



Best Practice Guideline

NURSING CARE OF DYSPNEA: THE 6TH VITAL SIGN IN INDIVIDUALS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) *Guideline supplement*

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Supplement Integration

Similar to the original guideline publication, this document needs to be reviewed and applied, based on the specific needs of the organization or practice setting/environment, as well as the needs and wishes of the client. This supplement should be used in conjunction with the guideline as a tool to assist in decision making for individualized client care, as well as ensuring that appropriate structures and supports are in place.

Background

Since the original publication of this guideline, current epidemiological data indicates that COPD is an increasing health issue worldwide (Canadian Lung Association (CLA), 2009; Petty, 2005). By 2020, The Canadian Lung Association (2008) reports that COPD is expected to be the third leading cause of death worldwide. There appears to be a continuous rise in the incidence and morbidity of COPD in women between the ages of 55 and 74 (CLA, 2008; Lacasse, Brooks & Goldstein, 1999; Li, 2004). At present, nationally, COPD affects 3.9 per cent of men and 4.8 per cent of women (CLA, 2009). The Canadian Lung Association (2008) suggests that COPD affects an estimated 1.5 million Canadians. They further suggest that 1.6 million Canadians 40 years or older may currently have

undiagnosed COPD; thus, in excess of three million Canadians may be living with COPD.

Revision Process

The Registered Nurses' Association of Ontario (RNAO) has made a commitment to ensure that this practice guideline is based on the best available evidence. In order to meet this commitment, a monitoring and revision process has been established for each guideline every three years.

A panel of nurses was assembled for this review, comprised of members from the original development panel as well as other recommended individuals with particular expertise in this practice area. A structured evidence review based on the scope of the original guideline and supported by three clinical questions was conducted to capture the relevant literature and guidelines published since



the original publication. The following research questions were established to guide the literature review:

1. In clients with chronic obstructive pulmonary disease (COPD), what are the effective methods of respiratory assessment in order to identify stable and unstable dyspnea and acute respiratory failure?
2. In clients with COPD, what are the most effective interventions that will help decrease episodes of all levels of dyspnea including acute episodes of respiratory distress?
3. In clients with COPD, what are the educational strategies that will help increase client's knowledge of preventative care in dyspnea and facilitate effective self care behaviour?

Initial findings regarding the impact of the current evidence, based on the original recommendations, were summarized and circulated to the review panel. The revision panel members were given a mandate to review the original guideline in light of the new evidence, specifically to ensure the validity, appropriateness and safety of the guideline recommendation as published in 2005.

Literature Review

One individual searched an established list of websites for guidelines and other relevant content. This list was compiled based on existing knowledge of evidence-based practice websites and recommendations from the literature.

Members of the panel critically appraised ten international guidelines, published since 2004, using the "Appraisal of Guidelines for Research and Evaluation" instrument (The AGREE Col-

laboration, 2001). From this review, eight guidelines were identified to inform the review process:

- Institute for Clinical Systems Improvement. (2009). Diagnosis and management of chronic obstructive pulmonary disease. *Institute for Clinical Systems Improvement*, Ed.7, pg 1-51.
- Management of COPD Working Group. (2007). VA/DoD clinical practice guideline for the management of outpatient chronic obstructive pulmonary disease. Washington (DC): *Department of Veteran Affairs, Department of Defense*, 2, 1-138.
- McKenzie, D. K., Frith, P. A., Burdon, J. G. W. & Town, I. (2006). The COPD-X plan: *Australian and New Zealand guidelines for the management of chronic obstructive pulmonary disease*. Australian Lung Foundation, 1-66.
- O'Donnell, D. E., Aaron, S., Bourbeau, J., Hernandez, P., Marciniuk, D.D., Balter, M., et al. (2007). Canadian Thoracic Society recommendations for management of chronic obstructive pulmonary disease – 2007 update. *Canadian Respiratory Journal*, (Suppl B), 5B-32B.
- O'Donnell, D.E., Aaron, S., Bourbeau, J., Hernandez, A., Marciniuk, D.D., Balter, M. et al. (2008). Canadian Thoracic Society recommendations for management of chronic obstructive pulmonary disease-2008 update. *Canadian Respiratory Journal*, (Suppl A), 1A-8A.
- O'Driscoll, B.R., Howard, L.S., & Davison, A.G. (2008). Guideline for emergency oxygen use in adult patients. *Thorax*, 63(suppl VI), vi1-vi73.

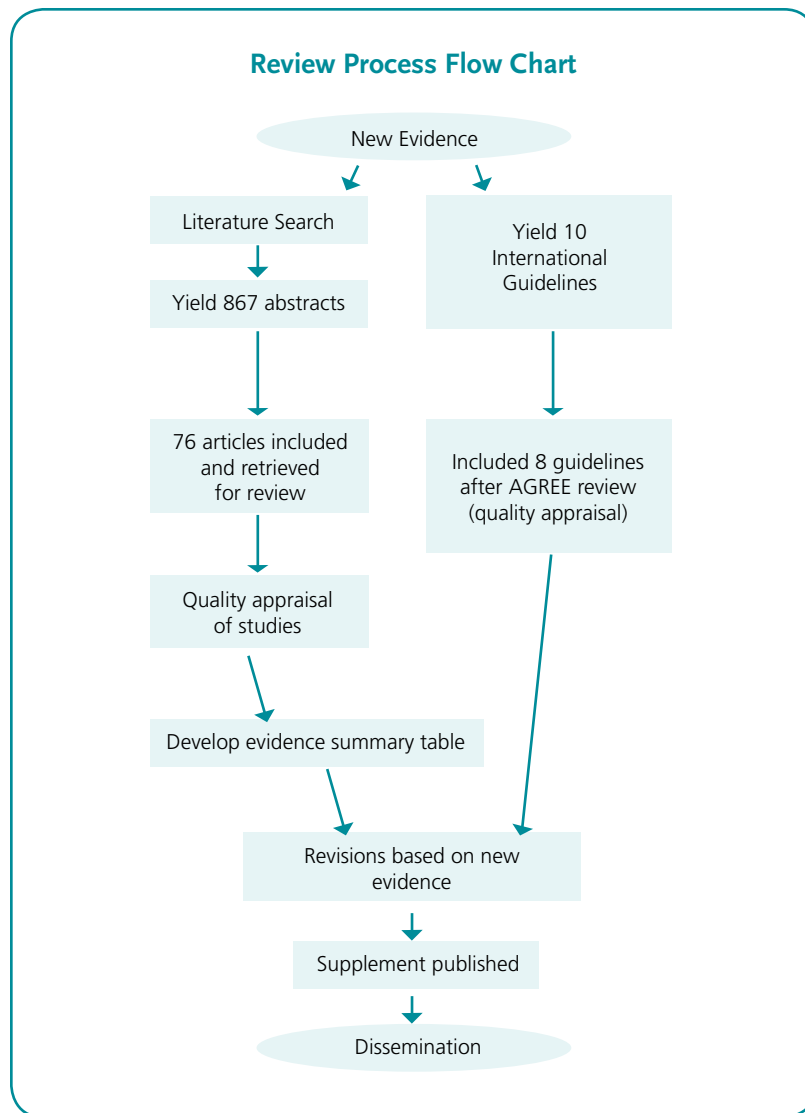
- Qaseem, A., Snow, V., Shekelle, P., Sherif, K., Wilt, T., Weinberger, S. et al. (2007). Diagnosis and management of stable chronic obstructive pulmonary disease: A clinical practice guideline from the American College of Physicians. *Annals of Internal Medicine*, 147, 633-638.

