

Managing Dyspnea in End of Life Care



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Background^{1,2}



- ❧ Dyspnea- derives from Greek “dys” - abnormal/difficult and “pnoia” meaning breath
 - ❧ Defined as “uncomfortable sensation or awareness of breathing:
 - ❧ Air Hunger ~ Suffocation ~ Shortness of Breath
 - ❧ Dyspnea one of the most common symptoms reported in end of life care
 - ❧ A subjective symptom – similar to pain
- Dyspnea \neq Tachypnea

Effects of Dyspnea³



Physical

- Fatigue and tiredness
- Decrease in functional status (low Karnofsky performance score)

Emotional

- Distressing to family and patient
- More likely to be anxious and depressed
- Associated with anger, helplessness, loneliness

Social

- Dyspnea (rather than lung function) correlates highly with disability
- Prevents patient involvement with any activities, including talking in severe cases

Spiritual

- Positive correlation with spiritual distress

Dyspnea and Life Expectancy^{4,5}

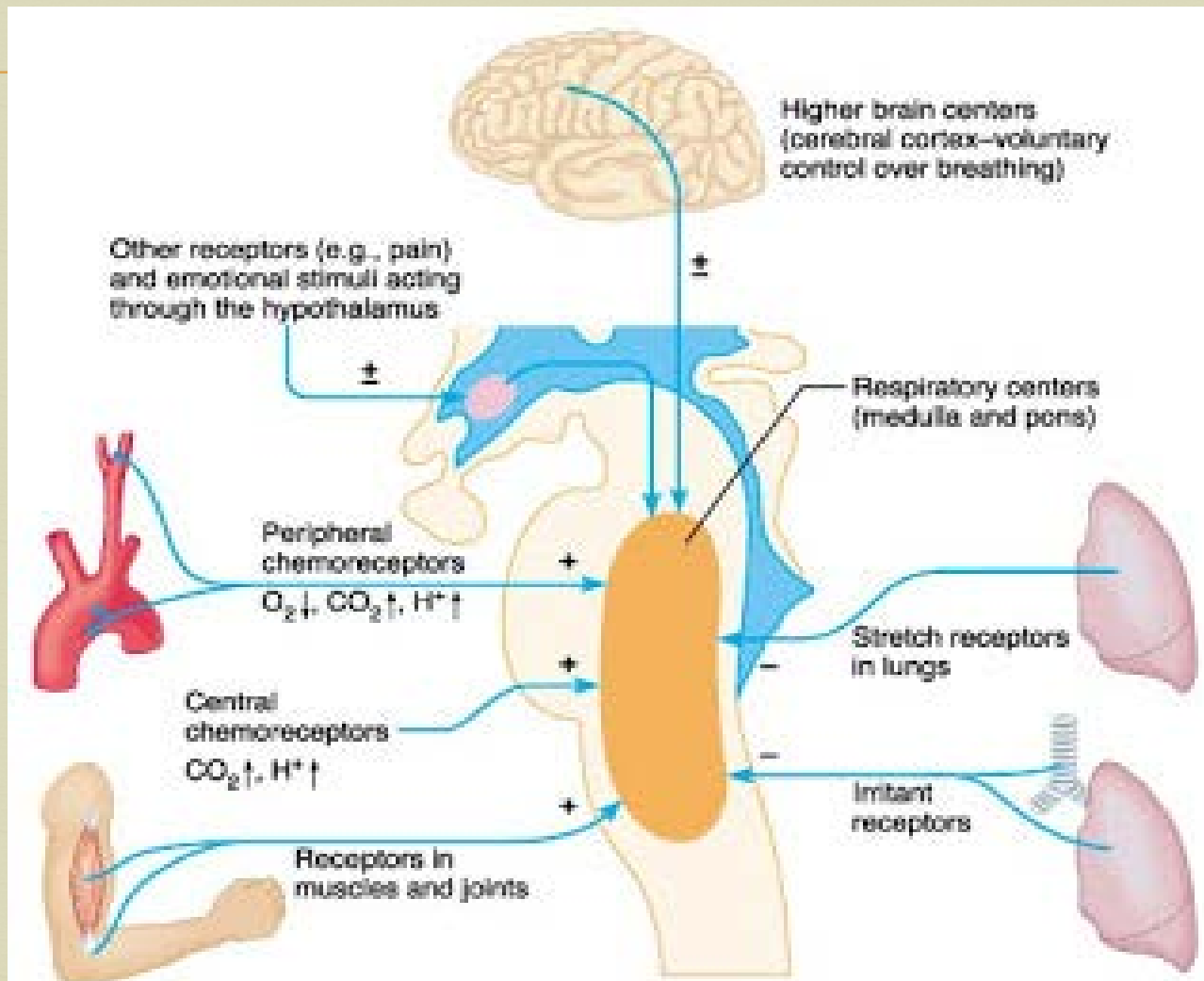
- ❧ Dyspnea may predict shortened survival in cancer patients
- ❧ Patients with cancer presenting to ED with dyspnea had median overall survival of 12 weeks
 - ❧ Lung cancer- 4 weeks
 - ❧ Breast cancer- 22 weeks
- ❧ Elevated pulse and respiratory rate along with cancer-related dyspnea correlated with a predicted mean survival of < 2 weeks

