

Acute Cardiogenic Pulmonary Oedema (ACPO)

Presentation: Acute respiratory distress, pink frothy sputum, clinical signs of pulmonary oedema, significantly unwell (ie significantly deranged obs/severe breathlessness)

Investigations:

ABG
CXR
ECG
Bloods inc. troponin
Consider urgent echo

Check NIBP at least every 2.5 mins after IV nitrate

Manage patient in resus
High-flow O₂ (15L/min) if Sao₂<94%
Sit patient up
Consider/treat reversible causes

IV furosemide bolus 50 mg (higher or repeated doses if not naive to diuretics)

If no CI to nitrates and SBP > 110:
Nitrate bolus: either SL/buccal GTN
Or 2mg IV GTN (do not flush cannula afterwards: to avoid IV line deadspace when used for subsequent infusion)

Reassess after 5 mins:
BP, RR, O₂ sats, clinical condition

If no improvement + SBP > 110
Commence GTN infusion:
Start at 0.6-2 mg/hr (depending on BP) then titrate up by 1-2mg/hr every 5 mins until clinical response
Ensure SBP remains >100 on infusion, stop / reduce rate if drops

Reassess

If no improvement at 30 mins:
Consider CPAP/HFNO (can use sooner if very hypoxic)
Revisit reversible causes
Involve ED senior / cardiologist / ITU
Consider invasive ventilation
Consider alternate diagnoses (e.g. PTE, pneumonia, ARDS)

Reversible Causes:

- Arrhythmia: DCC / pacing
- Ischaemia/MI: Standard Rx of ACS, urgent cath lab / thrombolysis for AMI
- Acute mechanical cause eg valvular dysfunction: urgent ECHO
- Severe anaemia/thyrotoxicosis

Contraindications to Nitrates:

- Hypotension
- Fixed cardiac output states e.g. HOCM, severe AS/MS
- Hypovolaemia
- Use of phosphodiesterase inhibitors (e.g. Viagra) in past 24hrs

Nitrates:

- Cannula + bung will have filling volume of ~0.2 - 0.3mls – will need to prime line if IV bolus not already given
- Note higher doses / faster titration than on previous GTN protocol, IV bolus can be given (MEDUSA says not)

Opiates:

- Helpful in some patients to reduce anxiety / SOB or for myocardial ischaemia, but use with caution as may worsen respiratory failure

Cardiogenic Shock:

- Hypotension and heart failure = cardiogenic shock (high morbidity / mortality): involve ED senior & cardiologist, urgent ECHO, revisit reversible causes (see above), consider inotropes in selected patients, consider ceilings of treatment

Further learning: <https://www.rcemlearning.co.uk/references/cardiogenic-pulmonary-oedema/>
<https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Acute-and-Chronic-Heart-Failure>

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