

## Ambulance specific considerations

### Ambulance Cleaning / Disinfection

1. An [EPA-registered disinfectant](#) should be used to clean and disinfect the back of the ambulance after transporting a persons under investigation for COVID-19. Ensure a sufficient supply of disinfectant wipes are available for both the crew (for the doffing procedure) and the ambulance and equipment. A facemask and eye shield should be used if disinfecting with a spray bottle; if using wipes, a gown and gloves are sufficient.
  - a. **\*\*NOTE\*\*** In addition to hospital-grade disinfectants such as Cavicide and Sani-Wipes, several surface cleaners/disinfectants common in the Navy stock system (such as “Spray Nine”) are now listed on the EPA’s “List N.”
2. To the extent possible (i.e. assuming the patient does not require emergent on-the-scene care), the driver of the ambulance should avoid direct contact with the patient. This may reduce the need to clean and disinfect this compartment after each call and preserve supplies (e.g. PPE).
3. Should the driver be required to participate in patient care, they should don appropriate PPE and disinfect the driver compartment after completion of patient care.
4. In an effort to avoid exposing extra personnel, whenever possible, patients should self-ambulate into the ambulance, vice being carried out on a stretcher or stair chair. This assumes the patient is able to walk and does not have contraindications to physical activity (e.g. fractured femur, acute coronary syndrome, respiratory failure, sepsis, altered mental status, etc.)
5. Family members should not be permitted to ride in the ambulance, as they may be carriers of the coronavirus. Exceptions may be made for pediatric patients riding with their parent or guardian.
6. Proper ventilation of the ambulance should be utilized during transport, including ensuring that ventilation is set to not-recycle the air. The rear exhaust fans should be on to draw air away from the cab.
7. The patient compartment should be completely isolated from the driver compartment. Ensure the window between both locations is shut and properly sealed. Have the driver run the cab ventilation fan (A/C or Heat) on high to help prevent air flow into the cab.
8. When dropping off patients, leave the rear doors of the ambulance open to allow for exchange of air out of the patient compartment. It is thought that sufficient air exchange should have occurred to clear out any lingering respiratory droplets in the time it takes to drop off the patient and complete documentation on the scene.

### Airway and Respiratory Treatment Modifications

**\*\*NOTE\*\*** Due to the uncertainty of how some patients with COVID-19 may present (e.g. no fever, primary GI symptoms, etc.), this guidance should be followed for all patients, not just PUIs.

1. Prior experience during the SARS epidemic showed us that the greatest risk of exposure to healthcare providers was the performance of aerosol-generating procedures, and thus, ALL aerosol-generating procedures should be avoided in PUIs. If the EMS clinician feels such a procedure is necessary, and has time to do so, they should contact online medical direction for permission to perform the procedure.
2. Nebulized treatments should be avoided and bronchodilator treatment with MDIs (with spacers) should be substituted.
  - a. Dosing (maximum of 3 doses)

- i. Adults – 8 puffs repeated every 20-30 minutes
  - ii. Pediatrics
    - 1. 5 – 10 kg – 4 puffs every 20-30 minutes
    - 2. 10 – 20 kg – 6 puffs every 20-30 minutes
    - 3. > 20 kg – 8 puffs every 20-30 minutes
  - b. If unable to substitute nebulized albuterol for an MDI, treatments should be administered outside of the ambulance with the crew in full PPE (see below)
  - c. Any active nebulized treatments should be discontinued prior to bringing a patient into the ambulance or emergency department or hospital entrance.
- 3. If local protocols allow, consider using alternative treatments for bronchospasm, asthma, or COPD exacerbations, such as:
  - a. IV Magnesium sulfate
    - i. Adults - 2 g IV infusion over 20 minutes (avoid in patients with renal failure)
    - ii. Pediatrics – 50 mg/kg (max of 2 g) IV infusion over 20 minutes
  - b. IM epinephrine (1:1000 concentration – 1 mg/mL) - for patients with severe exacerbation who are unresponsive to MDI with spacer treatment and / or magnesium infusion
    - i. Adults - administer 0.3 mg IM
    - ii. Pediatrics – administer 0.01 mg/kg IM (max dose 0.3 mg)
- 4. CPAP and Non-invasive positive pressure ventilation should be avoided. Positive pressure generates aerosols which are released into the environment through the exhalation port on the mask.
- 5. Should advanced airway management be required, supraglottic airways are preferred to endotracheal tubes, as this will likely aerosolize fewer respiratory droplets.
- 6. If endotracheal intubation is necessary, and proper equipment is available, video laryngoscopy is preferred over direct laryngoscopy, as this will increase the distance of the operator's face from the patient.
  - a. When intubating, avoid any positive pressure ventilations with a BVM, if at all possible
  - b. If needed to pre-oxygenate the patient, ensure an assistant uses a good two-hand technique to get a firm seal against the patient's face, and attach a HME or HEPA filter to the face mask stem (between the mask and the bag)
  - c. If a bag can be attached your CPAP mask, you could alternatively attach the CPAP mask to the patient's face, attach the filter to the CPAP mask, and then attach the bag. This may negate the need for a 2<sup>nd</sup> assistant to hold a two-handed mask seal. If using this technique, a PEEP valve should be attached to the bag and set at 0 PEEP.
- 7. Should any aerosol-generating procedures need to be performed, all members in the ambulance should have full PPE on
  - a. N95 respirator
  - b. Surgical mask over the respirator (reduces contamination of the respirator if not using a full face shield)
  - c. Goggles or face shield (eye glasses are not sufficient)
  - d. Gown or coveralls
  - e. Surgical cap (to cover hair)
  - f. Double set of gloves (one set under the sleeves of the gown and one set over the sleeves).
- 8. To minimize the spread of droplets in the ambulance, a surgical mask can be placed over nasal cannulas or non-rebreathers.
  - 1. If available, HME or HEPA filters (rated to filter out infectious materials including viruses and tuberculosis) should be attached to a bag-valve mask (place between the face mask and the stem)

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- a. Attach directly to an endotracheal tube or supraglottic airway, and then attach your EtCO<sub>2</sub> detector and bag-valve-mask or ventilator circuit
- b. If your ventilator does not have an inherent HEPA filter, another filter can be placed at the end of the ventilator circuit (the return line of exhaled air), which can filter circulated air returning to the ventilator
- c. These are available through your MTF supply chains.