

EPEEC for Veterans

Education in Palliative and End-of-life Care for Veterans

Trainer's Guide

Module 6c

Dyspnea

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Principal message

Facility with the management and treatment of common physical symptoms encountered in end-of-life care is important if quality of life and relief of suffering are to be achieved.

Module overview

Module 6c presents an approach to the assessment and management of dyspnea. It covers the pathophysiology, assessment, and management.

Preparing for a presentation

1. Assess the needs of your audience

Choose from the material provided in the syllabus according to the needs of your expected participants. It is better for participants to come away with a few new pieces of information, well learned, than to come away with a deluge of information, but remembering nothing.

2. Presentation timing

Allow sufficient time to collect participants' demographic data and complete the pre-test.

The suggested timing for each part of this module is:

Introduction	2-3 minutes
Presentation	35 minutes
Summary	2-3 minutes
Post-test & Evaluation	<u>5 minutes</u>
Total	44-46 minutes

3. Number of slides: 18

4. Preparing your presentation

The text in the syllabus was not designed to be used as a prepared speech. Instead, the slides have been designed to trigger your presentation. Although the slides closely follow the text of the syllabus, they do not contain all of the content. Their use presumes that you have mastered the content. You may want to make notes on the slide summary pages to help you prepare your talk in more detail and provide you with notes to follow during your presentation.

Practice your presentation using the slides you have chosen, and speaking to yourself in the kind of language you expect to use, until it is smooth and interesting and takes the right amount of time.

5. Preparing a handout for participants

The syllabus text and slides in the **Trainer's Guide** were designed to be reproduced and provided to participants as a handout, either in its entirety, or module by module. If the entire curriculum is not being offered, please include the following in each handout:

- **EPEC for Veterans Front Cover Page**
- **EPEC for Veterans Acknowledgment Pages** (to acknowledge the source of the material)
- Syllabus and slides for **Module 6c**

6. Equipment needs

- computer with DVD capability or separate DVD player
- flipchart and markers for recording discussion points

Making the presentation

1. Introduce yourself

If you have not already done so, introduce yourself. Include your name, title, and the organization(s) you work for. Briefly describe your clinical experience related to the information you will be presenting.

2. Introduce the topic

Show the title slide for the module. To establish the context for the session, make a few broad statements about the importance of managing symptoms as a clinical skill. Identify which symptoms you will be covering. Tell participants the format and time you will take to present the session. Identify any teaching styles other than lecture that you intend to use.

3. Review the session objectives

Show the slide with the session objectives listed. Read each objective and indicate those that you are planning to emphasize.

4. Show the trigger tape or present the clinical case

After reviewing the objectives for the session, show the trigger tape or present the clinical case below. It has been designed to engage the audience and provide an appropriate

clinical context for the session. It was not designed to demonstrate an ideal interaction, but to ‘trigger’ discussion.

Clinical case

M.B. is a 62-year-old electrician and former naval shipyard worker with a long history of smoking with end-stage chronic obstructive pulmonary disease. He also has a history of heart failure. He notes that the dyspnea has worsened over the past 3 months despite the use of oxygen at 2 liters per nasal cannula. He is often anxious.

5. Present the material

Recommended style: interactive lecture

An interactive lecture will permit you to engage your audience, yet cover the material within 45 to 60 minutes. Identify the symptoms you plan to cover and select the slides to go with those symptoms. Use the case on the video or the written case or your own case vignettes to illustrate clinical applications for the information presented.

6. Key take-home points

Dyspnea

1. Breathlessness is a distressing symptom that adversely affects quality of life.
2. History, physical examination, and plain radiograph of the chest may make the diagnosis.
3. The differential diagnosis of breathlessness is broad. Depending on the goals of care, evaluation may or may not be appropriate but may lead to different therapeutic approaches.
4. When moderate to large pleural effusion is present, serial thoracentesis or semipermanent catheters may be used for effusions for which pleurodesis is not possible, or has failed. Semipermanent catheters allow Veterans to be tapped in the home, often reducing the need for medical visits as their disease progresses.
5. Drainage of a large pleural effusion may safely be tapped at home; ultrasound guidance is not required.
6. When considering any medical intervention, always consider the individual Veteran’s goals of care, as well as those of his/her family.
7. Opioids are safe and effective in the symptomatic management of breathlessness.

