

**COVID-19 STANDARD OPERATING PROCEDURE
AEROSOL GENERATING PROCEDURES
AIR AMBULANCE PROGRAM**



Aerosol Generating Procedures

AIRWAY MANAGEMENT DECISIONS FOR COVID-19

For COVID-19 patients (diagnosed or presumed) who require high levels of oxygen to maintain saturations, consider early intubation after consultation with MCP.

<p>Supplemental Oxygen (Sats >90%) <i>May be lower depending on the patient's underlying disease – consult with MCP to determine individual patient requirements.</i></p>	<p>If the patient's oxygen saturation is greater than 90%, do not administer supplemental oxygen</p>
<p>Airway Interventions (Sats <90%) <i>May be lower depending on the patient's underlying disease – consult with MCP to determine individual patient requirements.</i></p>	<p>Interventions in order of least aerosolizing to most aerosolizing:</p> <ol style="list-style-type: none"> 1. Administer oxygen via nasal prongs with a surgical mask over top, utilizing lowest flow possible to maintain sats ≥90%, maximum flow rate of 6 L/min <p>Before proceeding to any of the interventions below, ensure consultation with MCP:</p> <ol style="list-style-type: none"> 2. CPAP if no contraindications as per policy 3. BVM with passive oxygenation only – do not squeeze the bag, maximum flow rate of 10 to 15 L/min 4. BVM with bagging (try to avoid/minimize) 5. I-gel only with no spontaneous respirations. I-gel is to be the first advanced airway utilized. 6. Endotracheal intubation only if all other interventions (including i-gel) fail. Bougie is to be utilized, and most experienced provider to attempt.
<p>Expert RRT Consultant Patrick Dugas</p>	<p>Patrick Dugas, RRT, may be contacted via MCMC (on a recorded line) to consult regarding mechanical ventilation strategies based on individual patient presentation. Please ask the MCP whether or not they wish to be included in the conference and proceed as directed.</p> <p>Patrick would like a call to notify him of a patient transfer before departing base so he can be sure to be alert and available.</p>

ADDITIONAL INFORMATION

Aerosols	Do not administer aerosolized medications. Use MDI where required. Use MDI with spacer and mask or MDI via ventilator circuit
CPAP	Ensure tight seal with mask Use lowest oxygen flow to achieve saturations of at least 90% Ensure a filter is used in the set-up
Nasal Cannula	Should not be used under NRB mask or under CPAP mask or under BVM. Interferes with seal and allows for more aerosolization of particles Use surgical mask over the nasal cannula to prevent aerosolization
Bag-valve-mask	If active (bagging) assistance is required, utilize two person technique where possible (one to hold mask, one to squeeze bag) Ensure proper adjuncts are used: MDI adapter, filter, ETCO2 adapter, extension tubing, BVM
Open Suctioning (not inline)	Do not suction the patient unless patient is near death due to inability to manage secretions
Suctioning (inline)	Inline suction can be utilized for ETI or i-gel patients, however should be done only for life-threatening obstruction thought to be caused by secretions
Awake patient with hypoxia	Sedation can be used to manage hypoxic agitation Avoid over-sedation to ensure spontaneous respirations are maintained – in order to minimize requirements for unnecessary advanced airway interventions
i-gel	Should not be used for spontaneously breathing patients No pre-oxygenation for i-gel, proceed directly to insertion of appropriate device. ETI to be used only if/when i-gel fails Avoid inserting fingers in patient's mouth to open the airway, use an adjunct such as oral airway, laryngoscope, etc where possible Ensure proper adjuncts are used: in-line suction (if applicable), MDI adapter, filter, ETCO2 adapter, extension tubing, BVM or vent circuit
ETI	Should not be used for spontaneously breathing patients No pre-oxygenation for ETI, proceed directly to insertion of appropriate device. ETI to be used only if/when i-gel fails Avoid inserting fingers in patient's mouth to open the airway, use an adjunct such as oral airway, laryngoscope, etc. where possible Ensure proper adjuncts are used: in-line suction, MDI adapter, filter, ETCO2 adapter, extension tubing, BVM or vent circuit
CPR	Apply surgical mask to patient prior to beginning chest compressions. Insert i-gel as early as possible – following first or second round of chest compressions
Lidocaine spray	Avoid using
Receiving Facility	Ensure receiving facility is notified of impending arrival of COVID positive/presumed positive patient.

BVM Set Up



- BVM
- PEEP Valve
- Extension tubing/swivel
- ETCO2 inline adapter
- Filter
- MDI adapter
- Mask

i-gel Set Up



- BVM
- PEEP Valve
- Extension tubing/swivel
- ETCO2 inline adapter
- Filter
- MDI adapter
- In-line suction
- i-gel

ETI Set Up



- BVM
- PEEP Valve
- Extension tubing/swivel
- ETCO2 inline adapter
- Filter
- MDI adapter
- In-line suction
- ETT

MECHANICAL VENTILATION

<p>Follow ARDS guidelines (High FiO₂, High PEEP, High RR, low Vt)</p>	<ul style="list-style-type: none"> • Permissive hypercapnia (accepting higher EtCO₂ values) • Accepting lower SpO₂ values (85-90%) • Limiting to no suctioning • Avoid paralytics if possible (case by case basis)
<p>Initial Settings (intubated with ETT)</p>	<ul style="list-style-type: none"> • A/C Volume • Vt – 6 mLs/kg IBW (4 - 5 mLs/kg for severe cases) • Set RR - 20 (or somewhere within 16-25 bpm range) • PEEP - 10 • FiO₂ - 1.0
<p>Initial Settings (intubated with i-gel)</p>	<ul style="list-style-type: none"> • If using iGel, consider using PCV mode if PIP is > 25 cmH₂O. <p>Use same parameters as above:</p> <ul style="list-style-type: none"> • Vt – 6 mLs/kg IBW (4 - 5 mLs/kg for severe cases) • Set RR - 20 (or somewhere within 16-25 bpm range) • PEEP - 10 • FiO₂ - 1.0
<p>Ventilation Strategies</p>	<p>Focus more on Pplat instead of PIP (As PIP will likely be higher)</p> <ul style="list-style-type: none"> • Once setup, perform Pplat as soon as appropriate. (remember, can only be done in VC mode) • We want Pplat < 30cmH₂O • Consider switching to PCV if needed, if Pplat > 30 and adjust RR and/or Ti as needed to compensate for same MV
<p>Advanced considerations</p>	<ul style="list-style-type: none"> • SpO₂ worsening below 85% with 100% O₂ and 10 PEEP, increase PEEP by 1 – 2 at a time if needed and re-assess • You should see an improvement in oxygenation. If they respond well to PEEP increases, the PIP will likely be in the same range since more lung is effectively being recruited. EtCO₂ should be close to same range. Those who respond to PEEP usually respond very well to higher PEEP settings. • If the patient does not improve oxygenation and has: <ul style="list-style-type: none"> ○ a sudden jump in EtCO₂, ○ and/or has a sudden large increase in PIP (VC mode) ○ or decrease in Vt (PCV mode), ○ and/or a drop in systolic BP, • Go back to previous PEEP setting and hold. (this would indicate that they may not be responding to PEEP and their compliance is poor, (the diseased "crispy-sticky" lungs are already stretched out which puts them at risk for lung over-distension and barotrauma) They would then likely need advanced treatment which we are not able to provide during transport such as prone position, or ECMO or both.