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Recommended Practices for Prevention of Transmissible Infections in the Perioperative Practice Setting

The following recommended practices were developed by the AORN Recommended Practices Committee and have been approved by the AORN Board of Directors. They were presented as proposed recommended practices for comments by members and others. They are effective January 1, 2007.

These recommended practices are intended as achievable recommendations representing what is believed to be an optimal level of practice. Policies and procedures will reflect variations in practice settings and/or clinical situations that determine the degree to which the recommended practices can be implemented.

AORN recognizes the numerous types of settings in which perioperative nurses practice. These recommended practices are intended as guidelines adaptable to various practice settings. These practice settings include traditional operating rooms, ambulatory surgery centers, physicians' offices, cardiac catheterization suites, endoscopy suites, radiology departments, and all other areas where operative and other invasive procedures may be performed.

PURPOSE. The rapidly changing health care environment presents health care workers with continuing challenges in the form of newly recognized pathogens and well known microorganisms that have become more resistant to today's therapeutic modalities. Protecting patients and safeguarding health care workers from potentially infectious agent transmission continues to be a primary focus of perioperative registered nurses.

RECOMMENDED PRACTICE I

Health care workers should use standard precautions when caring for all patients in the perioperative setting.

1. Standard precautions should be applied across all aspects of health care delivery.¹ Any individual (eg, patient, family member, significant other, visitor, or health care provider) may be transiently or chronically colonized with pathogenic microorganisms

and may be asymptomatic, display active infection, or be in the incubation period of the infectious disease.¹

2. Additional precautions may be needed for specific organisms encountered, but at a minimum, standard precautions should be used for all surgical patients.
 - Standard precautions apply to exposure or the potential for exposure to blood and all body fluids, secretions, and excretions (except perspiration) whether or not they contain visible blood; nonintact skin; and mucous membranes. Standard precautions are designed to protect patients and health care workers from contact with recognized and unrecognized sources of infectious agents.¹
 - Infectious agents can be transmitted via direct and indirect contact, respiratory droplets, and airborne aerosols.
3. Exposure to potentially infectious agents should be minimized by the use of personal protective equipment (PPE) (eg, gloves, gowns, aprons), work practices, engineering controls, and other measures tailored to the specific work environment.²

RECOMMENDED PRACTICE II

Hand hygiene should be performed before and after each patient contact.

1. All personnel should practice general hand hygiene. Prompt and frequent hand antisepsis is the single most important measure to reduce the spread of microorganisms.¹⁻³ Hand hygiene should be performed
 - at the beginning of a work shift,
 - before and after patient contact,
 - after removing gloves,
 - before and after eating,
 - before and after using the restroom,
 - any time there is a possibility that there has been contact with blood or other potentially infectious materials, and

- any time when hands may have been soiled or any time the practitioner believes his or her hands may have been soiled.
2. An appropriate alcohol-based hand antiseptic agent should be available in convenient locations (eg, wall, bedside).³ Frequency of health care providers' hand hygiene can be increased by convenient access to hand wash sinks or hand sanitation stations.⁴
 4. Exam gloves should be inspected upon donning, and changed after each patient contact, or when
 - a visible defect is noted,
 - perforation is suspected, and
 - according to organizational policy.

RECOMMENDED PRACTICE III

Protective barriers must be used to reduce the risk of skin and mucous membrane exposure to potentially infectious materials.

Personal protective barriers are required when it can be reasonably anticipated that a health care worker will be exposed to blood and body fluids or other potentially infectious materials.²

