Who is in charge of infection control?

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Infection control in dentistry not only means safe care for patients, but also safe work conditions for dental healthcare providers. Every dental office should have at least one person in charge of the infection control program. This issue of Practice Management Notes will define the role of the infection control coordinator, help the reader locate reliable resources for infection control and safety information, and provide helpful checklists.

Two recent events have brought national attention to infection control in dentistry. The first case was in West Virginia during a two-day “Mission of Mercy” dental clinic held at a high school in June 2009. Three patients and two clinic volunteers were identified as having acute hepatitis B infection. County, state and federal agencies have been working to determine how they may have contracted the disease. Notification letters were mailed to all patients and volunteers. The letters recommended testing for hepatitis B, hepatitis C and Human Immunodeficiency Virus (HIV).

There is laboratory evidence that weakness in infection control protocols has been identified as the probable culprit. The clinic was held in a temporary dental setting and investigation suggested that some of the equipment was not cleaned properly or was not functioning correctly. In addition, there was no infection preventionist involved in the clinic setting and operations. An infection preventionist is an expert who specializes in preventing infection in healthcare settings.

The second event occurred in the dental clinic at John Cochran Veterans Administration Medical Center (VAMC) in St. Louis, MO. A spokesperson for VAMC stated that the dental instruments were sterilized but the proper sequence of instrument processing was not followed. It was determined during an audit that the breach in the protocol for instrument processing took place from February 2009 to March 2010. Because VAMC could not determine that the risk to patients was zero, 1800 patients were notified that they could have been exposed to hepatitis B, hepatitis C, or HIV. Patients were also offered testing, evaluation and counseling.

The term *infection control* means controlling the spread of disease agents by performing specific procedures. To be an effective infection control coordinator, one needs to be competent in infection control practices and understand the basic elements of an infection control program. An infection control coordinator’s responsibilities include:

- Ensuring that employee training has been conducted and that necessary immunizations have been made available;
- Evaluating the office infection control protocols for patient and employee safety;
- Ensuring that appropriate disinfectants and sterilants are used; and
- Monitoring office infection control systems for effectiveness and compliance with state and federal regulations.

To simplify this seemingly overwhelming task, the infection control coordinator should seek out reliable resources, such as the Organization for Safety and Asepsis Procedures (OSAP) publication called *CDC Guidelines: From Policy to Practice by OSAP* (available at www.OSAP.org) and the US Centers for Disease Control and Prevention publication *Guidelines for Infection Control in Dental Health-Care Settings—2003* (available at www.cdc.gov). Also, check with the dental board in your state to determine if the minimum standards for infection control differ from the Centers for Disease Control (CDC) guidelines.
Training

The first step in an effective infection control program is proper training for dental healthcare providers (DHCP). The infection control coordinator can conduct the infection control and safety training as it relates to the workplace. A good resource for information is the Occupational Safety and Health Administration (OSHA) Web site, http://osha.gov/pls/publications/publication. athruz?pType=Types&pID=2

Six fact sheets on bloodborne pathogens can be printed from the site. Another helpful resource is OSAP’s Interact Employee Infection Control and Safety Training System, which includes videos, workbooks, a manager’s guide, exposure control checklists, and post-exposure management materials. The office OSHA manual is also a good training resource. If your office does not have a current OSHA manual, it is important to obtain one that is designed specifically for dental offices. Be sure to review and personalize the manual by filling in the information that describes your office. OSHA requires that initial training be provided to all employees before they perform tasks that could expose them to infectious agents. This training should include techniques to prevent contact with infectious agents, instrument processing protocols, and personal protective equipment (PPE) that is available for use. The training must be site-specific and include information on the office’s exposure control plan.

The exposure control plan is a written plan that requires the employer to identify which individuals have occupational exposure and who will receive training, PPE, vaccinations, and other protections as stated in the Bloodborne Pathogen Standard and to expedite medical treatment for the exposed individual. The infection control coordinator should also provide information on where the eye wash station and first aid kit are located.

OSHA requires that bloodborne pathogen training be provided at least annually, at no charge to employees, and include a review of the office exposure control plan. Employees must have an opportunity to ask questions of the person conducting the training and the training must be documented and maintained for a period of 3 years. The infection control coordinator should review the training records and update training as needed.

