



OXYGEN TOLERANCE IN C.O.P.D.



Escambia County, Florida - ALS/BLS Medical Protocol

It is common to find protocols that caution against the use of high concentrations of supplemental oxygen for patients with COPD (emphysema). Such protocols may restrict supplemental oxygen for a spontaneously breathing COPD patient at 2 liters/ minute by nasal cannula. The intent is to avoid inhibition of their spontaneous respiratory efforts.

However, it is desirable to minimize how long a patient, including those with COPD, or serious hypoxia must endure. Shock from hypoxia is life threatening. All patients should receive supplemental oxygen as quickly and as high a concentration as their systems will tolerate when serious hypoxia is present. The clinical problem in the field is determining how much supplementary oxygen a COPD patient can safely tolerate.

The COPD patient regulates their spontaneous ventilation by internal measurement of the oxygen content in their blood. This is different from normal patients who use CO₂ content to guide ventilation. When a COPD patient is hypoxic, ventilation is over-stimulated. If the COPD patient has a large surplus of oxygen, as may occur with inappropriate use of high concentrations of supplemental oxygen, spontaneous ventilation decreases or becomes apneic. An understanding of this simple physiologic control mechanism can be used to safely titrate oxygen administration with COPD patients.

When COPD patients have acute respiratory distress, oxygen may be given in high concentrations until the rapid respiratory rate begins to slow down towards normal. This shows that hypoxia is becoming less severe and respiratory drive is starting to return to normal. The supplemental oxygen dosage may then be reduced in a titrated manner as the respiratory rate returns to normal. This approach allows oxygenation to be restored as quickly as possible and reduces the potential harm of extended hypoxia.

If spontaneous ventilation becomes severely compromised, perform bag-mask ventilations without supplemental oxygen until adequate spontaneous ventilations resume. If the spontaneous ventilation becomes further compromised from an acute respiratory emergency, and not from excessive oxygen, assist ventilations with supplemental oxygen. These two situations may be distinguished from one another by signs of severe hypoxia such as cyanosis, pallor, or diaphoresis. These would indicate acute respiratory distress. If there is uncertainty about whether or not to give oxygen, always give the oxygen and be ready to assist ventilations as needed. This will be less dangerous than withholding oxygen from a patient that may be in desperate need of it.



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Approved by:


Charles Neal, D.O. Medical Director