1. Gloves selected for use should provide an effective barrier against infectious materials (eg, blood, body fluids) and any anticipated chemicals to which the gloves may come in contact. Some chemicals may cause the breakdown of the glove material.
2. Use of polyvinyl chloride (PVC) or vinyl gloves should be limited to brief, low-risk exposures.⁵⁻¹¹ Research has shown that PVC and vinyl gloves have a high failure rate in use.
3. Users should refer to the glove manufacturer's written instructions for use with chemicals (eg, glutaraldehyde, peracetic acid, methyl methacrylate). When handling glutaraldehyde solutions, gloves that are impervious to glutaraldehyde should be worn.¹² Gloves should be changed immediately following direct contact with uncured methyl methacrylate (ie, bone cement). Exposure to uncured methyl methacrylate places the wearer at risk for direct contact with and skin absorption of the methyl methacrylate because it permeates the glove material. Users should contact the specific glove manufacturer and request written reports on specific glove styles and materials for the intrinsic ability of the glove to protect the wearer when exposed to chemotherapeutics, chemical agents, and bloodborne pathogens.
5. Sterile surgical gloves should be inspected immediately upon donning and before contact with sterile supplies and tissue.¹³ Sterile gloves should be changed
 - after each patient contact;
 - when a visible defect is noted;
 - when suspected or actual contamination occurs;
 - when a suspected or actual perforation from a needle, suture, bone, or other event occurs;
 - immediately following direct contact with uncured methyl methacrylate (ie, bone cement) because the wearer is at risk for direct contact and skin absorption of the methyl methacrylate via penetration of the glove material;¹⁴
 - when an unintentional electrical shock from an electrosurgical unit (ESU) is received to the hand(s) of the user;¹⁵
 - when gloves begin to swell, expand, and become loose on the wearer's hands, as a result of the material's absorption (hydration) of fluid and fats; and
 - according to organizational policy.
6. All end users should be familiar with the intended use and the limitations of each glove material.¹⁶ Each surgical glove material has specific characteristics (eg, latex, polyisoprene, chloroprene) which affect the performance and intended use of the glove.
7. Gloves should not be washed between patient contacts or uses. Research has found that pathogens are not effectively removed from gloves by washing.⁴ Washing gloves is not a substitute for hand washing.

8. Health care workers must wear masks to protect the mucous membranes of the nose and mouth during procedures and activities that generate splashes, splatters, sprays, or aerosols of blood or other potentially infectious materials.²
9. Health care workers must wear protective eye wear when a splatter is anticipated.²
10. Health care workers must wear a face shield if a splash is anticipated.²
11. Health care workers must wear fluid-resistant attire to protect skin and clothing during activities that generate splashes, splatters, sprays, or aerosols of blood or other potentially infectious materials. Personal protective equipment is required and must be used whenever exposure to potentially infectious materials is anticipated. The type of PPE required depends upon the type of exposure anticipated. Work garments, such as scrub attire and warm-up jackets, are not considered PPE because they are not impervious to strike-through of hazardous materials.²

RECOMMENDED PRACTICE IV

Health care practitioners should double-glove during invasive procedures.

1. Health care practitioners should wear two pairs of gloves, one over the other, during invasive procedures. A systematic review of 18 clinical trials of gloving practices clearly demonstrates that double-gloving minimizes the risk of exposure of health care workers to blood during invasive procedures. Meta-analyses of nine of these studies demonstrate the following.
 - Perforation rates of the glove closest to the skin are significantly less when wearing double gloves compared to single gloves ($P < 0.00001$).
 - Perforation rates are no different when wearing single gloves compared to the outer glove when two pairs of gloves are worn ($P = 0.3$).
 - More glove perforations are detected when using a colored under-glove indicator system when compared to two pairs of standard latex gloves ($P = 0.002$).¹⁷
- This systematic review also included clinical trials addressing other aspects of gloving practices. These studies found the following.
- Wearing two pairs of gloves (ie, double-gloving) significantly reduces the number of perforations to the innermost glove, when compared to the outer glove or single gloves.¹⁷
 - Wearing two pairs of gloves does not increase the likelihood of increased perforations to the outermost glove.¹⁷
 - Wearing one pair of standard thickness gloves on top of a pair of standard thickness colored gloves facilitates the wearer's rapid recognition of perforations to the outer glove.¹⁷
 - Wearing a single pair of orthopedic gloves (ie, thicker latex gloves) provides the same protection from perforations as does two pairs of standard latex gloves.¹⁸
 - Wearing two layers of colored gloves does not assist in recognizing breaches to the glove closest to the wearer's skin.¹⁹⁻²¹
 - Wearing a glove liner between two layers of gloves does reduce perforations to the innermost glove during orthopedic surgical procedures.^{22,23}
 - Wearing cloth outer gloves during orthopedic surgical procedures does decrease the number of perforations to the innermost glove when compared to double-glove layers.^{24,25}
 - Wearing steel weave outer gloves during orthopedic surgery does not reduce the number of perforations to the innermost gloves when compared to double gloves.²⁶
- The Centers for Disease Control and Prevention (CDC), the American College of Surgeons, and the American Academy of Orthopedic Surgeons, support double-gloving during invasive procedures.²⁷⁻²⁹
2. Upon completion of the invasive procedure, both pairs of gloves should be discarded and hand hygiene should be performed.³

