

Infectious Disease Precautions & Personal Protective Equipment

Provided by the Office of Emergency Preparedness &
Response

Colorado Department of Public Health & Environment



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Preparedness & Response**

Department of Public Health & Environment

This resource was adapted from “EMS Infectious Disease Playbook” ASPER TRACIE for Colorado Healthcare Coalitions and their member organizations. EMS should reference the original ASPR TRACIE document as it has more specificity for EMS personnel.

<https://files.asprtracie.hhs.gov/documents/aspr-tracie-transport-playbook-508.pdf>








Disclaimer

This document was created using official or best practice information taken from multiple organizations that was vetted and assembled by subject matter experts working for the Technical Resources, Assistance Center, and Information Exchange (TRACIE) at the request of the U.S. Department of Health and Human Services (HHS)/Office of the Assistant Secretary for Preparedness and Response (ASPR). The aim was not to develop novel guidance for **emergency** medical services (EMS) agencies, but to unify multiple sources of information in a single planning document addressing the full spectrum of infectious agents to create a concise reference resource for EMS agencies developing their service policies. This document does not represent official policy of HHS/ASPR or other federal or private agencies.

The information contained in this playbook is intended as a planning resource, and should be incorporated into agency standard operating procedures and reviewed by the EMS medical director. There is not one correct way to don and doff personal protective equipment; EMS agencies should review the guidelines and their specific circumstances to develop procedures that are ensemble and site appropriate. Appropriate education and training is critical to the success of infection prevention and control protocols. The authors, TRACIE, and HHS/ASPR take no responsibility and bear no liability for any clinical care outcomes, provider injury/illness, or inaccuracies in or resulting from this document. All recommendations were current at the time of publication and vetted to the best of our ability.

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Standard Precautions



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



GOAL OF PRECAUTIONS

Apply a standard set of protections based on the patient's symptoms and the clinical care rather than a specific suspected organism. The goal is to apply PPE as needed to prevent exposure to bodily fluids and PPE is based on how the disease is transmitted. Examples include routine use of hand hygiene, gloves, and adding eye protection and mask for patients with respiratory symptoms and during airway interventions, or gown for potential splash exposures.



PPE

- Gloves during patient contact for any potential exposure to infectious agent or bodily fluids
- Goggles/face shield and surgical mask for any airway procedures (intubation, suctioning) or patient with active cough from apparent infectious source and to protect mucous membranes from splash/liquid exposure
- Impermeable gown for any situation likely to generate splash/liquid exposures
- Consider using a checklist to assist with proper donning and doffing.
- PPE should be removed in an appropriate doffing area to prevent secondary contamination. Meticulous care should be taken to avoid self-contamination. PPE waste should be placed in a labeled leak-proof container.
- Potential exposures should be reported according to existing service protocols.

Standard Precautions

RESOURCES



- + **Guideline for Isolation Precautions 2007**
- + **Selected EPA-Registered Disinfectants**
- + **Standard Precautions in Health Care**
- + **Considerations for Selecting Protective Clothing used in Healthcare for Protection against Microorganisms in Blood and Body Fluids**

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Contact Precautions



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) (plus mask)



GOAL OF PRECAUTIONS

- Provide impermeable barriers to infectious agents that are either highly pathogenic, drug resistant, contagious, or persistent that can easily be contracted or spread to other environments via fomites and surface contact.



PPE

- Consider using a checklist to assist with proper donning and doffing.
- Report potential exposures according to existing service protocols.
- Disposable fluid-resistant gown that protects the provider's legs; consider disposable fluid-resistant coveralls if there is a preference to stock and use one item or if there are concerns about provider leg coverage.

*Wear mask during vomiting/diarrhea if norovirus suspected

Contact Precautions



- Disposable gloves
- Ensure strict adherence to standard precautions based on situation (e.g., mask, goggles/face shield for splatter risk or airway interventions).

