While infection control principles are generally easy to understand, “the devil can be in the details.” Clinicians often encounter situations in which the correct practice may not be immediately apparent.

Over the past few years, almost 2,000 clinicians around the world have contacted the Organization for Safety and Asepsis (OSAP) with their questions. Through the organization’s “Ask OSAP” service, these clinicians have received written and referenced answers, usually within 24-48 hours.

While every dental setting is unique, there have been many recurring questions — sometimes called frequently asked questions (FAQs). This issue of Infection Control in Practice (ICIP) describes some of the most popular queries of 2007 and challenges you to answer them before you turn to the answers...a veritable “quiz bowl.”

This innovative approach to infection control challenges is a fun way to learn and retain the information. Let the game begin!

— OSAP

FAQs may suggest trends

Based on the questions OSAP has received in 2007, there are several interesting trends or issues. Would you agree or disagree? What would you recommend OSAP do to address these?

1. Based on the number and types of questions, many submitters are either unfamiliar with the Centers for Disease Control and Prevention (CDC) dental infection control guidelines and/or they do not know where to access them.
2. There appears to be a need for help in writing standard operating procedures (SOPs) for many infection control and safety practices.
3. Many people do not know how to locate the laws and/or agencies involved with safety regulations.
4. A growing number of dental offices are installing household dishwashers to clean contaminated dental instruments and equipment. Apparently, they are unaware that regular dishwashers can cause instrument corrosion and do not disinfect.
5. There is much confusion regarding surface disinfection, particularly with respect to disinfectant wipes.
6. Many employees appear unaware of their rights following an exposure incident and also of the need for a postexposure evaluation and follow-up.
7. There have been increased requests for revised/updated laboratory infection control protocols.
8. There appears to be growing concern regarding MRSA, CJD, and hepatitis C and how best to treat infected patients.
9. More requests are being submitted for data concerning safety issues/hazards (e.g., surgical plume generated by lasers).
10. There appears to be some confusion regarding proper handling of extracted teeth used for teaching purposes.

Learning Objectives

After reading this article, the reader should be able to:

► articulate the correct answers to some frequently asked infection control and safety questions.
► list at least five reliable infection control resources.
► understand how to obtain evidence-based answers to dental infection control and safety questions not already addressed on the OSAP website.
# Infection Control Challenge Quiz Bowl

OSAP challenges you to answer each question in the Infection Control Quiz Bowl before you turn to the answers. Please note there are two questions in each category. As you answer the questions, consider the resources available to support your answers. For other infection control FAQs, check the OSAP website. If you have a question and don’t see it listed, submit it to “Ask OSAP” and receive a referenced answer back at no charge. Nonmembers incur a small processing fee.

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**Glossary**

**Anti-HBs:** Vaccine-acquired protective antibodies.

**CDC:** Centers for Disease Control and Prevention, Atlanta, GA. The sentinel for the health of people in the United States and throughout the world, CDC strives to protect people’s health and safety, provide reliable health information, and improve health through strong partnerships.

**Chemical Process Indicator:** Special chemicals that change color or form with exposure to heat, steam, or ethylene oxide gas. Used to monitor exposure of items to the sterilizing agents. These are not guarantees of sterilization, rather that a condition (e.g., a specific temperature) was present.

**Clinical Contact Surface:** Category of environmental surfaces that are touched by contaminated hands, instruments, devices, or other items while providing dental or medical care or while performing activities that support dental or medical care.

**Debridement:** The removal of foreign material or tissue.

**Disinfection:** Destruction of pathogenic and other kinds of microorganisms by physical or chemical means. Reducing the number of pathogenic organisms decreases the chance of disease transmission.

**Event-Related Storage:** A storage practice that recognizes that a package and its contents should remain sterile until some event causes the item(s) to become contaminated.

**Exposure Incident:** Specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials occurring during the course of an employee’s duties.

**HBeAg:** Hepatitis B soluble antigen. The presence of this antigen indicates that the virus is replicating and serves as a marker of heighted infectivity.

**HBsAg:** Hepatitis B surface antigen. A serologic marker on the surface of HBV that denotes active or chronic infection with hepatitis B.

**Housekeeping Surfaces:** Category of environmental surfaces that is not involved in the direct delivery of dental care and only requires regular cleaning to remove dirt and dust (e.g., floors, walls).

**Non-Responder:** An individual who does not develop an adequate antibody response to vaccinations.

**OSHA:** Occupational Safety and Health Administration. Its mission is to assure the safety and health of America’s workers by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual improvement in workplace safety and health.

**Shelf-Life:** The period of time a solution or product may be stored before activation or use and still retain effectiveness or sterility.

**Sterilization:** Use of a physical or chemical procedure to destroy all microorganisms including substantial numbers of resistant bacterial spores.