RECOMMENDED PRACTICE V

Contact precautions should be used when providing care for patients who are known or suspected to be infected or colonized with microorganisms that are transmitted by direct or indirect contact with patients or items and surfaces in patients' environments (eg, herpes simplex, impetigo, infectious diarrhea, smallpox, methicillin-resistant *Staphylococcus aureus* [MRSA], and vancomycin-resistant enterococci [VRE]).

- Contact precautions include many of the same elements found in the standard precautions requirements. These include
 - wearing gloves when caring for patients or coming in contact with items that may contain high concentrations of microorganisms (eg, fecal material, blood, wound drainage) noting that gloves should be changed after contact with body fluids;
 - wearing gowns when it is anticipated that clothing will have contact with infectious patients or items in the patients' environment (eg, transporting, transferring patient to a bed/cart, positioning);³⁰
 - wearing a mask when it is anticipated that aerosolized exposure to infectious microorganisms is possible;
 - face protection (eg, goggles, face shield) when it is anticipated that splash or sneezing exposure to microorganisms is possible;
 - ensuring that precautions are maintained during transport; and
 - adequately cleaning and disinfecting patient care equipment and items before use with each patient.
- When patient transport is necessary, barriers (eg, gown, gloves) should be used to reduce the opportunity for transmission of microorganisms to other patients, personnel, and visitors and to reduce contamination of the environment.¹
- Noncritical equipment (eg, equipment that touches intact skin) contaminated with blood, body fluids, secretions, or excretions should be cleaned and disinfected after each

use, according to the organization's written policy.¹ The use of dedicated patient equipment may be indicated in some situations (eg, anesthesia, post-anesthesia care unit).

- Routine cleaning of environmental surfaces (eg, floors and walls) is adequate for inactivation of MRSA, vancomycin intermediate resistant *Staphylococcus aureus* (VISA), and VRE.
- When additional measures are indicated to prevent the spread of highly transmissible or epidemiologically important infectious organisms, an infection control professional should be consulted for guidance.¹

RECOMMENDED PRACTICE VI

Droplet precautions should be used when caring for patients who are known or suspected to be infected with microorganisms that can be transmitted by infectious large particle droplets (ie, larger than 5 microns in size) and generally travel short distances of three feet or less (eg, diphtheria, pertussis, influenza, mumps, pneumonic plague).

- Droplet precautions include
 - wearing a mask when within three feet of infectious patients,
 - positioning patients at a distance of at least three feet from other patients, and
 - placing surgical masks on patients during transport.
- When patient transport is necessary, barriers should be used to reduce the opportunity for transmission of microorganisms to other patients, personnel, and visitors and to reduce contamination of the environment.
- Noncritical equipment (eg, equipment that touches intact skin) contaminated with blood or other potentially infectious materials should be cleaned and disinfected after use.¹
- When additional measures are indicated to prevent the spread of highly transmissible or epidemiologically important infectious

organisms, an infection control professional should be consulted for guidance.¹

5. Droplets are generated from the source person primarily during coughing, sneezing, or talking. Transmission via droplet requires close contact between patients and personnel; droplets do not remain suspended in the air and generally travel short distances (eg, three feet or less).¹

RECOMMENDED PRACTICE VII

Airborne precautions should be used when caring for patients who are known or suspected to be infected with microorganisms that can be transmitted by the airborne route (eg, rubeola, varicella, tuberculosis [TB], and smallpox).

