications (including use of O₂)

Associated symptoms:

Do you experience any other symptoms or feelings when the shortness of breath occurs?

Chest pain:

Respiratory pain is usually sharp in nature and is aggravated by deep breathing or coughing and occurs in 30-50% of patients with lung cancer diagnosis (Tyson, 2005). Chest pain is often seen in patients with peripheral tumors although the etiology of chest pain is not always clear.

In some patients chest pain may be directly related to chest wall or pleural invasion

Established methods of pain control should be used in these patients irregardless of the etiology of pain.

Cough:

Cough is the most common presenting symptom and occurs in 50-75% of patients with lung cancer (Tyson, 2005).

Assess cough in respect to:

- Recent onset
- Chronic cough
- Irritating cough
- Chronic cough plus production of large volumes of purulent sputum

Sputum

- White mucoid sputum (Asthma and bronchitis)
- Purulent green or yellow, foul smelling (Respiratory infection)
- Blood (Carcinoma of lung, pulmonary embolism) hemoptysis is defined as blood that is coughed up, it may be mixed with sputum. In 25-35% of lung patients, hemoptysis is present at diagnosis. It usually occurs in patients who have centrally located tumors as a result of tumor invading blood vessels or tumor necrosis (Tyson, 2005)
- Frothy white or pink (Pulmonary edema)
- Thick Viscid (Life-threatening asthma)

Most important pearl about the assessment of dyspnea is that objective signs often do not match the patient's perception. Thus, the subjective report as in pain is the gold standard for assessing this symptom.

Fever

Many patients with lung cancer display signs or symptoms of pneumonia, chest pain, cough and fever (Tyson 2005).

- Is there a presence of fever greater than 38.0 C?
- Is the patient currently on chemo therapy for lung cancer?
- If the client is currently on chemotherapy, consultation with oncology team is necessary to rule out febrile neutropenia and/or related sepsis.

Physical assessment

General appearance

- How does client appear on first visual?
- Note: posture, body language, facial expression
- Respiratory rate and vital signs
- Monitor for RR above 24 rpm
- Elevated heart or tachycardia

Color

Note whether ashen, pale, cyanotic, flushed

Use of accessory muscles

Note: Indrawing, substernal/suprasternal indrawing, diaphragmatic breathing (belly breathing)

Stridor

A type of wheeze that is caused by the partial obstruction of the larynx or trachea, it primarily occurs on inspiration and tends to high pitched.

Lung Auscultation

Auscultation of the lungs is the most important examining technique for assessing air flow through the tracheobronchial tree. Auscultation involves:

- 1) Listening to the sounds generated by breathing.
- 2) Listening for any added or adventitious sounds.
- 3) If abnormalities are suspected, listening to sound of the patient's spoken or whispered voice as they are transmitted through the chest wall.

Breath Sounds

Patterns of breath sounds can be identified by their intensity, pitch and relative duration of their inspiratory and expiratory phases.

Normal breath sounds are:

Vesicular, or soft and low pitched. They are heard through inspiration and continue without pause through expiration and then fade away about one third of the way through expiration.

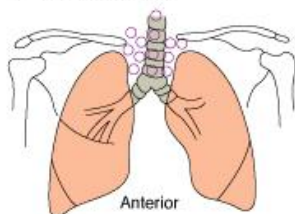
Bronchovesicular: with and expiratory and inspiratory sounds about equal in length, at times are separated by a silent interval, differences in pitch and intensity are often more easily detected during expiration.

Bronchial: or louder and higher in pitch with short silence between inspiratory and expiratory sounds. Expiratory sounds last longer than inspiratory sounds.

Tracheal breath sounds, very loud harsh sounds that are heard by listening over the trachea and the neck.

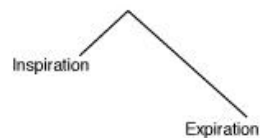
Listen to the breath sounds with the diaphragm of the stethoscope after instructing the patient to breathe deeply through an open mouth.

Bronchial or Tubular



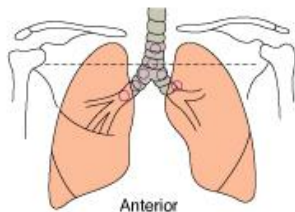
Blowing, hollow sounds auscultated over the trachea

Ratio of inspiration to expiration

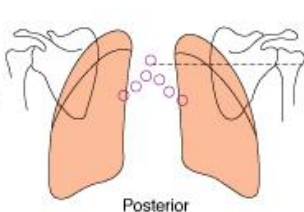


Inspiration is shorter than expiration. Expiration is longer, lower, and higher-pitched than inspiration.

