

FAST FACTS AND CONCEPTS #376
MANAGEMENT OF CHRONIC DYSPNEA
Richard Weinberg MD and Briana Ketterer MD

Background: Dyspnea is the sensation of breathing discomfort or an uncomfortable awareness of breathing (see *Fast Fact #27* on acute dyspnea at the end of life). Chronic dyspnea usually refers to breathlessness lasting > 4-8 weeks and is prevalent in progressive illnesses such as chronic obstructive pulmonary disease (COPD) (56-98%), heart failure (88%), cancer (77%), and end-stage renal disease (ESRD) (11-82%) (1). The aim of this *Fast Fact* is to review management options for chronic dyspnea.

Pathophysiology: When dyspnea becomes chronic, sensory input from chemoreceptors and mechanoreceptors become integrated into the neural processing of the brain making it challenging to fully eradicate (2). While indirect corollary measures such as tachypnea or hypoxemia are often measured, patient self-report is the only reliable indicator of dyspnea (2). Breathlessness often triggers anxiety which in turn can compromise respiratory mechanics via rapid breathing, hyperinflation, increased dead space, and diaphragmatic flattening (3). Reduced physical activity and deconditioning often follows. Even though diagnosing a dyspneic patient with anxiety disorder is not accurate and can be stigmatizing, controlling the dyspnea-anxiety cycle is a key therapeutic goal in chronic dyspnea. Patient acknowledgement that breathlessness triggers anxiety and, that anxiety can worsen breathlessness, can provide insight and improve adherence with recommended therapeutic strategies (4).

Management of chronic dyspnea: The initial evaluation of chronic dyspnea should address the underlying etiology/chronic illness and correct hypoxemia if appropriate. Clinicians should consider whether disease-modifying therapies may improve the patient's quality-of-life (e.g. optimization of COPD; drainage of a malignant effusion, etc) and refer to appropriate specialists if indicated. For many patients, further optimization of the underlying illness is not achievable, and the therapeutic goal must shift to reducing symptom burden and improving the patient's capacity to cope with chronic dyspnea. The following measures should be considered at any stage of disease, not just when life expectancy is short.

Non-pharmacologic management: Multi-disciplinary regimens that integrate disease management, anxiety reduction, emergency contingent planning, self-mastery of breathing mechanics, and exercise training are most effective for chronic dyspnea (5-7). Components of these regimens usually include:

- Pulmonary rehabilitation: a structured 4-8-week program involving physical and/or occupational therapists to provide education, exercise training, and counseling. For patients able to tolerate exercise training, pulmonary rehabilitation has the strongest supporting evidence for reducing chronic dyspnea (8). Its value is unclear for severely debilitated patients in the last months of life.
- Patient education including the psych-social-spiritual impact of the dyspnea-anxiety cycle. This may be delivered in the home or clinic with the aid of trained staff or via self-directed manuals (9-14).
- Energy conservation techniques: reorganizing living spaces to reduce energy expenditure, prioritizing activities within their ability, and utilizing restorative aids such as walkers or canes (12).
- Cognitive behavioral therapy: delivered by trained therapists (9,10).
- Relaxation techniques: diaphragmatic and pursed lip breathing training, guided imagery (see *Fast Fact #221*) meditation, and music therapy (apps and online videos are available) (10,12,13).
- Acupuncture: data are limited due to sample size and blinding issues but suggest a potential role for COPD and cancer (15,16).
- *Oxygen and therapeutic room air:* supplemental oxygen in those with hypoxemia, including high-flow oxygen systems, have been associated with improved symptom control in appropriate patients with COPD and pulmonary fibrosis (see *Fast Fact #330*) (17). Therapeutic air by means of a fan to the face has shown benefit for cancer and COPD patients (18).

Pharmacologic Management: In general, medications should be reserved for intolerable dyspnea that is refractory to non-pharmacologic approaches. They are best viewed as therapeutic adjuncts which, when utilized judiciously, can improve function and quality-of-life long before a patient is nearing death (19).

- Opioids: Oral, subcutaneous, and intravenous opioids have long been regarded as the mainstay of pharmacologic treatment for chronic dyspnea. Multiple studies and systematic reviews have evaluated various short and extended-release opioids for chronic dyspnea. While results are somewhat mixed, opioids appear to be safe and moderately effective at low doses (oral morphine equivalent dose < 30 mg/day) for advanced COPD, interstitial lung disease, and advanced cancer, even when prognosis is anticipated to be several months or years (19-21). Randomized controlled trials in heart failure and pulmonary hypertension have not shown as much benefit (22,23). When utilizing opioids for chronic dyspnea relief, communication is vital to allay concerns amongst the patient, family, and clinicians. Extra caution is warranted in patients with sleep apnea and when concomitantly prescribed with benzodiazepines as increased mortality has been noted (24). Starting at low doses (e.g. short-acting morphine dose of 0.5-2 mg q4 hours as needed), monitoring for effect, and then titrating up at small intervals until the lowest effective dose is identified, allows for confidence that the treatment is safe and effective (25,26). If tolerated, consider a low dose, once daily, long-acting opioid (e.g. morphine ER 15-30 mg/day) (21,26). When prognosis is weeks or less, a more accelerated opioid titration strategy is usually required (*Fast Fact #21*).
- Benzodiazepines: A Cochrane systematic review found no convincing evidence for or against the use of benzodiazepines for chronic dyspnea (27). They have been associated with an increased mortality risk when co-prescribed with opioids (24). Many experts prescribe them for select patients for whom refractory anxiety is a significant component to their symptomatology.
- Antidepressants: Buspirone has not shown benefit in cancer patients with chronic dyspnea (28). One case series suggested that mirtazapine could benefit select patients with chronic dyspnea (29).

