



REGION 11 CHICAGO EMS SYSTEM POLICY	Title: EMS Guidelines for Infection Control
	Section: Patient Care
	Approved: EMS Medical Directors Consortium
	December 6, 2023

EMS GUIDELINES FOR INFECTION CONTROL

I. PURPOSE

To prevent or stop the spread of infection in the prehospital setting by using two levels of precautions: Standard Precautions and Transmission-Based Precautions.

II. DEFINITIONS

- A. Standard Precautions: Basic level of infection control for all patient care that includes both safe practices and use of Personal Protective Equipment (PPE) to protect EMS personnel from infection and prevent the spread of infection from patient to patient.
- B. Transmission-Based Precautions: A second tier level of basic infection control that are used in addition to Standard Precautions for patients with known or suspected infections.

III. POLICY:

A. EMS PERSONNEL GUIDELINES

1. EMS personnel should be vigilant for travel history and signs and symptoms of communicable disease (e.g., fever, cough, gastrointestinal [GI] symptoms, unusual rash). Standard precautions should always be used with the addition of appropriate transmission-based precautions whenever history or exam findings warrant.
2. **EMS personnel should implement strict standard and transmission-based precautions based on the patient's clinical information to avoid exposure to potentially infectious bodily fluids, droplets, and airborne particles (Table 1).**
3. EMS personnel should avoid direct contact with a patient who may have a communicable disease until they are wearing appropriate PPE.
4. Maintaining distance from the patient and increasing fresh air circulation can reduce respiratory transmission. Maintaining a distance of at least six feet is generally recommended unless specific PPE is worn.
5. Limit the number of EMS personnel in direct contact with a potentially infectious patient to the minimum required to perform tasks safely.
6. **Hand hygiene (e.g., handwashing with non-antimicrobial soap and water, alcohol-based hand rub [ABHR], or antiseptic handwash) is one of the best ways to remove pathogens, avoid getting sick, and prevent the spread of pathogens to others. Perform hand hygiene before and after all patient care activities.**
7. **Place a surgical mask on the patient (for source control) to contain infectious**

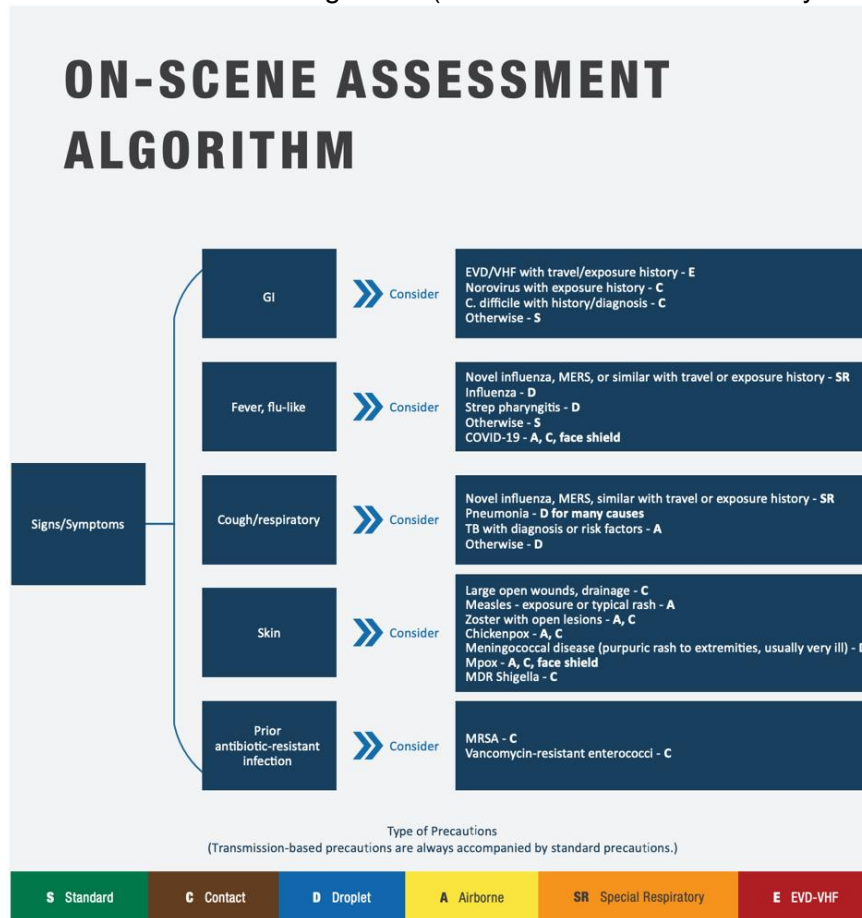


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respiratory droplets if tolerated. Patients unable to tolerate a mask should cover their nose and mouth when coughing or sneezing, use tissues to contain respiratory secretions and properly dispose of them in the nearest waste receptacle after use, and perform hand hygiene after having contact with respiratory secretions and contaminated objects or materials.