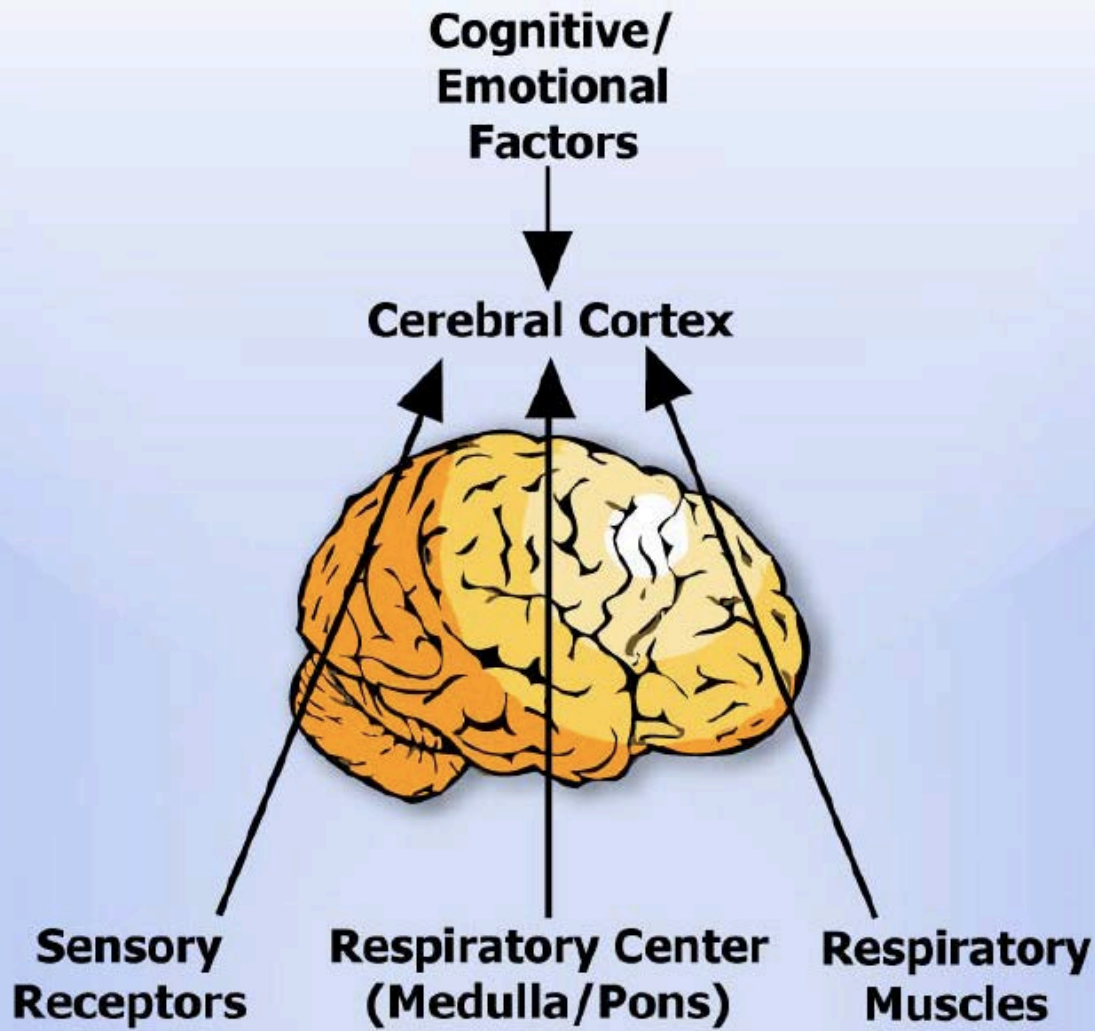
Etiology⁶



- ❧ Increase in respiratory effort needed to overcome obstruction/restrictive disease; more respiratory muscles required to maintain adequate breathing; increase in ventilatory need
- ❧ Terminally illnesses commonly reporting dyspnea
 - ❧ Advanced malignant disease
 - ❧ COPD
 - ❧ Heart Failure
 - ❧ Deconditioning
 - ❧ Pneumonia
 - ❧ AIDS

Regulation of Normal Breathing^{2,7}





**From: Thomas JR, von Guten CF. Clinical management of
dyspnea. Lancet Oncol. 2002;3(4): 223-228. PMID: 12067684**

Main Abnormalities in Dyspnea^{6,8}



❧ Mechanical Impairment

❧ Increased resistance requiring increased workload

❧ COPD, Bronchial Obstruction

❧ Workload

❧ Increase in the proportion of respiratory muscles needed to sustain workload

❧ Weakened respiratory muscles (cachexia, neuromuscular weakness)

