

Infection Prevention Basics

- **Expect to be routinely exposed to infectious agents.**
 - A commitment to employing basic infection prevention measures on every single incident will provide the simplest and best protection against infectious diseases.
 - All EMS Providers must be aware of well-known (Hepatitis B, influenza, etc.), as well as emerging/new pathogens (Avian Flu, SARS, etc.) that present risks to Providers.
- Immunizations
 - Immunizations are an extremely important weapon against infectious disease, and updated immunizations protect the provider and decreases overall disease transmission (“herd immunity”).
 - For healthcare workers, recommended immunizations include: *Hepatitis A & B, Measles, Mumps, & Rubella (MMR), Varicella (chickenpox), Tetanus, Diphtheria, & Pertussis (Tdap), & Influenza.*
- Hand Washing
 - Hands should be washed as soon as is feasible after each patient contact, the removal of gloves/PPE, and after cleaning all equipment.
 - Waterless, alcohol-based hand cleaners are an acceptable alternative to soap and water provided there is no gross organic material present.
- Cleaning and Disinfection of Equipment and Work Areas
 - First, Remove Gross Contamination.
 - Failure to remove organic material provides a continuing breeding ground for organisms.
 - Then, Disinfect any potentially contaminated surfaces:
 - After applying disinfectant, always permit the equipment to air dry. Wiping dry the wet disinfected surface will negate the effects of the agent and render it useless.

Personal Protective Equipment (PPE)

- Gloves:
 - Wear gloves during all patient interactions, and remove gloves after contact with a patient and/or the surrounding environment (including medical equipment).
 - **Never** wear the same pair of gloves for the care of more than one patient.
- Gowns
 - Wear a gown to protect skin and prevent contamination of clothing when contact with significant amounts of blood (e.g. childbirth/trauma) or other body fluids (e.g. diarrhea/vomitus) is anticipated.
- Respiratory/Mucous Membrane (Mouth, Nose & Eye Protection):
 - Respiratory protection should be considered with any patient presenting with an **acute febrile respiratory illness** (fever plus nasal congestion/rhinorrhea, sore throat, and/or cough).
 - Select masks/eye protection to protect mucous membranes during procedures and activities that are likely to generate splashes or sprays of blood, body fluids, secretions and excretions.

Standard Precautions = All Patient Interactions:

- Standard Precautions are intended to be applied to the care of all patients, regardless of the suspected or confirmed presence of an infectious agent.
- This is based on the principle that all blood, body fluids, secretions/excretions, non-intact skin, and mucous membranes may contain transmissible infectious agents
- Always conduct a self-check of your skin (particularly hands and exposed surfaces) prior to any potential patient contact. Identify and cover scrapes, wounds, or other non-intact surfaces with bandages.
- **Personal Protective Equipment (PPE)** is designed to stop the transmission of an infectious agent by preventing contamination of a Provider's skin, mucous membrane, or clothing. While it reduces the risk, PPE does not completely eliminate the possibility of infection, and is only effective if used correctly.
 - The application of various pieces of PPE during patient care is determined by the nature of the provider-patient interaction and the extent of anticipated blood, body fluid, or pathogen exposure.
 - It is often difficult to determine the appropriate level of protection/PPE needed in certain situations. An informed decision can't be made until a patient assessment is completed and/or a history is obtained. By then, it's too late! **When in doubt, always use maximal rather than minimal PPE.**
- Do not reuse gloves, masks, gowns or other pieces of PPE.
- Providers must be familiar with PPE application (*donning*) and removal (*doffing*) procedures.
- Always exercise caution in the removal of PPE to prevent inadvertent self-inoculation if the PPE has been contaminated with infectious materials, and dispose of PPE in an appropriate biohazard waste receptacle.

Contact Precautions = Standard Precautions (Gloves) + Gowns:

- Use in situations where contamination of the provider with blood or other bodily fluids may occur beyond just the providers' gloved hands--large amounts of diarrhea, vomitus, etc., or
- Use with a known infective organism that is transmitted by direct contact with secretions or bodily fluids or from environmental surfaces: I.e. any drug resistant organism, Clostridium difficile, Scabies, etc.