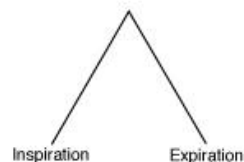
Bronchovesicular



First and second interspaces

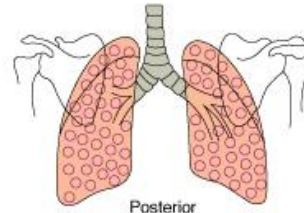
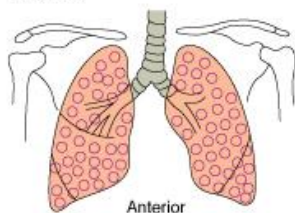


Medium-pitched, medium intensity, blowing sounds auscultated over the first and second interspaces anteriorly and the scapula posteriorly

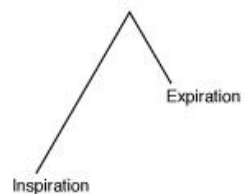


Inspiration and expiration have similar pitch.

Vesicular



Soft, low-pitched sounds auscultated over the lung periphery



Inspiration is longer, louder, and higher-pitched than expiration.

Figure 25-34 Normal breath sounds.

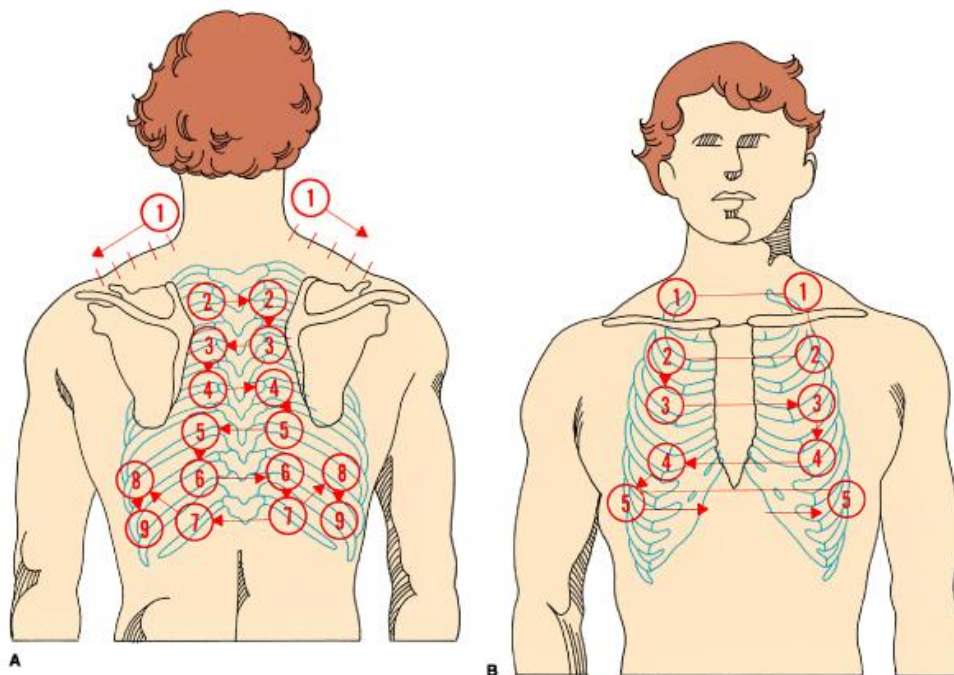


Figure 25-32 Posterior (A) and anterior (B) chest—landmarks and systematic sequence of assessment. The pattern is used for palpation, percussion, and auscultation of the chest.

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Moving your stethoscope from one side to the other of the patient's chest, compare symmetric areas of the lungs. If you hear or suspect abnormal sounds, auscultate adjacent areas so that you can full describe the extent of any abnormality. Listen to at least one full breath in each location

Aventitious Sounds

Detection of aventitious sounds, crackles, wheezes, and rhonchiis an important part of your examination.

Crackles: are intermittent discontinuous sounds, non musical and brief. Like dots in time. Fine crackles are soft, high pitched and very brief. Coarse crackles are somewhat louder in pitch and not quite so brief.

Ronchii: are relatively low pitched and have a snoring quality.

Wheezes: are continuous sounds that are relatively high pitched and have a hissing or shrill quality (Bickley, Szilagyi, 2003)

Wheezing is the result of the vibration of a narrowed airway as air passes through it. In patients with lung cancer, wheezing often is caused by a lesion in the main stem bronchii. The wheezing is localized and may be associated with a cough. This should be differentiated from generalized wheezing, which usually is caused by bronchospasm (Tyson, 2005).

Mental status

- Degree of alertness

- Alert

- Confusion

- Drowsy/stuporous

Psychological

Ask about the presence of anxiety or fear.

How does the breathlessness make the client feel?

The nurse may refer to anxiety scores and sense of well being on the ESAS as an approach to addressing this, or opening the discussion.

Krishnasamy and colleagues (2001) present breathlessness as a symptom with physical and emotional influences; therefore, it would be important to consider the presence of anxiety, fear and uncertainty that the client may be experiencing along with the symptom of breathlessness. The parallel model of care works in collaboration with the traditional biomedical model of care. This approach then helps to identify the meaning of the symptom by examining the psychological impact.

Anxiety does not cause breathlessness, but breathlessness left untreated will always result in anxiety.

Diagnostic tests

O₂ sat if able. Objective measurement rarely matches the subjective experience.