8. When prognosis is days to weeks, avoid invasive procedures and use medical management alone.

7. Summarize the discussion

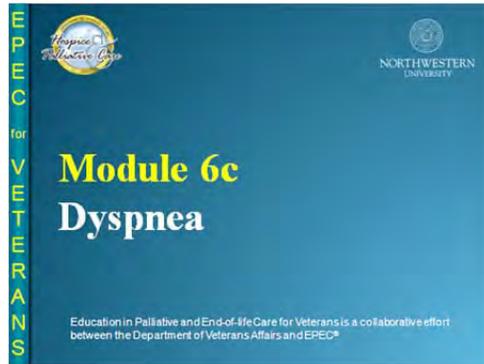
Briefly review each part of the presentation. Recap 2 or 3 of the most important points that were discussed.

8. Post-test/evaluation

Ask the participants to evaluate the session.

Module 6c: Dyspnea

Slide 1



This module discusses the assessment and management of dyspnea (breathlessness). Dyspnea can be a debilitating and anxiety-producing symptom that can prevent the patient and family from either continuing their lives or completing life closure. As with other symptoms, management should be tailored based on the underlying etiology and pathophysiology. This module provides the clinician with a working knowledge of specific dyspnea causes and therapies, as well as their potential adverse effects, to effectively relieve suffering and improve the patient's quality of life.

Objectives

Slide 2



After studying this module, clinicians will be able to:

- discuss the pathophysiology of dyspnea;
- discuss assessment strategies; and
- understand management strategies.

Clinical case

M.B. is a 62-year-old electrician and former naval shipyard worker with a long history of smoking with end-stage chronic obstructive pulmonary disease. He also has a history of

heart failure. He notes that the dyspnea has worsened over the past 3 months despite the use of oxygen at 2 liters per nasal cannula. He is often anxious.

Introduction

Slide 3



Dyspnea ...

- Definition: uncomfortable sensation or awareness of breathing or needing to breathe, i.e. shortness of breath

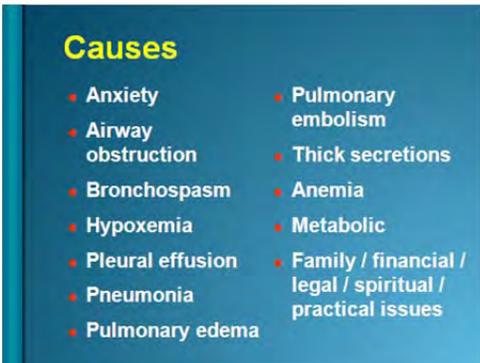
Slide 4



... Dyspnea

- Can be one of most frightening symptoms
- Contributes significantly to quality of life
- Doctors can under-rate its significance in patient treatment

Slide 5



Causes

- Anxiety
- Airway obstruction
- Bronchospasm
- Hypoxemia
- Pleural effusion
- Pneumonia
- Pulmonary edema
- Pulmonary embolism
- Thick secretions
- Anemia
- Metabolic
- Family / financial / legal / spiritual / practical issues

Dyspnea is *the uncomfortable sensation or awareness of breathing or needing to breathe, i.e., shortness of breath*. There are many possible specific underlying causes of dyspnea. Physical etiologies include airway obstruction, bronchospasm, hypoxemia, pleural effusion, pneumonia, pulmonary edema, pulmonary embolism, thick secretions, anemia, muscle weakness, and metabolic derangement. Psychological, social, and spiritual issues, such as loss and grief or fear of dying can cause anxiety which can lead to dyspnea.