Microorganisms carried by airborne transmission (eg, droplet nuclei or dust particles) can be dispersed widely by air currents, remain suspended in the air for extended periods, and may become inhaled by a susceptible host within the same room or over a longer distance from the source patient.¹

1. Airborne precautions should include
 - National Institute of Occupational Safety and Health (NIOSH)-approved N95 mask worn by health care personnel;¹
 - placing surgical masks on patients during transport;
 - airborne isolation rooms with special air handling; and
 - ventilation for areas outside the surgical suite.
2. Additional perioperative considerations for patients known or suspected to have airborne diseases include the following.
 - Elective surgical procedures on patients requiring airborne isolation precautions, such as TB, should be delayed until the patient is no longer infectious.
 - Attempts should be made to perform procedures on patients requiring airborne isolation precautions at times when other patients are not present in the surgical suite and when a minimum number of personnel are present (eg, at the end of the day).

- Placing a bacterial filter on endotracheal tubes when operating on patients who have confirmed or suspected TB may help reduce the risk for contaminating anesthesia equipment or discharging tubercle bacilli into the ambient air.³¹
- Strict traffic control should be enforced.
- After the patient leaves the room, the room should remain closed and not used until the air in the room has completely changed (eg, 15 air changes per hour requires 28 minutes for a 99.9% removal efficiency).³²
- Health care personnel entering the OR suite immediately following a patient on airborne precautions should use an N95 mask and use proper PPE.

3. When surgical procedures are performed on patients who may have infectious TB, respiratory protection worn by personnel protects the sterile field from the respiratory secretions of the health care worker and protects the health care worker from the infectious droplets generated by patients.³²

RECOMMENDED PRACTICE VIII

Health care workers should be immunized against epidemiologically important agents according to CDC recommendations.

1. All health care workers must receive hepatitis B virus (HBV) immunizations unless medically contraindicated. Immunization against HBV is effective in preventing the disease and should be given before occupational exposure occurs. Information about HBV infection must be provided to employees within ten days of hire, and informed consent should be given before employees accept HBV immunizations. Health care workers may decline the vaccine but shall do so by signing a declaration statement that declines the vaccine. Vaccination should remain available after this declaration in the event the employee changes his or her mind.²
2. Health care workers should be immunized against other communicable and infectious agents.^{33,34}

RECOMMENDED PRACTICE IX

Work practices must be designed to minimize risk of exposure to pathogens.

1. Work practice controls must be implemented to reduce the risk of exposure to bloodborne pathogens, based upon input from nonmanagement staff members.² Activities involving hand-to-hand, hand-to-skin, hand-to-nose, hand-to-mouth, or hand-to-eye action can contribute to direct or indirect transmission via inanimate surfaces and should be prohibited in the work area.¹ These prohibited activities include, but are not limited to,

- eating,
- drinking,
- smoking,
- applying cosmetics or lip balm, and
- handling contact lenses.²

Strict adherence to standard precautions minimizes the risk of cross contamination among health care workers, patients, and their environment.

2. Food and drink should not be stored where the potential for exposure to blood or other potentially infectious materials could occur (eg, refrigerators, shelves, countertops, and cabinets).
3. Food and drink should not be present in the restricted and semirestricted areas of the surgical suite.
4. The environment should be kept in a clean and sanitary condition by cleaning and decontaminating all equipment and environmental surfaces between procedures.²⁶ Microbes such as HBV and VRE are known to remain viable on environmental surfaces for seven days or longer.³⁵⁻³⁸

RECOMMENDED PRACTICE X

Personnel must take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments.

1. Health care organizations must have a comprehensive exposure control plan that includes engineering and work practice controls.^{2,39} Health care organizations must

- document in the exposure control plan that they have evaluated and implemented safety-engineered sharp devices and needleless systems;
- review and update changes in the exposure control plan at least annually to reflect changes in sharps safety technology;
- maintain a sharps injury log with detailed information about percutaneous injuries;
- solicit and document in the exposure control plan input from nonmanagerial health care workers when identifying, evaluating, and selecting safety engineered sharp devices; and
- provide engineering controls to include devices with engineered sharps injury protection.²