Donning:

1. Personal items (e.g., jewelry [including rings], watches, cell phones, pens) should ideally be removed and stowed. Long hair should be tied back. Eyeglasses should be secured with a tie.
2. Inspect PPE prior to donning to assure not torn or ripped, that all required supplies are available, and that correct sizes are selected for the healthcare worker (HCW).
3. Perform hand hygiene; allow hands to dry before moving to next step
4. Put on gown or coverall. Ensure large enough to allow unrestricted movement.
5. Put on gloves. Ensure the cuffs are pulled over the sleeves of the gown or coverall and are tight.
6. After donning, the integrity of the ensemble should be verified. The HCW should go through a range of motions to ensure sufficient range of movement while all areas of the body remain covered.

Contact Precautions



Doffing:

Remove PPE only in an appropriate doffing area. Meticulous care should be taken to avoid self-contamination. PPE waste should be placed in a labeled leak-proof biohazard bag.

1. Inspect the PPE for visible contamination, cuts, or tears before removal. Disinfect any visible contamination with an EPA-registered hospital disinfectant wipe.
2. Inspect the glove outer surfaces for visible contamination, cuts, or tears.
 - Visible contamination, cut, or tear – If glove is visibly soiled, disinfect the glove with either an EPA-registered hospital disinfectant wipe in accordance with manufacturer recommendations or alcohol-based hand rub (ABHR)⁵, remove the gloves, and perform hand hygiene with ABHR on bare hands. If the glove is cut or torn, review your occupational exposure protocol.
 - No visible contamination, cuts or tears – Remove the gloves and perform hand hygiene with ABHR.
3. Remove gown or coverall and discard.
 - Gown – Depending on gown design and location of fasteners, the HCW can either untie or gently break fasteners. Avoid other contact with outer surface of gown during removal. Pull gown away from body, rolling inside out and touching only the inside of the gown.
 - Coverall – Tilt head back to reach zipper or fasteners. Unzip or unfasten completely before rolling down while turning inside out. Avoid other contact with outer surface of coverall during removal, touching only the inside of the coverall.
 - Dispose of gown or coverall into the biohazard bag.

⁵ Preliminary research suggests that multiple applications of some types of ABHR may affect nitrile and latex gloves. Switching the type of glove or ABHR product used is necessary if decreased glove integrity (e.g., they start to tear or rip) or unusual changes (e.g., they become sticky, shrink, or harden) that would affect work-related tasks are observed during training and practice.

Contact Precautions



4. Perform hand hygiene.
 - Visibly dirty, contaminated, or soiled with blood or body fluids – Wash hands with soap and water, then perform hand hygiene with ABHR.
 - Not visibly soiled – Perform hand hygiene with ABHR.
5. Inspect for any contamination of the HCW uniform. If there is contamination, secure the garment for cleaning. Contaminated clothing should be washed or discarded in accordance with disease-specific guidelines, generally with hot water, usual detergent, and the addition of household bleach.

RESOURCES



- + **Considerations for Selecting Protective Clothing used in Healthcare for Protection against Microorganisms in Blood and Body Fluids**
- + **Frequently Asked Questions about Clostridium difficile for Healthcare Providers**
- + **Guidelines for Isolation Precautions 2007**

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Droplet Precautions



EXAMPLE DISEASES

Neisseria meningitidis • mumps • mycoplasma • streptococcal and many other causes of pneumonia • parvovirus • pertussis • pneumonic plague • rhinovirus • rubella • seasonal influenza • streptococcal pharyngitis



GOAL OF PRECAUTIONS

- Provide additional respiratory protection against inhalation of larger infectious droplets during direct patient care activities.



PPE

- Consider using a checklist to assist with proper donning and doffing.
- PPE should be removed in an appropriate doffing area to prevent secondary contamination. Meticulous care should be taken to avoid self-contamination. PPE waste should be placed in a labeled leak-proof container.
- Report potential exposures according to existing service protocols.