Therefore, this is helpful for obtaining data but not for expressing the significance of the symptom for patient.

O₂ saturation <90% indicates a need for immediate nursing intervention and consultation with the medical team.

Unit Three

Nursing Interventions

Refer to “Toolkit for Breathlessness Management” for detailed interventions. This toolkit elaborates on the Provincial Palliative Care Integration Project’s Collaborative Care Plans and numerous best evidence random controlled trial studies as well as the MacMillan UK based breathlessness education program. This Toolkit is both for the management of patients experiencing breathlessness and also for those who are at risk but not yet experiencing the symptom.

1. Assessment
2. Training in Breathing Control Techniques
(See Attached Patient Fact Sheet: Coping with Shortness of Breath)
 - Bredin et al. (1999) conducted a randomized controlled study with interventions carried out by specialist nurses including training in breathing control techniques, progressive muscle relaxation and distraction exercises. The findings showed that patients attending the clinics for breathlessness experienced improvements in breathlessness, performance status and physical and emotional states.
 - Gallo-Silver and Pollack (2000) wrote an article that reviewed breathing techniques and provided detailed information about them. This suggested that the breathing retraining has been proven to be beneficial, especially when initiated at the earliest possible stage.
3. Goal Setting and Developing a Therapeutic Nurse Client Relationship
(See Attached Patient Fact Sheet: Managing Breathlessness)
 - Hately and colleagues (2003) conducted a study in which individuals with lung cancer engaged in an intervention program that consisted of a range of strategies including breathing retraining, simple relaxation techniques, activity pacing and psychosocial support. The study outcomes revealed at study entry 97% of patients were experiencing breathlessness at least once or twice per day, 73% several times daily, and 27% most or all of the time. At final visit, 27% were experiencing dyspnea several times daily and only 3% experiencing it most or all of the time.
4. Support and Advice on Managing Dyspnea
(See Attached Patient Fact Sheet: Living with Breathlessness)
 - Krishnasamy et al, (2001) considered the methodological and philosophical issues that arose during a multicentre, randomized controlled trial of a new nursing intervention to manage breathlessness with patients with primary lung cancer and concluded that the intervention

is not about following a series of steps. The physical and emotional components of the intervention are interdependent, as they are for the individuals experiencing them. The method involved in working with each patient involved the focus on breathing retraining and strategies for minimizing functional limitations as well as engaging in the transpersonal caring relationship to understand the meaning of the symptom for the patient.

Unit Four

Evaluating Nursing Interventions

The literature supports that individuals with lung cancer who have received nursing interventions for breathlessness management, focused within the areas of symptom meaning, advice on ways to manage, breathing retraining and supportive counselling experienced improvements in breathlessness ratings, ability to manage activities of daily living, performance status and psychological well being. (Corner et al., 1996; Bredin et al., 1996; Hatley et al., 2003).

- Initial dyspnea assessment should be recorded and patient stated goals should be recorded
- Nursing interventions should be recorded
- Subsequent breathlessness scores should be recorded using the dyspnea assessment to indicate the effectiveness of the intervention
- Feedback from patients and family members should also be included
- The patient goals should include their perception of decreased breathlessness
- The goal should also include decreased perception of distress related to breathlessness

Unit Five

Medical Management

After dyspnea assessment is complete, collaboration with the medical team may be indicated for advice on further diagnostic testing and/or procedures, oxygen therapy and pharmacology. In situations when there is a new onset or change to the patient's regular breathing pattern, an acute episode or exacerbation of breathlessness, new onset chest pain, and/or fever greater than 38 C, consultation with the medical team will be indicated (CCO, 2005).

Treatment of the Underlying Cause

- **Pleural Effusion**
Thoracentesis, tenchkoff catheters, chest tubes and/or pleurodesis may be indicated.
A chest x-ray will show a pleural effusion, but it can be difficult to differentiate an effusion from collapse/consolidation or a mixture of the two. An ultrasound scan will confirm the presence of a pleural effusion, and many radiologists will mark a site for aspiration if requested. Chest x-ray or ultrasound should be performed if a clinically-diagnosed pleural effusion has not been confirmed radiologically and the clinical signs are not straightforward.
The aspiration of a pleural effusion can give symptomatic relief from dyspnea. A pleural effusion large enough to cause dyspnea will be detectable clinically. Aspiration of 300-500 ml fluid will usually give some symptomatic improvement but up to 1.5 litres may be aspirated in some cases (Watson, Lucas, Hoy, & Back, 2005)
- **Anemia**
Transfusion of packed cells if it is felt that this could improve dyspnea. Sometimes a therapeutic trial is required to determine this
- **Cardiac**
Diuretics, ace inhibitors, and digoxin should be considered
- **Pulmonary Emboli**
Anticoagulation therapy should be considered
- **Infection**
Treat with antibiotics, expectorant, physio
- **Airway Obstruction**
Radiotherapy is an option. Corticosteroids may be useful. Also, stenting, laser treatment, and brachytherapy

- **Lymphangitis Carcinomatosa**
Can only be diagnosed on x-ray and even this may not be diagnostic; suspect when consistent severe breathlessness at rest or on exertion and widespread fine crepitations in the lungs.
Consider corticosteroids, diuretics and/or bronchodilators
- **Radiation Fibrosis**
Radiotherapy of tumors located within or around the thoracic cavity usually results in partial irradiation of the surrounding normal lung tissue. Fibrosis develops together with loss of capillaries, increases in the thickness of the alveolar septa, and obliteration of the alveolar space (Bruner, Haas, Gosselin-Acomb, 2005). Corticosteroids can be tried (Alberta Palliative Care Resource, 2001).

