

Management of Dyspnea in the Terminally Ill

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The genesis of dyspnea involves the activation of several mechanisms that are mediated and perceived depending on previous experiences, values, emotions, and beliefs. Breathlessness may become unbearable, especially in patients who are terminally ill, whether afflicted by respiratory-, cardiac-, or cancer-related disorders, because of a final stage of a chronic process, an acute event, or both. Compared with pain, palliation of dyspnea has received relatively little attention in clinical practice and the medical literature. This is particularly true when the breathlessness is associated with acute respiratory failure because most of the studies on pharmacologic and nonpharmacologic treatments of respiratory distress have excluded such patients. Assessments of the quality of dying for patients in an ICU consistently show that few patients are considered by family members to breathe comfortably at the end of their life. This review focuses on the management of dyspnea in patients with advanced terminal illness, summarizing clinical trial evidence on pharmacologic and nonpharmacologic interventions available for these patients.

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“How people die lives on in the memories
of those who live on”

Cicely Saunders

As summarized in an American Thoracic Society position paper on mechanisms of dyspnea in COPD, dyspnea is defined as “the subjective experience of breathing discomfort” and the physiology is complex.¹ It involves the activation of several mechanisms that lead to increased work of breathing; stimulation of receptors in airways, lung parenchyma, or chest wall; and excessive stimulation of the respiratory

center by peripheral or central chemoreceptors. The sensation of dyspnea is also complex and is dynamically mediated and perceived depending on our previous experiences, values, emotions, and beliefs. Therefore, the symptom of dyspnea has subtypes that are described in different ways and derived from different respiratory and nonrespiratory disorders, as summarized in [Table 1](#). Furthermore, as determined by PET scan, relief of dyspnea involves a characteristic brain activation different from that subserving dyspnea perception.² We all

^{Q3} **ABBREVIATIONS:** HFNT = high-flow nasal therapy; NIV = noninvasive ventilation; RCT = randomized controlled trial

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TABLE 1] Subtypes of Dyspnea

Type of Dyspneic Sensation	Origin of the Dyspneic Sensation	Example of Disease	Possible Treatment
Air hunger	Chemoreflex activity	Pulmonary hyperinflation (COPD, advanced phase of asthma attack)	CPAP, NIV, bronchodilators
Increased work of breathing	Activity of cerebral motor cortex	Muscle weakness (neuromuscular diseases)	NIV, IMV
Chest tightness	Stimulation of slowly adapting receptors in the large airways	Bronchospasm (first phase of asthma attack)	Bronchodilators
Rapid breathing, tachypnea	Stimulation of pulmonary C fibers	Interstitial lung disease, pulmonary venous congestion	Opioids, HFNT

HFNT = high-flow nasal therapy; IMV= invasive mechanical ventilation; NIV = noninvasive ventilation.

experience dyspnea at times, for example during exercise, but in certain situations it becomes unbearable; therefore, it is not surprising that one of the most popular rating instruments (ie, Medical Research Council Dyspnea Scale) defines the highest stage of dyspnea as “too breathless to leave the house or dress or undress.”³ This is particularly relevant in patients who are terminally ill, whether afflicted by respiratory-, cardiac-, or cancer-related disorders, because of a final stage of a chronic process, an acute event, or both.

In some acute or chronic situations, dyspnea results from a combination of events. Therefore, clinicians should evaluate the different onset of manifestation (chronic, acute on chronic, or end-of-life symptoms) to more effectively manage the dyspnea in these patients. In addition, many patients with advanced disease experience episodic dyspnea, which is poorly understood and often develops without any identifiable trigger.⁴ In this setting, the assessment of terminal dyspnea is a more complex process because the patient’s ability to perceive and report the symptom may be impaired in the face of declining cognition and alertness. Although interventions to alleviate breathlessness may or may not work in a particular patient, clinicians should feel obligated to assure these patients that beyond all the treatments that have been tried unsuccessfully to cure them, there will always be hope for a peaceful, dignified

death. Unfortunately, palliation of dyspnea has received relatively little attention in clinical practice, in medical literature, and (when we consider the emphasis given to the problem of pain) even among the general public. This holds particularly true when the respiratory distress is associated with acute respiratory failure because most if not all of the studies on the effects of pharmacologic treatments, such as opioids or oxygen, have excluded these patients. Therefore, it is not surprising that a study on the quality of the dying experience for patients in an ICU found that only 3% of patients were considered by family members to breathe comfortably at the end of life.⁵ Indeed, a study on patients who were terminally ill showed that breathlessness increased significantly at days 3 and 10 before death and remained unchanged thereafter; however, breathlessness was significantly higher for patients with noncancer diagnoses.⁶ Despite this finding, evidence shows that palliative care teams are seldom consulted in the terminal care of patients in the ICU or those with respiratory disorders.⁷

The aim of this review is to assess the pharmacologic and nonpharmacologic treatment of breathlessness, with specific emphasis on patients experiencing respiratory distress or acute respiratory failure at terminal stages of their disease. We also identify knowledge gaps and consider ways of improving the management of dyspnea in patients who are terminally ill.

Materials and Methods

Search Criteria

This is a narrative review of the literature based on searches of two main databases, namely PubMed and The Cochrane Database of Systematic Reviews, using the key words “dyspnea,” “palliative dyspnea,” “breathlessness,” “palliative breathlessness,” and

“refractory breathlessness.” The search strategy using Medical Subject Headings was limited to human studies and articles in English or in any other language with an English abstract. The search was done on abstract, title, and key words fields. Because this was a narrative review, we conducted a qualitative analysis without additional assessments.

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