

	14-0103	Treatment of Potential COVID-19 Patients and All ILI Patients
Nor-Cal EMS Policy & Procedure Manual		Infectious Disease Control
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Approval: Jeffrey Kepple MD – MEDICAL DIRECTOR		SIGNATURE ON FILE

Authority

Health and Safety Code Division 2.5, California Code of Regulations, Title 22, Division 9.

Purpose

The purpose of this policy is to help protect our clinical providers while providing high quality care to our patients. These are unsettling times we are experiencing with the emergence of COVID-19 and the subsequent pandemic. We have been forced to reevaluate our approach to airway management and the treatment of respiratory illnesses. These issues are front and center when we encounter patients who have a cough, fever and difficulty breathing prior to knowing their infectious disease status.

The causative agent of the current pandemic is the Coronavirus which is transmitted by primarily droplets and potentially aerosolized particles. This occurs during airway and respiratory interventions that we routinely perform. There is very limited high-quality data and studies regarding the amount of aerosol generated by various procedures including but not limited to nasal cannula with flow rates great than 6 liters/minute, CPAP, and CPR. We are encouraging you to try and avoid any procedure that may aerosolize particles including but not limited to nasal cannula (greater than 6 liters/minute), non-rebreather mask, beta agonist nebulizer, and CPAP/NIV. This is to be viewed in the light of not jeopardizing the safety and care of your patients.

Procedure

CDC Criteria to Guide Evaluation of PUI for COVID-19

EMS personnel should use their judgment to determine if a patient has signs and symptoms compatible with COVID-19. According to recent studies COVID-19 symptoms include cough (68%), fever (44%), fatigue (38%), sputum production (34%), shortness of breath (19%), sore throat (14%), headache (14%), and other upper respiratory symptoms.

With any respiratory patient that is coughing, sneezing, and/or running a temperature (greater than 100.4 F) or they feel warm by tactile sensation assume they are COVID-19 positive until proven otherwise. Therefore, use full protective PPE for these patients.

When dealing with any respiratory patient please remember that a SaO₂ (oximetry) of between 90 to 92% is completely acceptable if it adequately treats the patient's breathing (oxygenation) issues. Always evaluate the patient's work of breathing and respiratory rate to see whether they need more aggressive care. In many COVID-19 patients they will have SaO₂ in the 80's and the other vital signs will be remarkably normal.

Remember that all advanced airways generate droplet and airborne particles. Please use the most non-invasive technique/device possible.

Here is a list of Aerosol-Generating Procedures/Events. These all require full PPE (N-95 respirators, goggles/face shields, gloves, and gowns).

1. Coughing and/or sneezing.
2. Nasal cannula particularly at greater than 6 liters/minute.
3. Simple and Non-rebreather masks.
4. Nebulized medications.
5. Cardiopulmonary resuscitation (prior to endotracheal intubation, does not include the supraglottic airway placement).
6. Tracheal suctioning.
7. Laryngoscopy.
8. Intubation with either the supraglottic airway or endotracheal tube.
9. CPAP (continuous positive airway pressure) devices.
10. BVM (essential to use two hands while performing to reduce aerosolized particles).

The following are clinical recommendations for your safety while providing excellent patient care.

1. Nor-Cal EMS clinicians will initially evaluate the patient if their clinical condition allows from a distance of 6 feet.
2. Placement of a Nasal Cannula.