Pharmacology

Medications have been explored as a method of relieving dyspnea by altering the perceptual sensitivity and/or by exerting respiratory depressive effects (American Thoracic Society, 1999).

Oxygen Therapy

Patients who are hypoxemic on room air are quite likely to benefit from oxygen therapy. Most medical professionals recommend oxygen for patients with hypoxic dyspnea to achieve and maintain an oxygen saturation greater than 88% (Dudgeon, 2002; Houlihan, Inzeo, Joyce, & Tyson, 2005). However, the usefulness of oxygen for management of patients with cancer who have nonhypoxic dyspnea is questioned in the literature (Bruera & Ripamonti, 1998; Houlihan et al., 2005). Oxygen may acutely reduce exertional dyspnea; however, an individual response to oxygen cannot be predicted with precision. Thoughtful clinicians must always consider that oxygen can tie the patient down, it can be claustrophobic, it may cause difficulty talking, and it may be associated with dry mouth and increased risk of mouth sores.

As per the Dyspnea Management Guideline (2003), “Start humidified oxygen prn if the patient is hypoxic ($\text{SaO}_2 < 92\%$) or if deemed helpful by the patient (Up to 6 L/min by nasal prongs)” (KFL&A, p. 1).

In the community setting it is important to consider how patients can qualify for home oxygen therapy when consulting with the medical team:

1. Individuals must have chronic hypoxemia on room air at rest (PaO_2 of 55 mmHg Or less, or SaO_2 of 88 per cent or less).
Individuals with persistent PaO_2 in the range of 56-60 mmHg may be considered

Candidates for long-term oxygen therapy if any of the following medical conditions are present; cor pulmonale, pulmonary hypertension, persistent erythrocytosis.

Individuals with PaO₂ consistently in the range of 56 to 60 mmHg (SaO₂ of 89 to 90 %) on room air may be considered candidates for funding if exercise limited by hypoxemia and documented to improve with supplemental oxygen, nocturnal hypoxemia.

2. Special consideration is given to Ontario residents at the end stage of a terminal disease (i.e. life expectancy < 3 months) who are receiving end of life care and require home oxygen therapy. Individuals who are identified as receiving end of life care will receive funding assistance for a maximum period of 90 days. The start date of the coverage for palliative funding will be based on the physician's prescription date. There are no extensions for palliative care funding beyond the 90-day funding period. If home oxygen therapy is required after the 90-day funding period, the client must apply to the regular funding program and the eligibility criteria must be met (Ministry of Health and Long Term Care, 2005).

PaO₂ levels are measured by arterial blood gases and can be ordered by the physician and obtained by a Respiratory Therapist when the patient is in to the hospital for appointments.

Opioid Therapy

Opioids are known respiratory depressants that reduce the central processing of neural signals within the central nervous system. Opioids have been shown to modulate dyspnea in acute bronchoconstriction. Opiates may alleviate dyspnea by blunting perceptual responses so that for a given stimulus, the intensity of respiratory sensation is less (American Thoracic Society, 1999). Cancer Care Ontario's clinical practice guideline for the management of dyspnea in cancer patients recommends, "systemic opioids, by the oral or parenteral routes, can be used to manage dyspnea in advanced cancer patients and nebulized morphine should not be used to treat dyspnea" (2006, p. 1).

It is important to distinguish between patients who have not been taking opioids regularly for at least several days and patients who are already taking opioids regularly for pain and dyspnea (Gallagher, 2003). The KFL&A (2003) dyspnea management guideline for palliative care patients states that:

- If the patient is not taking an opioid, initiate short-acting morphine 2.5-5.0 mg po q4h and 2.5 mg po q2h prn for breakthrough (if the SC route is needed, divide the PO dose by half)
- Titrate up by 25% every 3 to 5 doses until dyspnea is relieved
- If the patient is taking an opioid with q 4h dosing, increase this dose by 25%
- If the patient is taking a long acting opioid, change back to q4h dosing and increase this dose by 25%
- Titrate short-acting opioid by 25% every 3 to 5 doses until dyspnea is relieved

- If significant opioid side effects are present (e.g. nausea, drowsiness, myoclonus) consider switching to another opioid (p. 1).
- An increased HS dose may be helpful as dyspnea often is perceived as worse at nighttime.
- Administration of liquid forms of morphine or dilaudid may allow for titration in smaller increments.
- There is no evidence that nebulized opioids are of any benefit (CCO,2006).