Type:

- Disposable surgical mask (N95 respirator not required)
- Disposable gloves
- Eye protection – cleanable goggles or disposable face shield

Droplet Precautions



Donning:

1. Select gloves and mask and inspect to ensure not torn or ripped and that the correct size is selected.
2. Perform hand hygiene with ABHR; allow hands to dry before moving to next step.
3. Put on gloves.
4. Put on eye protection if using⁶.
5. Put on surgical mask.

⁶ Per CDC, no recommendation for routinely wearing eye protection, but influenza and other diseases can transmit via the ocular surfaces as well as other mucous membranes. 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.

Droplet Precautions



Doffing:

Care should be taken to avoid self-contamination when removing mask and gloves. Place all PPE waste in a labeled leak-proof biohazard bag.

1. Inspect PPE for visible contamination, cuts, or tears before starting to remove. If any PPE is visibly contaminated, disinfect with an EPA-registered hospital disinfectant wipe in accordance with manufacturer recommendations.
2. Remove and discard gloves, taking care not to contaminate hands when removing the gloves. Dispose of gloves in biohazard bag.
3. Remove eye protection: Remove by strap, avoid touching the front surface of the eye protection. Discard in biohazard bag. Perform hand hygiene with ABHR. Reusable goggles must be thoroughly cleansed with EPA-registered hospital disinfectant wipes.
4. Remove the surgical mask by tilting the head slightly forward, grasping the elastic straps, sliding them off the ears/head, and removing the mask without touching the front fabric. Discard the mask into the biohazard bag.
5. Perform hand hygiene: If hands are visibly dirty, or soiled with blood or body fluids or other material, wash hands with soap and water, then perform hand hygiene with ABHR. If hands are not visibly soiled, simply perform hand hygiene with ABHR.
6. The HCW should inspect for any contamination of their uniform. If there is contamination, remove the soiled garment and secure it for cleaning. Contaminated clothing should be washed or discarded in accordance with disease-specific guidelines, generally with hot water, usual detergent, and the addition of household bleach.

RESOURCES

+ Guidelines for Isolation Precautions 2007



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Airborne Precautions



EXAMPLE DISEASES

measles • monkeypox • TB (suspected or confirmed pulmonary or laryngeal) • varicella (chickenpox)



GOAL OF PRECAUTIONS

- Provide respiratory protection against inhalation of infectious aerosols (agents that remain infectious over long distances when suspended in the air).



PPE

- Consider using a checklist to assist with proper donning and doffing.
- Report potential exposures according to existing service protocols.

Type:

- Disposable NIOSH-approved, fit-tested N95 respirator.
 - » agencies often use powered air purifying respirators (PAPRs) with full hood and high efficiency particulate air (HEPA) filter for airborne precautions for employees that cannot safely fit test on N95 respirators due to facial hair, facial structure, etc.
 - » For the purposes of consistency and simplicity, the use of respirators for all infectious agents known to be transmitted by infectious aerosols is recommended.
- Disposable exam gloves

Airborne Precautions



Donning:

1. Inspect PPE prior to donning to ensure that it is in serviceable condition (e.g., gloves not torn or ripped, respirator not soiled or creased; if using PAPR, check motor and airflow) and that correct size is selected.
2. Perform hand hygiene with ABHR; allow hands to dry before donning gloves.
3. Put on gloves.
4. Put on respirator.
 - N95 or elastomeric respirator – Apply mask, mold to nose/face, and perform fit check to assure intact seal.
 - PAPR – Turn on PAPR motor, apply hood assuring inner and outer liner drape smoothly over shoulders, and adjust headband to comfort.

Doffing:

PPE should be doffed in a appropriate removal area (particularly if using a PAPR). Care should be taken to avoid self-contamination during removal. Place all PPE waste in a labeled, leak-proof biohazard bag. PAPR should be placed in a separate biohazard bag and/or managed by service protocol.