- Registered Nurses Association of Ontario (2007). *Integrating smoking cessation into daily nursing practice*. Toronto, Canada: Registered Nurses' Association of Ontario.

Concurrent with the review of existing guidelines, a search for recent literature relevant to the scope of the guideline was conducted with guidance from the Team Leader. The search of electronic databases, (Medline, CINAHL and EMBASE) was conducted by a health sciences librarian. A Research Assistant (Master's prepared nurse) completed the inclusion/exclusion review, quality appraisal and data extraction of the retrieved studies, and prepared a summary of literature findings. The comprehensive data tables and reference lists were provided to all panel members.

Review Findings

In September 2009, the panel was convened to achieve consensus on the need to revise the existing set of recommendations. A review of the most recent literature and relevant guidelines published since January 1, 2004 does not support dramatic changes to the recommendations, but rather suggest some refinements and stronger evidence for our approach. A summary of the review process is provided in the following flow chart:







Summary of Evidence




The following content reflects the changes made to the original publication (2005) based on the consensus of the review panel. The literature review does not support dramatic changes to the recommendations but rather suggests some refinements and stronger evidence for the approach.

Recommendation 3.0 has been modified to include additional bullet: **Combination Treatments (Level of Evidence = Ia)**.

A new Recommendation 6.0 has been added to expand on the need for nurses working with patients with advanced illness to ensure highest quality of life for person experiencing dyspnea at end-of-life. As a result of this new recommendation, the final point: End-of-life decision-making/advanced directives (Level of Evidence=IV) has been removed from Recommendation 5.0 and the Education, Organization and Policy and Program/Services recommendations numbering has changed to 7.0, 8.0 and 9.0 respectively.

Practice Recommendations

-  unchanged
-  changed
-  additional information
- NEW**  new recommendation

<p>Recommendation 1.0</p> <p>Nurses will acknowledge and accept the patients' self-report of dyspnea. (Level of Evidence = IV)</p>	
<p>Recommendation 1.1 of original guideline on page 22 has changed for the assessment of Present level of dyspnea to differentiate between patients who are able to self-report and patients unable to self-report and the type of measurement scale to be used. An additional assessment parameter, swallowing assessment, has been added. Note: changes are in bold font:</p> <p>All individuals identified as having dyspnea related to COPD will be assessed appropriately (See Figure 1 – COPD Decision Tree). Respiratory assessment should include:</p> <ul style="list-style-type: none"> ■ Level of dyspnea <ul style="list-style-type: none"> • Present level of dyspnea (for patients who are able to self-report) Present dyspnea should be measured using a quantitative scale such as a visual analogue (Appendix C) or numeric rating scale (Appendix D) • Present level of dyspnea (for patients who are unable to self-report) Present level of dyspnea should be measured using a quantitative scale such as the Respiratory Distress Observation Scale (RDOS), (Campbell, 2008), see Appendix Ea. ■ Usual level of dyspnea <ul style="list-style-type: none"> • Usual dyspnea should be measured using a quantitative scale such as the Medical Research Council (MRC) Dyspnea scale (Appendix E) ■ Vital signs ■ Pulse oximetry ■ Chest auscultation ■ Chest wall movement and shape/abnormalities ■ Presence of peripheral edema ■ Accessory muscle use ■ Presence of cough and/or sputum ■ Ability to complete a full sentence ■ Level of consciousness ■ Watch for swallowing difficulties <p style="text-align: right;">(Level of Evidence=IV)</p>	
<p><i>The discussion of evidence for this recommendation found on page 22 of the original guideline has been revised to reflect additional literature support and a new revised paragraph on dyspnea as a subjective symptom as follows:</i></p> <p>Discussion of Evidence</p> <p>On page 22, first paragraph: Patient's descriptors of breathlessness vary depending of the intensity of their dyspnea experience (von Leupoldt et al., 2007). Often the presenting symptom of acute dyspnea is anxiety (von Leupoldt & Dahme, 2007). Nurses may focus on anxiety to the exclusion of dyspnea (Bailey, Collella, & Mossey, 2004). Nurses need to recognize anxiety as an important and potentially measurable sign of invisible dyspnea for patients with acute respiratory distress (Bailey, 2004).</p>	

Although **dyspnea is a subjective experience**, it is characterized by observable behaviours (Campbell, 2008). An inability of the patient to self-report may result in a failure by nurses to identify and appropriately treat this distressing symptom (Campbell, 2009). Campbell (2008a) suggests that stimulation of the “autonomic neurological system produces observational and measurable behaviours” (p. 54). These involuntary responses are elicited sequentially and include: increased heart rate, tachypnea, restlessness, and use of accessory muscles, end expiratory grunting, involuntary nasal flaring and fearful facial expression (Campbell, 2007). The Respiratory Distress Observation Scale (RDOS) is a reliable and valid instrument available to assist nurses in the assessment of dyspnea in patients who are unable to self-report (Campbell, 2008b).

