The Operatory

Chairside asepsis involves the infection control procedures performed at chairside just before, during, and immediately following patient treatment. Since the patients’ mouths are the primary sources of potential pathogens in the office, these chairside procedures take on a special meaning. At this point, all three major routes of microbial spread can occur from the:

- patient to you,
- you to the patient, and/or
- patient to patient.

There are numerous ways microbes can escape from patients’ mouths. Anything that goes into the mouth and is removed is contaminated and must be discarded or properly managed before reuse. These include your hands, instruments, handpieces, syringe tips, anesthetic syringes, temporaries, impression trays, fluoride trays, needles, 2 x 2s, cotton rolls, and other disposables. Surfaces that you touch during patient care become fomites supporting the indirect spread of the microbes. In addition, use of high-speed and low-speed handpieces, air/water syringes, ultrasonic scalers, and air-abrasion systems can generate aerosols and/or spatter that contain microbes. Interfering with the spread of these microbes is based within the concept of standard precautions that considers all body fluids and mucous membranes and non-intact skin to be potentially infectious.

Just before patient treatment

Perform hand hygiene. Put on appropriate personal protective equipment (PPE) including heavy duty gloves, a face mask and protective eyewear, and clean and disinfect those touch surfaces that may not be protected by environmental barriers. Remove gloves and mask and perform hand hygiene. Place environmental barriers, make sure engineering controls are available or are in place, assure good quality treatment water will be available, place the patient charts and x-rays in their appropriate place, bring up the computer images if using digital x-rays, and assure any needed items re-

Learning Objectives

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

- understand how microbes are spread at chairside.
- prepare for a patient appointment from an infection control point of view.
- visualize how hand hygiene, engineering controls, work practices, surface asepsis and personal protective equipment play an important role in chairside asepsis.
- maintain proper infection control during operatory clean-up.
The Operatory
continued from front cover

Infection Control In Practice

The Operatory

While still wearing your PPE flush water through the air/water syringes, handpieces and ultrasonic scalers, and remove and discard any environmental barriers. Remove and discard your gloves, perform hand hygiene and put on heavy duty gloves to clean appropriate touch surfaces in the operatory. Transport instruments and waste in a covered container to the instrument processing room. Rinse and disinfect any prosthodontic items before taking them into the in-office lab. Remove and decontaminate eyewear. Remove your gloves and other protective barriers and perform hand hygiene (see “Putting It All Together” on pages 4-5).

Step-by-step clinical infection control protocols for chairside asepsis are available1.

— OSAP

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Here are some examples of what you can say to patients about chairside asepsis. “We take your safety very seriously in this office. I:

• wash my hands or use an alcohol hand rub before gloving to remove germs that have contaminated my hands, for this reduces the chances of anything on my hands contaminating you if my gloves should tear.
• wear a new pair of gloves for you and for every patient so I don’t spread anything into your mouth or from your mouth to someone else.
• am giving you safety glasses to protect your eyes from infectious and physical injuries.
• cover or clean and disinfect the surfaces in here to prevent carry over of germs from the previous patient.”
Examples of specific pathways for microbial spread in the operatory

Patient to you where you become contaminated:
- through breaks in your skin.
- through sharps injuries with items contaminated with patient materials.
- from direct contact with spatter from patient’s oral fluids or contaminated dental unit water.
- from contact with aerosol from patient’s oral fluids or contaminated dental unit water.
- from contact with contaminated operatory surfaces or equipment with ungloved hands.


You to the patient when you accidentally:
- injure yourself and bleed into a patient’s mouth.
- bleed on something used in the patient’s mouth.


Patient to patient when:
- contaminated operatory surfaces are not decontaminated between patients.
- instruments including handpieces are not properly cleaned and sterilized before being used on a subsequent patient.
- hands/gloves contaminated with patient materials carry microbes to another patient’s mouth.

