



Interim Infection Control Guidance for Prehospital Emergency Medical Services (EMS)

Effective communication among clinicians requesting emergency transport of a patient with possible or known 2019-Novel Coronavirus (2019-nCoV) disease, EMS personnel, and receiving facilities is necessary to ensure appropriate protection of healthcare workers. Prehospital personnel should follow CDC infection control guidance and use Standard, Contact, Droplet, and Airborne precautions, including the use of eye protection (e.g. goggles or a face shield). See guidance for Isolation Precautions at <https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html> and <https://www.cdc.gov/coronavirus/2019-nCoV/hcp/infection-control.html>.

When 2019-nCoV is suspected in a patient needing emergency transport, ***prehospital care providers and healthcare facilities should work closely with Public Health and provide as much advance notice as possible that they may be transporting or receiving a patient who may have 2019-nCoV disease.***

A. Assessment Criteria

Circumstance: A patient complains of illness with or without FEVER

Questions to be incorporated to patient assessment:

1. Did/Does the patient have a fever in conjunction with their current illness? (Fever may not be present in some patients, use clinical judgement to guide testing.)
 - a. Fever onset date
 - b. Highest measured temperature
2. Does the patient have symptoms of lower respiratory illness (LRI) (e.g. cough, difficulty breathing)?
 - a. Symptom onset date
3. Then ask:
 - a. Have they traveled from China in the past 14 days?
 - b. Have they had contact with a person who recently traveled from China was sick?
 - c. Have they had contact with a person confirmed or suspected to have 2019-nCoV?
 - Nature of contact: Family/Household, Coworker, Healthcare worker, Travel, Other?
4. Suspect 2019-nCoV if the patient answered YES to
 - a. Fever and respiratory symptoms, and travel to China; OR
 - b. Fever or respiratory symptoms, and contact with confirmed case

If the provider suspects 2019-nCoV then:

1. Ensure that the patient is masked;
2. Ensure that healthcare personnel use contact, droplet, AND airborne precautions, INCLUDING eye protection (e.g., goggles or face shield) Please note: Airborne precautions include use of NIOSH-approved fit-tested N95 mask or higher.
3. Follow the below interim infection control guidance for prehospital EMS for patient transport, personal protective equipment, safe work practices, clinical specimens, post-transport



management of contaminated vehicles, and EMS personnel follow up.

B. Patient Transport

Objective: Safely transport patients with known or possible 2019-nCoV disease.

Activities: Due to the novel nature of this coronavirus, current precautions should be that of MERS (<https://www.cdc.gov/coronavirus/mers/hcp/monitoring-movement-guidance.html>) and SARS (<https://www.cdc.gov/sars/guidance/i-infection/prehospital.html>).

- Involve the fewest EMS personnel required to minimize possible exposures.
- Family members and other contacts of 2019-nCoV patients should not ride in the ambulance if possible. If necessary, family members and other contacts should be evaluated for fever and lower respiratory symptoms and, if either is present, asked to wear a surgical or procedure mask when riding in the vehicle.
- When possible, use vehicles that have separate driver and patient compartments that can provide separate ventilation to each area. Close the door/window between these compartments before bringing the patient on board. Set the vehicle's ventilation system to the non-recirculating mode to maximize the volume of outside air brought into the vehicle. If the vehicle has a rear exhaust fan, use it to draw air away from the cab, toward the patient-care area, and out the back end of the vehicle. Some vehicles are equipped with a supplemental recirculating ventilation unit that passes air through HEPA filters before returning it to the vehicle. Such a unit can be used to increase the number of air changes per hour (ACH) (<https://www.cdc.gov/niosh/hhe/reports/pdfs/1995-0031-2601.pdf>).
- If a vehicle without separate compartments and ventilation must be used, open the outside air vents in the driver area and turn on the rear exhaust ventilation fans to the highest setting. This will create a negative pressure gradient in the patient area.
- If possible, place a surgical mask on the patient to contain droplets expelled during coughing. If this is not possible (i.e., would further compromise respiratory status, difficult for the patient to wear), have the patient cover the mouth/nose with tissue when coughing.
- Oxygen delivery with a non-rebreather face mask may be used to provide oxygen support during transport. If needed, positive-pressure ventilation should be performed using a resuscitation bag-valve mask, preferably one equipped to provide HEPA or equivalent filtration of expired air.
- If a patient has been mechanically ventilated before transport, HEPA or equivalent filtration of airflow exhaust should be available. (EMS organizations should consult their ventilator equipment manufacturer to confirm appropriate filtration capability and the effect of filtration on positive-pressure ventilation.)
- Cough-generating procedures (e.g., mechanical ventilation, nebulizer treatment) should be avoided during prehospital care.