*The discussion of evidence for this recommendation found on **page 23** of the original guideline has been revised to reflect additional literature support and a new final paragraph on the prevalence of GERD in patients with advanced COPD as follows:*

An increased incidence of gastroesophageal reflux (GERD) has been identified in individuals with a diagnosis of COPD (Rodrigues, Ruigmez, Martin-Merino, Johnson & Wallander, 2008). Individuals with advanced COPD have an increased prevalence of asymptomatic GERD (Casanova et al., 2004; Kempainen et al., 2007). Researchers also suggest that the presence of GERD symptoms is associated with increased acute exacerbations (AECOPD) (Gross, Atwood, Ross, Olsewski, & Eichorn, 2009; Rascon-Agular et al., 2006). Impaired co-ordination between the respiratory cycle and swallowing function has been observed by a number of researchers in individuals with moderate to severe COPD (Good-Fratturelli, Curlee & Holle, 2000; Kobayashi, Kubo & Yanai, 2007; Mokhlesi, Logemann, Rademaker, Stangl & Corbridge, 2002). The normal deglutition pattern of exhale-swallow-exhale is often altered in individuals with COPD who frequently inhale rather than exhale following the swallow. This dysfunction may place individuals at increased risk for aspiration as the negative pressure generated by inspiration may pull food or liquid toward the lungs.

Recommendation 1.1, Figure 1: COPD Decision Tree found on page 24 of the original guideline: *Methylxanthines has been removed* from pharmacological agents list in the Nursing Intervention Box under the section for Unstable/Acute as follows:

Figure 1 COPD Decision Tree, under Unstable/Acute section:







NURSING INTERVENTIONS

- Ongoing monitoring of vital signs, pulse oximetry, level of consciousness and respiratory parameters
- **Administration of the following pharmacological agents as prescribed:**
 - Bronchodilators
 - Beta 2 Agonists
 - Anticholinergics
- Corticosteroids
- Antibiotics
- Oxygen
- Opioids (Palliative)
- Preparation for non-Invasive/Invasive Mechanical Ventilation for severe acute exacerbations

Additional Literature Supports

Management of COPD Working Group (2007)

O'Driscoll et al. (2008)

<p>Recommendation 1.2 Nurses will be able to identify stable and unstable dyspnea, and acute respiratory failure. (Refer to Table 1 for descriptors of disease severity as related to progressive clinical symptoms.) (Level of Evidence=IV)</p>	
<p>Additional Literature Support Institute for Clinical Systems Improvement (2009) McKenzie et al. (2006) Qaseem et al. (2007)</p>	
<p>Recommendation 1.3 Every adult with dyspnea who has a history of smoking and is over the age of 40 should be screened to identify those most likely to be affected by COPD. As part of the basic dyspnea assessment, nurses should ask every patient: <ul style="list-style-type: none"> ■ Do you have progressive activity related shortness of breath? ■ Do you have a persistent cough and sputum production? ■ Do you experience frequent respiratory tract infections? (Level of Evidence=IV)</p>	
<p>Recommendation 1.4 For patients who have a history of smoking and are over the age of 40, nurses should advocate for spirometric testing to establish early diagnosis in at risk individuals. (Level of Evidence=IV)</p>	
<p>Recommendation 2.0 Nurses will be able to implement appropriate nursing interventions for all levels of dyspnea including acute episodes of respiratory distress: <ul style="list-style-type: none"> ■ Acknowledgment and acceptance of patients' self-report of present level of dyspnea ■ Medications ■ Controlled oxygen therapy ■ Secretion clearance strategies (Appendix H) ■ Non-invasive or invasive ventilation modalities ■ Energy conserving strategies (Appendix I) ■ Relaxation techniques (Appendix J) ■ Nutritional strategies ■ Breathing retraining strategies (Appendix J) (Level of Evidence=IV)</p>	
<p><i>The discussion of evidence for this recommendation found on page 28 of the original guideline has been revised to reflect additional literature support. Refer to Recommendation 1.1 Discussion of Evidence, new paragraphs on patient descriptors of breathlessness and dyspnea as a subjective experience. These new paragraphs added in 1.1 also apply to 2.0 discussion of evidence under: Acknowledgement and Acceptance of Patients' Self Report of Present Level of Dyspnea.</i></p>	

On **page 33** of the original guideline, Table 2 in the Symptoms and Potential Nutrition Solutions Chart, **utilizing holding chamber** is an added bullet point under Solutions for Oral thrush due to improper inhaled corticosteroid as follows:

Table 2 in the Symptoms and Potential Nutrition Solutions

Symptoms	Solutions
Oral thrush due to improper inhaled corticosteroid use	<ul style="list-style-type: none"> ■ Assess oral cavity ■ Promote good dental hygiene ■ Ensure appropriate medical follow up ■ Ensure adequate rinsing of mouth post inhaled corticosteroid ■ Consider liquid nutritional supplementation if individual is unable to eat ■ Utilize holding chamber

Additional Literature Supports

Garcia, Rocha, Pinto, Lopes, & Barbara (2008)
 Hill et al. (2006)
 Nield, Soo Hoo, Roper, & Santiago (2007)
 O'Driscoll et al. (2008)

+

Recommendation 2.1

Nurses must remain with patients during episodes of acute respiratory distress.
 (Level of Evidence=IV)

✓

Recommendation 2.2

Smoking cessation strategies should be instituted for patients who smoke:

- Refer to RNAO (2007) guideline, Integrating Smoking Cessation into Daily Nursing Practice
- Use of nicotine replacement and other smoking cessation modalities during hospitalization for acute exacerbation.