Abernathy and Wheeler have recently coined the term “total dyspnea” to describe the diverse etiologies and management strategies for dyspnea.¹

Slide 6

Prevalence/prognosis

- Prevalence 21–90% in patients with life-threatening illness
- Prognosis < 6 months when no underlying treatment for malignancy

Prevalence

Dyspnea is a commonly encountered symptom in Veterans that results from multiple disease processes and can lead to limited function and poor quality of life. Breathlessness in end-stage chronic obstructive pulmonary disease (COPD) has been reported to occur in up to 95% of patients. In CHF, CVA, ALS and dementia, prevalence rates of up to 61%, 37%, 50%, and 70% respectively have been observed.² The prevalence of dyspnea among cancer patients has been reported to be between 21-90%, depending on the type and stage of cancer.^{3,4,5}

Prognosis

Evidence is growing that subjective measures such as dyspnea are related to shorter survival in patients with COPD or cancer, and generally in patients in palliative care.⁶ For patients with cancer, if there is no effective treatment for the underlying malignancy, prognosis is generally less than 6 months.

Pathophysiology

Slide 7

Pathophysiology ...

- Respiratory center (medulla and pons)
 - coordinates diaphragm, intercostal m, accessory m of respiration
- Sensory input from
 - chemoreceptors (pO_2 , pCO_2)
 - mechanoreceptors (stretch, irritation)

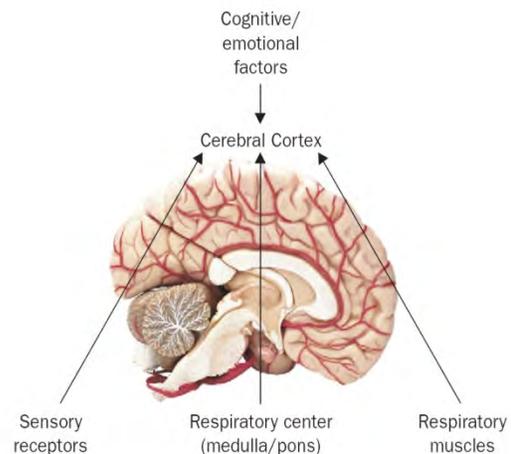
... Pathophysiology

- **Work of breathing**
resistance (COPD, obstruction)
weakened muscles (cachexia)
- **Chemical**
hypoxemia, hypercarbia (small role in cancer)
- **Neuromechanical dissociation**
mismatch between brain and sensory feedback

The pathophysiology of dyspnea is multifactorial and incompletely understood (see **Figure 1**).^{7,8,9} The respiratory center in the medulla and pons coordinates the activity of the diaphragm, the intercostal muscles, and accessory muscles of respiration.

Figure 1: Schematic representation of the control of respiration

From: Thomas JR, von Gunten CF. Clinical management of dyspnea. *Lancet Oncol.* 2002; 3(4): 223-228.



It receives sensory information from central and peripheral chemoreceptors, peripheral mechanoreceptors from muscles, tendons, and joints, and pulmonary vagal afferents. These vagal afferents include pulmonary stretch receptors that are activated by lung inflation, pulmonary irritant receptors triggered by air flow and smooth muscle tone, and alveolar C fibers that respond to pulmonary interstitial and capillary pressure. These afferents may also send information directly to the cerebral cortex. It is believed the cerebral cortex integrates this sensory input with other cognitive and emotional factors as well as motor information from the respiratory center.^{10,11}

Three concepts have emerged to explain the pathophysiology and guide therapy: (1) work of breathing, (2) chemical effects, and (3) neuromechanical dissociation.

Work of breathing

Most studies point to increased respiratory work as an important component of dyspnea. The effort required for breathing against increased resistance in chronic obstructive pulmonary disease or bronchial obstruction, or breathing with weakened muscles in cachexia, is sensed as dyspnea.⁷

Chemical effects

Most patients with dyspnea are not hypoxemic. Medullary chemoreceptors sense hypercapnia while carotid and aortic body chemoreceptors sense hypoxemia. Stimulation of these chemoreceptors can cause dyspnea independent of carbon dioxide or oxygen levels.^{12,13} It takes moderately severe levels of hypoxemia to trigger peripheral chemoreceptors.¹⁴ In addition, the compensatory increase in ventilation triggered by hypoxemia drives down the carbon dioxide level, which partially negates the effect of the hypoxemia.

