

University of Michigan Health System

A PHYSICIAN'S INFECTION CONTROL TRAINING GUIDE

I. INTRODUCTION

Care must be taken to protect both the patient and yourself from spread of microorganisms. The CDC estimates that one out of every 20 patients admitted to a hospital develops a nosocomial infection. Healthcare workers (HCW) are also at risk for acquiring infections, e.g., hepatitis B, due to their work activities. It is important that you know the UMHC policies that will protect you and your patients from infections.

II. BLOODBORNE PATHOGENS

Many microorganisms can be found in human blood and have the potential for transmission to a healthcare worker (HCW). These include Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), Hepatitis C, delta hepatitis, other human retroviruses, syphilis, malaria and other viral and bacterial illnesses not commonly seen in this area. The two most significant risks for HCWs are HBV and HIV.

Potentially Infectious Materials

- Human blood, blood products
- Human semen or vaginal secretions; cerebrospinal, synovial, pleural, pericardial, peritoneal and amniotic fluids (also known as OPIM - other potentially infectious material)
- Any body fluid contaminated with blood or OPIM
- Saliva in dental procedures
- All body fluids if difficult to differentiate
- Any unfixated human tissue or organ
- HIV or HBV cultures and blood, organs from HIV-infected experimental animals

III. BODY SUBSTANCE PRECAUTIONS

- UMHS universal precautions policy entitled Body Substance Precautions (BSP) is designed to prevent the spread of potentially infectious microorganisms present in any moist body substance (e.g., blood, OPIM, oral secretions, etc.) primarily by the use of handwashing, barriers (gloves, gowns, face protection, etc.), and safe sharps use. Under the policy, all patients are cared for using BSP. Policy at URL: http://www.med.umich.edu/i/policies/ice/ICM_ip/Bsp.htm
- Hands shall be **cleansed** in each of the following situations,
 - Before and after direct patient contact
 - After any direct patient contact where there is some likelihood of contamination with moist body substances.
 - Whenever a hospital policy/procedure requires hand washing.
 - After handling potentially contaminated articles.
 - Before preparing/handling sterile items or supplies.
 - After glove removal, if gloves contacted moist body substances or non-intact skin or potentially contacted body fluids or items contaminated with body fluids in conjunction with the ICC Body Substance Precautions Policy.
 - Before the use of gloves if contact with mucous membranes, non-intact skin, or sterile body sites is anticipated.
 - Before/after eating.
 - Hands shall be washed using soap and water in each of the following situations,
 - When hands have been potentially soiled with moist body substances.
 - After handling used dressings, sputum containers, soiled urinals, catheters, bedpans, or changing a diaper.
 - Following personal hygiene (use of toilet, blowing nose, etc.).
 - An alcohol-based handrub may be used in each of the following situations,
 - When hands are not visibly soiled with blood, body fluids, or any organic matter.
 - In situations where handwashing facilities are not available. See section V. C. of the Hand Hygiene policy for additional information. Policy at URL: http://www.med.umich.edu/i/policies/ice/ICM_ptcare/Handwash.htm.

4. Nails and patient care staff,
 - a. Keep short
 - b. No artificial nails or nail products

REMEMBER: WASH HANDS AND OTHER SKIN SURFACES IMMEDIATELY AND THOROUGHLY WITH SOAP AND WATER IF CONTAMINATED WITH BLOOD OR OTHER BODY FLUIDS.

- B. Gloves are used:
- when touching blood, body fluids, or mucous membranes
 - over your non-intact skin and when touching non-intact skin
 - when handling items that may be soiled with blood or body fluids
 - when performing venipuncture - OSHA rule
 - when performing any vascular access - OSHA rule
 - when handling or disposing of body wastes

Gloves are changed after any contact with patient's body fluids or items contaminated with body fluids:

- do not wash and reuse gloves
- soiled gloves can transmit pathogenic microorganisms just like unwashed hands – do not contaminate anything in the environment

C. Gowns:

1. Must not permit blood or other fluid to pass through to skin or clothing. Specified surgical procedures may require reinforced sleeves/front. Clinic procedures may need only a lab coat. Plastic gowns may be best for wound irrigation of short duration.
2. Gowns must be removed immediately following procedure and placed into appropriate container.