1. Inspect glove outer surfaces for visible contamination, cuts, or tears.
 - Visible contamination, cut, or tear – If a glove is visibly soiled, then disinfect the glove with either an EPA-registered hospital disinfectant wipe or ABHR, in accordance with manufacturer recommendations, remove the gloves, dispose in biohazard bag, perform hand hygiene with ABHR on bare hands. If the glove is cut or torn, inspect the underlying skin. If any break in the skin, contact your supervisor and follow your service exposure guidelines.
 - No visible contamination, cuts or tears – Remove and discard gloves, taking care not to contaminate hands during removal. Dispose of gloves in biohazard bag. Perform hand hygiene with ABHR.

Airborne Precautions



2. Respirator

- Remove N95 respirator mask tilting the head slightly forward, grasping the elastic straps, sliding them off the ears/head, and removing the mask without touching the front fabric. Discard mask into the biohazard bag.
- Elastomeric half-face respirator – Reapply clean gloves, remove mask by straps, wipe surface with EPA-registered hospital disinfectant wipe, allow to dry. Remove gloves and perform hand hygiene with ABHR.
- PAPR with External Belt-Mounted Blower (if used): Remove PAPR belt and set PAPR down in front of you. Lean forward, grasp top of hood (avoid grabbing hose), slowly remove hood by pulling off and straight down to floor. Retain the belt-mounted blower unit and reusable PAPR components in a separate bag for disinfection (must be wiped down with EPA-registered hospital disinfectant wipes and allowed to air dry).

3. Perform hand hygiene.

- Visibly dirty, contaminated, or soiled with blood or body fluids – Wash hands with soap and water, then perform hand hygiene with ABHR.
 - Not visibly soiled – Perform hand hygiene with ABHR.
4. Inspect for any contamination of the HCW uniform. If there is contamination, secure the garment for cleaning. Contaminated clothing should be washed or discarded in accordance with disease-specific guidelines, generally with hot water, usual detergent, and the addition of household bleach.

RESOURCES



- + **Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings**
- + **Respiratory Protection Standards**

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Special Respiratory Precautions



EXAMPLE DISEASES

Severe acute respiratory syndrome (SARS) • MERS • novel influenza strains (e.g., H7N9) • smallpox



GOAL OF PRECAUTIONS

- Provide respiratory protection against inhalation of infectious aerosols (infectious agents that remain infectious over long distances when suspended in the air) as well as impermeable barrier to reduce spread of highly pathogenic viruses on surfaces and via fomites during direct patient care activities (standard + contact + airborne).



PPE

Type:

- Disposable NIOSH-approved, fit-tested 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)
- Disposable face shield or disposable or cleanable goggles (if not using hooded PAPR)
- Disposable fluid-resistant gown that extends to at least mid-calf or disposable fluid-resistant coveralls
- Disposable gloves with extended cuffs (strongly consider double-gloving)
- Disposable boot/shoe covers

Special Respiratory Precautions



Donning:

1. Personal items (e.g., jewelry [including rings], watches, cell phones, pagers, pens) should ideally be removed and stowed. Long hair should be tied back. Eyeglasses should be secured with a tie.
2. Inspect PPE prior to donning to ensure that it is in serviceable condition (e.g., gloves not torn or ripped, respirator not soiled or creased, if using PAPR check motor and airflow) and that correct size is selected.
3. Perform hand hygiene with ABHR; allow hands to dry before donning gloves.
4. Put on first pair of gloves (assume double-gloving).
5. Put on gown or coverall. Ensure large enough to allow unrestricted movement. Ensure cuffs of inner gloves are tucked under the sleeve of the gown or coverall.
6. Put on boot/shoe protectors.
7. Put on outer gloves. Ensure the cuffs are pulled over the sleeves of the gown or coverall and are tight. Consider taping, if required.
8. Put on respirator.
 - N95 or elastomeric respirator – Apply mask, mold to nose/face, perform fit check to assure intact seal; apply face shield if not using goggles.
 - PAPR – Turn on PAPR motor, apply hood assuring inner liner (if equipped) is tucked into coverall (if used) and outer liner drapes smoothly over shoulders and adjust headband to comfort.
9. If not using hooded PAPR, apply full face shield or goggles.
10. After donning, the integrity of the ensemble should be verified by the HCW. The HCW should go through a range of motions to ensure sufficient range of movement without suit binding/stretching while all areas of the body remain covered.