(Level of Evidence=IV)

✓

Additional Literature Supports

Garcia et al. (2008)
 Hill et al. (2006)
 Holland, Hill, Nehez, & Ntoumenopoulos (2004)
 Institute for Clinical Systems Improvement (2009)
 McKenzie et al. (2006)
 Mota et al. (2007)
 O'Donnell et al. (2007)
 Putt, Watson, Seale, & Paratz (2008)
 Wilson, Fitzsimons, Bradbury, & Elborn (2008)

+

Recommendation 3.0

Nurses should provide appropriate administration of the following pharmacological agents as prescribed:

- (See Appendix L – COPD Medications)
- Bronchodilators (Level of Evidence = Ib)
 - Beta 2 Agonists
 - Anticholinergics
 - Methylxanthines
- Oxygen (Level of Evidence = Ib)
- Corticosteroids (Level of Evidence = Ib)
- **Combination Treatments (Level of Evidence = Ia)**
- Antibiotics (Level of Evidence = Ia)
- Psychotropics (Level of Evidence = IV)
- Opioids (Level of Evidence = IV)



The discussion of evidence for this recommendation found on pages 36 and 37 of the original guideline has been revised to reflect additional literature support and an additional paragraph under Corticosteroids which addresses Inhaled/IV corticosteroids. A new section on Combination Treatments has been added to the discussion of evidence:



Discussion of Evidence

Inhaled/IV Corticosteroids

Corticosteroids are available in inhaled, oral and parenteral forms. The role of inhaled corticosteroids (ICS) in COPD is controversial (O'Donnell et al., 2008) as they do not have consistent effects on airway inflammation, pulmonary function, symptoms, frequency or severity of exacerbation. ICS alone is generally inferior to an ICS and LABA combination.


Combination Treatments

Two combination inhaled corticosteroids (ICS) and long acting bronchodilators (LABA) products are currently available: fluticasone propionate plus salmeterol, and budesonide plus formoterol fumarate dihydrate. Combination treatment allows for a simplified regime. For patients with moderate to severe COPD with persistent symptoms and a history of exacerbations (one or more per year, on average for two years), a combination of tiotropium plus a LABA and ICS therapy product is recommended to improve bronchodilation and lung deflation, to reduce the frequency and severity of exacerbations and to improve health status (O'Donnell et al., 2008).

Additional Literature Supports
 Institute for Clinical Systems Improvement (2009)
 McKenzie et al. (2006)
Bronchodilators:
 Adams, Anzueto, Briggs, Menjoge, & Kesten (2006)
 Akamatsu et al. (2007)
 Ambrosino et al. (2008)
 Baumgartner et al. (2007)
 Cote, Pearle, Sharafkhaneh, & Spangenthal (2009)
 Kawayama et al. (2008)
 O' Donnell et al. (2004)
 Shioya et al. (2008)
 Stockley, Chopra, & Rice (2006)
 Zhou et al. (2006)



<p>Combination treatments</p> <p>Aaron et al. (2007) Calverley et al. (2007) Kardos, Wencker, Glaab, and Vogelmeier (2007)</p> <p>Steroids:</p> <p>Leigh, Pizzichini, Morris, Maltais, Hargreave, & Pizzichini (2006) Sposato, Mariotta, Palmiero, Ricci, Gencarelli, & Franco (2007)</p> <p>Antibiotics:</p> <p>File et al. (2001) Starakis, Gogos, & Bassaris (2004) Swanson, Lainez-Ventosilla, De Salvo, Dunne, & Amsden (2005) Xu et al. (2006)</p>	
<p>Recommendation 3.1</p> <p>Nurses will assess patients' inhaler device technique to ensure accurate use. Nurses will coach patients with sub-optimal technique in proper inhaler/device technique (Appendix M – Device Technique).</p> <p style="text-align: right;">(Level of Evidence=Ia)</p>	✓
<p>Recommendation 3.2</p> <p>Nurses will be able to discuss the main categories of medications with their patients including:</p> <ul style="list-style-type: none"> ■ Trade and generic names ■ Indications ■ Doses ■ Side effects ■ Mode of administration ■ Pharmacokinetics ■ Nursing considerations <p>(See Appendix L – COPD Medications)</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	✓
<p>Recommendation 3.3</p> <p>Annual influenza vaccination should be recommended for individuals who do not have a contraindication.</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	✓
<p>Additional Literature Supports</p> <p>Management of COPD Working Group (2007) Wongsurakiat et al. (2004)</p>	+
<p>Recommendation 3.4</p> <p>COPD patients should receive a pneumococcal vaccine at least once in their lives (high risk patients every 5 to 10 years).</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	✓
<p>Recommendation 4.0</p> <p>Nurses will assess for hypoxemia/hypoxia and administer appropriate oxygen therapy for individuals for all levels of dyspnea.</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	✓
<p>Additional Literature Supports</p> <p>O'Driscoll et al. (2008)</p>	+

<p>Recommendation 5.0 Nurses should support disease self-management strategies including:</p> <ul style="list-style-type: none"> ■ Action plan development (Level of Evidence = Ib) <ul style="list-style-type: none"> • Awareness of baseline symptoms and activity level • Recognition of factors that worsen symptoms • Early symptom recognition of acute exacerbation/infection 	
<p><i>Recommendation 5.0 of the original guideline on page 42 has last bullet point: End-of-life decision making/advanced directives (Level of Evidence = IV) removed.</i></p> <p>Additional Literature Supports Wong et al. (2005)</p>	+
<p>Recommendation 5.1 Nurses should promote exercise training.</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	✓
<p>Recommendation 5.2 Nurses should promote pulmonary rehabilitation.</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	✓
<p>Additional Literature Supports Boxall, Barclay, Sayers, & Caplan (2005) Donesky-Cueco, Janson, Neuhaus, Neilands, & Carrieri-Kohlman (2007) Guell et al. (2008) Maltais et al. (2008) McKenzie et al. (2006) Romagnoli et al. (2006) Wong et al. (2005)</p>	+
<p>Recommendation 6.0 Nurses working with patients with advanced illness causing dyspnea and their families will have the appropriate knowledge and skills to:</p> <ul style="list-style-type: none"> ■ encourage and promote ongoing dialogue regarding patient values, desired outcomes and treatment options, ■ ameliorate dyspnea and other distressing physical, emotional, social and spiritual symptoms using appropriate integrative and pharmacological approaches, ■ work collaboratively with an inter-professional team to ensure the highest quality of life possible for the person experiencing dyspnea at the end-of-life. <p style="text-align: right;">(Level of Evidence=IV)</p>	NEW
<p><i>The new recommendation and discussion of evidence follows after Key Points box on page 46 of the original guideline to reflect additional literature support with the addition of the paragraph below:</i></p> <p>Discussion of Evidence To date, there has been little research examining end-of-life care in patients with advanced COPD (Goodridge et al., 2008, 2009). Nevertheless, improving the quality of end-of-life care in individuals living with COPD is a high priority (Goodridge et al., 2008, 2009; Rucker et al., 2007). Patients with advanced COPD have special palliative care needs as their final years are characterized by progressive functional decline, poor quality of life, increasing dependency on informal caregivers and on the health care system as a result of incapacitating</p>	NEW

breathlessness (Rocker et al., 2007). Attention to the management of dyspnea, anxiety and treatment decision-making are priority concerns when providing end-of-life care to patients with COPD (Goodridge et al.; Spence, 2009).