D. Surgical Hoods/Shoe Covers are generally only needed in Labor/Delivery and during OR procedures where gross contamination is likely. These items are not needed for most procedures.

E. Masks/Eye Protection Devices:

1. Must be worn when splashes or droplets of blood or OPIM is likely.
2. Eye glasses used as a barrier must have side shields. In general if eye protection is needed, a mask should also be worn.

F. Barrier location:

- Gloves are located in each patient and procedure room.
- Other protective equipment are located on each unit - usually in a central location.

G. Sharps Disposal:

1. Use safety devices whenever possible (e.g. IV catheters, butterfly needles)
2. Contaminated needles are not to be bent, manipulated, removed from syringe or recapped.
3. When discarding syringe, make sure it drops into the sharps container instead of lying on the opening.
4. Syringes without needles must be discarded in a sharps container
5. For any procedure that does not allow for immediate disposal of sharp items into a sharps container:
 - a) Have a large-mouthed container (such as an emesis basin) nearby while performing the procedure. Immediately after use, place the sharp item in the container.
 - b) As soon as possible, carry the container to the sharps container and roll the item from the container into the sharps container without handling the sharp items.
 - c) Rolling large containers may be brought to the procedure site.
6. Needles must be removed from secondary I.V. tubing before disposal:
 - a) Pull needle off of the end of I.V. tubing using a hemostat; still using the hemostat to hold needle, release needle directly over the sharps container allowing it to drop in. OR
 - b) Dangle I.V. tubing directly over the opening of the needlebox. Using scissors, cut the I.V. tubing as close to the needle as possible allowing needle to drop into the sharps container.

H. Other Work Practices:

1. Eating and drinking must be in designated areas only.

2. UMHS prohibits eating, drinking, smoking, cosmetic or lip gloss applications and insertion of contact lenses in work areas where there is likelihood of occupational exposure.
3. Food and drink cannot be kept in refrigerators, shelves, or countertops where infectious materials are present.
4. All procedures involving blood or OPIM shall be performed in such a manner as to minimize splashing, spraying, and generation of droplets. Mouth pipetting (lab procedures) is prohibited.
5. Laboratory specimens that may leak are placed inside a clear plastic transport bag prior to delivery to the laboratory.
6. Method for cleaning blood or moist body fluid spill:
 - a) Wear gloves.
 - b) Cover spill with paper toweling to absorb blood or moist body fluid.
 - c) Flood area with 70% alcohol, bleach (1:100 dilution), Virex, Cavicide, or other UMHS-approved disinfectant.
 - d) Allow disinfectant to remain for at least 10 min. before rinsing.

I. Hepatitis B vaccination/post exposure follow-up

1. A recombinant Hepatitis B vaccine (currently Engerix) is available free of charge to all UMHS employees at Employee Health Service.
2. The recombinant Hepatitis B vaccines are safe and result in protective antibody production in >95% of healthy adults after 3 doses.
3. Hepatitis B vaccine is strongly recommended for all physicians and HCWs with occupational exposures to blood and OPIM.
4. If you have not received the Hepatitis B vaccine, please report to Employee Health Services to receive information and begin vaccine. If you choose to decline the vaccine, a written declination sheet must be signed.
5. In the case of exposure:
 - a) Wash affected area with soap and water.
 - b) If mucous membrane was exposed, flush with copious amounts of water.
 - c) Page #5356 as soon as possible.
 - d) Have patient name and registration number available, if possible.

Appropriate counseling, therapy and follow-up will be done on a case-by-case basis.

IV. RESPIRATORY ISOLATION

- A. Respiratory Isolation (URL: http://www.med.umich.edu/i/policies/ice/ICM_ip/Ri.htm) is used to assist UMHS staff members in minimizing the airborne spread of communicable diseases.
- B. Most common diseases: Chickenpox, Tuberculosis, SARS.
- C. Policy parameters:
 - private, negative pressure, isolation room (with anteroom)
 - doors closed
 - mask for individuals entering room (N-95 mask for staff - for TB and SARS only; surgical or isolation mask may be used for other Respiratory Isolation unless immune to the disease)
 - isolation mask on patient when patient leaves room

V. CONTACT PRECAUTIONS (includes antibiotic –resistant microbes)

A. Background

Repeated exposure to antibiotics has resulted in microbes that have built up resistance to certain antibiotics. The risk of infection or colonization with antibiotic-resistant microorganisms is higher among debilitated patients and in settings of high antibiotic use and invasive technology (e.g., ICU). Infections due to antibiotic-resistant microbes are difficult to treat and are often associated with high morbidity.