- Influenza and other diseases can transmit via the ocular surfaces as well as other mucous membranes. EMS personnel should use PPE to protect the mucous membranes of the eyes, nose, and mouth during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions. Select masks, goggles, face shields, and combinations of each according to the need anticipated by the task performed.

Table 1: On-Scene Assessment Algorithm (EMS Infectious Disease Playbook 2023)



B. STANDARD PRECAUTIONS

- Goal of Precautions: Apply standard practice to protect against contact with blood,



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body fluids, non-intact skin (including rashes), and mucous membranes for all patient encounters. Examples include routine use of hand hygiene and gloves and adding eye protection and a mask when caring for patients with respiratory symptoms and during airway interventions, or gown for potential splash exposures.

2. Example Diseases: Acquired immune deficiency syndrome (AIDS)/human immunodeficiency virus (HIV), anthrax (cutaneous or pulmonary), botulism, cellulitis, dengue, minor wound infections including abscess, nonspecific upper respiratory infections.
3. Recommended Personal Protective Equipment (PPE)
 - a. Gloves during patient contact for any potential exposure to infectious agents or bodily fluids.
 - b. Goggles/face shield and surgical mask for any airway procedures (advanced airway insertion, suctioning) or patient with active cough from apparent infectious source and to protect mucous membranes from splash/ liquid exposure.
 - c. Impermeable gown for any situation likely to generate splash/ liquid exposures.
4. Patient Care Considerations
 - a. Provide a surgical mask for all patients with acute infectious respiratory symptoms who can tolerate it.
 - b. Provide tissues to patients for secretion control and encourage patient hand hygiene and cough etiquette practices.
5. Transport Considerations
 - a. Standard transportation to appropriate health care facility.
 - b. If the patient compartment is equipped with an exhaust fan, ensure that it is turned on.
6. Ambulance Decontamination
 - a. Any visibly soiled surface must first be cleaned and decontaminated using an Environmental Protection Agency (EPA)-registered disinfectant according to directions on the label.
 - b. Disinfect all potentially contaminated/high touch surfaces including the stretcher with an EPA-registered disinfectant according to directions on the label.
 - c. Medical equipment (e.g., stethoscope, blood pressure cuff) making patient contact should be disposable or cleaned and disinfected before use on another patient.

C. CONTACT PRECAUTIONS



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1. Goal of Precautions: Provide impermeable barriers to infectious agents that are either highly pathogenic, drug resistant, contagious, or persistent and that can easily be contracted or spread to other environments via fomites and surface contact.
2. Example Diseases: Excessive wound drainage, MRSA, Vancomycin-resistant enterococci (VRE), *C. difficile*, norovirus, other suspected infectious diarrhea, head lice/body lice/scabies, respiratory syncytial virus (RSV).
3. Recommended PPE
 - a. Disposable fluid-resistant gown.
 - b. Disposable gloves.
 - c. Ensure strict adherence to standard precautions based on situation (e.g., mask, goggles/face shield for splatter risk or airway interventions).
4. Patient Care Considerations
 - a. Cover draining wounds with adequately absorbent dressings.
 - b. Anticipate additional stool/vomitus to reduce contamination of EMS personnel and the ambulance (emesis bags, towels available, and/ or impermeable sheet placed on stretcher).
5. Transport Considerations
 - a. Consider applying an impermeable barrier sheet to the patient to protect EMS personnel and environmental surfaces in the presence of excessive wound drainage, fecal incontinence, or other discharges.
 - b. Advise receiving hospital of a patient on contact precautions who should preferably be transported to a private room.
6. Ambulance Decontamination
 - a. Any visibly soiled surface should be cleaned using an EPA-registered disinfectant according to directions on the label.
 - b. Medical equipment (e.g., stethoscope, BP cuff) making patient contact should be disposable or cleaned and disinfected before use on another patient. Other visibly contaminated equipment should similarly be cleaned and disinfected.
 - c. Confirmed or suspected *C. difficile* infection decontamination should utilize hypochlorite solutions. EPA-registered disinfectants with sporicidal activity may be sufficient but limited data is available.