Special Respiratory Precautions



Doffing:

PPE should be doffed in a designated removal area, particularly when using a PAPR. Care should be taken to avoid self-contamination during removal. Place all PPE waste in a labeled, leak-proof biohazard bag. PAPR should be placed in a separate biohazard bag and/or managed by service protocol.

1. Inspect the PPE for visible contamination, cuts, or tears before removal. Disinfect any visible contamination with an EPA-registered hospital disinfectant wipe.
2. Disinfect outer-gloved hands with either an EPA-registered hospital disinfectant wipe in accordance with manufacturer recommendations or ABHR. Remove and discard outer gloves into biohazard bag, taking care not to contaminate inner gloves in the process.
3. Inspect the inner glove outer surfaces for visible contamination, cuts, or tears.
 - Visible contamination, cut, or tear – If an inner glove is visibly soiled, then disinfect the glove with either an EPA-registered hospital disinfectant wipe or ABHR, remove the inner gloves, perform hand hygiene with ABHR on bare hands, and don a new pair of gloves. If the inner glove is cut or torn, check the underlying skin and review your occupational exposure protocol with your supervisor.
 - No visible contamination, cuts or tears – Disinfect the inner gloves with either an EPA-registered hospital disinfectant wipe or ABHR.
4. Remove gown or coverall and boot/shoe covers and discard.

(Note: Gown or coverall should be removed before face protection and respirator. If that is not possible due to the design of the PPE, remove the gown or coverall after face protection and respirator.)

 - Gown – Depending on gown design and location of fasteners, the HCW can either untie or gently break fasteners. Avoid contact with outer surface of gown during removal. Pull gown away from body, rolling inside out and touching only the inside of the gown.

Special Respiratory Precautions



- Coverall – Tilt head back to reach zipper or fasteners. Unzip or unfasten completely before rolling down while turning inside out. Avoid contact with outer surface of coverall during removal, touching only the inside of the coverall.
 - Dispose of gown or coverall into the biohazard bag.
5. Disinfect gloves with either an EPA-registered hospital disinfectant wipe or ABHR.
 6. Remove goggles or face shield (if used) sliding fingers under straps and sliding up and off away from face. Do not touch the front surface of the goggles/shield. Discard into biohazard bag. If re-using goggles must clean all surfaces with EPA-approved disinfecting wipes.
 7. Disinfect gloves with either an EPA-registered hospital disinfectant wipe or ABHR.
 8. Respirator
 - N95 respirator: Tip head slightly forward, remove by sliding fingers under the elastic straps and sliding them off the ears/head allowing the mask to fall away from the face being careful not to touch the front of the mask. Discard into the biohazard bag.
 - Elastomeric half-face respirator: Remove mask by straps without touching the front surface of the mask, wipe surface with EPA-approved hospital disinfectant cloth, allow to dry.
 - PAPR with External Belt-Mounted Blower: Remove PAPR belt and set PAPR down in front of you. Lean forward, grasp top of hood, (avoid grabbing hose), slowly remove hood by pulling off and straight down to floor. Retain the belt-mounted blower unit and reusable PAPR components in a designated bag or area for disinfection in accordance with manufacturer instructions (must be wiped down with EPA-approved hospital disinfectant and allowed to air dry).
 9. Disinfect inner-gloved hands with either an EPA-registered hospital disinfectant wipe or ABHR. Remove and discard gloves, taking care not to contaminate bare hands during removal process. Dispose of inner gloves into the biohazard bag.