References:

1. Moens K, Higginson IJ, Harding R. Are there differences in the prevalence of palliative care-related problems in people living with advanced cancer and either non-cancer conditions? A systematic review. *J Pain Symptom Manage*. 2014 Oct;48(4):660-77.
2. Denis E, O'Donnell, Robert B. Banzett, Virginia Carrieri-Kohlman, Richard Casaburi, Paul W. Davenport, Simon C. Gandevia, Arthur F. Gelb, Donald A. Mahler, and Katherine A. Webb, Pathophysiology of Dyspnea in Chronic Obstructive Pulmonary Disease: A Roundtable, *Proc Am Thorac Soc* 4: 145–168, 2007
3. Silva CS, Nogueira FR, Porto EF, Gazzotti MR, Nascimento OA, Camelier A, Jardim JR.
4. Dynamic hyperinflation during activities of daily living in COPD patients. *Chron Respir Dis*. 2015 Aug;12(3):189-96 Spathis A, Booth S, Moffat C, Hurst R, Ryan R, Chin C, Burkin J. The Breathing, Thinking, Functioning clinical model: a proposal to facilitate evidence-based breathlessness management in chronic respiratory disease *NPJ Prim Care Respir Med*. 2017 Apr 21;27(1):27.
5. Higginson IJ, Bausewein C, Reily CC, et.al. An integrated palliative and respiratory care service for patients with advanced disease and refractory breathlessness: a randomized controlled trial. *Lancet Respir Med*. 2014 Dec;2(12):979-87.
6. Bausewein C, Schumacher P, Bolzani A. Integrated breathlessness services for people with chronic conditions. *Curr Opin Support Palliat Care*. 2018 Sep;12(3):227-231.
7. Lenferink A¹, Brusse-Keizer M, van der Valk PD, Frith PA, Zwerink M, Monninkhof EM, van der Palen J, Effing TW. Self-management interventions including action plans for exacerbations versus usual care in patients with chronic obstructive pulmonary disease. *Cochrane Database Syst Rev*. 2017 Aug 4.
8. McCarthy B, Casey D, Devane D, et.al. Pulmonary rehabilitation for chronic obstructive pulmonary disease. *Cochran Database Syst Rev*. 2015 Feb 23;(2):CD003793.
9. Bausewein C, Booth S, Gysels M, Higginson I. Non-pharmacologic interventions for breathlessness in advanced stages of malignant and non-malignant diseases. *Cochrane Database Sys Rev*. 2008 Apr 16;(2):CD005623.
10. Cully. JA, Stanley MA, Deswal A, et.al. Cognitive-behavioral therapy for chronic cardiopulmonary conditions: preliminary outcomes from an open trial. *Prim Care Companion J Clin Psychiatry*. 2010;12(4). (<https://www.mirecc.va.gov/visn16/access-manual.asp>)
11. Bove DG, Midtgaard J, Kaldan G, et.al. Home-based COPD psychoeducation: a qualitative study of the patients' experiences. *J Psychosom Res*. 2017 Jul;98:71-77.

