

B05: Chronic Obstructive Pulmonary Disease

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Introduction

Chronic obstructive pulmonary disease (COPD) is a progressive, degenerative structural lung disorder that results in impaired ventilation. It is the result of persistent lung irritation from any number of causes, including but not limited to smoking, chemical exposure, and repeated infections. It includes progressive lung diseases such as emphysema. Although COPD cannot be cured, it can be managed. Patients with COPD often live with some degree of respiratory distress and frequently seek help during exacerbations of their disease, which are often prompted by respiratory tract infections.

Essentials

- COPD is primarily a disease of ventilation. Treatment should be directed towards improving overall airflow with bronchodilators and steroids.
- Critical hypercarbia can develop in patients with COPD despite high respiratory rates and apparently effective tidal volumes due to changes in the alveoli and pulmonary circulation. Monitor patients closely for signs of impending respiratory failure (a falling level of consciousness, a decreasing respiratory rate, decreasing tidal volumes) and intervene early if necessary.
- Oxygen therapy should be titrated based on what is typical for the patient. Although oxygen should never be withheld from patients who are acutely short of breath, its administration should be considered with due care and attention. Patients living with COPD are often very aware of their oxygen saturation when not in crisis; they, or their caregivers, can be used as a resource to guide oxygen therapy.
- When patients report a history suggestive of respiratory infections, paramedics must use appropriate personal protective equipment and avoid all aerosol generating procedures until protective measures are in place.
- Recognize that treatment options for COPD exacerbations in the prehospital environment are limited. Extrication and transport should be accomplished as soon as practical and safe. Do not exert patients during transfers.

Referral Information

Patients with COPD are at significant risk for recurrent hospital admissions due to exacerbation of their disease. Paramedics should investigate whether patients have action or management plans and assess their compliance with these programs. Self-management strategies have been demonstrated to reduce hospital admissions and improve quality of life for patients living with chronic diseases, including COPD. Referral to community care organizations, either independently or through the emergency department, may be appropriate in these cases. Referral to community paramedicine programs, where available, may also provide significant improvements in quality of life.

Patients who return to baseline norms for their disease may be left at home in consultation with the CliniCall referral pathway, but in general, an exacerbation of COPD that requires paramedic attendance should be further investigated.

Community paramedics should refer to the [CP COPD guidelines](#) for additional management information.

General Information

- Patients with COPD often have comprehensive management plans prescribed by their care team. These plans reflect an individual's condition and describe a series of actions to be taken based on symptoms. Compliance with the action plan, and response to treatment, should form part of any investigation into a COPD exacerbation.
- Complete relief of symptoms, including audible wheezes, is frequently not possible. Although paramedics should be aggressive in attempting to relieve dyspnea, therapeutic end points should be set with reference to the patient's normal condition.
- In the absence of patient-specific information, paramedics should consider observable signs that describe the degree of distress. The ratio of inspiratory time to expiratory time is an important clinical clue to the effectiveness of therapy, as is the tidal volume with each breath.

- Paramedics should consider the possibility of concurrent disease processes and seek evidence to include or exclude other diagnoses.

Interventions

First Responder

- Minimize patient activity and do not exert patients during transfer.
- Titrate supplemental oxygen to SpO₂ 88-92%.
 - → [A07: Oxygen and Medication Administration](#)
- Place patient in position of greatest comfort and easiest breathing (generally sitting up).
- Assist patient with use of own inhalers if prescribed.
- Begin positive pressure ventilation using bag-valve masks if respiratory failure develops. Provide a tight seal with the BVM using a 2-person technique where possible.

Emergency Medical Responder – All FR interventions, plus:

- Transport early.
- Consider ACP intercept.

Primary Care Paramedic – All FR and EMR interventions, plus:

- [Salbutamol via MDI](#).
- Consider CPAP (required CliniCall consult)
 - → [PR09: Continuous Positive Airway Pressure](#)
 - CPAP should be used with extreme caution. Paramedics will wear airborne PPE when administering CPAP. If possible, CPAP should be discontinued prior to entering the emergency department and resumed when the patient is in an appropriate patient care area (i.e. negative pressure room).

Advanced Care Paramedic – All FR, EMR, and PCP interventions, plus:

- [Salbutamol](#) and [ipratropium](#) via MDI.
- Consider dexamethasone.
- Intubate as necessary. CliniCall must be consulted prior to attempting intubation for patients with perfusing rhythms who are breathing spontaneously.

Community Paramedic (CP) Interventions

- → [CP09: Chronic Obstructive Pulmonary Disease](#)

Critical Care Paramedic – All FR, EMR, PCP, and ACP interventions, plus:

- Consider use of BiPAP ventilation.

Evidence Based Practice

[Chronic Obstructive Pulmonary Disease](#)

References

1. Abdo WF, et al. Oxygen-induced hypercapnia in COPD: myths and facts. 2012. [\[Link\]](#)
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3. Beasley R, et al. Thoracic Society of Australia and New Zealand oxygen guidelines for acute oxygen use in adults: "Swimming between the flags." 2015. [\[Link\]](#)
4. COMBIVENT Inhalation Aerosol Study Group. In chronic obstructive pulmonary disease, a combination of

- ipratropium and albuterol is more effective than either agent alone. 1994. [\[Link\]](#)
5. New A. Oxygen: kill or cure? Prehospital hyperoxia in the COPD patient. 2006. [\[Link\]](#)