D. DROPLET PRECAUTIONS



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1. Goal of Precautions: Protection of EMS personnel mucous membranes and respiratory system from exposure to potentially infectious droplets during direct patient care activities.
2. Example Diseases: Neisseria meningitidis, mumps, mycoplasma, streptococcal and many other causes of pneumonia, parvovirus, pertussis, pneumonic plague, rhinovirus, rubella, seasonal influenza, streptococcal pharyngitis.
3. Recommended PPE
 - a. Disposable surgical mask (N95 respirator not required but optional).
 - b. Disposable gloves.
 - c. Eye protection – goggles or face shield.
4. Patient Care Considerations
 - a. Provide a surgical mask for all patients with acute infectious respiratory symptoms who can tolerate it.
 - b. Provide tissues to patients for secretion control and encourage patient hand hygiene and cough etiquette practices.
 - c. EMS personnel not in appropriate PPE should maintain a distance of at least 6 feet from the patient and should wear gloves to guard against infectious agents on the surfaces of objects close to the patient.
 - d. Minimize use of nebulizers to avoid aerosolization of respiratory droplets; consider metered dose inhalers instead.
 - e. Minimize airway interventions that may cause coughing (e.g., suctioning) to degree possible.
5. Transport Considerations
 - a. Consider having the patient compartment exhaust vent on high and isolating the driver compartment if performing aerosol generating procedures (airway suctioning, advanced airway insertion, aerosolized medication administration, non-invasive positive pressure ventilation). Increase ventilation by having air or heat on non-recirculating cycle and/or opening windows.
 - b. Advise receiving hospital of respiratory symptoms and that a private (but not negative pressure) room is preferred.
6. Ambulance Decontamination
 - a. Any visibly soiled surface should be cleaned using an EPA-registered disinfectant according to directions on the label.
 - b. Disinfect all potentially contaminated/high touch surfaces including the stretcher with an EPA-registered disinfectant according to directions on the label.
 - c. Medical equipment (e.g., stethoscope, BP cuff) making patient contact should be disposable or cleaned and disinfected before use on another patient.



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E. AIRBORNE PRECAUTIONS

1. Goal of Precautions: Provide respiratory protection against inhalation of potentially infectious suspended droplet nuclei/aerosols (agents suspended in the air that are respirable and remain infectious over long distances).
2. Example Diseases: Measles, tuberculosis (suspected or confirmed pulmonary or laryngeal), varicella (chickenpox).
3. Recommended PPE:
 - a. Disposable NIOSH-approved, fit-tested N95 respirator or PAPRs with full hood and HEPA filter for airborne precautions for employees who cannot safely fit test on N95 respirators due to facial hair, facial structure, and other factors.
 - b. Disposable exam gloves.
4. Patient Care Considerations
 - a. Ensure strict adherence with standard precautions.
 - b. Ask the patient to wear a surgical mask (N95 respirator not required) if they are able to tolerate it.
 - c. Provide tissues to patients for secretion control and encourage patient hand hygiene and cough etiquette practices.
 - d. The performance of procedures that can generate suspended droplet nuclei/aerosols (i.e., aerosol-generating procedures), such as advanced airway insertion, non-invasive ventilation, and open suctioning of the respiratory tract have been associated with higher risk of transmission of infectious agents to health care personnel, including tuberculosis. Protection of the eyes, in addition to respirator and gloves, is recommended while performing these procedures in accordance with standard precautions.
5. Transport Considerations
 - a. Notify the receiving hospital of the need for an airborne infection isolation room (AIIR) for patient placement.
 - b. Consider having the patient compartment exhaust vent on high and isolating the driver compartment from the patient compartment. Consider having the driver compartment ventilation fan set to high without recirculation.
 - c. If driver compartment is not isolated from the patient compartment, vehicle operator should wear N95 respirator.
 - d. Patients who have an advanced airway in place should be ventilated with a bag-valve device or ventilator equipped with a viral or HEPA filter in-line or on the exhalation port.
6. Ambulance Decontamination



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- a. Any visibly soiled surface should be cleaned using an EPA-registered disinfectant according to directions on the label.
- b. Disinfect all potentially contaminated/high touch surfaces including the stretcher with an EPA-registered disinfectant according to directions on the label.
- c. Medical equipment (stethoscope, BP cuff, etc.) making patient contact should be disposable or cleaned and disinfected before use on another patient.

F. SPECIAL RESPIRATORY PRECAUTIONS

1. Goal of Precautions:

- a. Provide protection of mucous membranes and respiratory protection against inhalation of potentially infectious suspended droplet nuclei/ aerosols (agents suspended in the air that are respirable and remain infectious over long distances).
- b. Create an impermeable barrier to reduce spread of highly pathogenic viruses on surfaces and via fomites during direct patient care activities (standard + contact + airborne + eye protection).

