

# Dyspnea Management

**Dyspnea is one of most prevalent and distressful symptoms in patients with advanced illness. There are numerous etiologies, and patients with advanced illness often have multiple causes. The pathophysiology may vary, even in those with comparable disorders. Useful therapies may target the cause of the symptom, or promote symptomatic relief, irrespective of cause. Both nonpharmacological and pharmacological interventions may be used to reduce distress.**

## Dyspnea Definition and Prevalence

Dyspnea is the perception of having difficulty breathing. As a symptom, it is subjective and may be distinguished from objective indicators of respiratory dysfunction, such as change in rate or depth of respiration.

Dyspnea may or may not be associated with signs of cardiopulmonary dysfunction.

Dyspnea may be reported by more than two-thirds of patients with cancer or HIV/AIDS, and a higher proportion in populations with advanced diseases of the heart or lungs. It has been shown to be a predictor of poor prognosis in the cancer population.

## Dyspnea Assessment

Self-report is the gold standard in assessing dyspnea. Simple zero-to-ten scales that measure the intensity of dyspnea or its associated distress may be used to help characterize the symptom and document the course of therapy.

Given the complexity of the perception and its causes, the evaluation should aim to more fully characterize the symptom and clarify both its etiologies and pathophysiology. The history should define the onset,

course, severity, exacerbating and relieving factors, and impact on daily activity. The medical status of the patient, both in terms of specific disorders and overall signs of advanced illness, should be understood. The impact on breathing of specific psychological factors, such as anxiety or the meaning of dyspnea, as well as the importance of social and environmental factors, should be noted. The physical examination can help clarify whether processes such as bronchospasm are important. Objective tests often are needed and may include complete blood count, pulse oximetry, arterial blood gas, pulmonary function tests, ECG, and imaging.

## Etiology and Pathophysiology

The perception of dyspnea may be the result of one or more disturbances in the physiology of breathing, which in turn may be the result of one or more of a very large number of respiratory, cardiovascular, hematologic, musculoskeletal, and neurological diseases (Figure 1). Physiological disturbances are strongly influenced by psychological factors, including cognitions, emotional state, resiliency, environment, and culture. In some cases, comorbid psychiatric disorders are persistent drivers of distress.

**Table 1. Dyspnea Etiology**

CANCER RELATED		CONCURRENT FACTORS	DISEASE SPECIFIC
↓	↓	↓	↓
Primary metastasis	Surgery	Cachexia	Congestive Heart Failure
Intrinsic/extrinsic obstruction	Radiation therapy pneumonitis	Anemia	Chronic Obstructive Pulmonary Disease
Pleural/Pericardial Effusion	Chemotherapy induced pulmonary disease	Pneumonia	Other
Ascites/Hepatomegaly	Chemotherapy induced cardiomyopathy	Pulmonary emboli	
Phrenic Nerve Paralysis		Paraneoplastic Syndrome	
SVC Syndrome			

## Dyspnea Management

Treatment of the etiology of dyspnea, such as heart failure, or treatment of its underlying pathophysiological processes, such as hypoxemia or bronchospasm, is a prime consideration in symptom control. Treatments of this type should be offered if they are consistent with the goals of care and can be provided in a manner that yields a favorable balance between likely benefit and risk or burden. For example, maximal therapy for heart failure may vary with the latter considerations, but low risk therapies, such as oxygen and bronchodilators, usually are offered. Studies have confirmed the benefit of oxygen only in the context of hypoxemia. A trial of a bronchodilator, such as albuterol, and a nebulized glucocorticoid usually are indicated if there is any indication that the symptom is related to airway disease. A systemic trial of a glucocorticoid, such as low-dose dexamethasone or prednisone, usually is considered in the context of advanced illness, if nebulized therapy is not indicated or is ineffective, and the etiology of the dyspnea involves pulmonary pathology.

Symptomatic therapies may be nonpharmacological or pharmacologic. There is evidence that a fan directed to the face is effective, and this simple approach should always be considered in the context of advanced illness. Placing the patient in front of a window, lowering the temperature of the room, and positioning the body as directed by the patient are other strategies.

There is considerable support for the use of psychological and integrative therapies for dyspnea. The patient may be taught different types of breathing techniques (e.g., pursed lip breathing), as well as varied mind-body approaches that reduce anxiety and help control breathing. These may include guided imagery or relaxation training and varied forms of music therapy.