**Ultrasonic Cleaner:** Device that removes debris by a process called cavitation. It transmits high-energy and high-frequency vibrations throughout the unit’s detergent-containing chamber to remove particulate matter from dental instruments.

**Ultrasonic Scaler:** Sometimes referred to as a power scaler. It is an electronic generator that transmits high-frequency vibrations to a handpiece used to remove heavy calcified deposits from the surface of a tooth.

**Use-Life:** The period of time a solution is effective after it has been activated or prepared for use.

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covers a marker of heightened infectivity.

**Infection Control In Practice** is a resource prepared for clinicians by the Organization for Safety & Asepsis Procedures with the assistance and expertise of its members. OSAP is a nonprofit, independent organization providing information and education on infection control and occupational health and safety to dental care settings worldwide.

Information in this issue has been brought to you with the help of the following individuals:

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OSAP’s Responses to Frequently Asked Questions

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It is now time to compare your answers to the questions we presented in the Challenge Quiz Bowl. If you have not done so recently, please revisit the 10 evidence-based resources identified in this publication (see page 8). They provide a wealth of information and support the answers that OSAP provides.

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**Instrument Processing**

1. When processing contaminated instruments, have puncture-resistant utility gloves, face and eye protection, and protective apparel in place to prevent sharps injuries and splashes to skin, nose, mouth, eyes, and clothes.
   
   At the point of use, place reusable patient-care items in a leak-proof, puncture-resistant transport container with solid sides and bottom. Transport containers are for instruments only, not liquids. Cover the container to prevent accidental exposures.

2. Because used ultrasonic cleaning solutions can contain large numbers of microbes, drain or otherwise discard the cleaning solution at least daily, and earlier if it becomes visibly soiled. Rinse the unit, disinfect, rinse again, and dry the cleaning chamber at the end of the day while wearing PPE. Regularly perform function testing (“foil test”) on the ultrasonic unit, usually monthly, following the manufacturer’s directions. Factors such as type and number of instruments, amount of debris, and use of a holder or basket may affect the cleaning time and efficiency of the unit. Always follow the unit manufacturer’s operational instructions concerning acceptable cleaning (detergent) agents/solutions, mixing, disposal and cycle times. Remember that leaving certain instruments in some solutions for extended periods may cause corrosion (e.g., certain metals such as carbon steel). Instruments are not sterile after cleaning and should be rinsed with water to remove chemical or detergent residue and thoroughly dried by personnel wearing appropriate personal protective equipment (PPE).

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**Sterilization**

1. Chemical indicators use sensitive chemicals to assess physical conditions (e.g., temperature, presence of steam) during the sterilization process. Although chemical indicators do not prove items are sterilized, they allow detection of certain equipment malfunctions, and can help identify procedural errors. Internal chemical indicators placed inside each package show that the sterilizing agent has penetrated the packaging material to reach the instruments. A single-parameter internal chemical indicator provides information regarding only one sterilization parameter (e.g., temperature). Multi-parameter internal chemical indicators react to at least two parameters (e.g., time and temperature; or time, temperature, and the presence of steam) and can provide more reliability that sterilization conditions have been met. Multi-parameter internal indicators are available only for steam sterilizers (i.e., autoclaves). If the internal chemical indicator is not visible from the outside, use an external chemical indicator such as autoclave tape or markings that are present on the packaging materials. External indicators applied to the outside of the package change color rapidly and verify that the package has been exposed to the sterilization process.

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**PPE**

1. PPE is specialized clothing or equipment worn by an employee for protection against a hazard. When there is the potential for occupational exposure, dental employers must provide, at no cost to the employee, appropriate PPE such as, but not limited to, gloves, gowns, laboratory coats, face shields or masks and eye protection, and resuscitation/ventilation devices. PPE is appropriate only if it does not permit blood or other potentially infectious materials to pass through to or reach general work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use. The type and characteristics will depend upon the task and degree of exposure anticipated.

2. Because of the exposure risks associated with chemical disinfectants and contaminated surfaces dental workers should wear puncture-resistant, heavy-duty utility gloves when handling or manually cleaning contaminated instruments and devices. Chemical and puncture-resistant utility gloves offer more protection than patient examination gloves when using hazardous chemicals, cleaning instruments, performing decontamination, and during housekeeping procedures that involve potential blood or body fluid contact. Each person in the office needing these gloves should have his or her own pair or pairs.
OSAP’s Responses to Frequently Asked Questions

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2 Discard used sterilization wraps and bags after each use. Reusing single-use sterilization wraps/bags/pouches is dangerous as the packaging has lost its chemical indication and sealing properties and would not be able to maintain sterility of the contents after processing.

Disinfection

1 The cellulose in cotton products may inactivate or absorb some germicides, especially iodophors or chlorines. Avoid soaking disinfectants in gauze or other cotton-based materials for use throughout the day. If using gauze to apply disinfectant to surfaces, saturate the gauze with the disinfecting agent at the time of use. Gauze is acceptable for surface disinfection, but disposable paper towels are usually a more economical choice.

