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PRIMER ON PREVENTING HEALTHCARE-ASSOCIATED INFECTIONS
and
REDUCING THE RISK OF INFECTIONS IN HEALTH CARE WORKERS

VA ANN ARBOR HEALTHCARE SYSTEM

ANN ARBOR, MICHIGAN

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Health care workers (HCW) must take precautions to avoid transmitting organisms that cause infections to our patients and to avoid becoming infected with organisms carried by our patients. These precautions are quite simple and straightforward. The risk of acquiring health-care associated infection is far greater for patients than for HCW. Patients are at greatest risk of acquiring bacteria that are resistant to most common antibiotics, and these organisms are most often spread by the hands of HCW.

PREVENTION OF HEALTHCARE-ASSOCIATED INFECTIONS

The single most important action that can be taken by a HCW when having direct contact with patients is APPROPRIATE HAND HYGIENE. Hand hygiene must be performed before and after contact with each patient and before and after any invasive procedure, even when gloves are worn.

Handwashing with an antimicrobial soap removes dirt and bacteria that transiently reside on the skin by mechanical friction. Handwashing is always appropriate, but it must be used when hands or gloves are visibly soiled, before you eat and after you use the restroom. Alcohol hand rub rapidly kills transient microbial flora, but should not be used if hands are visibly soiled.

Many healthcare-associated can also be traced back to use of devices such as intravenous catheters, especially central venous catheters, indwelling urinary catheters, and endotracheal tubes. These devices violate a patient's natural host defenses and increase the patient's risk of infection. Attention to proper insertion and care procedures for these devices is essential to reduce healthcare-associated infections.

STANDARD PRECAUTIONS

HCW cannot always know which patients carry infectious agents that may be transmissible to others. This is the main reason why Standard Precautions are used for the care of ALL patients. Standard Precautions implies that every patient has the potential to transmit blood-borne pathogens to a HCW if the patient's blood, body fluids, or tissues contaminate HCW open cuts, mucous membranes, or tissues. It is essential that all HCW understand this concept and carry out Standard Precautions when caring for any patient and especially when dealing with sharps and invasive procedures.

The following precautions should be taken when dealing with blood, blood-contaminated secretions, tissues, mucous membranes, or body fluids:

1. Wear gloves when performing an invasive procedure (i.e., drawing blood, inserting an IV, inserting a urinary catheter). Perform proper hand hygiene before applying and after removing gloves.

2. The same gloves cannot be worn when giving care to different patients. Hands must be washed and a new pair of gloves donned before going on to the next patient.

3. If you leave a patient's room, you should discard the gloves you are wearing, cleanse your hands and then put on a new pair of gloves before going back into the room.

4. Needles and sharp instruments are disposed of in the sharps containers located in each patient's room. Use safety devices whenever available. If recapping of needles is required (e.g. blood cultures or arterial blood gases), use the one-handed technique.

5. If splashing of blood or blood-contaminated body fluids is expected, protect your clothes with a gown and your eyes, nose, and mouth with a mask and goggles or with a faceshield.

6. On each ward there are supply containers or carts with gowns, gloves, masks, faceshields, and goggles,. There is also a spill

kit that will allow you to safely clean up blood and other spills. Contact your housekeeper for assistance.

7. All specimens are transported to the lab in Biohazard ziplock plastic bags.

8. Infectious waste is placed in red biohazard trash. NEVER place sharps such needles, scalpels, or syringes in the trash. ONLY use puncture-resistant sharps containers.

9. Above all, use common sense when handling all blood and body fluids.

PRECAUTIONS AND ISOLATION PROCEDURES

Standard Precautions primarily protect HCW from acquiring infections. Additional precautions are necessary to prevent the spread of infection and to protect patients from acquiring nosocomial infections. A sign on the door of a patient's room will list specifically whether you should wear a gown, put on gloves, or wear a mask. Precautions are based on the organism that the patient is carrying, the transmissibility of that organism, and the risk to others. The following are examples of Isolation Precautions:

AIRBORNE PRECAUTIONS: A patient with known or suspected tuberculosis is placed into Airborne Precautions in a negative pressure room. Airborne Precautions mandate that HCW wear a special mask (N-95 respirator or PAPR) when entering the room. Both devices are available outside of the patient's room. The patient should cover his/her mouth with a tissue when coughing and wear a surgical mask when leaving the room for procedures.