It has happened! (Redd, JT. Patient-to-patient transmission of hepatitis B virus associated with oral surgery. J Infect Dis 195:1311-14, 2007)

Chairside asepsis involves:

Hand hygiene
- wash hands with non-antimicrobial or antimicrobial agent, or
- use an alcohol hand rub when no visible soil is present

Personal protective equipment
- wear gloves, mask, eyewear with side shields, protective clothing
- use heavy duty gloves for cleaning and disinfection and operatory clean-up

Surface asepsis
- use fresh environmental barriers for each patient, or
- clean and disinfect between each patient with a disinfectant spray using spray-wipe-spray, or
- clean and disinfect between each patient with a disinfectant wipe using wipe-discard-wipe (one wipe to clean followed by another wipe to disinfect)

Engineering controls
- place sharps containers wherever sharps may be used or found (e.g., at chairside, in the instrument room)
- use a cap holder to recap needles between multiple injections or before removing the needle from a non-disposable syringe
- use the rubber dam
- use high-volume evacuation
- assure good quality dental unit water

Work practices
- look carefully before reaching for a sharp instrument

What’s wrong with these pictures?
Take this chairside asepsis challenge and see if you can readily identify the breach in aseptic procedure in these photos.

PHOTO CHALLENGE 1
PHOTO CHALLENGE 2

SEE PAGE 6 FOR PHOTO CHALLENGE ANSWERS.
Putting It All Together continued ...

continued from page 4

- pass sharp instruments carefully and only when necessary
- make sure instruments returned to the tray/bracket table are placed in a stable position
- retrieve supplies aseptically without contaminating adjacent items
- recap/dispose of used needles and other sharps immediately after use rather than passing them to others
- do not bend, break or remove needles before disposal and do not remove needles from disposable syringes before disposal
- recap needles using a one-hand scoop technique rather than using both hands or any other technique that directs the point of the needle towards any part of your body
- replace handpieces in holder with burs pointing in
- if gloves are torn, remove, perform hand hygiene and replace with new gloves
- keep from touching your face and hair with contaminated gloves
- remove gloves when leaving chairside to avoid painting the patient's microbes on touched surfaces

Examples of touch surfaces

- Chair headrest and control buttons and top part of chair back*
- Light handles and switch*
- Bracket table and handpiece/dental unit control switches*
- Handpiece and evacuator connectors and hoses*
- Ultrasonic scaler connector and hose*
- Air/water syringe handle and hose*
- X-ray handle, cone, controls* and view box
- Dental team chair backs
- Supply containers and bottles
- Light curing equipment
- Shade guides

* usually best to cover these since cleaning is not easy or they have electrical components - although most, if not all, surfaces lend themselves to covering

Some key CDC recommendations for chairside asepsis

Hand hygiene

- Perform hand hygiene with either a non-antimicrobial or antimicrobial soap and water when hands are visibly dirty or contaminated with blood or other potentially infectious material (OPIM). If hands are not visibly soiled, an alcohol-based hand rub can also be used. Follow the manufacturer’s instructions.
- Indications for hand hygiene include
  - when hands are visibly soiled
  - after barehanded touching of inanimate objects likely to be contaminated by blood, saliva, or respiratory secretions
  - before and after treating each patient
  - before donning gloves, and
- For oral surgical procedures, perform surgical hand antisepsis before donning sterile surgeon’s gloves. Follow the manufacturer’s instructions by using either an antimicrobial soap and water, or soap and water followed by drying hands and application of an alcohol-based surgical hand hygiene product with persistent activity.
- Store liquid hand-care products in either disposable closed containers or closed containers that can be washed and dried before refilling. Do not add soap or lotion to top off a partially empty dispenser.