2 It is important to follow label instructions and wear appropriate PPE for either method. The “spray-wipe-spray” method starts with a thorough cleaning of the surfaces with a cleaner or cleaner/disinfectant. Second, wipe vigorously using paper towels. Third, spray the surface again with a low- to intermediate-level disinfectant evenly covering the entire surface, and allow the disinfectant to remain undisturbed for the contact time indicated on its label. The “wipe-discard-wipe” method does not generate any chemical spray as it calls for wiping a pre-moistened cleaner-disinfectant towelette over the surface. Follow label instructions for the amount of coverage area each towelette can provide. Discard the towelette, and then saturate the surface using a new pre-moistened disinfectant towelette. Let the surface remain moist for the contact time stated on the disinfectant’s label. If, after the stated contact time, the surface is still wet, wipe dry before seating the patient.

Infectious Diseases

1 When treating any infectious patient, dental workers should consult with the patient’s treating physician prior to dental care. Modifications to the treatment plan may be necessary based on the consultation. Apart from any recommended modifications, infectious patients should be treated the same as any other patient. When using droplet-producing equipment such as power scalers and handpieces, always wear proper PPE, use high volume evacuation (HVE), engineering controls and work practice controls. And, while no scientific evidence indicates that preprocedural mouth rinsing prevents clinical infections among dental workers or patients, studies have demonstrated that a preprocedural rinse with an antimicrobial product (e.g., chlorhexidine gluconate, essential oils, or povidone-iodine) can reduce the level of oral microorganisms in aerosols and spatter generated during routine dental procedures with rotary instruments. Preprocedural mouth rinses can be most beneficial before a procedure that requires using a prophylaxis cup or ultrasonic scaler since rubber dams are not an option available to minimize aerosol and spatter generation and often there is no assistant to provide high-volume evacuation.

Dental Unit Waterlines

1 Always consult the manufacturer of your dental unit and the maker of any water-carrying devices that attach to the dental unit (such as ultrasonic scalers) for the specific products and protocols they recommend. It is the responsibility of the equipment manufacturers, rather than the clinician, to determine appropriate and equipment-compatible devices or protocols for their units.

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OSAP provides a great deal of information concerning dental unit waterlines, including links to additional resources. The United States Air Force Dental Evaluation & Consultation Service (DECS) provides information including a synopsis of treatment products and the American Dental Association has additional information.

Dentists should consult with the manufacturer of their dental unit or water delivery system to determine the best method for maintaining acceptable water quality (i.e., <500 CFU/mL) and the recommended frequency of monitoring. It is possible to monitor dental water quality using commercial water-testing laboratories. Some laboratories provide specialized services to the dental profession, but any commercial water-testing lab can enumerate water bacteria present in a sample. Another option is commercially available in-office water testing kits/testing samplers.

Waste Management

Amalgam disposal is regulated by federal, state, and local agencies. In addition, consult the Material Safety Data Sheet (MSDS) for proper handling and disposal directions. The American Dental Association (ADA) provides a great deal of information on amalgam and waste management including how to choose an amalgam waste recycler.

The ADA further states that although there is no national regulation requiring the installation of amalgam separators in U.S. dental offices, state and local requirements exist in some areas. Check with your state or local dental society to see if any requirements exist in your area.

Because carpules may break or may contain aspirated blood, OSHA considers them “potential sharps” and regulated waste. Consult your State Board of Dental Examiners/Licensing Board and State Health Department concerning possible laws governing the disposal of used anesthetic cartridges. In addition, there may be special state laws governing the disposal of used anesthetic cartridges.

Exposure Incident

1 Refer dental personnel who experience an exposure incident (e.g., blood splash to the eye, contaminated percutaneous injury) to a physician or other healthcare provider experienced in occupational exposures. The physician will maintain confidential medical records of both the employee and source patient, including bloodborne disease status. The physician will notify the worker of the results of all testing and of the need for strict confidentiality with regard to the source patient’s results. The physician is required to send the employer a written opinion within 15 days. The written opinion may only include the following:
- documentation that the employee was informed of evaluation results and the need for any further follow-up;
- whether HBV vaccine was indicated and if it was received.

All other findings or diagnoses remain confidential and are not included in the written report.