While any person with a serious illness may experience diminished decision-making capacity and incur the risk of receiving health care inconsistent with their preferences, older adults are particularly vulnerable to receiving unwelcome and inappropriate curative care (Somogyi-Zalud, Zhong, Hamel, and Lynn, 2002; Winzelberg, Hanson, and Tulsy, 2005). When it eventually becomes clear that dying is inevitable, rapidly hastening cognitive impairment and severe disability make it impossible to ascertain with any accuracy the wishes and preferences older dying persons may have about their treatment (Dunstan, 1996). Up to 75% of hospitalized patients lack decision-making capacity when urgent choices about initiating, maintaining or discontinuing life-sustaining therapies should be made (Bedell and Delbanco, 1984; Dunstan, 1996; Reilly, Wagner, and Magnussen, 1994).




In spite of dyspnea being often poorly controlled and incapacitating in advanced stage COPD (Gore, Brophy, and Greenstone, 2000), access to supportive services such as palliative care services in hospital or at home is much more limited for these individuals than for persons with cancer (Currow, Agar, Sanderson and Abernethy, 2008; Goodridge, et al., 2008). Because many persons with advanced COPD have developed trusting relationships with nurses in community and hospital settings, it is important for these nurses to develop skill and knowledge in the provision of palliative care. Nurses should ensure that end-of-life care planning (which may include the completion of advance directives) occurs in a culturally safe manner for all patients with serious illness. End-of-life care planning should include dialogue about surrogate decision-makers, resuscitation, emergency treatment (including intubation) and ongoing mechanical ventilation, and be initiated as early as possible in the course of the illness before the end-of-life. Advance Care Planning (ACP) is the process by which a person considers options about future health care decisions and identifies what his or her wishes are (Canadian Hospice and Palliative Care Association and Bruyere Continuing Care [CHPCA], 2009). End-of-life care planning may be initiated at diagnosis, if appropriate to the patient's circumstances. Additional triggers for end-of-life care planning include situations where: there is serious impairment of functional status; the patient is asking questions salient to the end-of-life; or when the provider would not be surprised if the patient died in the next 12 months (Goodridge, Marciniuk, Brooks, van Dam, Hutchinson, and Bailey, et al., 2009; Rocker et al., 2007), see **Appendix P-a**.


There is some evidence supporting the use of opioids for the treatment of dyspnea with individuals in the end stages of COPD (Currow, Plummer, Frith, and Abernethy, 2007; Jennings, Davies, Higgins, Gibbs, and Broadley, 2002; Rocker et al., 2007). Rocker et al. (2009) stress the usefulness of very small doses of opioids (start low, go slow), when conventional treatments have been optimized. Patients with advanced COPD and their health care providers, however, have yet to benefit from the breadth of rigorous research studies that have been conducted among their cancer counterparts (Rocker et al., 2009). Although its use is associated with some side effects, a number of randomized trials and a meta-analysis suggest that oral opioids reduced the sensation of dyspnea. The efficacy of nebulized opioids has not been demonstrated for management of dyspnea. Oral and parenteral routes continue to be recommended as a route of administration (Foral, Malesker, Huerta, and Hilleman, 2004).

Additional Literature Supports:
Lanken et al. (2008)



<p>EDUCATION RECOMMENDATION: Changes to 7.0 in numbering starting on page 46 of the original guideline with addition of NEW Practice Recommendation 6.0.</p>	
<p>Recommendation 7.0 Nurses working with individuals with dyspnea related to COPD will have the appropriate knowledge and skills to:</p> <ul style="list-style-type: none"> ■ Recognize the importance of individual’s self report of dyspnea ■ Provide COPD patient education including: <ul style="list-style-type: none"> • Smoking cessation strategies • Pulmonary rehabilitation/exercise training • Secretion clearance strategies • Breathing retraining strategies • Energy conserving strategies • Relaxation techniques • Nutritional strategies • Role/rationale for oxygen therapy • Role/rationale for medications • Inhaler device techniques • Disease self-management and action plans • End-of-life issues ■ Conduct appropriate referrals to physician and community resources <p style="text-align: right;">(Level of Evidence=IV)</p>	
<p>Additional Literature Supports Institute for Clinical Systems Improvement (2009) McKenzie et al. (2006)</p>	
<p>ORGANIZATION RECOMMENDATIONS: Changes to 8.0 in numbering starting on page 47 to 49 of the original guideline with addition of NEW Practice Recommendation 6.0.</p>	
<p>Recommendation 8.0 Organizations must institutionalize dyspnea as the 6th vital sign.</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	
<p>Recommendation 8.1 Organizations need to have in place COPD Educators to teach both nurses and patients.</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	
<p>Recommendation 8.2 Organizations need to ensure that a critical mass of health professionals are educated and supported to implement the COPD BPG in order to ensure sustainability.</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	
<p>Recommendation 8.3 Organizations will ensure sufficient nursing staff to provide essential care, safety and support for individuals with all levels of dyspnea.</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	