Immunizations

The infection control coordinator must ensure that employees have information about recommended immunizations. DHCP are at risk for exposure to infectious organisms. Immunizations substantially reduce both the number of DHCP susceptible to these diseases and the potential for disease transmission to other DHCP and patients. Thus, immunizations are an essential part of prevention and infection control programs for DHCP, and a comprehensive immunization policy should be implemented.2

The infection control coordinator should have access to all employees’ medical recordkeeping forms to verify that these immunizations have been offered:

- Hepatitis B as required by OSHA. (Employees may decline the vaccine and, if declined, the infection control coordinator must verify that the employee’s refusal is documented in writing.)
- Influenza vaccine, if offered by the employer.

While not required by OSHA, the infection control coordinator also should gather information from employees to check that they have been vaccinated against measles, mumps, rubella, and varicella. DHCP are at substantial risk of contracting these diseases, which are all vaccine-preventable. If employees have questions or concerns about vaccinations, the infection control coordinator should refer them to the CDC Web site for current information and recommendations.

Personal protective equipment

The infection control coordinator can help employees locate and order appropriate Personal Protective Equipment (PPE). He or she instructs on disposal of paper gowns and gloves and single use face shields and surgical masks. For reusable items, the coordinator should
train employees on proper decontamination techniques. If employees decline to wear PPE in situations where the employee is likely to come in contact with blood, other potentially infectious materials (OPIM), or chemicals, the infection control coordinator is responsible for confronting the employee and explaining the office policy for safety as it relates to the OSHA requirements. Often, employees will conform to procedure if well-fitting, non irritating items can be found.

- **Clinical attire**, such as lab coats, gowns, or clinical jackets are worn to prevent contamination of street clothing and to protect the skin from exposures to blood and body substances. OSHA requires sleeves to be long enough to protect the forearms. DHCP should change protective clothing when it becomes visibly soiled and as soon as feasible if penetrated by blood or other potentially infectious fluids. All protective clothing should be removed before leaving the work area.

- **A surgical face mask** must be worn whenever there is the potential for splashes of blood or OPIM. It should be changed after every patient and more often if it becomes moist or contaminated. The surgical face mask’s outer surface can become contaminated from splashes and sprays generated during patient treatment and from touching the mask with contaminated, gloved hands.

- **Eye protection** should include safety glasses that are rated by the American National Standards Institute (ANSI) as protective eyewear. Prescription glasses alone do not protect the wearer from splashes and flying debris that often are generated during dental procedures. A full-face shield offers better protection by covering more of the face and is a good alternative for those who prefer not to wear protective eyewear. The use of a face shield does not eliminate the need to wear a surgical face mask.

- **Gloves** come in many different styles, sizes, and materials. Be sure to provide the appropriate glove for the task, including puncture resistant/chemical resistant utility gloves for decontaminating instruments and working with chemicals.

### Hand hygiene

The infection control coordinator should evaluate whether hand hygiene procedures are followed. Employees must wash hands before donning gloves and every time gloves are removed. Effective handwashing includes vigorously rubbing together all surfaces of lathered hands for at least 20 seconds, followed by rinsing under a stream of water. If the hands are not visibly soiled, an alcohol-based hand rub may be used. The CDC’s *Guideline on Hand Hygiene in Health-Care Settings* provides complete hand-washing information, including surgical hand antisepsis.

### Environmental surface disinfection

Environmental surfaces are surfaces that become contaminated during patient treatment. These surfaces include the dental unit, monitoring equipment, countertops, the dental chair, overhead light and x-ray equipment. The infection control coordinator should make sure that environmental surfaces are disinfected correctly. After each patient, environmental surfaces must be cleaned and then disinfected with an Environmental Protection Agency (EPA)-registered low- to intermediate-level disinfectant. The level of the disinfectant can be found on the product label.

EPA-registered low-level disinfectants are effective against hepatitis B virus (HBV) and Human Immunodeficiency Virus (HIV). EPA-registered intermediate-level disinfectants are effective against HBV and HIV, as well as having a tuberculocidal kill claim. When surfaces are visibly contaminated with blood or OPIM, an intermediate-level disinfectant should be used. If the surface is not cleaned first, disinfection can be compromised. Removal of all visible blood, inorganic, and organic matter can be as critical as the germicidal activity of the disinfecting agent. HBV has been demonstrated to survive in dried blood at room temperature on environmental surfaces for at least 1 week.

### Barriers

Items or surfaces that are likely to become contaminated and are difficult to clean and disinfect should be protected with barriers. Barriers include clear plastic wrap, bags, tubing, plastic-backed paper, or other moisture-impervious materials. Digital radiography sensors and other high-technology instruments, such as intraoral cameras and lasers, should be barrier protected by using an FDA-cleared barrier to reduce gross contamination during use.

Because barriers can become contaminated, they should be removed and discarded between patients, before DHCP remove their gloves. After removing the barrier, if the surface becomes soiled inadvertently, it must be cleaned and disinfected.