Special Respiratory Precautions



10. Perform hand hygiene.

- Visibly dirty, contaminated, or soiled with blood or body fluids – Wash hands with soap and water, then perform hand hygiene with ABHR. Refer to the [Occupational/Health Exposures](#) information in the Resources/Special Considerations section for additional guidance to ensure that occupational health is aware of potential exposure.
- Not visibly soiled – Perform hand hygiene with ABHR.

11. HCW should inspect for any contamination of their uniform. If there is contamination, remove and secure garment for cleaning. Contaminated clothing should be washed or discarded in accordance with disease-specific guidelines, generally with hot water, usual detergent, and the addition of household bleach.

RESOURCES



- + **Considerations for Selecting Protective Clothing used in Healthcare for Protection against Microorganisms in Blood and Body Fluids**
- + **Interim Guidance for Infection Control Within Healthcare Settings When Caring for Confirmed Cases, Probable Cases, and Cases Under Investigation with Novel Influenza A Viruses Associated with Severe Disease**
- + **Middle East Respiratory Syndrome (MERS)**

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Resources/Special Considerations

HAND HYGIENE¹²

- During the delivery of healthcare, avoid unnecessary touching of surfaces in close proximity to the patient to prevent both contamination of clean hands from environmental surfaces and transmission of pathogens from contaminated hands to surfaces.
- When hands are visibly dirty, contaminated with proteinaceous material, or visibly soiled with blood or body fluids, wash hands with either a nonantimicrobial soap or an antimicrobial soap and water.
- If hands are not visibly soiled, or after removing visible material with soap and water, the preferred method of hand decontamination is with ABHR.
- Wash hands with non-antimicrobial soap or with antimicrobial soap and water if contact with spores (e.g., *C. difficile* or *Bacillus anthracis*) is likely to have occurred. The physical action of washing and rinsing hands under such circumstances is recommended because alcohols, chlorhexidine, iodophors, and other antiseptic agents have poor activity against spores.
- Do not wear artificial fingernails or extenders if duties include direct contact with patients at high risk for infections with associated adverse outcomes.

PANDEMIC INFLUENZA

- PPE guidance for novel influenza and pandemic influenza may change rapidly. EMS agencies should monitor information from CDC and regulatory organizations at the state and federal level and have established contacts with infection prevention and control professionals.
- Novel influenza strains are usually initially managed according to Special Respiratory (Airborne + Contact + Standard) Precautions. If in doubt, the service should apply Special Respiratory Precautions until disease-specific guidance is available.

¹² 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings

Resources/Special Considerations

- Dispatch should update questions to reflect any screening needed for international, domestic, or local cases.
- Responding personnel should have a low threshold to mask the patient and wear appropriate PPE as influenza is transmissible prior to the onset of significant symptoms.
- Pandemics can place enormous strain on EMS services due to high call volumes and provider illness. Crisis standard of care plans may need to be implemented, including but not limited to:
 - » Adjusted resource assignments based on availability (e.g., police only on reported vehicle crash until non-ambulatory injuries confirmed)
 - » Auto-answer and caller deferral to information/prescribing lines for non-emergency situations
 - » Recommending private transport when appropriate
 - » Changing to “closest hospital” transportation or “batch” transports
 - » Deferral of selected 911 requests for service
 - » Expanding “left at scene” discretion/guidelines
 - » Non-hospital destinations for appropriate patients
 - » Changes in staffing, crew configuration, and use of novel response structures (“jump cars”, community paramedic response, etc.)
 - » Adoption of N95 respirator conservation or re-use strategies
- If EPA-registered hospital disinfectants become unavailable or are in short supply during a pandemic, consider dilute bleach solution as per CDC and WHO guidance listed below under Resources.
- Changes to 911 communications center protocols and EMS responses will require medical director and service director policy development and approval and may require local ordinance and state statutory relief. These policies and supporting governmental actions should be planned prior to an event that overwhelms EMS resources.