Additional CDC recommendations for chairside asepsis, such as those on personal protective barriers, surface asepsis, dental unit waterlines, handpiece management and more on hand hygiene, can be found at the CDC Web site2 (see “Links to Resources” on page 6).
Q: Why do you have to spray a surface a second time with a disinfectant?
A: Many disinfectants were registered with the EPA based on tests that first cleaned the surface and then added the disinfectant to disinfect the surface. The labels of those products will state “Pre-clean the surface then disinfect by applying the product...” or similar words. Some products received registration as a “one-step” disinfectant. Cleaning before disinfecting (with any surfactant-containing disinfectant) reduces the bioburden and helps assure that the disinfectant will work.

Dr. Mikael Zimmerman
Karolinska Institutet
Stockholm
SWEDEN

Australia
One area that causes some confusion in Australia is the concept of aseptic procedures encompassing “sterile” and “clean” fields. Some procedures (oral surgery, implant placement, periodontal surgery) require a sterile field and instruments to be sterile at the time of use. On the other hand, most dental procedures (conservative, prosthetic, simple periodontal) only require a clean field with cross-contamination controls in place (i.e., instruments sterilized between patients and environmental surfaces in the working zone managed by barriers). Non-dental infection control practitioners occasionally find this concept difficult and would like there to be “sterile field” conditions for all dental procedures. Education of such practitioners in the peculiarities of dentistry needs to continue.

Dr. Gerard Condon
Australian Dental Council

### Around the World

**Europe**

Among infection control specialists within the European Union there are strong movements to link infection control with antibiotic resistance as well as human rights and environmental concerns. I believe it is crucial for OSAP to endorse these perspectives. We must not see infection control in a narrow clinical perspective anymore. A recent survey in Sweden on the use of antibiotics in dentistry revealed that 25% of all out clinic patients taking penicillin V received their antibiotic prescription from a dentist. “We must think globally and act locally.”

Dr. Mikael Zimmerman
Karolinska Institutet
Stockholm
SWEDEN

**Australia**

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Dr. Gerard Condon
Australian Dental Council

### Links to Resources


### Glossary

**Engineering controls:** Controls that isolate or remove the blood-borne pathogens hazard from a workplace; examples include sharps disposal containers and safer medical devices (such as self-sheathing needles and needless systems).

**Fomite:** An inanimate object that becomes contaminated and can serve as a mean for spreading microbes.

**Standard precautions:** Practices and procedures that expand the elements of universal precautions into a standard of care designed to protect healthcare workers and patients from pathogens that can be spread by blood or any other body fluid, excretion, or secretion; applies to contact with blood, all body fluids, secretions, and excretions (except sweat), regardless of whether they contain blood; non-intact skin; and mucous membranes.

**Surfactant:** A wetting agent that lowers the surface tension of a liquid, allowing easier spreading.

**Touch surfaces:** Operatory surfaces that are contaminated (e.g., by touching or other means) during patient treatment and that need to be properly managed before treating the next patient.

**Work practices:** Practices that reduce the likelihood of exposure by changing the manner in which a task is performed (for example, recapping needles with a one-handed scoop technique instead of using two hands).

### Photo Challenge Answers – “What’s wrong with these pictures?”

**PHOTO CHALLENGE 1** Forearms are not covered. Dental assistant and the patient are not wearing safety glasses. Dentist is not wearing safety glasses with side shield.

**PHOTO CHALLENGE 2** Face masks are not covering nose. No safety glasses on the dentist, dental assistant and the patient. Forearms are not completely covered. No headrest cover. No protective barrier on operatory light handle.
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 payment information to cover the grading 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 216-398-7822.

For each question, pick the best answer.