Anxiolytics

Anxiolytics have the potential to relieve dyspnea by depressing hypoxic or hypercapnic ventilatory responses as well as by altering the emotional response to dyspnea. However, several controlled studies with various benzodiazepines have failed to demonstrate consistent improvement in dyspnea over placebo and the active drug tended to be poorly tolerated (American Thoracic Society, 1999).

Nozinan has been shown to have some dyspnea management properties.

The KFL&A (2003) dyspnea management guideline for palliative care patients states that:

- To treat agitation with severe dyspnea consider Nozinan (Methotrimeprazine) 5 mg po/sc q4-6h prn and titrate to a maximum of 25 mg q4-6h prn
- For all patients, if significant anxiety is present consider lorazepam 0.5-1.0 mg po/iv/sc/sl q 30min prn for anxiety. (Carefully!) If the patient is already taking a higher dose of lorazepam or another benzodiazepine, then dose appropriately. Monitor for paradoxical agitation or excessive somnolence.
- For all patients with very congested breathing consider glycopyrrrolate 0.1-0.2 mg sc q4h prn or scopolamine 0.3-0.6 mg sc q2-3h prn (p. 2).

Bronchodilators

Bronchodilators are useful therapeutic tools when dyspnea is exacerbated by reversible airway obstruction. Their use should be considered in patients who are smokers or ex-smokers and those with a history of bronchitis. Other obstructive causes could be a cold, bronchial tumor, superior vena cava obstruction, radiation pneumonitis and pulmonary fibrosis. They can be very effective in the patient with lymphangitic carcinomatosis (Watson, Lucas, Hoy, & Back, 2005).

Consider:

- B Adrenergic stimulants (e.g. salbutamol) (of note, excessive use can cause cardiac stimulation)
- Anticholinergics (e.g. atrovent)
- Methylxanthines (e.g. theophylline) (of note, recommended with COPD, CHF, can cause cardiac arrhythmias)

Corticosteroids

Steroids are thought to reduce the edema associated with tumor. Breathlessness may improve if due to multiple lung metastases, stridor due to airway obstruction, superior vena cava obstruction and lymphangitic carcinomatosis (Watson, Lucas, Hoy & Back, 2005)

Consider:

- Dexamethasone 4-8 mg po od for a one week trial if there is no improvement stop

Intractable Dyspnea

Dyspnea in the terminal phase can be quite severe. The management in this phase follows standard symptom management principles. In addition, in the final hours of expected life, appropriate sedation and comfort measures to manage the symptoms is warranted (Yarbro, Frogge, & Goodman, 2004)

- Reduce excessive secretions with scopolamine, hyoscyamine or atropine
- Implement oxygen therapy if required
- Institute sedation as needed (ONS,2007)

Midazolam (Versed)

In a study by Navigante and colleagues (2006), there was some evidence to support the use of benzodiazepines for intractable dyspnea, such as midazolam. Midazolam is used mainly for its properties of sedation.

Always remember, a holistic supportive approach can greatly improve breathlessness management in patients. An extensive dyspnea assessment is the cornerstone of determining the underlying cause of the symptom. Based on this assessment and the essence of the therapeutic relationship, effective interventions such as teaching, counselling in collaboration with the medical team can be successfully implemented to improve symptom management.

References

- Alberta Cancer Board. (2001). *Alberta palliative care resource* (2nd ed.). Retrieved October, 2007 from the Alberta Cancer Board Web Site:
www.albertapalliative.net
- American Thoracic Society. (1999). Dyspnea, Mechanisms, assessment, and management: A consensus statement. *American Journal of Respiratory Critical Care Medicine*, 159, 321-340.
- Bickley, L. S., & Szilagyi, P. G. Bates' guide to physical examination and history taking. *Lippincott Williams & Wilkins. (Philadelphia, Pennsylvania) ** 2003; 8 Ed 862 p,*
- Bredin, M., Corner, J., Krishnasamy, M., Plant, H., Bailey, C., & A'Hern, R. (1999). Multicentre randomized controlled trial of nursing intervention for breathlessness in patients with lung cancer. *BMJ*, 318, 901-903.
- Brown, M. L., Carrieri, V., JansonBjerklie, S., & Dodd, M. J. (1986). Lung cancer and dyspnea: The patient's perception. *Oncology nursing forum*, 13(5), 19-24.
- Bruera, E., Schmitz, B., Pither, J., Neumann, C. M., & Hanson, J. (2000). The frequency and correlates of dyspnea in patients with advanced cancer. *Journal of pain and symptom management*, 19(5), 357-362.
- Bruera, E., & Ripamonti, C. (1998). Dyspnea in patients with advanced cancer. In A.