Resources/Special Considerations



RESOURCES

- + **Collecting, Preserving and Shipping Specimens for the Diagnosis of Avian Influenza A(H5N1) Virus Infection Guide for Field Operations, Annex 7. Disinfection.**
- + **Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response**
- + **Crisis Standards of Care: A Toolkit for Indicators and Triggers**
- + **EMS Pandemic Influenza Guidelines for Statewide Adoption**
- + **Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008**

Resources/Special Considerations

PEDIATRIC ISSUES

- Children may be very fearful of caregivers in high-level PPE. Assure the ability to communicate with the child and explain what is happening and why in an age-appropriate manner.
- Caregivers who follow infectious precautions may be kept with the child if they wear appropriate PPE and have been providing care for the child during the current illness and there is no substantial risk of body fluid exposure during transport.
- Pediatric intravenous access can be difficult and the need for access must be balanced against the potential risk for needlesticks in the setting of potential blood-borne pathogens.
- Appropriate sizes of surgical masks should be available for children.
- Consider nasal/oral routes for analgesia and anxiolysis if intravenous access is not obtained.
- Assure that comfort objects (blanket, stuffed animal, etc.) can accompany the patient during transport.
- Do not avoid indicated procedures and medications for children simply because of a perceived risk of distress.
- Children are able to compensate for hypovolemia much better than adults by increasing their heart rate. However, hypotension and cardiovascular collapse can occur with little warning. Elevated heart rates can also be seen with fever, anxiety, and pain, making a determination of origin difficult. Assess perfusion, history, and other signs before assuming tachycardia is not related to early shock/sepsis.
- When possible, specialized EVD/VHF transport units should include agencies that routinely provide pediatric critical care interfacility transport.
- EVD commonly induces miscarriage. Providers should be aware of this issue and potential exposures and complications.
- Portable pediatric isolation transport units are available, but should only be used by personnel trained in their operation and limitations. The use of these units may significantly increase the patient's anxiety during transport.



RESOURCES

- + **Q&A's About the Transport of Pediatric Patients (<18 years of age) Under Investigation or with Confirmed Ebola**

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Infection Control


Clinical Syndromes or Conditions Warranting Empiric Transmission-Based Precautions in Addition to Standard Precautions

Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (2007)

Appendix A: Table 2

Format Change [February 2017]

 Update or clarification r17 The format of this section was changed to improve readability and accessibility. The content is unchanged.

Disease	Clinical Syndrome or Condition†	Potential Pathogens‡	Empiric Precautions (Always Includes Standard Precautions)
Diarrhea	Acute diarrhea with a likely infectious cause in an incontinent or diapered patient	Enteric pathogens§	Contact Precautions (pediatrics and adult)
Meningitis	Meningitis	<i>Neisseria meningitidis</i>	Droplet Precautions for first 24 hours of antimicrobial therapy; mask and face protection for intubation
Meningitis	Meningitis	Enteroviruses	Contact Precautions for infants and children
Meningitis	Meningitis	<i>M. tuberculosis</i>	Airborne Precautions if pulmonary infiltrate Airborne Precautions plus Contact Precautions if potentially infectious draining body fluid present
Rash or Exanthems, Generalized, Etiology Unknown	Petechial/ecchymotic with fever (general)	<i>Neisseria meningitidis</i>	Droplet Precautions for first 24 hours of antimicrobial therapy
Rash or Exanthems, Generalized, Etiology Unknown	Petechial/ecchymotic with fever (general) <ul style="list-style-type: none"> If positive history of travel to an area with an ongoing outbreak of VHF in the 10 days before onset of fever 	Ebola, Lassa, Marburg viruses	Droplet Precautions plus Contact Precautions, with face/eye protection, emphasizing safety sharps and barrier precautions when blood exposure likely. Use N95 or higher respiratory protection when aerosol-generating procedure performed. Ebola Virus Disease for Healthcare Workers [2014]  Update: Recommendations for healthcare workers can be found at Ebola For Clinicians .