12. Valenza MC, Valenza-Peña G, et al. Effectiveness of controlled breathing techniques on anxiety and depression in hospitalized patients with COPD: a randomized clinical trial. *Respir Care*. 2014 Feb;59(2):209-15
13. [Hillingdon Wellbeing Centre.](https://www.youtube.com/channel/UCNd44WnJT8iqVjabqUM6og/videos?view_as=subscriber)
[https://www.youtube.com/channel/UCNd44WnJT8iqVjabqUM6og/videos?view_as=subscriber.](https://www.youtube.com/channel/UCNd44WnJT8iqVjabqUM6og/videos?view_as=subscriber)
Accessed March 6, 2019.
14. [Living Well with COPD.](http://www.livingwellwithCOPD.com) www.livingwellwithCOPD.com Accessed April 5, 2019.
15. Feng, J, Wang X, Li X, et.al. Acupuncture for chronic obstructive pulmonary disease (COPD): A multicenter, randomized, sham-controlled trial. *Medicine (Baltimore)*. 2016 Oct;95(40):e4879.
16. Minchom A, Punwani R, Filshie J, et.al. A randomized study comparing the effectiveness of acupuncture or morphine versus the combination for the relief of dyspnoea in patients with advanced non-small cell lung cancer and mesothelioma. *Eur J Cancer*. 2016 July;61:102-10.
17. Spoletini G, Alotaibi M, Blasi F, Hill NS Heated Humidified High-Flow Nasal Oxygen in Adults: Mechanisms of Action and Clinical Implications. *Chest*. 2015 Jul;148(1):253-261
18. Kako J, Morita T, Tamahuchi T, et.al. Fan Therapy Is Effective in Relieving Dyspnea in Patients With Terminally Ill Cancer: A Parallel-Arm, Randomized Controlled Trial. *J Pain Symptom Manage*. 2018 Oct;56(4):493-500.
19. Davis MP, Behm B, Balachandran D Looking both ways before crossing the street: Assessing the benefits and risk of opioids in treating patients at risk of sleep -disordered breathing for pain and dyspnea *J Opioid Manag* 2017 May/June;13(3):183-196
20. Bales H, McDonald J, Smallwood N, Manser R. Opioids for the palliation of refractory breathlessness in adults with advanced disease and terminal illness. *Cochran Database Syst Rev*. 2016 Mar 31
21. Currow DC, McDonald C, Oaten S, et.al. Once-daily opioids for chronic dyspnea: a dose increment and pharmacovigilance study. *J Pain Symptom Manage*. 2011 Sep;42(3):388-99.
22. Oxberry SG, Torgerson DJ, Bland JM, Clark AL, Cleland JG, Johnson MJ., Short-term opioids for breathlessness in stable chronic heart failure: a randomized controlled trial. *Eur J Heart Fail*. 2011 Sep;13(9):1006-12.
23. Ferreira DH, Eckstrom M, Sajkov D, et.al. Extended-Release Morphine for Chronic Breathlessness in Pulmonary Arterial Hypertension- A Randomized, Double-Blind, Placebo-Controlled, Crossover Study. *J Pain Symptom Manage*. 2018 Oct;56(4):483-492.
24. Ekstrom MP, Bornefalk-Hermansson A, Abernethy AP, Currow DC. Safety of benzodiazepines and opioids in very severe respiratory disease: national prospective study. *BMJ*. 2014 Jan 30;348:g445.
25. Marciniuk D, Goodridge D, et al. Managing dyspnea in patients with advanced chronic obstructive pulmonary disease: a Canadian Thoracic Society clinical practice guideline. *Can Respir J* 2011;18(2): 69-78.
26. Rocker GM¹, Simpson AC, Joanne Young BHSc, Horton R, Sinuff T, Demmons J, Margaret Donahue , Hernandez P, Marciniuk D Opioid therapy for refractory dyspnea in patients with advanced chronic obstructive pulmonary disease: patients' experiences and outcomes. *CMAJ Open*. 2013 Jan 24;1(1): E27-36
27. Simon ST, Higginson IJ, Booth S, et.al. Benzodiazepines for the relief of breathlessness in advanced malignant and non-malignant diseases in adults. *Cochran Database Syst Rev*. 2016 Oct 20;10:CD007354.
28. Peoples AR, Bushnow PW, Garland SN, et.al. Buspirone for management of dyspnea in cancer patients receiving chemotherapy: a randomized placebo-controlled URCCOP study. *Support Care Cancer*. 2016 Mar;24(3):1339-47.
29. Lovell N, Bajwah S, Maddocks M, et al. Use of mirtazapine in patients with chronic breathlessness: A case series. *Palliat Med*. 2018 Oct;32(9):1518-1521.

Authors' Affiliations: University of Pittsburgh Medical Center, Division of General Medicine, Section of Palliative Care and Medical Ethics, Pittsburgh, PA

Conflicts of Interest: none

Version History: originally edited by Sean Marks MD; first electronically published in April 2019.

Fast Facts and Concepts are edited by Sean Marks MD (Medical College of Wisconsin) and associate editor Drew A Rosielle MD (University of Minnesota Medical School), with the generous support of a volunteer peer-review editorial board, and are made available online by the [Palliative Care Network of](#)

[Wisconsin](#) (PCNOW); the authors of each individual *Fast Fact* are solely responsible for that *Fast Fact*'s content. The full set of *Fast Facts* are available at [Palliative Care Network of Wisconsin](#) with contact information, and how to reference *Fast Facts*.

Copyright: All *Fast Facts and Concepts* are published under a Creative Commons Attribution-NonCommercial 4.0 International Copyright

(<http://creativecommons.org/licenses/by-nc/4.0/>). *Fast Facts* can only be copied and distributed for non-commercial, educational purposes. If you adapt or distribute a *Fast Fact*, let us know!

Disclaimer: *Fast Facts and Concepts* provide educational information for health care professionals. This information is not medical advice. *Fast Facts* are not continually updated, and new safety information may emerge after a *Fast Fact* is published. Health care providers should always exercise their own independent clinical judgment and consult other relevant and up-to-date experts and resources. Some *Fast Facts* cite the use of a product in a dosage, for an indication, or in a manner other than that recommended in the product labeling. Accordingly, the official prescribing information should be consulted before any such product is used.