<p>Recommendation 8.4</p> <p>Organizations should have available sample medication delivery devices, spacer devices, sample templates of action plans, visual analogue scales, numeric rating scales, MRC scales and patient education materials.</p> <p>(Level of Evidence=IV)</p>	
<p>Recommendation 8.5</p> <p>Organizations need to have in place best practice guideline specific strategies to facilitate implementation.</p> <p>Organizations may wish to develop a plan for implementation that includes:</p> <ul style="list-style-type: none"> ■ A process for the assessment of the patient population (e.g., numbers, clinical diagnostic practices, co-morbidities, average length of stay) of individuals usually cared for in their institution that are living with dyspnea related to COPD. ■ A process for the assessment of documentation practices related to the monitoring of dyspnea (usual and present dyspnea and dyspnea related therapies (e.g., SPO₂). ■ A process for the evaluation of the changes in the patient population and documentation strategies pre- and post-implementation. ■ A process for the assessment of policies supporting the care of individuals living with dyspnea related to COPD. <p>(Level of Evidence=IV)</p>	
<p>Recommendation 8.6</p> <p>Organizations need to develop specific pre-implementation and outcome markers to monitor the impact of the implementation of this BPG on the care of individuals with dyspnea related to COPD. Organizations may wish to evaluate:</p> <ul style="list-style-type: none"> ■ Nursing knowledge base pre- and post-implementation. ■ Length of time between acute exacerbations of COPD (AECOPD) for specific individuals (perhaps globally represented by the number of acute care admissions and/or use of acute care resources over time pre- and post-implementation). ■ Development of documentation strategies to monitor and enhance care of individuals living with dyspnea related to COPD (integration of usual and present dyspnea on vital sign records within the institution). ■ Development of policies institutionalizing an education program for nurses caring for individuals living with dyspnea related to COPD. <p>(Level of Evidence=IV)</p>	

<p>Recommendation 8.7</p> <p>Nursing best practice guidelines can be successfully implemented only where there are adequate planning, resources, organizational and administrative support. Organizations may wish to develop a plan for implementation that includes:</p> <ul style="list-style-type: none"> ■ An assessment of organizational readiness and barriers to education. ■ Involvement of all members (whether in a direct or indirect supportive function) who will contribute to the implementation process. ■ Dedication of a qualified individual to provide the support needed for the education and implementation process. ■ Ongoing opportunities for discussion and education to reinforce the importance of best practices. ■ Opportunities for reflection on personal and organizational experience in implementing guidelines. <p>In this regard, RNAO (through a panel of nurses, researchers and administrators) has developed the Toolkit: Implementation of Clinical Practice Guidelines, based on available evidence, theoretical perspectives and consensus. The RNAO strongly recommends the use of this Toolkit for guiding the implementation of the best practice guideline on Nursing Care of Dyspnea: The 6th Vital Sign in Individuals with Chronic Obstructive Pulmonary Disease (COPD.)</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	✓
<p>PROGRAM/SERVICES RECOMMENDATIONS: <i>Changes to 9.0 in numbering starting on page 49 to 50 of the original guideline with addition of NEW Practice Recommendation 6.0.</i></p>	
<p>Recommendation 9.0</p> <p>Pulmonary rehabilitation programs must be available for individuals with COPD to enhance quality of life and reduce healthcare costs.</p> <p style="text-align: right;">(Level of Evidence=Ia)</p>	✓
<p>Recommendation 9.1</p> <p>Palliative care services must be available for individuals and their carers living with COPD.</p> <p style="text-align: right;">(Level of Evidence=III)</p>	✓
<p>Recommendation 9.2</p> <p>Nursing research related to interventions for individuals with COPD must be supported.</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	✓
<p>Recommendation 9.3</p> <p>All Nursing programs should include dyspnea associated with COPD as one context for learning core curricula concepts.</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	✓
<p>Recommendation 9.4</p> <p>Funding regulations for oxygen therapy must be revisited to include those individuals with severe dyspnea, reduced ventilatory capacity and reduced exercise tolerance who do not qualify under the current criteria.</p> <p style="text-align: right;">(Level of Evidence=IV)</p>	✓

The Review Panel has identified updates to some appendices. Appendix L: **COPD Medications** and Appendix M: **Device Technique** each have sections updated. **Two new Appendices** have been added to the original document as follows:

- **Appendix Ea: Respiratory Distress Observation Scale (RDOS),**
- **Appendix Pa: Consensus statements regarding process indicators of quality of end-of-life care.**

Appendix Ea: Respiratory Distress Observation Scale (RDOS): To follow in section after Appendix E on page 95 of the original guideline.

Variable	0 points	1 point	2 points	Total
Heart rate per minute (auscultated)	Baseline to +5	Baseline + 6 -10 beats	Baseline +> 10 beats	
Respiratory rate per minute (auscultated)	Baseline to +3 breaths	Baseline + 4-6 breaths	Baseline +>6 breaths	
Restlessness: nonpurposeful movements	None	Occasional Slight movements	Frequent movements	
Accessory muscle use: rise in clavicle during inspiration	None	Slight rise	Pronounced rise	
Grunting at end-expiration: guttural sound	None		Present	
Nasal flaring: involuntary movement of nares	None		Present	
Look of fear	None		The upper iris is visible, the teeth are visible, the teeth are not parted, there are lines in the forehead, the eyebrows are flat, the eyebrows are raised, there are no wrinkles in the nose	

Reprinted with permission: *Journal of Palliative Care Medicine* 2008, 11(1), Pg.48.

Reference: Campbell, M. L. (2008b). Psychometric testing of a respiratory distress observation scale. *Journal of Palliative Care Medicine*, 11(1), 48.

Appendix L: COPD Medications on pages 114-121 have been revised as follows:

Methylxanthine:

- Page 115 of original guideline under Methylxanthine: **Quibron-T® has been removed** and **24-Hour: theophyllin** has “e”, corrected spelling.

Inhaled/Oral Steroids:

- Page 116 of original guideline **Ciclesonide has been added** under Inhaled/Oral Steroids.

Combination Drugs:

- Page 117 of original guideline under **ipratropium bromide and salbutamol: Combivent MDI 20up ipratropium/120ug salbutamol removed** as no longer available.

Antibiotics:

- Page 118 of original guideline: **telithromycin (Ketek) has been removed from** Macrolides/Anti-infectives.
- Fluoroquinolone/Antibacterial:
 - **New Section added to include moxifloxacin (Avelox)**

Vaccination:

- Page 121 of original guideline: **osteltamivir (Tamiflu) has been removed from** Vaccination and placed in a new category called **Antivirals**.