Disease	Clinical Syndrome or Condition†	Potential Pathogens‡	Empiric Precautions (Always Includes Standard Precautions)
Rash or Exanthems, Generalized, Etiology Unknown	Vesicular	Varicella-zoster, <i>herpes simplex</i> , variola (smallpox), vaccinia viruses	Airborne plus Contact Precautions; Contact Precautions only if Herpes simplex, localized zoster in an immunocompetent host or vaccinia viruses most likely
Rash or Exanthems, Generalized, Etiology Unknown	Maculopapular with cough, coryza and fever	Rubeola (measles) virus	Airborne Precautions
Respiratory Infections	Cough/fever/upper lobe pulmonary infiltrate in an HIV-negative patient or a patient at low risk for human immunodeficiency virus (HIV) infection	<i>M. tuberculosis</i> , Respiratory viruses, <i>S. pneumoniae</i> , <i>S. aureus</i> (MSSA or MRSA)	Airborne Precautions plus Contact precautions
Respiratory Infections	Cough/fever/pulmonary infiltrate in any lung location in an HIV-infected patient or a patient at high risk for HIV infection	<i>M. tuberculosis</i> , Respiratory viruses, <i>S. pneumoniae</i> , <i>S. aureus</i> (MSSA or MRSA)	Airborne Precautions plus Contact Precautions Use eye/face protection if aerosol-generating procedure performed or contact with respiratory secretions anticipated. If tuberculosis is unlikely and there are no AIIRs and/or respirators available, use Droplet Precautions instead of Airborne Precautions Tuberculosis more likely in HIV-infected individual than in HIV negative individual
Respiratory Infections	Cough/fever/pulmonary infiltrate in any lung location in a patient with a history of recent travel (10-21 days) to countries with active outbreaks of SARS, avian influenza	<i>M. tuberculosis</i> , severe acute respiratory syndrome virus (SARS- CoV), avian influenza	Airborne plus Contact Precautions plus eye protection. If SARS and tuberculosis unlikely, use Droplet Precautions instead of Airborne Precautions.
Respiratory Infections	Respiratory infections, particularly bronchiolitis and pneumonia, in infants and young children	Respiratory syncytial virus, parainfluenza virus, adenovirus, influenza virus, <i>Human metapneumovirus</i>	Contact plus Droplet Precautions; Droplet Precautions may be discontinued when adenovirus and influenza have been ruled out
Skin or Wound Infection	Abscess or draining wound that cannot be covered	<i>Staphylococcus aureus</i> (MSSA or MRSA), group A streptococcus	Contact Precautions Add Droplet Precautions for the first 24 hours of appropriate antimicrobial therapy if invasive Group A streptococcal disease is suspected

* Infection control professionals should modify or adapt this table according to local conditions. To ensure that appropriate empiric precautions are implemented always, hospitals must have systems in place to evaluate patients routinely according to these criteria as part of their preadmission and admission care.

† Patients with the syndromes or conditions listed below may present with atypical signs or symptoms (e.g. neonates and adults with pertussis may not have paroxysmal or severe cough). The clinician's index of suspicion should be guided by the prevalence of specific conditions in the community as well as clinical judgment.

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‡ The organisms listed under the column “Potential Pathogens” are not intended to represent the complete, or even most likely, diagnoses, but rather possible etiologic agents that require additional precautions beyond Standard Precautions until they can be ruled out.

§ These pathogens include enterohemorrhagic *Escherichia coli* O157:H7, *Shigella spp*, hepatitis A virus, noroviruses, rotavirus, *C. difficile*.

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