2. Example Diseases: MERS, novel influenza strains (e.g., H5N1), smallpox, Monkeypox, COVID-19.

3. Recommended PPE

- a. Disposable N95 or equivalent/higher level respirator (e.g., re-usable half face elastomeric respirator N95 or higher rating mask or PAPR with full hood and HEPA filter).
- b. Disposable face shield or disposable or cleanable goggles (if not using hooded PAPR).
- c. Disposable fluid-resistant gown that extends to at least mid-calf or disposable fluid-resistant coveralls.
- d. Disposable gloves with extended cuffs.
- e. Consider disposable boot/shoe covers.

4. Patient Care Considerations

- a. Ask the patient to wear a surgical mask (N95 respirator not required) if they are able to tolerate it.
- b. Provide tissues to patients for secretion control and encourage patient hand hygiene and cough etiquette practices.
- c. Exercise caution when performing aerosol-generating procedures (advanced airway insertion, airway suctioning, administration of nebulized medication, non-invasive ventilation [continuous positive airway pressure (CPAP)], and/or cardiopulmonary resuscitation [CPR]). Only perform these procedures if medically necessary and cannot be postponed.



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- d. Ventilate patients who have an advanced airway in place with a bag-valve device or ventilator with a viral or HEPA filter in-line or on the exhalation port.

5. Transport Considerations

- a. Notify the receiving hospital of the need for an airborne infection isolation room (AIIR) for patient placement.
- b. The patient compartment exhaust vent should be on high and the driver compartment should be isolated from the patient compartment if possible. The driver compartment ventilation fan should be set to high without recirculation.
- c. The vehicle operator should wear an N95 respirator if the patient compartment and cab cannot be isolated.
- d. EMS agencies should have a plan for family members wishing to accompany the patient that minimizes additional crew exposures.

6. Ambulance Decontamination

- a. Any visibly soiled surface should be cleaned using an EPA-registered disinfectant according to directions on the label.
- b. Disinfect all potentially contaminated surfaces including the stretcher with an EPA-registered disinfectant according to directions on the label.
- c. Medical equipment (e.g., stethoscope, BP cuff) making patient contact should be disposable or cleaned and disinfected using appropriate disinfectants before use on another patient.

G. EVD-VHF (EBOLA VIRUS DISEASE-VIRAL HEMORRHAGIC FEVER) PRECAUTIONS

1. Goal of Precautions: Provide maximal impermeable barrier and respiratory protection against highly pathogenic VHF viruses.
2. Example Diseases: EVD, MVD (Marburg Virus Disease), Lassa fever, Crimean-Congo fever.
3. Arriving EMS Actions and Considerations
 - a. Inquire about travel and direct exposure history within the previous 21 days. *Has the patient had direct contact with a person who is confirmed or suspected to have EVD/VHF (including local cases, if applicable)?*
 - i. If yes, does the patient have any fever, severe headache, muscle pain, weakness, fatigue, diarrhea, vomiting, abdominal (stomach) pain, or unexplained hemorrhage (bleeding or bruising)?
 - b. Positive EVD/VHF screen is travel or contact risk with symptoms of disease.
4. Guidance to Patients and EMS Personnel for EVD/VHF Positive Screen



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- a. EMS personnel should don appropriate PPE before direct contact with the patient.
 - b. If responding to an airport or other port of entry to the United States, notify the CDC Quarantine Station for the port of entry.
 - c. Notify EMS supervisor and Resource Hospital EMS Coordinator and Medical Director.
 - d. Consider alerting EVD/VHF specialized personnel and equipment/ ambulance if available as secondary EMS personnel and the patient is stable enough to await this resource.
 - e. If patient is transported, ensure follow-up with hospital regarding final diagnosis and report any exposures or issues to Chicago Department of Public Health.
 - f. Ensure that appropriate ALS/BLS care is provided. Most suspected cases will not have EVD/VHF.
5. PPE: Should be carefully donned and doffed with a checklist and trained observer.
- a. Initial EMS personnel to suspect case WITHOUT active bleeding, vomiting, or diarrhea:
 - i. Single-use (disposable) fluid-resistant gown that extends to at least mid-calf or single-use (disposable) fluid-resistant coveralls without integrated hood.
 - ii. Single-use (disposable) full face shield.
 - iii. Single-use (disposable) facemask
 - iv. Single-use (disposable) gloves with extended cuffs. Two pairs of gloves should be worn. At a minimum, outer gloves should have extended cuffs.
 - b. Initial EMS personnel to suspect case WITH active bleeding, vomiting, or diarrhea:
 - i. **Impermeable Garment:** Single-use (disposable) impermeable gown that extends to at least mid-calf or single-use (disposable) impermeable coveralls without integrated hood.
 - ii. **Respiratory, Head, and Face Protection:**
 - **PAPR:** A hooded respirator with a full face shield, helmet, or headpiece OR
 - Single-use (disposable) N95 respirator or higher in combination with single-use (disposable) surgical hood extending to shoulders and single-use (disposable) full face shield.
 - iii. Single-use (disposable) gloves with extended cuffs. Two pairs of gloves should be worn. At a minimum, outer gloves should have extended cuffs.
 - iv. Single-use (disposable) boot covers that extend to at least mid-calf.
 - v. Single-use (disposable) apron that covers the torso to the level of the mid-calf should be used over the gown or coveralls
 - c. Doffing is a high-risk step in VHF patient care. PPE should be doffed in a