Neuromechanical dissociation

Dyspnea occurs when there is a mismatch between what the brain desires for respiration and the sensory feedback it receives.¹⁵ For example, when researchers limit the inspiratory flow rate at which a subject is allowed to breathe, dyspnea results despite no change in respiratory work or chemical status.¹⁶

Assessment

Slide 9

Assessment ...

- The only reliable measure is patient self-report
- Respiratory rate, pO₂, blood gas determinations **DO NOT** correlate with the feeling of breathlessness

Slide 10

... Assessment

- May be described as
shortness of breath
a smothering feeling
inability to get enough air
suffocation

Like pain, the 'gold standard' for the diagnosis of dyspnea is Veteran self-report. There are no other reliable, objective measures of dyspnea. Respiratory rate, oxygen saturation, and arterial blood gas determinations do not necessarily correlate with, nor measure dyspnea. Veterans may be hypoxemic but not dyspneic, or dyspneic but not hypoxemic. The severity scales developed for pain (numerical, visual analogue scale) have been reliably used to assess dyspnea.¹⁷

In addition to a history, a physical examination may provide confirmatory information. Objective signs may include areas of pulmonary dullness, crackles, inability to clear secretions, stridor, bronchospasm (wheezing), cyanosis (central or peripheral), use of accessory muscles to breathe, and tachypnea.

Simple studies such as pulse oximetry, complete blood count and a chest x-ray may help to clarify the pertinent pathophysiology. Additional tests may be warranted when possible benefits exceed the burdens of further investigation.

Slide 11



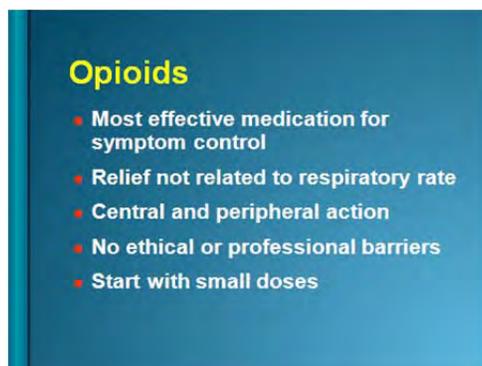
The goal of the symptomatic management of dyspnea is to relieve the Veteran's sense of breathlessness. Specific therapy to manage underlying causes, e.g., bronchodilators or stent placement to relieve focal obstruction, are appropriate in selected Veterans.

To manage the experience of shortness of breath, both pharmacological and nonpharmacological interventions have been shown to be effective.

Pharmacological management

Opioids

Slide 12



Opioids are the most effective medication for the symptomatic control of dyspnea.^{18,19,20} There are several postulated mechanisms by which they relieve dyspnea including: central effects on the medullary respiratory centers affecting hypoxia and hypercapnia responses, neurotransmitters levels (acetylcholine, 5-hydroxytryptamine, and noradrenaline); peripheral effects through arterial chemoreceptor action, binding sites in the alveolar wall, tracheal and bronchial smooth muscle, influence on pulmonary stretch

receptors; inhibition of mucus secretion, and alterations of perception of dyspnea similar to their effect on pain perception.²¹ Opioids relieve dyspnea at doses lower than those that depress the respiratory rate and oxygen saturation.

Opioid-naïve Veterans

In opioid-naïve Veterans, small amounts of morphine can relieve dyspnea.²² Start with 2.5-5 mg PO q 1 h PRN or 2.5 mg SC q 30 min PRN. Titrate to effect using standard opioid dosing guidelines (see EPEC for Veterans Module 4: Pain Management).

The duration of the effect of oral morphine is about 4 hours, often less (consistent with the effective serum half-life of morphine and equivalent to that observed for pain relief). Once a clear picture emerges as to the amount of opioid a Veteran needs to relieve his or her dyspnea, the daily total can be calculated and given in the form of a long-acting opioid in divided doses (see EPEC for Veterans Module 4: Pain Management).

