

## DURING AND AFTER TREATMENT

# Dyspnea: Common Side Effect

Anecita Fadol, PhD, APRN, FAANP, FAAN

For dyspnea, standards of care are based on emerging evidence-based practice.

## Definition

Dyspnea, or shortness of breath, is a subjective experience of breathing discomfort marked by distinct sensations of varying intensity. Resulting from interactions among physiologic, psychological, social, and environmental factors, dyspnea may lead to secondary physiologic and behavioral responses (Parshall et al., 2012). Dyspnea can be caused by cardiac and pulmonary disease (e.g., congestive heart failure, acute coronary syndrome, pneumonia, chronic obstructive pulmonary disease [COPD], pulmonary embolism), as well as other conditions (e.g., anemia, mental disorders, lung cancer).

## Incidence

- Dyspnea is often debilitating, affecting as many as 50% of patients admitted to acute, tertiary care hospitals and 25% of patients seeking care in ambulatory settings (Berliner et al., 2016; Parshall et al., 2012).
- Dyspnea is present in 43% of patients admitted with respiratory diagnoses and 25% of patients with cardiovascular diagnoses (Stevens et al., 2018).

## Pathophysiology

- Current explanatory hypotheses on the pathogenesis of dyspnea are based on the concept of a regulatory circuit consisting of afferent information relayed centrally from chemoreceptors for pH, CO<sub>2</sub>, and O<sub>2</sub>, as well as from mechanoreceptors in the musculature and the lungs and a corresponding ventilatory response (Ewert & Glaser, 2015).
- Clues to the underlying pathology can be derived from the patient's medical history (including diagnoses, interventions, surgery), prior cancer treatment (e.g., chemotherapy, radiation therapy to the chest), and symptoms and signs other than dyspnea that indicate a particular diagnosis, such as myocardial ischemia, heart failure, pulmonary embolism, and pneumothorax.
- Dyspnea typically arises as part of a collection of symptoms in an acute coronary syndrome or myocardial infarction, as well as in cardiogenic shock resulting from low cardiac output (Cannon et al., 2013; Roffi et al., 2015).
- Dyspnea in heart failure is caused by the decreased ability of

the heart to pump efficiently, producing elevated pressure in the blood vessels around the lung.

## Risk Factors

- History of treatment with anthracycline-based chemotherapy, including doxorubicin, daunorubicin, epirubicin, and idarubicin
- History of treatment with trastuzumab
- History of radiation therapy to the chest can increase the risk for developing accelerated atherosclerosis, cardiomyopathy, and heart failure.
- Presence of cardiac risk factors (e.g., hypertension, diabetes mellitus, obesity, preexisting cardiovascular disease, valvular disease)
- Cardiac arrhythmias (e.g., new onset atrial fibrillation with rapid ventricular response)

## Baseline Assessment

- Perform a comprehensive history and physical examination.
- Ask recommended questions to assess cardiac etiology of dyspnea (Tevaarwerk et al., 2021):

## PROVIDER RESOURCES

### Research Articles

- Hollenberg, S.M., Stevenson, L.W., Ahmad, T., Amin, V.J., Bozkurt, B., Butler, J., . . . Storrow, A.B. (2019). 2019 ACC expert consensus decision pathway on risk assessment, management, and clinical trajectory of patients hospitalized with heart failure: A report of the American College of Cardiology solution set oversight committee. *Journal of the American College of Cardiology*.
- <https://doi.org/10.1016/j.jacc.2019.08.001>
- Stevens, J.P., Dechen, T., Schwartzstein, R., O'Donnell, C., Baker, K., Howell, M.D., & Banzett, R.B. (2018). Prevalence of dyspnea among hospitalized patients at the time of admission. *Journal of Pain and Symptom Management*.
- <https://doi.org/10.1016/j.jpainsymman.2018.02.013>
- Whelton, P.K., Carey, R.M., Aronow, W.S., Casey, D.E., Jr., Collins, K.J., Dennison Himmelfarb, C., . . . Wright, J.T., Jr. (2018). 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: Executive summary: A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Hypertension*.
- <https://doi.org/10.1161/HYP.0000000000000066>