### The sterilization area

The infection control coordinator must make certain that the sterilization area has a clear distinction between dirty and clean. The flow pattern of incoming contaminated instruments should be clearly identified, thereby eliminating cross-contamination. It is helpful to place signs or labels identifying “dirty” vs. “clean” areas in the sterilization room.

The 4 main areas of the sterilization room are:
- Receiving, cleaning, and decontamination
- Preparation and packaging

March/April 2011 3
**SAMPLE EXPOSURE INCIDENT PROTOCOL**

An exposure incident is a specific incident involving contact with blood or other potentially infectious materials (OPIM) to the eye, mouth, other mucous membrane, non-intact skin, or parenteral under the skin (eg needlestick) that occurs during the performance of an employee’s duties. When an exposure incident occurs, immediate action must be taken to assure compliance with the OSHA Bloodborne Pathogen Standard and to expedite medical treatment for the exposed employee.

1. **Provide immediate care to the exposure site**
   - Wash wounds and skin with soap and water.
   - Flush mucous membranes with water.
   - DO NOT USE instrument involved on patient!
   - Employee must report incident immediately to supervisor/employer.

2. **Determine risk associated with exposure by:**
   - Type of fluid (eg, blood, visibly bloody fluid, or other potentially infectious fluid or tissue).
   - Type of exposure (eg, percutaneous injury, mucous membranes or non-intact skin exposure, or bites resulting in blood exposure).

3. **Evaluate exposure source**
   - Assess the risk of infection using available information.
   - The source individual (patient) must be asked if they know their HBV, HCV, HIV status. If not known, will they consent to testing?

4. **The exposed employee is referred as soon as possible** to a healthcare provider who will follow the current recommendations of the US Public Health Service Centers for Disease Control and Prevention recommendations for testing, medical examination, prophylaxis and counseling procedures.
   - “Note “ASAP” because certain interventions that may be indicated must be initiated promptly to be effective.
   - The exposed employee may refuse any medical evaluation, testing, or follow-up recommendation. This refusal is documented.

5. **Send all of the following with the exposed employee to the healthcare provider:**
   - A copy of the Bloodborne Pathogen Standard.
   - A description of the exposed employee’s duties as they relate to the exposure incident (Accidental Bodily Fluid Exposure Form).
   - Documentation of the route(s) of exposure and circumstances under which exposure occurred (Accidental Bodily Fluid Exposure Form).
   - All medical records relevant to the appropriate treatment of the employee including HBV vaccination status records and source individual’s HBV/HCV/HIV status, if known.
   - Name, address and policy number of worker’s compensation carrier (recommended but not OSHA required).

6. **Healthcare Provider (HCP)**
   - Evaluates exposure incident.
   - Arranges for testing of employee and source individual (if status not already known).
     - Notifies employee of results of all testing.
     - Provides counseling and post-exposure prophylaxis.
   - Evaluates reported illnesses.
   - HCP sends written opinion to employer:
     - Documentation that employee was informed of evaluation results and the need for further follow-up.
     - Whether Hepatitis B vaccine is indicated and if vaccine was received.

7. **Employer**
   - Receives HCP’s written opinion.
   - Provides copy of HCP written opinion to employee (within 15 days of completed evaluation).
   - Documents events on
     - Employee Accident/Body Fluid Exposure and Follow-Up Form and Employee Medical Record Form.
     - If the exposure incident involved a sharp, a Sharps Injury Log is completed within 14 days.
     - Treat all blood test results for employee and source individual as confidential.
**Sample Written Protocol for Instrument Processing**

Don personal protective equipment – protective gown or apron, chemical resistant utility gloves, face mask, and protective eyewear – when processing contaminated dental instruments.

**Step One - Transporting**
Transport contaminated instruments on a tray to the sterilization area. Do not carry contaminated sharp instruments by hand.

**Step Two – Cleaning**
- Place instruments in an ultrasonic unit or instrument washer.
- If manual scrubbing is necessary, use a long-handled brush.
- Visually inspect instruments for residual debris and damage; re-clean/replace as necessary.
- Make sure that instruments are rinsed and dried thoroughly prior to packaging.
- Follow manufacturer’s recommendations to lubricate and/or use rust inhibitors as needed.

**Step Three – Packaging**
After cleaning, instruments must be packaged or wrapped before sterilization if they are not to be used immediately after being sterilized. The packages/wraps must remain sealed until the day they will be used and must be stored in a way so as to prevent contamination.
- Packaging/wrap materials should be designed for the type of sterilization process being used.
- Loose instruments should be packaged so that they lay in a single layer, and not wrapped up so tightly as to prevent exposure to the sterilizing agent.
- Hinged instruments should be processed, opened and unlocked.
- Use chemical indicators to distinguish processed vs. unprocessed instruments.
- Conduct biological monitoring (spore testing) weekly to evaluate the effectiveness of the sterilizer.