Once the dyspnea is controlled, provide:

- an extended release formulation for baseline dyspnea control, and
- an immediate-release formulation of the same opioid for breakthrough dyspnea, e.g., 10% of the total dose q 24 h, offered q 1 h PRN.

For Veterans already using opioids

For Veterans on baseline opioids, start by increasing the opioid dose by 25%.²³ Titrate to effect using standard opioid dosing guidelines (see EPEC for Veterans Module 4: Pain Management).

Once the dyspnea is controlled, provide:

- an extended release opioid for baseline dyspnea control, and
- an immediate-release formulation of the same opioid for breakthrough dyspnea, e.g., 10% of the total dose q 24 h, offered q 1 h PRN.

Nebulized opioids

Nebulized opioids have been reported to be effective in relieving dyspnea in uncontrolled studies, with the possible advantage of acting quicker than oral opioids and being less invasive than parenteral opioids.²⁴ However, their use remains controversial. In small randomized controlled trials, nebulized water gave the same relief as nebulized morphine or hydromorphone.^{25,26} Additionally, there are concerns that nebulized morphine may trigger bronchospasm possibly through a histamine-mediated mechanism.²¹

Anxiolytics

Slide 13

Anxiolytics

- Anxiety common with dyspnea
- Benzodiazepines frequently prescribed for dyspnea-related anxiety, but evidence does not show effective
- Should be used only for Veterans who have prominent anxiety
- Safe in combination with opioids

lorazepam
0.5-2 mg PO q 1 h PRN until settled
then dose routinely q 4-6 h to keep settled

Veterans, like other patients, frequently report anxiety concurrent with dyspnea and these symptoms can reinforce each other. Dyspnea frequently leads to anxiety and anxiety can also exacerbate dyspnea. Opioids alone may break the cycle by relieving dyspnea, but they do not have direct anxiolytic effect.

Anxiolytics, e.g., benzodiazepines, are frequently prescribed for anxiety related to dyspnea. However, when tested, the evidence for their effectiveness is not persuasive.^{27,28,29,30} Therefore, do not use benzodiazepines alone as first line therapy for dyspnea. Benzodiazepines are also relatively contraindicated in the frail or elderly as they may lead to confusion and delirium.

Treatment of anxiety does have a role in a subset of Veterans for whom anxiety is a prominent component of their distress. For these Veterans, a time-limited trial of benzodiazepines will demonstrate whether they are effective. They may be prescribed in conjunction with opioids without fear of respiratory depression when guidelines are followed. A common starting dose is:

- Lorazepam, start with 0.5–2.0 mg PO, SL, Buccal, or SC q 1 h PRN and titrate to effect. Once the total dose required in 24 hours has been established, provide 1/3 of the total dose q 8 h routinely.

Oxygen

Slide 14

Oxygen

- Perceived benefit in many patients, with or without hypoxemia
- Negative aspects - cumbersome, expensive, self-image
- Fans or cool air may be as helpful

If hypoxemia is the cause of dyspnea, oxygen may be beneficial. However, its perceived benefit in patients who are dyspneic far exceeds the number who have hypoxemia.^{31,32} There is likely a placebo effect of oxygen, partially based on the medical symbolism inherent in its administration. This symbolism may be good: a reminder to the Veteran that we are “doing things,” or it may be bad: a continuing medicalization of his or her condition. This quandary demonstrates the importance of discussing such decisions with the Veteran and his or her family.

It has also been observed that similar relief is experienced from cool air blowing on the face, e.g., from a breeze or a fan. This may be explained by stimulation of the trigeminal nerve (V2 branch) having central inhibitory effects on dyspnea.^{33,34,35} Part of oxygen’s effect may be due to this sensory stimulation rather than correction of hypoxemia or a pure placebo effect.