- A. Titrate the flow rate until you reach a SaO₂ (oximetry) of between 90 and 92% if possible. Remember that patients who have COPD (chronic obstructive pulmonary disease) may never be able to reach saturations between 90 to 92%. Ask them what their best SaO₂ is on any given day. This does not hold true for asthmatics who may respiratory arrest with relatively good SaO₂. Evaluating the work of breathing for an asthmatic patient is critical. Remember that a slowing respiratory rate in an asthmatic can indicate impending arrest.
 - B. Place a surgical mask over the patient with a nasal cannula. It has been demonstrated that flow rates of greater than 6/liters per minute can generate droplet/airborne particles.
 - C. It has been demonstrated in recent studies that many COVID-19 patients may tolerate lower SaO₂ levels than between 90 to 92%. Again, treat the patient not the values of the monitors.
 - D. Always wear appropriate PPE (personal protective equipment) consisting of gloves, mask, and face shield and/or goggles.
3. Placement of a Non-Rebreather Mask.
- A. This is for patients who don't respond to a nasal cannula and are getting worse from a respiratory standpoint. Titrate the flow rate until you reach a SaO₂ (oximetry) of between 90 and 92% if possible. Remember that patients who have COPD may never be able to reach between 90 to 92%. Ask them what their best SaO₂ is on any given day. This does not hold true for asthmatics who may respiratory arrest with relatively good SaO₂. Evaluating the work of breathing for an asthmatic patient is critical. Remember that a slowing respiratory rate in an asthmatic can indicate impending arrest.
 - B. Place a surgical mask over the patient with a non-rebreather. This will help eliminate the droplet/airborne particles that can leak out at the sides of the mask.
 - C. It has been demonstrated that many COVID-19 patients may tolerate lower SaO₂ levels than between 90 to 92%. Again, treat the patient not the values of the monitors. What are their vital signs and mentation? Do they need more aggressive intervention or not?
 - D. Always wear appropriate PPE (personal protective equipment) consisting of gloves, mask, and face shield and/or goggles.
4. Placement of a CPAP (continuous positive airway pressure) Mask/NIV (noninvasive ventilation).
- A. CPAP/NIV will be avoided if at all possible, based upon the patient's clinical condition. For example, a worsening respiratory status (increasing respiratory rate or nearing respiratory collapse) where all respiratory interventions have not worked.
 - B. Do I think the patient has an exacerbation of obstructive lung disease (COPD) or acute pulmonary edema (CHF)? If not, then CPAP/NIV (non-invasive ventilation) is unlikely to be of significant benefit in the first place (in pneumonia specifically).ⁱ
 - C. Try to reserve this airway intervention for CHF (congestive heart failure) and COPD (chronic obstructive pulmonary disease) patients.
 - D. Evaluate the patient's work of breathing and SaO₂ and decide does the patient really need CPAP?
 - E. Try to avoid in respiratory patients that may be infectious.
 - F. Always wear complete PPE (personal protective equipment) consisting of gloves, N-95 respirator (if possible, not surgical mask), face shield, goggles and gown.
5. Utilization of a beta agonist nebulizer.
- A. Evaluate the patient's work of breathing and SaO₂ and decide does the patient really need an albuterol nebulizer?
 - B. Are they an asthmatic? What is their respiratory rate?
 - C. Nebulizer treatments will be completed on scene and in well-ventilated area unless extenuating circumstances do not allow. The nebulizer treatment preferably needs to be completed prior to loading the patient into the ambulance.
 - D. If the patient has been moved into the ambulance, then open the back and side doors to increase ventilation.
 - E. Complete the treatment before entering the healthcare facility with the ambulance doors open to improve ventilation.
 - F. Always wear complete PPE (personal protective equipment) consisting of gloves, N-95 respirators if possible, not a surgical mask, face shield, goggles and gown.
 - G. Remember to place a face shield if possible, over the nebulizer. This will significantly decrease the number of droplet/airborne particles being generated.
 - H. We are exploring obtaining beta agonist MDIs (metered dose inhalers) with spacers/aero chambers to temporarily replace albuterol nebulizers. This is a closed system and does not generate droplets nor aerosolized particles.

- I. Utilize IM (Intramuscular) Epinephrine instead of a beta agonist nebulizer for asthmatics. This needs to be considered for patients who are experiencing severe asthma attacks.
 - a. Consider this option for otherwise healthy asthmatics who are 50 years of age and younger who don't have any significant cardiovascular illnesses/risk factors (poorly controlled diabetes or hypertension for example).
 - b. This is for asthmatics who are severely short of breath.
6. The use of a BVM (Bag Valve Mask) Ventilation.
 - A. If you are performing BVM always place an inline Bacterial/Viral filter between the mask and the ETCO2 detector.
 - B. Whenever possible use a two-handed approach to BVM to reduce the generation and liberation of droplets/airborne particles. This will require bringing a First Responder along with you for the transport.
 - C. Always wear complete PPE (personal protective equipment) consisting of gloves, N-95 respirator if possible and not surgical mask, face shield, goggles and gown while performing any advanced airway placement. The PPE needs to stay on for the entire 911 call.
7. Placement of an i-gel or Endotracheal Tube (ETT).
 - A. When placing an i-gel (supraglottic airway) or ETT (endotracheal tube) always wear complete PPE (personal protective equipment) consisting of gloves, N-95 respirator if possible and not a surgical mask, face shield, goggles and gown while performing any advanced airway placement. The PPE needs to stay on for the entire 911 call.
 - B. The placement of any advanced air device is higher risk and exposes the clinician to droplets and aerosolized particles.
 - C. The risk of droplets and aerosolized particles is significantly reduced post-intubation with an endotracheal tube. This is not the same for supraglottic airways.
 - D. The PPE needs to stay on for the entire 911 call.
 - E. All patients who have had a i-gel or ETT placed the crew will utilize inline Bacterial/Viral filters. Place the filter between the BVM and the ETCO2 detector connected to the ETT connection.
8. Using Suction.
 - A. This procedure generates droplet and aerosolized particles.
 - B. Always wear complete PPE (personal protective equipment) consisting of gloves, N-95 respirators if possible, not surgical mask, face shield, goggles and gown while performing any advanced airway placement.
 - C. The PPE needs to stay on for the entire 911 call.
9. CPR.
 - A. The placement of any advanced air device is higher risk and exposes the clinician to droplets and aerosolized particles.
 - B. The PPE needs to stay on for the entire 911 call.

Acknowledgements

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ⁱ EMS1, Airway management adjustments in the era of COVID-19, March 21,2020, Kerri Hatt.