**Step Four – Sterilizing**
- Load the sterilizer according to manufacturers’ instructions. Do not overload. Use the manufacturers’ recommended cycle times for wrapped instruments.
- Allow packages to dry before removing them from the sterilizer.
- Allow packages to cool before handling.

**Step 5 – Storing**
Store instruments in a clean, dry environment to maintain the integrity of the package. Rotate packages so that those with the oldest sterilization dates are used first.
- Clean supplies/instruments should be stored in closed cabinets.
- Dental supplies/instruments should not be stored under sinks or in other locations that they might become wet or torn.
- Packages containing sterile supplies should be inspected before use to verify barrier integrity and dryness.
- If packaging is compromised, instruments should be re-cleaned, repackaged, and sterilized again.

**Disinfection and sterilization of patient care items**

The infection control coordinator is responsible for overseeing disinfection and sterilization of patient care items. CDC categorizes patient care items as critical, semicritical, or noncritical, based on the potential risk of infection during use. Critical items penetrate soft tissue or bone, have the greatest risk of transmitting infection, and should be sterilized by heat. Semicritical items touch mucous membranes or nonintact skin and have a lower risk of transmission. Because the majority of semicritical items in dentistry are heat-tolerant, they also should be sterilized by using heat. If a semicritical item is heat-sensitive, it should, at a minimum, be processed with high-level disinfection.

Noncritical patient care items pose the least risk of transmission of infection, contacting only intact skin. Non-critical items may be cleaned with detergent and water, or if visibly soiled, cleaning followed by disinfection with an EPA-registered hospital disinfectant should be used. It is helpful to have a written checklist for the office instrument processing protocol to ensure that instruments are properly cleaned and sterilized. When using sterilizers, ultrasonic tanks, instrument washers, or other cleaning devices, it is important to follow the manufacturers’ instructions. Sterilizers should be properly maintained, serviced, and operated. The infection control coordinator should create and post lists of the standard operating procedures for the proper use and maintenance of each device.
Because steam and/or the sterilizing agent need to circulate around the instruments, the sterilizer chamber should not be overloaded with instruments or cassettes. Ultrasonic tank solutions should be changed frequently per the manufacturers’ instructions, and instruments placed in the ultrasonic tank should be suspended in a basket or container so they do not touch the floor of the tank. Also, instruments should never be bound together with a rubber band or hair tie because the cavitation (cleaning) action will be hindered. Instrument washers should be FDA-approved devices and used only with recommended types of detergent. Improper use of instrument washers may corrode or damage instruments and void the manufacturers’ warranty.

Instruments to be stored for use at a later date should be packaged or wrapped before placement in the sterilizer and remain in the package until time of use. Packaging materials should be designed for the type of sterilization process being used. An unwrapped cycle (sometimes called flash sterilization) is a method for sterilizing unwrapped patient care items for immediate use only.2

The infection control coordinator should verify that sterilization monitoring is performed. Correct functioning of sterilization cycles should be verified for each sterilizer by the periodic use, at least weekly, of biological indicators. Biological indicators, also known as spore tests, are the most accepted method for monitoring the sterilization process.2 Spore test results must be maintained in a log. The infection control coordinator is responsible for documenting the results of these tests and reviewing any failed tests. To determine why the sterilizer is not functioning, the infection control coordinator must first rule out operator error. If the directions for use were followed and subsequent spore testing shows a failed sterilization cycle, the sterilizer should be considered malfunctioning and the infection control coordinator should remove it from use immediately and arrange to have it repaired. All instruments sterilized after the last successful sterilization test date should be re-sterilized.

Conclusion

The role of the infection control coordinator includes making sure patients and DHCP are safe from patient-to-patient disease transmission, patient-to-DHCP disease transmission, and DHCP-to-patient disease transmission. Following the CDC guidelines for infection control and OSHA bloodborne pathogen standards will help accomplish these goals.

There are many helpful resources available. OSAP has detailed information on infection control and safety in dentistry, the OSHA Web site has helpful fact sheets and you can consult your office OSHA manual for tools, training, and resource materials. The infection control coordinator is responsible for the office infection control program; however, the entire team must be committed to having a safe work environment and delivering safe dental care to patients.

A sample exposure incident and instrument processing protocol are included in this insert.

REFERENCES


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