❧ Ventilator Demand

❧ Increase in ventilatory demand

❧ Hypoxia, hypercapnia, metabolic acidosis, anemia

Assessment²



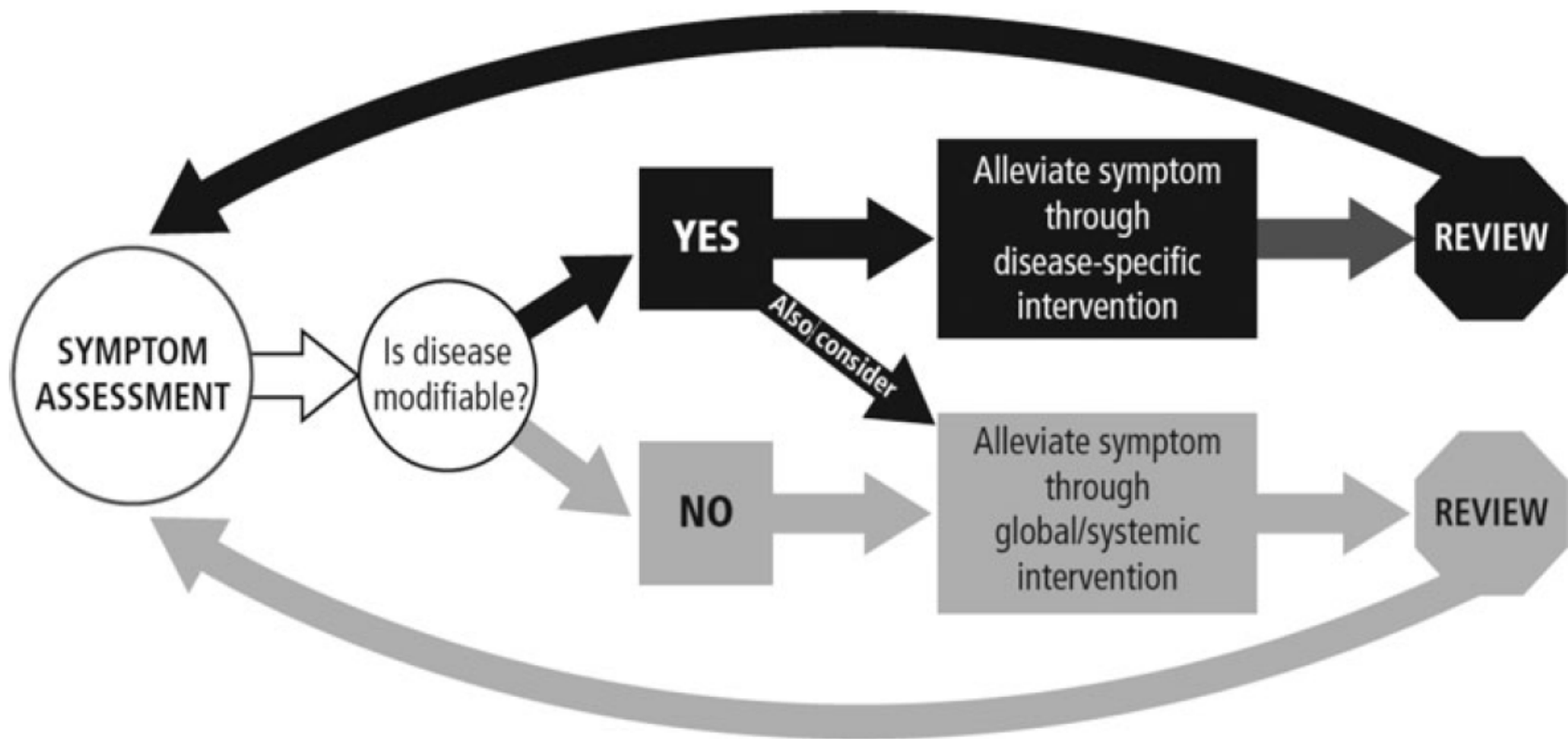
- ❧ Goal Standard: Patient self-report
- ❧ Objective signs include
 - ❧ Areas of pulmonary dullness or crackles
 - ❧ Inability to clear secretions
 - ❧ Stridor
 - ❧ Bronchospasm (wheezing)
 - ❧ Central or peripheral cyanosis
 - ❧ Intercostal retractions
 - ❧ Tachypnea