Pulmonary rehabilitation, which combines structured exercise, training in breathing techniques, and psychological interventions, may be indicated for patients with persistent dyspnea before the underlying disease becomes far advanced. Like other nonpharmacological strategies, this approach may

be combined with treatment that targets the underlying causes or pathophysiology of dyspnea, or medication trials directed at the symptom itself.

Persistent treatment-refractory dyspnea also may be addressed using varied types of noninvasive ventilation (NIV) support. NIV involves the delivery of mechanical

ventilation to the lungs using techniques that do not require an endotracheal airway. The most commonly used of these interventions apply noninvasive positive pressure ventilation (NPPV), which may be continuous or intermittent and be delivered through various types of masks.

**Table 2. Dyspnea Management In Advanced Illness: Pharmacological Interventions**

CLASS	EVIDENCE INDICATION	DOSING
<b>Opioids</b>	Clear evidence: Cancer, COPD	Opioid naive: 2.5-5mg Morphine IV/SC or 10-15mg q3-4 hrs. Opioid tolerant: 25-50% increase in standing dose
<b>Nebulized Morphine</b>	Mixed Review: Bronchospasm	Morphine 5mg/2.5-5ml saline inhale over 5-10min q4hrs.
<b>Benzodiazepines</b>	Some evidence (anxiety component)	Lorazepam 0.5mg PO/SC/IV q4hrs prn
<b>Steroids</b>	Beneficial: Lymphangitic carcinomatosis, superior vena cava syndrome, bronchospasm	Prednisone 20-40mg/day Dexamethasone 4-8mg/day
<b>Bronchodilators</b>	Beneficial in air flow obstruction	Albuterol 90/100mg/metered dose; 1-2 inhalations q4-6hrs prn
<b>Oxygen</b>	Some benefits in hypoxemic pts.	2-4L/min
<b>Nebulized Furosemide</b>	May be beneficial in airway disease; Insufficient data in cancer	40mg in nebulizer
<b>Diuretics</b>	Useful in congestive heart failure/superior vena cava syndrome	Furosemide 40mg daily or bid optimize treatment of underlying condition

Pharmacological interventions that aim to provide symptomatic relief irrespective of the etiology or pathophysiology include opioids, benzodiazepines, and nebulized furosemide. The evidence for the use of an opioid is sufficiently strong to consider this approach to be a standard of care for patients with breathlessness related to advanced illness of any type. There is also some evidence that anxiolytics, predominantly benzodiazepines such as lorazepam, also may be helpful and are usually

combined with the opioid. Although the mechanism of action of nebulized furosemide is not known, small controlled trials offer evidence of efficacy.

There are some anecdotal reports of phenothiazine or antidepressant use for the treatment of dyspnea, but there is insufficient evidence to support this pharmacologic intervention. There is also insufficient evidence to support inhaled topical anesthetics for management of dyspnea.

Patients with severe dyspnea who are approaching the end of life may be offered palliative sedation. It is defined as the administration of medications to sedate a terminally ill patient to unconsciousness for severe refractory symptoms and is typically an intervention of last resort.

## Conclusion

Dyspnea is a subjective and distressing symptom. The etiology, pathophysiology, and management can be complex. In advanced illness, treatment must continually consider the goals of care.

## Bibliography

Boyden JY, Connor SR, Otolorin L, et al. Nebulized medications for the treatment of dyspnea: A literature review. *J Aerosol Med Pulm Drug Deliv* 2015; 28:1-19

Currow DC, McDonald C, Oaten S, Kenny B, Allcroft P, Frith P, Briffa M, Johnson MJ, Abernethy AP. Once-daily opioids for chronic dyspnea: A dose increment and pharmacovigilance study. *J Pain Symptom Manage* 2011; 42:388-399

Kamal AH, Miriovsky BJ, Currow DC, Abernethy AP. Improving the management of dyspnea in the community using rapid learning approaches. *Chron Respir Dis* 2012; 9:51-61

Mahler DA, O'Donnell DE. Recent advances in dyspnea. *Chest* 2015; 147:232-241

Mahler DA, Selecky PA, Harod CG, Benditt JO, Carrieri-Kohlman V, Curtis JR, Manning HL, Mularski RA, Varkey B, Campbell M, et al. American College of Chest Physicians consensus statement on the management of dyspnea in patients with advanced lung or heart disease. *Chest* 2010; 137:674-691

Parshall MB, et al. An official American Thoracic Society Statement: Update on the mechanisms, assessment, and management of dyspnea. *Am J Respir Crit Care Med* 2012; 185:435-452

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