2. Perioperative registered nurses should be familiar with federal, state, and local regulations that mandate the use of needleless systems and sharps safety devices.
3. Sharps with engineering controls must be used when deemed acceptable.
 - Exposure to infectious material and the frequency of sharps injuries can be reduced through the use of safe needle devices and other technologies to minimize contact with sharp instruments.²
 - The use of blunt suture needles, when clinically indicated, can reduce the occurrence of glove perforations, needle sticks, and exposures to blood and other potentially infectious materials and are therefore recommended to be used in the perioperative setting as a method for reducing injuries.^{29,40-46}
 - The use of a safety scalpel is recommended.²
4. Work practice controls must be in place to minimize health care worker exposure when handling sharps.
 - Surgical team members should use a neutral zone or hands-free technique for passing sharp instruments, blades, and needles whenever possible and practical.¹⁶ Studies show that most sharps injuries

occur when suture needles or sharps are passed between perioperative team members. Changes in surgical practice to minimize manual manipulation of sharps (ie, neutral zone or no-touch techniques) can have a major effect on these injuries. Creation of a neutral zone (ie, where instruments are put down and picked up, rather than passed hand-to-hand) may decrease injuries from sharp instruments.²

- All sharps must be handled, removed, and disposed of properly. Contaminated sharps should be disposed of in a puncture-resistant, labeled, color-coded, leak-proof container.^{2,29} This type of container helps prevent injuries to personnel cleaning the room or equipment after use. Used needles must not be sheared, bent, broken, recapped, or resheathed by hand. If recapping is required, mechanical devices or the one-hand technique must be used.² Removable knife blades should be handled using an instrument or device.
- Reusable sharps must be handled, removed, and sequestered at the end of the procedure in a labeled, puncture-resistant, closed transportation container. Removable, reusable sharps should be handled using an instrument or device.

RECOMMENDED PRACTICE XI

Activities of personnel with infections, exudative lesions, nonintact skin, and/or bloodborne diseases should be restricted when these activities pose a risk of transmission of infection to patients and other health care workers. Identification, evaluation by a physician, and assessment of fitness for work performance in the perioperative setting should be required.

1. Health care workers infected with a bloodborne disease (eg, HIV, HBV, HCV) should use measures to protect themselves and others. The HIV infected health care worker who carries out invasive procedures should double-glove during all procedures.⁴⁷ Case reports have demonstrated the nosocomial transmission of HBV, HCV,

and other potentially infectious materials from health care professionals to patients during invasive procedures.⁴⁸⁻⁵⁴

2. Health care workers who have exudative lesions or weeping dermatitis should refrain from providing direct patient care or handling medical devices used in performing invasive procedures. Restricting personnel who have exudative lesions, nonintact skin, or weeping dermatitis reduces the risk of transmission of bloodborne and other pathogens between workers and patients.¹
3. Health care workers should follow the organization's written policy regarding reporting potentially infectious conditions.
4. Health care workers should consult with the organization's designated health care provider (ie, employee or occupational health department physician) for assessment, treatment, and limits to perioperative practice, if indicated. The organization's written guidelines should be followed with respect to the worker's ability to perform required job functions in the organization, especially in high-risk environments.

RECOMMENDED PRACTICE XII

Policies and procedures that address responses to threats of intentionally released pathogens (eg, anthrax, botulism) should be written, reviewed periodically, and readily available within the practice setting.

1. Health care workers should follow the organization's emergency preparedness plan as modified from published CDC guidelines for treating patients exposed to a biological agent in the event of an actual or suspected biological agent release (eg, anthrax, botulism, plague, smallpox). The CDC guidelines, available at <http://www.bt.cdc.gov>, outline transmission precautions for each organism and define those recommendations. The current CDC guidelines should be consulted in conjunction with the organization's infection control practitioner.⁵⁵

2. Perioperative registered nurses should actively participate in the organization's emergency preparedness plan for responding to an intentionally released biological pathogen.
3. Health care personnel should be educated on the underlying principles of infection control, which provide direction for personnel in providing direct and indirect patient care. Additional periodic educational programs provide reinforcement of principles of infection control, new evidence on risks and preventive measures, and changes in technology and regulations.

RECOMMENDED PRACTICE XIII

Policies and procedures that address responses to epidemic or pandemic pathogens (eg, severe acute respiratory syndrome [SARS], avian flu, influenza) should be written, reviewed periodically, and readily available within the practice setting.