- Berger, R.K., Portenoy, & D.E. Weissman (Eds.), *Principles and practice of supportive oncology* (pp. 295-308). Philadelphia: Lippincott Williams & Wilkins.
- Bruner, D., Haas, M., & Gosselin-Acomb, T. (2005). *Manual for radiation oncology nursing practice and education* (3rd ed.). Pittsburgh, PA: ONS Publishing Division.
- Canadian Cancer Society. (2007). *Canadian cancer statistics 2007*. Retrieved Sept. 11, 2007 from the Canadian Cancer Society Web Site:
www.cancer.ca/ccs/internet/frontdoor/0,,3543_longID-en,00.html
- Cancer Care Ontario. (2005). *Nursing telephone practice and symptom management guidelines: Breathlessness guideline*. Retrieved September 5, 2007 from the Cancer Care Ontario Web Site:
www.cancercareontario.on.ca/index_OtherPracticeGuidelines.htm
- Cancer Care Ontario. (2006). *The management of dyspnea in cancer patients: A clinical practice guideline*. Retrieved September 5, 2007 from the Cancer Care Ontario Web Site: www.cancercareontario.on.ca/index_OtherPracticeGuidelines.htm
- Corner, J., Plant, H., A'Hern, R., & Bailey, C. (1996). Non-pharmacological intervention for breathlessness in patients with lung cancer. *Palliative Medicine*, 10, 299-305.
- Dudgeon, D.J. (2002). Managing dyspnea and cough. *Hematology/Oncology Clinics of North America*, 16, 557-577.

- Gallagher, R. (2003). An approach to dyspnea in advanced disease. *Canadian Family Physician, 49*, 1611-1616.
- Gallo-Silver, L, Pollack, B. (2000). Behavioural interventions for lung cancer-related breathlessness. *Cancer Practice, 8*(6), 268-273.
- Hately, J., Laurence, V., Scott, A., Baker, R., & Thomas, P. (2003). Breathlessness clinics within specialist palliative care settings can improve the quality of life and functional capacity of patients with lung cancer. *Palliative Medicine, 17*, 410-417.
- Hood, L.E. & Harwood, K. (2004). Dyspnea. In C. Henke Yarbrow, M. Hansen Frogge, & M. Goodman, *Cancer symptom management (3rd Ed.)*. Sudbury, Massachusetts: Jones and Barlett Publishers.
- Houlihan, N., Inzeo, D., Joyce, M., & Tyson, L. (2005). In N. Houlihan, *Site specific cancer series* (pp. 103-124). Pittsburgh, Pennsylvania: ONS Publishing Division.
- Institute of Cancer Research. (2007). *A breath of fresh air: An interactive guide to Managing breathlessness in patients with lung cancer*. Sutton, UK: Author.
- KFL&A Palliative Care Integration Project. (2005). *Palliative care integration project: Resource manual*. Kingston, Ontario: Author.
- Krishnasamy, M., Corner, J., Bredin, M., Plant, H., & Bailey, C. (2001). Cancer nursing practice development: understanding breathlessness. *Journal of Clinical Nursing, 10*, 103-108.
- Martelli-Reid, L. (2006). *Nursing management of breathlessness; oral presentation*.

- McGavin, C.R., Artvinli, M., Naoe, H., & McHardy, G. (1978). Dyspnoea, disability, and distance walked: Comparison of estimates of exercise performance in respiratory disease. *BMJ*, 2, 241-243.
- Metro Health. *Normal Breathing Diagram*. Retrieved October 30, 2007 from Metro Health Web Site: www.metrohealth.org/body.cfm?id=1553
- Ministry of Health and Long Term Care. (2005). *Assistive devices program: Ministry of health and long term care..* Queen's Printer for Ontario: Author.
- Navigante, A.H., Cerchietti, L.C., Castro, M. A., Lutteral, M.A., & Cabalar, M.E. (2006). Midazolam as adjunct therapy to morphine in the alleviation of severe dyspnea perception in patients with advanced cancer. *Journal of Pain and Symptom Management*, 31, 38-47.
- O'Driscoll, M., Corner, J., & Bailey, C. (1999). The experience of breathlessness in lung cancer. *European Journal of Cancer Care*, 8, 37-43.
- Oncology Nursing Society. (2007). *Dyspnea: What can nurses do to assist people with cancer-related dyspnea? Putting evidence into practice series*. Pittsburgh: PA: ONS Publishing Division.
- Sarna, L., Brown, J., Cooley, M., Williams, R., Chernecky, C., Padilla, G., et al. (2005). Quality of life and meaning of illness of women with lung cancer. *Oncology Nursing Forum*, 32(1), 9-19.
- Tyson. (2005). Patient Assessment. In N. Houlihan, *Site-specific cancer series: Lung cancer* (pp. 35-44). Pittsburgh, Pennsylvania: ONS Publishing Division.

University of California San Diego. (2005). *Breathless patient picture insert*. Retrieved October 30, 2007 from the University of California San Diego Web Site:

<http://medicine.ucsd.edu/clinicalmed/lung.htm>

Watson, J. (2005). *Caring science as sacred science*. Philadelphia, PA: Davis.

Watson, M., Lucas, C., Hoy, A., Back, I. (2005). *Oxford handbook of palliative care*. Oxford, NY: Oxford University Press.