Anti-Virals (New section):

- **Osteltamivir (Tamiflu) and Relenza added.**

Full chart with revised sections can be found at: <http://www.rnao.org/dyspnea>

Appendix L: Changes have been made to the medication chart found on page 114-121 of original guideline. The chart below is an Abbreviated COPD Medication Chart showing only the categories changed. **Note that the full (all sections) revised Appendix L Medication chart can be found at:** <http://www.rmao.org/dyspnea>

Medications	Actions	Side Effects	Pharmacokinetics	Nursing Considerations
Inhaled Steroids:				
<p>Ciclesonide</p> <p>*Not indicated for COPD at this time</p> <ul style="list-style-type: none"> • Alvesco® MDI 100ug, 200ug 	<ul style="list-style-type: none"> • Ciclesonide is a nonhalogenated, glucocorticoid prodrug that is hydrolyzed to the pharmacologically active metabolite des-ciclesonide following administration. • Des-ciclesonide has a high affinity for the glucocorticoid receptor and exhibits anti-inflammatory activity. 	<p>Same as other inhaled corticosteroids.</p>	<p>Ciclesonide is presented in HFA –134a propellant and ethanol as a solution aerosol.</p> <p>Absorption: > 50% (active metabolite)</p> <p>Distribution: protein binding ≥ 99%, lung deposition - 52%</p> <p>Metabolism: ciclesonide hydrolyzed to active metabolite, des-ciclesonide via esterases in lungs, further metabolism via hepatic CYP3A4 and 2D6</p> <p>Excretion: feces (78%)</p> <p>Half Life: 6 hours</p>	
Fluoroquinolone / Antibacterial:				
<p>moxifloxacin (Avelox)</p> <ul style="list-style-type: none"> • PO/IV 400 mg daily for 7-14 days 	<ul style="list-style-type: none"> • Bactericidal, interferes with DNA replication, repair, transcription and recombination in susceptible gram-negative and gram-positive bacteria, preventing cell reproduction and leading to cell death 	<ul style="list-style-type: none"> • nausea • headache • vomiting • diarrhea • tendon inflammation/rupture 	<p>Absorption: unknown</p> <p>Distribution: crosses placenta</p> <p>Metabolism: liver</p> <p>Excretion: feces, urine</p> <p>Half-Life: 12-13.5 hrs</p>	<p>Allergy to fluoroquinolones</p> <p>Hypokalemia</p> <p>Hepatic impairment</p> <p>Monitor for tendon inflammation/rupture</p>
Antiviral:				
<p>Zanamivir (Relenza)</p> <p>Oral Inhalation</p> <p>5mg/blister (4 blisters per Rotadisk), packaged with Diskhaler inhalation device</p> <p>2 inhalations (10mg) twice daily x 5 days.</p> <p>Begin within 2 days of signs or symptoms</p>	<ul style="list-style-type: none"> • Selectively inhibits influenza virus neuraminidase: by blocking the action of this enzyme, there is decreased viral release from infected cells, increased formation of viral aggregates, and decreased spread of virus 	<ul style="list-style-type: none"> • headache • nausea • diarrhea • bronchospasm-use cautiously with patients with asthma or COPD-Fast acting bronchodilator should be on hand 	<p>Absorption: inhalation</p> <p>Distribution: unknown</p> <p>Metabolism: liver</p> <p>Excretion: feces and urine</p> <p>Half-Life: 2.5-5 hrs</p>	<p>Allergy to any components of the drug.</p> <p>COPD</p> <p>Asthma</p>
<p>oseltamivir (Tamiflu)</p> <ul style="list-style-type: none"> • PO 75 mg x 5 days begin treatment within 2 days of onset of symptoms 	<ul style="list-style-type: none"> • Inhibits influenza virus neuraminidase with possible alteration of virus particle aggregation and release 	<ul style="list-style-type: none"> • headache • fatigue • nausea • vomiting • diarrhea • cough • abdominal pain 	<p>Absorption: rapidly absorbed</p> <p>Distribution: protein binding is low</p> <p>Metabolism: converted to oseltamivir carboxylate</p> <p>Excretion: eliminated by conversion</p> <p>Half-Life: 1-3 hours</p>	

Appendix M: Device Technique

Revised sections:

On page 122:

Section: Medications: Inhalation Devices, **Spiriva® has been removed** in the second bullet for Dry Powder Inhalers:

Medications come in many forms. However most often they are taken by the inhaled route:

- Metered Dose Inhaler (puffer)
- Dry Powder Inhalers (Turbuhaler®, Diskus®, Diskhaler®, HandiHaler®)
- Nebulizer

Section A: Metered Dose Inhalers (MDI) additional information on Advair dose counters has been added as a last sentence of the paragraph (in **bold**):

Metered dose inhalers (MDI), or puffers, deliver a precise dose of medication to the airways when used appropriately. It is very important to have a good technique. A holding chamber or spacer is recommended for use with a MDI, particularly for those not able to use a puffer accurately. To determine whether the puffer is empty: (1) calculate the number of doses used, or (2) invert or shake it close to the ear several times and listen/feel for movement of liquid. One advantage of using the MDI is that it is quite portable. A number of different metered dose inhalers are available. Different pharmaceutical companies manufacture similar medications that are in different inhalers. **Advair has dose numbers on both MDI and Diskus.**

Section B: Dry Powder Inhalers (DPIs) on page 125, Key Point box for dry powder inhalers the last bullet (in **bold**) has been revised:

Key Point

General points of dry powder inhalers include:

- A quick forceful breath in is required to deliver the medications to the lungs, versus a slow breath for MDIs.
- **All DPIs contain a lactose carrier or filler.**

In Section B, under **Proper Use of a Turbuhaler®** on page 125 **points 2, 3 and 6 have been changed** for clarity as follows:

1. Unscrew the cover and remove it.
2. **Holding the device upright, turn the coloured wheel one way (right) & back (left) the other way until it clicks. The inhaler is now ready to use. Once you have done this, do not shake or turn the Turbuhaler® sideways or upside down as the medication will be lost.**
3. **Breathe out, away from the Turbuhaler® mouthpiece.**
4. Place the mouthpiece between your lips & tilt your head back slightly.
5. Breathe in deeply and forcefully.
6. **Remove the Turbuhaler® from your mouth while holding your breath. Continue holding your breath for about 10 seconds.**
7. If a second dose is prescribed, repeat the steps.

