

Pulmonary Critical Care

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COVID Considerations:

Immediate isolation is needed, review institutional protocols. In the ICU:

- 1) Can you skip the chest radiograph (CXR) and make a diagnosis (dx) with the physical exam (↓ risk of contaminated equipment)?
- 2) Minimize bronchoscopy (aerosolization risk) and use only if absolutely needed (lung volume loss, not just secretions)
- 3) Noninvasive
- 4) Some unconfirmed reports of COVID-19 patients requiring substantial sedation when intubated (↑ air hunger), but minimize use if possible

Hypoxia:

- **Consider dx of COVID-19 in all patients who present with hypoxia without other apparent cause during peak periods of disease activity.**
 - Very low O₂ saturation (SaO₂) seen in COVID-19 cases
 - Consider using clinical condition in lieu of SaO₂ to guide decision for intubation
- **Management of hypoxia in the ICU setting mirrors that in operating room (OR) algorithms, with a few additional items including checking arterial blood gases (ABG) and CXR**
 - ddx → ↓ FiO₂, hypoventilation, V/Q mismatch, shunt, ↓ diffusion
 - ↑ Vol (crackles, neck veins) → CHF or iatrogenic vol overload → **IV furosemide**, trial **NIPPV (caution in COVID-19 due to risk of aerosolization)**, fix rhythm, fix HTN if concurrent; consider **cardiac ischemia w/u**
 - Wheezes → Anaphylaxis → as you would in the OR; also, COPD/asthma
 - **COPD: nebs** (albuterol prn, ipratropium q4-6h), **prednisone** 40 mg qd x5d, d/w ICU antibiotics; Asthma: continuous **albuterol neb**, heliox
 - Tachycardia → consider PE, revised Geneva score, **CTA (IV contrast)**, LE doppler to r/o DVT if CT not available, start **heparin gtt** per protocol, **RV support**
 - Tachycardia + Hypotension → r/o tamponade
 - ↓ BS → PTX, effusion, atelectasis, PNA → u/s or CXR can r/o PTX, effusion
 - Lobar atelectasis → Mucus plug → bronch (avoid in COVID-19 cases)
 - Fever, ↑ WBC, infiltrate → **PNA also r/o respiratory viruses, including influenza, SARS-CoV-2** cultures before abx! **Consider if patient needs isolation and staff need PPE, keep low threshold of suspicion.**
 - VAP (ventilator-associated PNA) → **BCx x2, tracheal aspirate/BAL, empiric abx vancomycin (cover MRSA), cefepime or piperacillin/tazobactam (cover gram-negative including PsA)**

- Rates of bacterial co-infection low in COVID-19 (8.1% of critically ill patients)¹
 - ↓ breathing → r/o **opioid o/d** → naloxone 0.04-0.4 mg titrated to effect
- **Hypercarbia: see opioid o/d, PE, COPD/asthma (above)**
 - ddx → ↑ **dead space, V/Q mismatch, ↑ CO₂ production (fever, MH)**
 - **Other emboli: air, fat, AFE** → support RV → dobutamine or epi if hypotension
- **Primer: injured lungs and ARDS**
 - Lung Injury → ↓ Compliance → ↓ TV for same pressure or ↑ pressure for same TV
 - Lung protection: 1) prevent overstretching stiff lungs (↓ TV); 2) prevent pressure injury to lung (↓ P_{plateau}, ↓ driving pressure); 3) prevent opening/closing of alveoli (↑ PEEP, recruitment); 4) treat other injuries
 - Lung protective ventilation → see Ventilation section
- **Lung rescue strategies**
 - **Prone positioning may improve outcomes² and has been increasingly described in COVID-19^{3,4}**; must involve entire/ dedicated team and proper PPE
 - **Early paralysis with NMBD** for 48 h may be indicated^{5,6}
 - **Sedation: see Neuro section, consider short-acting drugs and avoid benzodiazepines**
 - **Conservative fluid tx / early diuretics**
 - **Trial of inhaled pulmonary vasodilator (epoprostenol / iNO)** to ↓ shunt → stop if no improvement or worsening (does not change mortality)
 - **Consider short course of dexamethasone 10 mg IV daily with onset of ARDS⁷**
 - **Refractory hypoxemia/hypercarbia:** see ECMO section
- **PPx**
 - **VAP PPx: HOB >30, sedation interruption/SBT ≥ qd (d/w ICU consult)**
 - **Stress ulcer PPx, DVT PPx: see Best Practices section**
- **Team Approach**
 - **Nurses, Respiratory Therapists, Pharmacists, Nutritionists, Palliative Care Consultants** will all assist with management and should be involved in decisions
- **Goals of Care:** address early and often, particularly when considering intubation in patients with ↑ age / ↑ comorbidities

References

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