1. Personnel should follow the organization's infection control plan for epidemics based on published CDC guidelines for treating patients exposed to organisms considered high public health risks. The CDC outlines precautions for each organism on its Web site at <http://www.cdc.gov>.⁵⁵ The organization's infection control practitioner should be consulted regarding additional specific precautions in the perioperative arena.
2. Perioperative registered nurses should create and maintain an optimal health environment for patients with human and avian influenza and SARS.⁵⁶
3. Perioperative registered nurses should actively participate in the organization's emergency preparedness plan for responding to an epidemic or pandemic.

RECOMMENDED PRACTICE XIV

Personnel should demonstrate competence in the prevention of transmissible infections.

1. Personnel should be knowledgeable about the principles of infection transmission, risks to patients and personnel, measures to minimize these risks, and actions to be taken in the event of an exposure.
2. Personnel must be instructed in the proper use of PPE and other measures to prevent transmission of infectious agents. Initial education must take place within 90 days of new hire according to the Occupational Safety and Health Administration regulations and updated at least annually.²

4. Administrative personnel should assess and document initial and annual competency of personnel in the safe use of standard and transmission-based precautions, according to organization and department policy. Incorrect use can result in serious injury to patients and personnel. Competency validation assures that personnel have an understanding of risks and appropriate preventive actions. This knowledge is essential to minimizing the risks of transmission of infectious agents from health care personnel to patients and patients to health care personnel.

RECOMMENDED PRACTICE XV

Policies and procedures should be written, reviewed periodically, and readily available within the practice setting.

1. Personnel should report all exposure incidents (eg, needle sticks, blood exposures), infections, or communicable disease to the health care organization according to organization policy. Prompt reporting enables employers to provide timely and confidential postexposure evaluation, intervention, testing, or appropriate prophylaxis.²
2. An introduction and review of policies and procedures for infection prevention, exposure mitigation, and emergency response plans should be included in orientation and ongoing education of personnel to assist in the development of knowledge, skills, and attitudes that affect safety and surgical outcomes. Policies and procedures also assist in the development of quality assessment and improvement activities.

3. The uniform perioperative nursing vocabulary should be used to document patient care related to prevention of transmissible infections on the intraoperative patient record. The perioperative nursing vocabulary is a clinically relevant and empirically validated standardized nursing language. This standardized language consists of the Perioperative Nursing Data Set and includes perioperative nursing diagnoses, interventions, and outcomes. The expected outcome of primary import to this recommended practice document is Outcome 10 (O10), "The patient is free of signs and symptoms of infection." This outcome falls within the domain of Physiologic Responses (D2). The associated nursing diagnosis is (X28): "Risk for infection." The associated interventions that may lead to the desired outcome include (I98) "Protects from cross-contamination."⁵⁷
4. Information about adverse events and near misses should be collected, analyzed, and used for performance improvement as part of the institution-wide performance improvement program. To evaluate the quality of patient care and to formulate plans for corrective action, it is necessary to maintain a system of evaluation.
5. Organizational policies and procedures that address occupational exposure to pathogens must be consistent with federal, state, and local rules and regulations that govern occupational exposure to blood-borne pathogens.
6. These recommended practices should be used as guidelines for developing policies and procedures within the practice setting. Policies and procedures establish authority, responsibility, and accountability, and serve as operational guidelines.

GLOSSARY

AIRBORNE PRECAUTIONS: Precautions that reduce the risk of an airborne transmission of infectious airborne droplet nuclei (ie, small particle residue

5 microns or smaller). Airborne transmission refers to contact with infectious airborne droplet nuclei that can remain suspended in the air for extended periods of time or infectious dust particles that can be circulated by air currents.

ANTHRAX: An acute infectious disease caused by *Bacillus anthracis*. Exposure (ie, skin contact, ingestion, or inhalation) to *Bacillus anthracis* spores from infected animals or animal products can produce infection in humans. Routes of exposure include pulmonary (eg, bioterrorism threat through aerosolization of spores), cutaneous, or gastrointestinal. Person-to-person transmission is not known to occur with inhalation or gastrointestinal anthrax route of exposure.

BOTULISM: An acute infectious disease caused by *Clostridium botulinum*. Exposure can occur through contaminated food or aerosolization (ie, inhalation) of *Clostridium botulinum* spores. Person-to-person transmission is not known to occur.