Goals of Therapy⁹

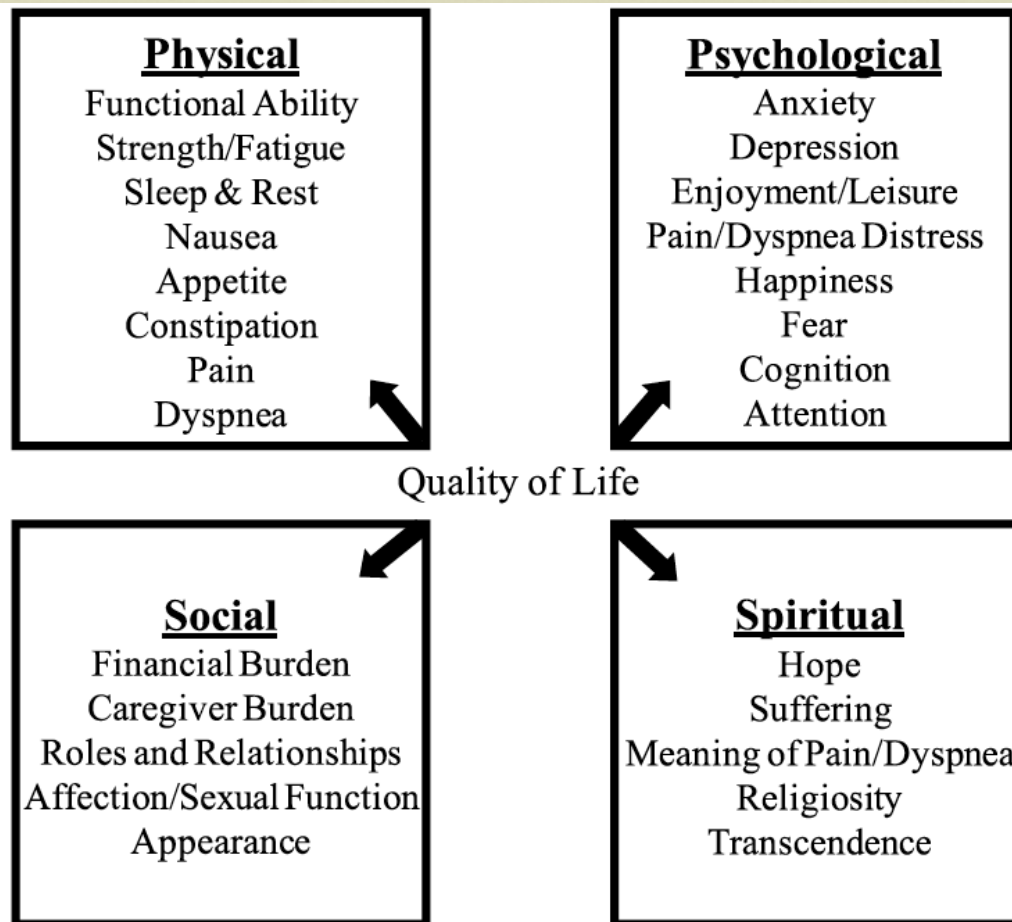


- ❧ Identify and treat underlying cause of dyspnea if applicable
- ❧ Fully address all other concomitant symptoms, stressors, and spiritual distress

Biopsychosocial Model of Dyspnea Management⁹



The City of Hope QOL Model



Adapted from Ferrell et al., 1991

Bronchoconstriction

=

Albuterol/ipratropium
nebulizers

Hypoxia

=

Oxygen

Fluid overload/CHF

=

Diuretics



**Treat
Underlying
Cause**

COPD exacerbation;
superior vena cava
obstruction;
lymphangitic
carcinomatosis

=

Steroids

Nicotine cravings

=

Nicotine
patch/clonidine
patch

Cough

=

Antitussives/opioids

Pneumonia/infectious
process (not terminal
pneumonia)