1. Which of the following modes of microbial spread is least involved in chairside asepsis?
   a. You to the patient  
   b. The patient to you  
   c. The office to the community  
   d. Patient to patient

2. Which of the following can serve as a fomite?
   a. Teeth being restored  
   b. Mucous membranes  
   c. Handpiece holder  
   d. Tongue

3. When should an alcohol hand rub be used?
   a. Under any circumstances  
   b. Only following handwashing with another antimicrobial agent  
   c. Only if sterile gloves will be donned afterward  
   d. Only if no soil is visible on the hands

4. When leaving chairside to obtain a forgotten supply item, what barrier should be removed and then replaced upon returning to the patient?
   a. Gloves  
   b. Mask  
   c. Eyeglasses  
   d. Protective clothing

5. Wearing gloves when working at chairside protects:
   a. you.  
   b. the patient.  
   c. you and the patient.  
   d. neither you nor the patient.

6. Sharps containers should be placed:
   a. in the instrument room.  
   b. at chairside.  
   c. near waste containers.  
   d. wherever sharps may be used or found.

7. When should environmental barriers in the operatory be changed?
   a. After every patient  
   b. At the end of the day  
   c. Over the lunch hour  
   d. After patients with respiratory disease symptoms

8. Which of the following operatory surfaces is usually not considered as a touch surface?
   a. Light handles  
   b. Floor  
   c. Handpiece connector/hose  
   d. Light switch

9. Which of the following is not an engineering control?
   a. Sharps container  
   b. Rubber dam  
   c. High-volume evacuator  
   d. Recapping a needle by the one-handed scoop technique

10. How many disinfectant wipes should be used for proper treatment of a contaminated light handle?
    a. One  
    b. Two  
    c. Three  
    d. Four

Instructions for taking courses online

1. Go to www.ineedce.com
2. Register or log in (if already registered)
3. Click on the online CE tab at the top
4. Scroll down until you see the course of choice (courses are in alphabetical order) Make sure the sort by is set to ALL COURSES.
5. Add course to cart
6. Click on the view cart tab at the top, or the item in cart link located in the upper right of the page
7. Enter coupon code if any click on Apply
8. Click Continue
9. Verify information and click continue
10. Enter payment information (unless using 100% off coupon code)
11. Click Submit ordered items
12. Print receipt for your records and click continue
13. Click on Take Exam to enter the answers or View PDF for the course material
14. After entering answers click continue
15. Review answers and click continue
16. Fill out Evaluation and click submit
17. Review evaluation and click continue
18. Click on verification form
19. Print
You can return at any time to print the verification form. Just log in with your user name and password. Click on my CE Archives.
Dental dams are thin squares of latex rubber or silicone used mainly in endodontic treatment. They serve as an engineering control to help isolate the tooth/teeth from contamination of blood or saliva and protect the patient's oral pathway from any materials that may fall during treatment.

To simplify and expedite dental dam application, use a pre-framed dental dam. Consider using dental dam stabilizing cord in place of clamps to secure the dam on both ends of your isolation. The cord is stretched between the teeth and left in place.

For best infection control, isolate in the traditional manner as follows: lubricate the tissue side of the dental dam with a water-soluble lubricant such as KY Jelly® to facilitate placement of the dam between the teeth. Be careful not to bunch the dental dam and place an edge between the teeth first. Carry the remaining dam through the contact with your fingers. For difficult contacts, use waxed dental floss to carry an edge through first, loop the floss to the lingual and pass it through the contact carrying more dental dam into the contact area. Pull both strands of floss through the buccal embrasure and repeat the process until all the dam is through the contacts.

A non-traditional option is general field isolation. This option does not provide maximum infection control, but the tongue, cheeks, and most soft tissues are isolated. There are variations to this technique, but the most simple involves cutting a slit between two punched holes. The dam is stretched over the area to be isolated, and stabilizing cord can be used to anchor the dam on both ends or a clamp is used on the posterior with cord on the anterior.

Dental dams can increase the safety and infection control of dental procedures. Practicing on a dental mannequin may be helpful in increasing your confidence and application technique.

Mary R. Costello, CDA
Ms. Costello has a BS in Health Administration from Governor State University, IL. She is currently Manager of Continuing Education and Professional Relations-Hygienic Products for Coltene Whaledent, Inc.