Wikipedia. (2007). *Breath: Definition*. Retrieved Sept. 15, 2007 from the Wikipedia Web Site: www.wikipedia.ca

Appendix A**PALLIATIVE PERFORMANCE SCALE (PPS)**

%	Ambulation	Activity and Evidence of Disease	Self-Care	Intake	Conscious Level
100	Full	Normal Activity No Evidence of Disease	Full	Normal	Full
90	Full	Normal Activity Some Evidence of Disease	Full	Normal	Full
80	Full	Normal Activity with Effort Some Evidence of Disease	Full	Normal or Reduced	Full
70	Reduced	Unable Normal Job / Work Some Evidence of Disease	Full	Normal or Reduced	Full
60	Reduced	Unable Hobby / House Work Significant Disease	Occasional Assistance Necessary	Normal or Reduced	Full or Confusion
50	Mainly Sit/Lie	Unable to Do Any Work Extensive Disease	Considerable Assistance Necessary	Normal or Reduced	Full or Confusion
40	Mainly in Bed	As Above	Mainly Assistance	Normal or Reduced	Full or Drowsy or Confusion
30	Totally Bed Bound	As Above	Total Care	Reduced	Full or Drowsy or Confusion
20	As Above	As Above	Total Care	Minimal Sips	Full or Drowsy or Confusion
10	As Above	As Above	Total Care	Mouth Care Only	Drowsy or Coma
0	Death	-	-	-	-

Appendix B



**Edmonton Symptom Assessment System:
Numerical Scale**
Regional Palliative Care Program

Please circle the number that best describes:

No pain	0	1	2	3	4	5	6	7	8	9	10	Worst possible pain
Not tired	0	1	2	3	4	5	6	7	8	9	10	Worst possible tiredness
Not nauseated	0	1	2	3	4	5	6	7	8	9	10	Worst possible nausea
Not depressed	0	1	2	3	4	5	6	7	8	9	10	Worst possible depression
Not anxious	0	1	2	3	4	5	6	7	8	9	10	Worst possible anxiety
Not drowsy	0	1	2	3	4	5	6	7	8	9	10	Worst possible drowsiness
Best appetite	0	1	2	3	4	5	6	7	8	9	10	Worst possible appetite
Best feeling of wellbeing	0	1	2	3	4	5	6	7	8	9	10	Worst possible feeling of wellbeing
No shortness of breath	0	1	2	3	4	5	6	7	8	9	10	Worst possible shortness of breath
Other problem	0	1	2	3	4	5	6	7	8	9	10	

Patient's Name _____

Date _____ Time _____

Complete by (*check one*)

- Patient
 Caregiver
 Caregiver assisted

BODY DIAGRAM ON REVERSE SIDE

Appendix

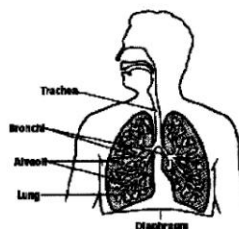
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A Breath of Fresh Air Fact Sheet // Coping with Shortness of Breath

This fact sheet offers practical suggestions for coping with breathlessness.

Breathing and the lungs

When you breathe, air is taken into your lungs through your mouth and nose via a series of branching tubes that end in small sac-like structures called alveoli. Oxygen from the air is then absorbed into your body, enabling it to function properly. Diseases that lead to breathlessness frequently involve blockage or narrowing of these passageways within the lungs.



Natural responses to becoming breathless

Often when you become breathless, you will automatically start to:

- breathe with your shoulders and upper chest
- breathe more quickly
- feel frightened, anxious or panicked

Your body is trying to increase the amount of oxygen it is receiving, and although these responses are natural, they can make the sensation of breathlessness much worse.

Strategies for coping with shortness of breath

Below are some suggestions that may help you to cope and feel more in control when you become breathless; practicing these techniques when you are *not* breathless may help you to use them when you are.

Position: *try sitting down with your back straight or leaning slightly forward with your elbows on your knees. Standing positions, such as leaning against a wall or forward onto a table, can also help. The key is to be comfortable, to support your back but allow the shoulders and upper chest to relax and the abdomen to expand.*

Breathing: *try breathing in slowly through your nose (or nose and mouth) and gently out through your mouth. Pursing your lips and concentrating on making your 'out*

breath' twice as long as your 'in breath' can help to empty all the old air from your lungs before taking in new.

Relaxing shoulder and upper chest muscles: *when you breathe out normally, your shoulder and upper chest relaxes - consciously try to maintain this when you breathe in also (if you cannot feel this relaxation, ask someone to press down gently on your shoulders to relieve some of the tension and practice relaxing these muscles whenever you breathe).*

Breathing with your lower chest: *place your hands on your abdomen and as you breathe in, feel them being pushed out by your diaphragm and abdominal muscles. Try to use these muscles to get a feeling of breathing around the waist rather than the upper chest and of getting more air into your lungs.*

Relaxing your mind: *try closing your eyes, listening to some gentle music, repeating words like 'calm, quiet' to yourself or imagining a relaxing place in your mind – noting colours and sounds; these techniques can help to relax your mind and relieve your breathlessness.*

A Breath of Fresh Air Factsheet // Living With Breathlessness

This fact sheet offers practical suggestions for minimising the daily impact of breathlessness.