The Contact Precautions policy (URL: http://www.med.umich.edu/i/policies/ice/ICM_ip/cp.htm) is based on experience from other institutions in controlling the spread of antibiotic-resistant microorganisms and other illnesses, e.g. lice, scabies, rotavirus. As with all microorganisms, these microbes can be spread from patient-to-patient through transient hand carriage and environmental contamination.

B. Microbes covered by precautions

- Vancomycin resistant enterococci (VRE) (*except vanC isolates, e.g., E. casseliflavus, E. gallinarum*)

- All Gram-negative bacteria that are completely β lactam resistant. (e.g., Klebsiella, Serratia, *P. aeruginosa*, Enterobacter) - includes 3rd generation cephalosporins and penicillins
- Other microorganisms with antibiotic-resistance profiles considered by Infection Control & Epidemiology to be epidemiologically significant
- Lice, scabies, rotavirus
- Methicillin-resistant *S.aureus* (MRSA) is **not** covered by this policy - only BSP required

C. Practices

1. Methods include

- use of a private room
- glove and gown use for staff and visitors
- cleaning the environment and equipment (e.g., with Cavicide or Virex before use on another patient), and communication of the CP status to other departments (e.g., patients with antibiotic-resistant microorganism have a green arm band)
- a designated stethoscope in room
- non-transfer of patients (to new room or floor) except when medically necessary
- **prudent use of antibiotics in all settings**

2. Removing a patient from precautions

- **Inpatients** positive for **VRE** must remain on CP for duration of hospital stay.
- **Inpatients** with other antibiotic-resistant microbes must remain on CP until negative for the organism on two occasions, at least one week apart:
 1. At any previous culture positive sites,
 2. Urine, and
 3. Wound if present.
- **Readmitted** patients must be placed in CP until negative on *one occasion* at all of the sites listed above
- Lice and scabies – 24 hours after treatment
- Rotavirus – until diarrhea resolves

VI. REGULATED WASTE

A. Includes:

1. Liquid or semiliquid blood, other potentially infectious materials (OPIM - see page 1).
2. Items saturated with blood or OPIM to the point that liquid would be released if compressed.
3. Items caked with dried blood or OPIM.
4. Contaminated sharps (e.g., needles, scalpels).
5. Pathologic or microbiologic wastes, e.g., used petri dishes.

B. All sharps, including broken glass, needles, scalpels must be placed immediately in sharps containers located in each patient room.

C. Place other regulated waste in red bags or bucket labeled with biohazard label.

Any questions concerning infection prevention and control practices can be addressed by calling the following individuals:

I. Infection Control Information

A. **Infection Control & Epidemiology** (936-6355), C201 Med Inn / 0825
Candace Friedman, MPH, CIC, Manager

Kristi Vander Hyde, BS, BSN, Staff Specialist (pager #2291)
Kathy Petersen, MS, CIC, Staff Specialist (pager #2280)
Ann Herman, BSN, MPH, CIC, Staff Specialist (pager #7980)
Lisa Sturm, MPH, CIC, Staff Specialist (pager #5921)
Kristen VanDerElzen, MPH, CIC, Staff Specialist (pager #5919)
Jennifer Arndt, Staff Specialist (pager #1814)
Jennifer Sweeney, MPH, Staff Specialist (pager #8673)

B. **Infection Control Website**

Contains infection control-related hospital policies and unit specific practices. It is accessible at URL:
<http://www.med.umich.edu/ice>

II. Clinical Questions Relating to Infectious Diseases

Physicians:

Carol Chenoweth, MD
Infection Control Committee Chair - (936-6355)

Cary Engleberg, MD
Chief, Division of Infectious Diseases - (936-5205)

Janet Gilsdorf, MD
Chief, Pediatric Infectious Diseases - (763-2440)

Carol Kauffman, MD
VA Hospital – (761-7984)

III. Occupational Exposure Consultation and Follow-up

Employee Health Service (764-8021), C380 Med Inn / 0838