=

antibiotics

3,9,10

Symptom Palliation^{9,11}



Dyspnea

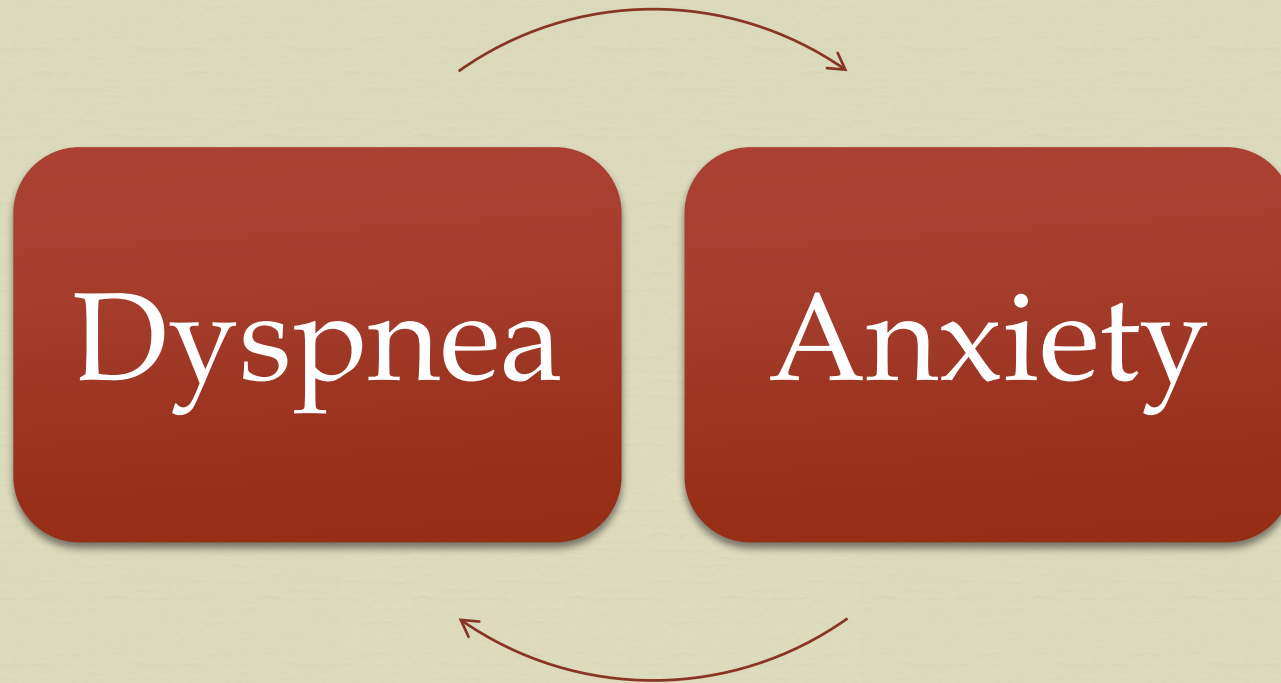


Opioids

Non-
pharmacologic
Options



Fan; Elevating head
of bed; Reducing
environmental
irritants



- Opioids should remain first line when anxiety is a component
- Benzodiazepines should not be used first line as mono-therapy for dyspnea.
- Benzodiazepines may be used as adjunct therapy when opioids are not fully successful
 - Lorazepam: initial- 0.5-2.0 mg PO, SL, buccal, or SC q 1 h PRN and titrate to effect. Once the TDD established, provide 1/3 q 8 h routinely.

MOA of Opioids in Dyspnea



- ❧ Mechanism not completely understood- multiple theories e
- ❧ May reduce the sensitivity and responsiveness of the medullary respiratory centers to hypoxia and hypercapnia
 - ❧ Addition of 100% oxygen can induce apnea
- ❧ May inhibit stimulus-evoked release of ACh
 - ❧ Mu and delta opioid receptors
- ❧ Opioid receptors are located throughout the respiratory tract and most abundantly in the alveolar walls
 - ❧ May activate opioid receptors associated with pulmonary afferents on vagal C-fibers believed to be within the alveolar wall

Opioids^{2,9,13,14}



- ❧ Much lower doses are needed to relieve dyspnea than that which can cause respiratory depression
- ❧ Opioid naïve patient
 - ❧ Morphine 10 to 15mg po q1h PRN and titrate to effect
 - ❧ Possible alternative: hydromorphone 2.5mg orally q6h
