Asthma and COPD Exacerbations

Severity signs, first treatments, oxygen targets, NIV and ventilating obstructive lungs

ICU Basics
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SEVERE ASTHMA

SEVERE	LIFE-THREATENING
Talks in words, sits hunched forward	Drowsy, confused, silent chest
RR over 30, HR over 120	Bradycardia, hypotension, poor effort
SpO_2 under 90%, peak flow 50% or less	Normal or rising $PaCO_2$: the patient is tiring

- Albuterol, repeated or continuous, plus ipratropium
- Oxygen to SpO_2 93–95% in adults
- Systemic steroids early (prednisone 40–50 mg or IV equivalent)
- IV magnesium 2 g over 20 min for severe attacks
- Not helped: routine antibiotics, sedatives, theophylline

EXAM TIP A 'normal' $PaCO_2$ of 40 in a wheezing, tachypneic patient is ominous: expect it to be low. Prepare for intubation.

COPD EXACERBATION

- Short-acting bronchodilators (albuterol with or without ipratropium)
- Prednisone 40 mg for 5 days
- Antibiotics if sputum is more purulent plus more dyspnea or volume, or if ventilated
- Oxygen to SpO_2 88–92%: higher targets raise $PaCO_2$
- Bilevel NIV for pH 7.35 or less with $PaCO_2$ over 45; cuts intubation and death

SAFETY High-flow oxygen in CO_2 retainers worsens hypercapnia (V/Q mismatch and the Haldane effect), not only by blunting drive.

VENTILATING OBSTRUCTED LUNGS

- Goal: time to exhale. Low rate (10–14), Vt 6–8 mL/kg PBW, high inspiratory flow, short inspiratory time
- Accept permissive hypercapnia (pH over about 7.20)
- Check auto-PEEP (end-expiratory hold) and plateau pressure (under 30)
- Ketamine is a useful induction drug in asthma (bronchodilates)

SAFETY Sudden hypotension after intubation: air trapping or tension pneumothorax. Disconnect from the ventilator briefly to let air out, then reassess.

EXAM TIP High peak with a normal plateau = airway resistance (bronchospasm); treat with bronchodilators, not more pressure.

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