While oxygen therapy may be beneficial, some clinicians order oxygen therapy for dyspneic Veterans without considering the associated burdens or other therapeutic alternatives. It can be costly and cumbersome, particularly when it is ordered for use in the Veteran’s home. It may also dry the upper airway, restrict mobility and alter the Veteran's self-image, particularly if it interferes with normal activities.

Non-pharmacologic management

Slide 15



Regardless of cause, elevating the head of the bed, keeping air moving using fans and open windows, and reducing environmental irritants are likely to help the experience of dyspnea.

Cognitive/behavioral interventions

Dyspnea also has both cognitive and emotional components.³⁶ This has been well understood by pulmonary rehabilitation clinics for COPD.³⁷ Teaching breathing control, activity pacing, relaxation techniques, and psychosocial support are effective. Some investigators have shown the efficacy of breathing retraining and relaxation in helping to treat dyspnea.³⁸

The demeanor of the clinician in the face of dyspnea is also important. A calm, confident demeanor can be reassuring to the Veteran and family and can help to diminish the

anxiety component. By contrast, the clinician who responds to the frightened, anxious, dyspneic Veteran with a similar response is likely to have the opposite effect.

Specific causes of dyspnea

Slide 16

Specific causes ...

- **Pulmonary edema**
furosemide
- **Bronchospasm**
albuterol, steroids, ipratropium bromide
- **Thick secretions**
scopolamine, glycopyrrolate

Slide 17

... Specific causes

- **Anemia**
- **Airway obstruction**
steroids, racemic epinephrine by inhaler
- **Pleural effusions**
drainage, thoracoscopy, pleurodesis

In addition to overall symptomatic treatment as outlined above, it is important to consider specific causes and treat those as possible.

Pulmonary edema

Pulmonary edema can be a cause of dyspnea in the setting of heart failure. In addition to ensuring that standard heart failure medications are used (including angiotensin converting enzyme (ACE) inhibitors and beta blockers), furosemide or other diuretics can help to relieve dyspnea in this setting.

Common dosing options include:

- Furosemide 20 mg PO bid; this can be titrated up every few days if not effective. Depending on overall goals of care, clinicians may want to check electrolytes in this setting as well as renal function.

Bronchospasm

Although wheezes and/or rhonchi may be present, always look for intercostal retraction on examination, i.e., evidence of bronchoconstriction, increased inspiratory pressures. If bronchospasm is suspected, a clinical trial of medications may be indicated. Frail

Veterans may have difficulties using inhalers, even with spacers. Nebulized delivery may be more effective.

Possible medications include:

- Steroids to reduce swelling and inflammation: Dexamethasone 4–12 mg PO, IV, SC daily (long half-life permits once-daily dosing; minimal mineralocorticoid effects and edema);
- Albuterol 2–3 puffs q 4–8 h (by inhaler), or albuterol 0.5%, 2.5–5.0 mg diluted to 4.0 ml with saline by nebulizer q 4 h; and
- Ipratropium bromide 2–3 puffs q 4–8 h PRN or 0.125 mg q 4 h via nebulizer or tiotropium 18 mcg cap/INH daily.³⁹

Thick secretions

Thick secretions can accumulate around tracheostomy appliances and in airways of Veterans with obstruction or bronchospasm or those who are weak or frail. To minimize secretion buildup, maintain best possible hydration of the Veteran, keep mucous membranes moist, and increase humidity of inspired air. If the cough reflex is strong, loosen secretions with nebulized saline and guaifenesin. If the cough reflex is weak, consider the following medications to dry secretions:

- Scopolamine 0.1–0.4 mg SC, IV q 4 h or 1–3 1.5 mg transdermal patches q 72 h or 50–200 µg/h by continuous IV or SC infusion; and
- Glycopyrrolate 0.4–1.0 mg daily by SC infusion or 0.2 mg SC, IV q 4–6 h PRN.