- ❧ On baseline opioids
 - ❧ Increase opioid dose by 25% and titrate to effect
- ❧ Chronic dyspnea
 - ❧ ER formulation for baseline control w/ 10% of TDD for breakthrough dyspnea

Inhaled Opioids¹⁵⁻¹⁷



- ❧ Inhaled opioids have shown mixed results in improving dyspnea with most showing minimal effect
- ❧ Rapid administration of morphine can produce pulmonary vasoconstriction secondary to histamine release
- ❧ Studies have shown that the opioid lung receptor density is altered in 'sensitized' airways and may contain a non-conventional opioid receptor.
 - ❧ Decrease in delta receptors w/ sensitized tissues
 - ❧ Mucus secretions not inhibited by kappa agonists

Summary of Treatment Options for Dyspnea⁹



Intervention	Agent	Conclusions
Medical Gas	Oxygen – Hypoxemic	↑
	Oxygen – Normoxemic	↔
	Medical air – Normoxemic	↔ or ↑
Pharmacologic	Opioids – oral/IV	↑
	Opioids - inhaled	↓
	Inhaled furosemide	↔
	Anxiolytics	↔
	Heliox	↔
Non-pharmacologic	Fan	↑
	Pulmonary rehabilitation (in select patients)	↑
Surgical	Pleural catheter	↑
	LVRS (in select patients)	↑
	Bronchial stenting (in select patients)	↑
Complementary	Acupuncture	↔ or ↑

↑ Evidence generally supports use of intervention
 ↓ Current evidence does not support use
 ↔ Further investigation required
 ↔ or ↑ Further investigation is required, but emerging data are compelling to support use

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