C. Personal Protective Equipment

Objective: Ensure the safety of prehospital care providers who transport patients with known or possible 2019-nCoV disease.

Activities:

- Prehospital care providers who directly handle a patient with 2019-nCoV disease or who are in the compartment with the patient should wear PPE as recommended for Standard, Contact, Droplet and Airborne Precautions, and use eye protection (e.g., goggles or face shield). These include the following:
 - Disposable isolation gown
 - Disposable patient examination gloves
 - Eye protection (i.e., goggles¹ or face shield²)
 - Respiratory protection (i.e., N-95 or higher-level respirator)
- Personnel in the driver's compartment who will have no direct patient contact should wear an N-95 or higher-level respirator during transport. Drivers who also provide direct patient care (e.g., moving patients on stretchers) should wear the recommended PPE during patient contact. This PPE, with the exception of the respirator, should be removed and hand hygiene performed after completing patient care and before entering driver's compartment to avoid contaminating the compartment. Instructions for a general approach to donning and doffing can be found here <https://www.cdc.gov/coronavirus/2019-nCoV/hcp/infection-control.html>. An example doffing sequence can be found at <https://files.asprtracie.hhs.gov/documents/aspr-tracie-transport-playbook-508.pdf>.

¹*Appropriately fitted, indirectly-vented goggles with a manufacturer's anti-fog coating provide the most reliable practical eye protection from splashes, sprays, and respiratory droplets. Directly-vented goggles may allow penetration by splashes or sprays; therefore, indirectly-vented or non-vented goggles are preferred for infection control. Newer styles of goggles may provide better indirect airflow properties to reduce fogging, as well as better peripheral vision and more size options for fitting goggles to different workers. Many styles of goggles fit adequately over prescription glasses with minimal gaps. However, to be efficacious, goggles must fit snugly, particularly from the corners of the eye across the brow. While highly effective as eye protection, goggles do not provide splash or spray protection to other parts of the face.*

²*Face shields are commonly used as an infection control alternative to goggles. As opposed to goggles, a face shield can also provide protection to other facial areas. To provide better face and eye protection from splashes and sprays, a face shield should have crown and chin protection and wrap around the face to the point of the ear, which reduces the likelihood that a splash could go around the edge of the shield and reach the eyes. Disposable face shields for medical personnel made of light weight films that are attached to a surgical mask or fit loosely around the face should not be relied upon as optimal protection.*



D. Safe Work Practices

Objective: Ensure safe work practices among EMS personnel to prevent transmission of 2019-nCoV.

Activities:

- Avoid touching one's face with contaminated gloves.
- Avoid unnecessary touching of surfaces in the ambulance vehicle.
- Arrange for the receiving facility staff to meet the patient at the ambulance door to limit the need for EMS personnel to enter the emergency department in contaminated PPE. (It may not be practical to change PPE before patient transfer into the facility.) Remove and discard PPE after transferring the patient at the receiving facility and perform hand hygiene. Treat used disposable PPE as medical waste.

E. Clinical Specimens

Objective: Safely collect clinical specimens from 2019-nCoV patients during transport.

Activities:

- Interim Guidelines for Collecting, Handling, and Testing Clinical Specimens from Patients Under Investigation (PUIs) for 2019 Novel Coronavirus (2019-nCoV)
<https://www.cdc.gov/coronavirus/2019-nCoV/guidelines-clinical-specimens.html>
- Handle clinical specimens that must be collected during transport (e.g., blood gas) in accordance with standard operating procedures.

F. Post-Transport Management of the Contaminated Vehicle

Objective: Safely clean vehicles used for transport of 2019-nCoV patients to prevent 2019-nCoV transmission.

Activities:

- Follow standard operating procedures for the containment and disposal of regulated medical waste.
- Follow standard operating procedures for containing and reprocessing used linen. Wear appropriate PPE when removing soiled linen from the vehicle. Avoid shaking the linen.
- Clean and disinfect the vehicle in accordance with company/agency standard operating procedures. Personnel performing the cleaning should wear a disposable gown and gloves (a respirator should not be needed) during the clean-up process; the PPE should be discarded after use. All surfaces that may have come in contact with the patient or materials contaminated during patient care (e.g., stretcher, rails, control panels, floors, walls, work surfaces) should be thoroughly cleaned and disinfected using an EPA-registered hospital disinfectant in accordance with manufacturer's recommendations.



- Clean and disinfect reusable patient-care equipment according to manufacturer's instructions.

G. Follow-up of EMS Personnel

Objective: Ensure appropriate follow-up and care of EMS personnel who transport 2019-nCoV patients.

Activities:

- Manage EMS personnel who transport 2019-nCoV patients as recommended for hospital personnel identified in the latest CDC Guidance.
- Planning and or conducting Active or Direct Active Monitoring of healthcare workers can be done through support by Local and State Public Health.