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designated PPE removal area. Meticulous care should be taken during this process to avoid self-contamination as this is a major contributor to EMS personnel disease. Place all PPE waste in a labeled leak-proof biohazard bag.

- d. EMS and hospital personnel caring for patients with VHF must have received comprehensive training and demonstrated competency in performing VHF-related infection control practices and procedures.

6. Patient Care Considerations

- a. Ask the patient to wear a surgical mask (N95 respirator not required) if they are able to tolerate it.
- b. Be aware that the biggest risk to suspect EVD/VHF patients is withholding appropriate treatment as few will actually have the disease.
- c. Recognize that the more body fluids, the higher the transmission risk.
- d. Anticipate potential stool/vomit and control contamination of EMS personnel and the ambulance (use emesis bags, towels, and/ or place impermeable sheet on stretcher).
- e. Minimize the number of EMS personnel who make patient contact.
- f. Use dedicated medical equipment (ideally disposable) for the provision of patient care whenever possible.
- g. Strongly consider having the patient wear a barrier garment, surgical mask, and gloves if tolerated.
- h. Exercise caution when performing aerosol-generating procedures (advanced airway insertion, airway suctioning, administration of nebulized medication, CPAP, CPR). Only perform these procedures if medically necessary and cannot be postponed. (Note that cardiac arrest early in the illness may be due to electrolyte imbalance and may be survivable. Late cardiac arrest from multi-organ failure likely carries a dismal prognosis.)
- i. Do not perform IV insertion or any other invasive procedures unless urgently required for patient care or stabilization. Handle any needles and sharps with extreme care and dispose in puncture-proof, sealed containers that are specific to the single patient. Do not dispose of used needles and sharps in containers that have sharps from other patients in them.
- j. Consider giving oral or nasal medicine to reduce nausea and/or pain per Region 11 Protocols rather than injectable.
- k. Use hands-free communications devices (e.g., tactical headsets) inside the PPE ensemble to facilitate communication and avoid contamination of radios.
- l. Complete documentation in a clean area or after transport.

7. Transport Considerations

- a. Advise the designated “Specialized Pathogen Treatment Center” as early as possible about a suspect case to allow them preparation time.
- b. If the patient is a highly suspect case and stable, consider specialized ambulance preparation and transport (as approved by Region 11 and IDPH) if time and acuity allow.



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- c. Interfacility transport of confirmed case should be performed by EMS personnel with properly prepared ambulances or patient containment devices.
- d. For emergency transport, consider applying an impermeable barrier sheet or containment system to the patient to protect EMS personnel and environmental surfaces in the presence of incontinence, draining wounds, or other discharges.
- e. The driver's compartment should remain clean. No family members or patient belongings are permitted in the driver's compartment.
- f. Suspect EVD/VHF cases should be transported to a hospital capable of evaluation and initial management and placed into a dedicated isolation room. Placement should be coordinated in consultation with local/state public health authorities and the receiving facility.
- g. Consider deferring ambulance decontamination for a brief period to determine if EVD/VHF can be quickly ruled out during initial hospital assessment.
- h. Formal decontamination after transport of a suspect/confirmed case should occur in a designated area by trained personnel as described in the next section.

8. Ambulance Decontamination

- a. Select an appropriate site for ambulance decontamination that protects the vehicle and the team from the weather, preferably a well-ventilated, climate controlled, large, enclosed garage/structure.
- b. All waste, including PPE, drapes, and wipes, should be considered Category A infectious substances, and should be packaged appropriately for disposal.
- c. Personnel must be in appropriate PPE during decontamination and disinfection. A third person should also be available as a trained observer and to assist as needed.
- d. Grossly contaminated and visibly soiled surfaces must be decontaminated prior to disinfection.