On page 127:

Appendix M, **Spiriva® has been removed in header: Proper Use of HandiHaler®** and for clarity points 1, 2, 3, 4, (in **bold**) have been revised:

1. **Press the green piercing button completely in and let go to release the dust cap.**
2. **Lift open the dust cap and mouthpiece.**
3. **Right before use, remove only one SPIRIVA® capsule from the blister.**
4. **Place the capsule in the centre chamber. It does not matter which end of the capsule is placed in the chamber.**
5. Close the mouthpiece firmly until you hear a click, leaving the dust cap open.
6. Hold the HandiHaler® device with the mouthpiece upwards and press the piercing button completely in once, and release. This makes holes in the capsule and allows the medication to be released when breathing in.
7. Breathe out completely. Do not breathe into the mouthpiece at any time.

8. Raise the HandiHaler® device to your mouth and close your lips tightly around the mouthpiece. Keep your head in an upright position and breathe in slowly and deeply but at a rate sufficient to hear the capsule vibrate. Breathe in until your lungs are full; then hold your breath as long as is comfortable and at the same time take the HandiHaler® device out of your mouth. Resume normal breathing. To ensure you get the full dose of Spiriva®, you must repeat steps 5 and 6 once again.
9. After you have finished taking your daily dose of Spiriva®, open the mouthpiece again. Tip out the used capsule and dispose.
10. Close the mouthpiece and dust cap for storage of your HandiHaler® device.

Appendix Pa: Consensus statements regarding process indicators of quality of end-of-life care.

To follow in section after Appendix P on page 135 of the original guideline.

Reprinted with permission: Pulsus Group Inc., Canadian Respiratory Journal 2009 16(5); e52.

Reference: Goodridge et al.(2008). End-of-life care for persons with advanced chronic obstructive pulmonary disease:

Report of a national interdisciplinary consensus meeting. *Canadian Respiratory Journal*, 16(5), e51-e53.

1. Initiating the dialogue and end-of-life care planning

- Clinicians should ensure that end-of-life care planning (which may include the completion of advanced directives) occurs in a culturally safe manner for all patients with serious illness. End-of-life care planning should include dialogue about surrogate decision-makers, resuscitation, emergency treatment (including intubation) and ongoing mechanical ventilation, and be initiated as early as possible in the course of the illness before the end-of-life (American College of Physicians)
- End-of-life care planning may be initiated at diagnosis, if appropriate, to the patient's circumstances. Additional triggers for end-of-life care planning include situations in which there is serious impairment of functional status, the patient is asking questions salient to the end-of-life or when the provider would not be surprised if the patient died in the following 12 months
- The topic of end-of-life care planning should be first introduced by the health care provider most trusted by the patient, although physician involvement in the decision-making process is crucial. Families and significant others play a pivotal role in planning for the end-of-life of people with advanced COPD. The involvement of and ongoing dialogue with family members and significant others in end-of-life care planning needs to be strongly encouraged by providers

2. Anticipating the need for end-of-life care

- While accurate prediction of the trajectory of decline for a given individual with advanced COPD is challenging, the primary indicators that the patient is approaching the end-of-life are: a) poor functional status (Medical Research Council dyspnea scale 4 to 5); b) severe acute exacerbation; c) FEV1 less than 30% predicted; d) signs of respiratory failure or pulmonary hypertension; e) body mass index of less than 20kg/m², or f) the patient is starting to wish for or talk about death. Deteriorating psychosocial/cognitive status and a pattern of increasing health care utilization are also useful indicators. Ongoing and focused monitoring (including the use of functional status scales such as the Palliative Performance Scale and the Bode Index) have prognostic value and should be used in both in patient and home care settings

3. Advocating for patient and caregiver preferences as to the site of end-of-life care

- The specific location of both care and death is less important for persons with advanced COPD than implementing end-of-life care in a setting of their choice that accommodates both the patient's and caregiver's unique needs and preferences. The ability to access both inpatient and home support is a critical indicator of the quality of end-of-life care for people with advanced COPD. Alternative settings such as day hospices that may supplement care and relieve caregiver burden need to be explored.

4. Optimizing interdisciplinary team care

- End-of-life care is optimized through continuity of direct care providers and access to an interdisciplinary team. Knowledgeable family physicians, nurse practitioners and case managers are the foundation of quality end-of-life care. Family physicians and home care teams should have access to the resources of both respiratory disease specialists and palliative care teams.
- Enhanced collaboration among respiratory care providers and palliative care services will optimize quality of care. While palliative care specialists have an important role in consulting to provide symptom management family physicians, respiratory specialists and home care providers must be trained to provide quality end-of-life care. Patients and families need clarification about the roles of each team member.
- Specific initiatives designed to optimize end-of-life care for people with advanced COPD must be evaluated. These initiatives include 24 h emergency response teams for community-based patients (including same-day in-home response), dedicated case managers, system navigator models, rapid access to respite and palliative care beds in nursing homes and hospitals, and access to outpatient symptom management clinics. A strong evidence base, generated by high-quality research for best practices in end-of-life care for this population, must be supported by appropriate and sustainable funding.

5. Selecting interventions for patients with advanced COPD

- Subjective symptom assessments (eg, Edmonton Symptom Assessment Scale) need to be routinely conducted in a consistent manner. Multidisciplinary interventions must address the whole person and include psychosocial, spiritual and existential dimensions. Screening for depression, fatigue, anxiety and caregiver burden, as well as appropriate interventions to alleviate these concerns, are critical. The use of opioids to manage dyspnea at the end-of-life may be a beneficial intervention. Interventions designed to enhance exercise tolerance, nutritional status or treat infection must be considered.
- Interventions that may be detrimental to the quality of life of people with advanced COPD include sustained mechanical ventilation, 'emergency decisions' about life-sustaining therapies and cardiopulmonary resuscitation.

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