COLONIZED: The presence of microorganisms that reproduce on tissue without invading tissue or causing disease or infections.

CONTACT PRECAUTIONS: Precautions designed to reduce the risk of transmission of epidemiologically important microorganisms by direct or indirect contact.

DIRECT CONTACT: Person-to-person contact resulting in physical transfer of infectious microorganisms between an infected or colonized person and a susceptible host.

DROPLET PRECAUTIONS: Precautions that reduce the risk of large particle droplet (ie, 5 microns or larger) transmission of infectious agents.

DROPLET TRANSMISSION: The transfer of infectious microorganisms by contact with conjunctival, nasal, or oral mucosa droplets (eg, coughing, sneezing, talking, suctioning). Viral particles can be acquired from environmental surfaces and transmitted to mucous membranes.

EXAM GLOVE: Intended for short duration use, size specific (eg, small, medium, large), can be either nonsterile or can be made sterile by the manufacturer, provided in pairs or singles, made from several materials (eg, latex, PVC, nitrile, chloroprene), but are not intended for invasive surgical procedures because of their lower acceptable quality limit (AQL).

EXPOSURE INCIDENT TO PATHOGENS: Exposure via specific eye, mouth, or other mucous membranes; nonintact skin; or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

INDIRECT CONTACT: Contact of a susceptible host to a contaminated object (eg, instruments, bed rails, linens, equipment).

INVASIVE PROCEDURES: The surgical entry into tissues, cavities, or organs or repair of major traumatic injuries.

MULTI-DRUG RESISTANT ORGANISMS (MDRO): Bacteria that may be resistant to one or more antibiotics (eg, MRSA, VRE).

NEUTRAL ZONE (SYNONYM: HANDS-FREE TECHNIQUE): A safe work practice control technique used to ensure that the surgeon and scrubbed person do not touch the same sharp instrument at the same time. This technique is accomplished by establishing a designated neutral zone on the sterile field and placing sharp items within the zone for transfer of the item between scrubbed personnel.

PERSONAL PROTECTIVE EQUIPMENT: Protective equipment (eg, masks, gloves, fluid-resistant gowns, goggles, face shields) for eyes, face, head, and extremities; protective clothing; respiratory devices; and protective shields and barriers designed to protect the wearer from injury. Used wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact.

PERSONNEL: Paid or unpaid health care workers, students, volunteers, physicians, and others who may have direct patient contact or opportunity for exposure to patients or devices, supplies, or equipment used for patients.

PLAGUE: An acute, gram-negative, bacterial disease caused by *Yersinia pestis*. Bubonic and septicemic plague transmission is primarily from infected fleas, although pneumonic plague aerosolization of bacteria can result from bioterrorism-related acts. Person-to-person transmission usually occurs through large aerosol droplets of saliva during face-to-face

contact (ie, coughing or sneezing).

POTENTIALLY INFECTIOUS MATERIAL: Blood; all body fluids, secretions, and excretions (except sweat), regardless of whether they contain visible blood; nonintact skin; mucous membranes; and airborne, droplet, and contact-transmitted epidemiologically important pathogens.

SHARPS: Sharps include, but are not limited to, suture needles, scalpel blades, hypodermic needles, electrosurgical needles and blades, safety pins, and instruments with sharp edges or points.

SMALLPOX: An acute, highly contagious viral illness caused by the variola virus. It is transmitted through airborne or droplet exposure (ie, coughing, speaking) and skin contact with skin lesions and secretions. Once exposed, the patient is contagious from the onset of rash until scabs separate (ie, approximately three weeks).

STANDARD PRECAUTIONS: The primary strategy for successful infection control and reduction of worker exposure. Precautions used for care of all patients regardless of their diagnosis or presumed infectious status.

SURGICAL GLOVE: Intended for invasive surgical procedures. Size and hand specific (eg, 5½ to 9, right or left). Manufactured to higher AQL for holes than exam gloves.

TRANSMISSION-BASED PRECAUTIONS (ENHANCED): Second tier of precautions designed to be used with patients known or suspected to be infected or colonized with highly transmissible or epidemiologically important pathogens for which additional precautions are needed to prevent transmission in the practice setting.

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