Anemia

Selected Veterans who are anemic and breathless may benefit from a blood transfusion or iron replacement. The likelihood of a transfusion being of benefit is high when the patient's hemoglobin is <6 g/dL (60 g/L) and is low when it is >10 g/dL (100 g/L).⁴⁰

After transfusing, evaluate over several days since there may be an initial placebo effect. If the Veteran experiences a sustained increase in his or her energy and/or reduced breathlessness, consider following the hemoglobin and transfuse as needed.

While erythropoiesis-stimulating agents reduce the need for blood transfusion in settings such as end-stage renal disease and chemotherapy-induced anemia, meta-analysis of their use for all cancer-related anemia shows an association with worse overall mortality and increased risk of thromboembolism.⁴¹ Their continued use as death approaches should be guided by their risk/benefit ratio and overall goals of care.

Airway obstruction

Airway obstruction can cause considerable distress. High-pitched inspiratory stridor is often audible at a distance. Make sure tracheostomy appliances are cleaned regularly. If the patient is still eating and aspiration is likely puree solids, thicken liquids with cornstarch or other thickeners, and instruct family members and caregivers on positioning during feeding and suctioning. For airway obstruction due to masses, surgical management or radiation therapy may be appropriate.⁴²

While interventional management is being considered, medications include:

- Steroids to reduce swelling and inflammation, such as dexamethasone 2–20 mg PO, IV, SC q d (long half-life permits once-daily dosing; minimal mineralocorticoid effect or edema); or
- Racemic epinephrine by inhaler.

Pleural effusions

Pleural effusions accumulate in the potential space between the visceral (inner) layer covering the lungs and the parietal (outer) layer covering the chest wall. Although the most commonly associated symptom is dyspnea, persistent cough and chest pain can also occur. Malignant pleural effusions occur commonly in Veterans with cancer. In a general hospital setting, up to 50% of all pleural effusions are malignant.⁴³ Other causes of pleural effusions include CHF and pneumonia. Pleural effusions from a malignancy for which there is no effective treatment portend a poor prognosis. Median survival for patients with an effusion due to metastatic cancer averages three months. Drainage alone does not affect survival, only comfort.⁴⁴

Assessment

A history of worsening dyspnea, cough, and/or pleuritic chest pain may suggest a pleural effusion. Diminished breath sounds, fremitus, and dullness to percussion on physical examination are suggestive.

Chest x-rays establish the probability of the effusion and provide an estimate of volume. Lateral decubitus views can distinguish free-flowing from loculated effusions. CT scans are useful when an x-ray is inconclusive.

The diagnosis of the type of pleural effusion is made with thoracentesis. Effusions are evaluated as transudative or exudative based on Light's criteria (see Table 1).

Table 1: Light's criteria for transudative vs. exudative effusions

	Transudate	Exudate
Malignant Cells	Negative	Positive < 50%
Cell count	Low	High
Total protein	Pleural : serum ratio < 0.5	Pleural : serum ratio > 0.5
LDH	Pleural : serum ratio < 0.6	Pleural : serum ratio > 0.6 or > 2/3 normal serum limit
pH	< 7.3	> 7.3

Cytology of the pleural fluid can also be used to diagnose the type of pleural effusion. However, in 25% of Veterans with cancer and recurrent pleural effusion, malignant cells may not be identified by cytology.⁴⁵ Although multiple samples may increase diagnostic accuracy to 77% and procedures such as thorascopy and biopsy may increase accuracy even higher, doing any of these procedures should be weighed in light of the Veteran goals of care and priorities.

Management of pleural effusions

Drainage

Establish the goals of treatment before initiating drainage. Consider the Veteran's symptoms, performance status, primary site of the tumor and its responsiveness to available antineoplastic treatment, and potential for lung expansion following drainage of fluid. Drainage may achieve goals of relief of dyspnea, minimize hospitalization, improve function, and give the Veteran and family a sense of control.

A variety of options, as listed below along with the advantages and disadvantages of each, are available for drainage.