DROPLET PRECAUTIONS: Patients with a variety of different respiratory infections, especially viral infections, are placed in Droplet Precautions to prevent spread of these infections to HCW and other patients. HCW must wear a surgical mask upon entry to the room. The patient must wear a surgical mask upon leaving the room.

CONTACT ISOLATION (methicillin-resistant Staphylococcus aureus etc): The patient usually has a wound or body fluid harboring an organism that could be transmitted to other patients. Precautions include routine use of gloves, a gown when touching the patient or the environment, and careful hand cleansing.

CONTACT- (MDRO) MULTI-DRUG RESISTANT ORAGNISMS: (VRE, ESBL-positive bacteria, CRE, etc.) The

patient usually has a wound or body fluid harboring a highly drug resistant organism that could be transmitted to other patients. Precautions include routine use of gloves and a gown the patient or the environment, and careful hand cleansing.

ENTERIC PRECAUTIONS: The patient with a stool specimen positive for *Clostridium difficile* toxin or suspected norovirus requires precautions similar to those for a patient in contact isolation. Hand hygiene is performed by washing with soap and water before leaving the room. Alcohol gel should NOT be used. Precautions include routine use of gloves and a gown the patient or the environment, and careful hand cleansing.

PREVENTION OF SPECIFIC DISEASES IN HCW

TUBERCULOSIS: Transmission of tuberculosis can be minimized by ensuring that the patient is in a negative pressure isolation room and by having all HCW wear a respirator. You must be fit-tested to determine the appropriate size for the N-95 respirator. If you are not known to have had a positive TB test in the past, you should get a yearly skin test (PPD) or blood test to

ensure that you have not become infected with tuberculosis. If you are exposed and/or your skin test converts, you should seek advice from Employee Health.

VARICELLA-ZOSTER INFECTION: If you have not had chickenpox or been immunized, do not care for or even enter the room of a patient with herpes zoster (shingles) or varicella (chickenpox) infections. This virus is highly contagious, and the disease in adults is often more severe than in children. If you do not remember if you have had the chicken pox or the vaccine, ask Employee Health to check an antibody titer. If negative, you should be immunized with the varicella vaccine.

HCW IMMUNIZATION AGAINST HIGHLY CONTAGIOUS ILLNESSES: Measles, mumps, rubella, and whooping cough can easily be spread from person to person; these diseases can be prevented by appropriate vaccination. HCW born after 1956 should have antibody titers to measles checked before starting work. If not immune, you should be re-vaccinated with measles vaccine. Likewise, every HCW should have immunity to rubella to minimize the risk of transmission of rubella to a pregnant woman, with possible severe consequences to the fetus.

HEPATITIS B and C (HBV, HCV) AND HIV: Standard Precautions should protect against transmission of these blood-borne pathogens. The hepatitis B vaccine is protective for most persons who have received a course of three vaccinations; all HCW should be immunized. In the event of a mucous membrane or percutaneous exposure to blood or body fluids, your antibody status will be checked to be sure that you are immune. If not, a booster dose of vaccine and perhaps high-titered immune globulin to hepatitis B (HBIG) may be indicated. There currently is no vaccine nor immunoglobulin for hepatitis C. Specific prophylaxis against HIV infection is available and must be given within a few hours of exposure if it is to be effective.

IN THE EVENT OF EXPOSURE TO BLOOD-BORNE PATHOGENS

1. Wash the area liberally with soap and water.
2. Immediately tell your supervisor or Resident. During regular hours, go to Employee Health; during other times, go to the VA ER.

3. Testing of the patient and the HCW for HBV, HCV, and HIV is done through established mechanisms; another HCW will obtained informed consent from the patient for HIV testing.

4. Anti-retroviral prophylaxis will be discussed with you by Employee Health or specified physicians in the ER. Drugs are provided free of charge by the VA Pharmacy and the first dose must be taken within 2 hours of the exposure.

5. Information can be readily accessed on-line. Go to the VA Ann Arbor Healthcare System home page (http://vaww.ann-arbor.med.va.gov/). Near the top of the page there are several icons. Click on the icon labeled *Exposure to Bloodborne Pathogens.*

INFECTION CONTROL MANUAL

For further information go the VA Infection Control Manual. This manual can be readily accessed on-line on the VA Ann Arbor Healthcare System home page (http://vaww.ann-arbor.med.va.gov/). Near the top of the home page are several icons. Click on the icon labeled *Infection Control Manual*. The manual will assist in determining which precautions may be necessary for your patient and when precautions may safely be

discontinued. The Infection Control Coordinator may be paged on (734) 651-5894 for assistance.