Procedure:

- Everyone involved in direct patient care should wear **clean gloves and gowns**.
- Gloves and gowns should be removed and placed in appropriate biohazard waste receptacle.
- Hands should be washed with soap and water upon completion of patient transfer.
- Consider additional protection (e.g. masks, face protection, goggles) depending on the patients symptoms or procedures done. (e.g. masks and eye protection for suctioning, intubation, or nebulized medication).

Droplet Precautions = Standard Precautions (Gloves) + Mask +/- Eye Protection:

- Droplet precautions should be employed for patients with *febrile* respiratory illness: Meningitis, Pertussis, Influenza, as well as common respiratory viruses (e.g. adenovirus and rhinovirus).

Procedure:

- Utilize pre-arrival information provided by dispatch to a possibly symptomatic patient (when applicable).
- Patient(s):
 - Option 1: Provide **surgical masks** to all patients with symptoms of a respiratory illness who can tolerate its placement.
 - Option 2: For patients who cannot wear a surgical mask (due to symptoms, required medical interventions, or refusal) consider application of oxygen via **non-rebreather face mask** to limit dissemination of airborne particles (in addition to any medical treatment being provided).
- Providers:
 - All providers should wear a **surgical mask** and adhere to Standard Precautions.
 - **Consider additional use of a gown and eye protection** if contact with bodily secretions or a contaminated environment is anticipated,
 - When performing **high risk respiratory procedures** (i.e. intubation, deep tracheal suctioning, nebulized respiratory treatments), use a **fitted N95 respirator** mask.
- Continue droplet precautions until it is determined that the cause of symptoms is not an infectious agent that requires precautions beyond standard precautions.

Airborne Precautions = Standard Precautions (Gloves) + N95 Mask:

- Airborne precautions should be employed when the infectious agent is spread via a vector which forms small particles that may remain airborne for an extended period of time: i.e. tuberculosis, measles, chicken pox, small pox and other pandemic illnesses when the exact mechanism of transmission is unknown.
- **Includes Standard Precautions, Contact Precautions and Droplet Precautions as outlined above.**

Procedure:

- Utilize pre-arrival information provided by dispatch to a possibly symptomatic patient (when applicable).
- Limit the number of EMS personnel who have contact with the patient.
- *Provider(s)*: Use a **fitted N95 mask** for all patient contact (and always perform a "fit check" by molding the mask to the face and checking for air leaks after donning).
- *Patient(s)*: Provide surgical masks or non-rebreather similar to "Droplet Precautions" (*above*) to all patients with symptoms of a respiratory illness who can tolerate its placement.
- Continue to use airborne precautions until it is determined that the cause of symptoms is not an infectious agent that requires precautions beyond standard precautions.

Sharps Hazards:

- The greatest risk for an occupational exposure to blood occurs with the use of needles and other sharp implements.
- The most common occupational blood exposure occurs when needles are **recapped**.
 - Needles that have contact with human tissue should never be recapped, re-sheathed, bent, broken, or separated from disposable syringes.
- Used needles and other sharps shall be disposed of in approved sharps containers as soon as possible.
- Providers should ensure that no sharp is used in a manner inconsistent with its intended purpose or attempt to circumvent the safety features of the device.

Post Exposure Evaluation Procedure:

- If a Provider is exposed to blood, bodily fluids, or airborne particles, appropriate action must be taken.
- Many of these actions are time-dependent so it's important to initiate the reporting/evaluation process as soon as possible. If a provider has experienced a confirmed or suspected exposure to blood or other infectious material:
 - Withdraw from patient care as soon as it is appropriate--this is usually at the completion of care but may need to occur sooner in some cases.
 - Cleanse the wound (or irrigate the membranes) with the appropriate solution immediately after any exposure to a patient's bodily fluids.
 - Don't attempt to "milk" any needle stick injuries as this does not appear to be useful in removing source patient material.
 - **Report any suspected exposure to communicable diseases to your supervisor or the appropriate designated individual in your agency as quickly as possible.**
- In the case of a blood exposure due to needle stick (or other sharps), bodily fluid spray to mucous membrane, or patient blood contacting non-intact skin, the EMS Provider should travel to the closest appropriate facility for evaluation as soon as possible.