Table 2: Chest drainage options

	Advantages	Disadvantages
Serial thoracentesis	Technically simple. Can be performed in outpatient setting. Volumes large enough to cause symptoms make pneumothorax unlikely.	Impractical with quickly reaccumulating fluid. Recurrence rate at one month approaches 100%. ⁴⁶
Chest tube insertion with intrapleural sclerosant	Success rate > 60%, low incidence of complications. Small bore equally as effective as large bore tubes. ⁴⁷	Side effects of sclerosants and pain. Requires hospitalization.
Permanent or semipermanent catheter	Placed by interventional radiology or surgery. Can be continuous or intermittent drainage. Family can manage catheter in the home setting without need for repeat medical visits.	Highly proteinaceous fluid may clog. Local cellulitis most common complication.
Thoracoscopy with talc	High success rate >90%. Perioperative mortality <0.5%.	Invasive procedure. Most common major complications: empyema, respiratory failure.

Thoracoscopy

Thoracoscopy is now a widely used technique for diagnosis and the management of pleural effusions. It should be considered for the diagnosis of suspected, but unproven, malignant pleural effusion, and for control of recurrent malignant effusions.

Video-assisted thoracoscopy (VATS) offers detailed visualization of the hemithorax, allowing for directed pleural biopsies, therapeutic pleurectomies, mechanical pleurodesis, chemical pleurodesis improved distribution of the sclerosing agent, and catheter placement for thoracic drainage.⁴⁸

Pleurodesis

Selected Veterans who have undergone thoracentesis may be candidates for pleurodesis. Typically, Veterans are candidates if thoracentesis resulted in lung re-expansion with apposition of the visceral and parietal pleura and relief of the symptoms and have less than 200 ml/day of drainage.

Pleurodesis is performed to scar the visceral and parietal pleura together and obliterate the pleural space. Pleurodesis requires a diffuse inflammatory response and local activation of the coagulation system with fibrin deposition. Talc is generally considered the preferred agent.⁴⁹ Other agents that have been used include doxycycline and bleomycin.

Dyspnea at the end of life

During the last hours of a Veteran's life, there can be significant changes in their breathing patterns, e.g., Cheyne-Stokes breathing or short shallow respirations are signs that death is approaching. This is usually important information to discuss with families and to counsel them concerning the Veteran's comfort.

Oxygen may or may not be appropriate; some suggest it may prolong the dying process.⁵⁰ But, oxygen is a powerful medical symbol to patient and family, therefore decisions to continue or forego oxygen therapy should be based on the circumstances of the individual case. There is consensus in the palliative care and ethics literature that it is appropriate to either continue or to withdraw oxygen in these patients. Focus on relieving the sense of shortness of breath, clearing or reducing secretions, and supporting everyone who is at the bedside (see EPEC for Veterans Module 11: Last Hours of Living for details).

Summary

Slide 18



Dyspnea can be a debilitating and anxiety-producing symptom that can prevent the patient and family from either continuing their lives or completing life closure. As with other symptoms, management should be tailored based on the underlying etiology and pathophysiology. This module provides the clinician with a working knowledge of specific dyspnea causes and therapies, as well as their potential adverse effects, to effectively relieve suffering and improve the patient's quality of life. This module discussed specific causes of dyspnea and their management.

Key take-home points

1. Breathlessness is a distressing symptom that adversely affects quality of life.
2. History, physical examination, and plain radiograph of the chest may make the diagnosis.
3. The differential diagnosis of breathlessness is broad. Depending on the goals of care, evaluation may or may not be appropriate but may lead to different therapeutic approaches.

4. When moderate to large pleural effusion is present, serial thoracentesis or semipermanent catheters may be used for effusions for which pleurodesis is not possible, or has failed. Semipermanent catheters allow Veterans to be tapped in the home, often reducing the need for medical visits as their disease progresses.
5. Drainage of a large pleural effusion may safely be tapped at home; ultrasound guidance is not required.
6. When considering any medical intervention, always consider the individual Veteran's goals of care, as well as those of his/her family.
7. Opioids are safe and effective in the symptomatic management of breathlessness.
8. When prognosis is days to weeks, avoid invasive procedures and use medical management alone.

References

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