Planning and pacing

Thinking ahead about what you want and need to do in a day / week can help you to plan activities in such a way that you won't become over-exerted. It is important to pace any activities and to allow time for rest in between. It is a case of finding the right balance for you, and trying not to get frustrated by limitations your body may impose.

Making life easier for yourself

There are a number of day-to-day things you can do to reduce episodes of breathlessness. Get help with your daily tasks, or simply do them less often. Move items you use a lot in the house to easily accessible places. Be prepared for the unexpected in your routine, for example, climbing stairs or having to queue, and develop strategies that will help you cope.

Dealing with every day activities

Practicing techniques, such as relaxation or breathing, can help you to deal with periods of breathlessness and assist in managing everyday activities. Here are other suggestions:

- **Showering and bathing:** try opening a window in your bathroom to lessen feelings of claustrophobia. As you undress, do not hold your breath and avoid covering your face or lifting your arms for long periods. If you're having a bath, do not over fill it or have the water too hot; try to lower yourself in gently and maybe let the water out before you get out. If you are showering, angle the spray away from your face, and try sitting down.
- **Dressing:** sit down and take your time while dressing. Try to wear loose fitting clothes, especially around your waist and chest and where possible, avoid bending.
- **Walking, slopes and stairs:** applying breathing techniques can help you to manage everyday walking and climbing. Try to match your breathing rate to your steps, taking your time so that this is comfortable and attainable; stand still every so often if you need to.
- **Bending:** this can make breathing difficult. Instead, try easing yourself into a crouching position while keeping your back straight; using a secure piece of furniture to hold on to can help. If you need to work at a level below your waist, sit on a low stool.
- **Lifting and carrying:** try to avoid if possible, but if you must lift or carry take frequent rests and opportunities to put things down. Use trolleys or a backpack rather than carrying bags in your hands, and do not attempt loads that are too heavy or awkward.
- **Talking on the telephone:** ask anyone who is likely to phone you to let it ring until you pick up so that you are not rushing to answer it or use an answer machine. Sit down while you're talking and use short sentences if you are becoming breathless.
- **Gardening:** using a low garden chair to help you access flowerbeds without bending is also useful for resting if you get breathless. Alternatively, plant pots or trays at waist height to avoid bending down and don't try to do too much at one time.

- **Making love:** talk to your partner about any anxieties you have, and if this is difficult, consider going to a counsellor. Find comfortable positions, perhaps sitting or standing, which avoid bending or may become claustrophobic.

A Breath of Fresh Air Factsheet // Managing the experience of breathlessness

This fact sheet offers practical suggestions for managing your breathlessness.

Your disease, its treatment and side effects can have wide ranging emotional and physical effects, giving rise to a variety of anxieties, fears and concerns - you are not alone in experiencing these feelings.

Acknowledging and looking ahead

Recognising limitations and problems imposed by your disease can allow you to target and find ways of overcoming them. Developing coping strategies can boost your sense of control and self-confidence. Prioritising activities, planning ahead and talking to people about what you feel and need can also be valuable in looking ahead positively.

The experience of breathlessness

Your disease and associated breathlessness can have different physical effects:

- **Fluctuating feelings:** people often report feeling very different emotions day to day; there is no right or wrong way to deal with these, though talking can help. Try to bear in mind that this can be hard for family and friends to understand or accept too.
 - Anxiety and fear can lead to physical symptoms ranging from indigestion to panic attacks; learning to recognise this can help you to develop coping strategies.
 - Extended periods of 'feeling down' may be a sign of depression; it may be valuable to talk to your GP about this and won't necessarily mean a course of anti-depressants.
- **Tiredness:** feeling tired is common. Allow yourself to rest whenever you need, but try to balance periods of rest with gentle exercise to avoid further loss of energy or function.
- **Reduced appetite:** if your appetite is affected, try experimenting with different types of food, seasonings and herbs. If you have difficulty eating meals, try smaller helpings, be sure to take any anti-sickness, enzyme or pain medications in advance and eat slowly with plenty of fluid. Include plenty of fruit and vegetables and if you are not managing to eat enough, try calorie or protein supplements.
- **Abnormal breathlessness:** although you may notice a gradual increase in your breathlessness over time, sudden increases accompanied by coughing up phlegm and having a temperature may be signs of a chest infection requiring antibiotics. If periods of breathlessness do not settle within a time frame that is normal for you, see your GP.

Help and support

You and your carers do not have to face the challenges of your disease alone. As well as nurses and doctors in the hospital and community environment, you can see:

- **Social workers** – to discuss financial and home care support
- **Physiotherapists** – to help develop breathing techniques that can help combat breathlessness as well as advice about exercise, relaxation and performing daily activities
- **Occupational therapists** – for further information about adjusting aspects of your daily life
- **Dieticians** – for practical advice on meeting your nutritional needs
- **Spiritual / religious support** – Someone with whom to share your spiritual / religious needs