2 A medical evaluation must be available to the exposed employee at a reasonable time and place and provided according to recommendations of the U.S. Public Health Service (USPHS). The cost of all medical evaluations and procedures related to an occupational exposure incident are the responsibility of the employer. Following an exposure incident the employer must send with the employee, to the evaluating healthcare professional, the following:
- a copy of the worker’s standard job description;
- a copy of the exposure incident report;
- the source patient’s identity and bloodborne infection status (if known and consent is obtained);
- the employee’s HBV status and other relevant medical information (if known and consent is obtained);
- a copy of the OSHA Bloodborne Pathogens Standard.
If you wish to obtain one (1) hour of continuing education (CE) credit, complete the following test by selecting the best answer and fax or mail it to the OSAP Central Office for grading. Please include a check or credit card to cover handling charges. Pending satisfactory results (at least seven out of ten), you will be issued a letter for one (1) CE credit hour. OSAP is recognized by the American Dental Association as a CERP Provider. For more information, call OSAP at 800-298-6727 (410-571-0003).

For each question, pick the best answer.

1. The presence of this antigen indicates that the hepatitis B virus is replicating and there is heightened infectivity:
   a. HBsAg  
   b. HBeAg  
   c. HBcAg  
   d. HBeAb

2. Ultrasonic cleaning solutions should be discarded:
   a. daily  
   b. every other day  
   c. daily, earlier if visibly soiled  
   d. every three hours

3. What type of gloves should you wear whenever handling contaminated instruments and devices?
   a. exam gloves with over-gloves  
   b. heavy duty utility gloves  
   c. double-gloving with surgeons gloves  
   d. sterile exam gloves

4. Approximately _____ percent of non-responders to the hepatitis B vaccine will respond to a second series.
   a. 25  
   b. 50  
   c. 75  
   d. 100

5. If no antibody response occurs after the second hepatitis B series, a ____ test may be recommended.
   a. HBeAg  
   b. HBeAb  
   c. HBcAg  
   d. HBsAg

6. Dental unit water delivery systems should maintain acceptable water quality of:
   a. <50 CFU/mL  
   b. <100 CFU/mL  
   c. <500 CFU/mL  
   d. <600 CFU/mL

7. OSHA considers anesthetic carpules as:
   a. non-regulated waste  
   b. potential sharps  
   c. liquid waste  
   d. harmless

8. Following an exposure incident, the physician is required to send the employer a written opinion in:
   a. 15 days  
   b. 24 hours  
   c. 30 days  
   d. 7 days

9. Dentists should consult with ____ for how to maintain acceptable water quality in the dental unit waterline.
   a. OSAP  
   b. OSHA  
   c. the American Dental Association  
   d. the unit's manufacturer

10. Sterilization wraps and bags should be:
    a. EPA-registered  
    b. discarded after each use  
    c. treated as contaminated medical waste after use  
    d. sealed with chemical indicator tape when reusing

Mail or Fax completed test with the appropriate payment to receive one (1) hour of continuing-education credit.

Your Name: ______________________________________ OSAP Member Name: ________________________________
(if different)

Address: ____________________________________________________________________________________________

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☐ VISA ☐ MASTERCARD ☐ CHECK ENCLOSED Fee: ☐ OSAP MEMBER, $10 ☐ NONMEMBER, $15

Name on Card: ___________________________ Card Number: ___________________________

Expiration Date: ______________ Signature: ________________________________

MAIL TO: OSAP CE • P.O. Box 6297 • Annapolis, MD 21401 • USA • FAX TO: 410.571.0028
1. OSAP website (updated daily): http://www.osap.org
2. Centers for Disease Control and Prevention (CDC) website at www.cdc.gov, particularly:
   a) Guidelines for Infection Control in Dental Health-Care Settings: 2003. http://www.cdc.gov/mmwr/pre-
      view/mmwrhtml/rr5217a1.htm
   b) Hand Hygiene Guidelines http://www.cdc.gov/mmwr/pre-
      view/mmwrhtml/rr5116a1.htm
3. Occupational Safety and Health Administration (OSHA) website at www.osha.gov, particularly:
   a) OSHA’s Bloodborne Pathogens Standard 29 CFR 1910.1030: http://www.osha.gov/SLTC/blood-
      bornepathogens/index.html
   b) PPE Standard 1910.132 http://osha.gov/pls/oshaweb/owadis-
p.show_document?p_table=STAN-
      DARDS&p_id=9777
   c) http://osha.gov/SLTC/personal-
      protectiveequipment/index.html
4. a) CDC Guidelines: From Policy to Practice by OSAP. Copyright 2004. http://osap.org/display-
      common.cfm?an=1&subarticlen-
      br=10
6. American Dental Association http://www.ada.org
8. Practical Infection Control in Dentistry, 2nd edition by Cot-
   tone, Terezhalmy and Molinari (Note: Third addition will be avail-
   able in 2008)
9. HIVDENT, the internet's HIV/AIDS oral healthcare re-
   source: http://www.hivdent.org
10. World Health Organization http://www.who.int

Do you have a practice tip you’d like to share with other OSAP members and subscribers? Send your suggestions for enhancing dental infection control and safety in practice to editor@OSAP.org. Be sure to include contact information, a photo, and a brief bio. Thanks!