LEARNING OBJECTIVES

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

• list the four major workspaces in a well-organized instrument processing area.

• describe the rationale for designating each of the specific workspaces in an instrument processing area.

• describe the process of transporting contaminated instruments to the instrument processing area in a manner that reduces the chances for spread of contaminants and prevention of sharps injuries.
SCENARIO: The Incident

Dr. Cliff has a busy general dentistry practice in a small office with one dental assistant (Scarlet), one hygienist, and a receptionist. One afternoon Dr. C and Scarlet were restoring three of Mrs. Dows’ teeth and were both engaged in the procedure. Dr. C dropped a mouth mirror, so he asked the part-time receptionist (Lockly - whose desk was located just outside that operatory) to retrieve a blue-wrapped “exam pack” of instruments from the instrument processing area.

This area was in the same room as the main operatory and situated on a countertop located behind the patient seated in the operatory chair. Lockly delivered the package, and Dr. C asked her to open the package. Then he and Scarlet completed treatment on Mrs. Dows.

After dismissing the last patient of the day, Scarlet added a little liquid detergent to the tray of contaminated instruments on the bracket table to start the cleaning process. After cleaning up the operatory she carried the tray of instruments to the instrument processing room. She carefully picked up the uncapped anesthetic needle from the tray and discarded it, along with cotton rolls and a gauze pad, into a sharps container.

She decided to run the sterilizer while she was cleaning the new batch of instruments, so she removed her exam gloves and donned a fresh pair. She gathered up the cleaned and wrapped instrument packages she prepared before lunch, but when she was placing them into the sterilizer she noticed one package was missing. She finally determined the missing package was the exam pack which Lockly retrieved earlier. Scarlet didn’t say anything because she knew she had done a really good job that morning processing the instruments through the ultrasonic.

Potential Consequences

Carrying an open tray of contaminated sharps to the instrument processing room is risky. Transporting contaminated instruments in a solution further enhances the risk of spreading the contaminants. Spilling the solution or instruments on the floor would cause unnecessary cleanup of the fluid and handling of contaminated instruments risking sharps injury.

Handling a used, uncapped, anesthetic needle on the instrument tray in the processing room causes an unnecessary manipulating of the contaminated sharp. Cotton rolls and gauze pads are not considered regulated waste unless they are dripping wet or caked with dried blood or saliva.

Assigning tasks related to patient or personnel safety to an untrained person is an unsafe practice. Lockly had no idea she retrieved non-sterile instruments, and Dr. C and Scarlet did not pay sufficient attention to the package brought to them. Fortunately the cleaned but not sterilized mouth mirror used was not a critical item and did not pen-
etrate any tissue during its use. Even though the potential for spread of disease from this incident was very low, it was indeed an important breach of infection prevention. Having the instrument processing area in the same room as the clinical area should be avoided, if possible. This presents a great risk for cross-contamination.

Exam gloves worn by Scarlet for operatory cleanup do not give as much protection from chemicals and sharps for the hands as do heavy utility gloves. Also wearing the contaminated exam gloves away from chairside increases the risk of spreading contaminants to all touched surfaces.

**Prevention** (See “Strategies” on page 4 for further details)

Dr. C and his staff need updated training on infection prevention and need to develop a total office culture of safety. First of all, even though Lockly was a receptionist, she should have been trained on disease prevention, particularly in an office with a relatively low number of staff where “job sharing” is a greater possibility.

Both the Centers for Disease Control and Prevention (CDC) and the Occupational Safety and Health Administration (OSHA) indicate that contaminated instruments must be transported to the instrument processing area in an appropriate container that prevents percutaneous injury. Contaminated instruments are not to be transported while in a liquid as the risk of spreading contaminants from splashing/dripping is too great.

The uncapped anesthetic needle on the instrument tray should have been recapped in a safe manner and discarded at chairside to avoid a second and unnecessary handling of the contaminated sharp in the processing area.

The work sites in the instrument processing area need to be visually identified to prevent the intermingling of non-sterile with sterile instruments. This, along with the proper use of chemical process indicators*, and checking to see if the indicators have changed during processing will help prevent the accidental use of non-sterile instruments on patients.

Heavy utility gloves along with a mask, protective eyewear and protective clothing are to be worn during operatory cleanup and instrument processing.

If it is necessary to have the instrument processing area in the same room as the clinical area, instrument processing and patient care should not be performed at the same time. Sterile packaged items are to be placed in drawers or closed cabinets until needed. Cleaned packaged instruments awaiting sterilization as well as supply items should not be left out in the processing area. They need to be covered or containerized until needed. In this one-room situation, it also would be wise to cover the dental unit and chair during instrument processing.

PS: Ultrasonic cleaning does not sterilize the instruments.

*Sterilization monitoring will be discussed in the October 2017 issue of *Infection Control in Practice*.

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**Some Related CDC Recommendations and OSHA Regulations**

- Designate a central processing area. Divide the instrument processing area, physically or, at a minimum, spatially, into distinct areas for 1) receiving, cleaning, and decontamination; 2) preparation and packaging; 3) sterilization; and 4) storage. Do not store instruments in an area where contaminated instruments are held or cleaned. (CDC)
- Train dental health care personnel (DHCP) to employ work practices that prevent contamination of clean areas. (CDC)
- Minimize handling of loose contaminated instruments during transport to the instrument processing area. Use work-practice controls (e.g., carry instruments in a covered container) to minimize exposure potential. (CDC)
- All bins, pails, cans, and similar receptacles intended for reuse (e.g., instrument transport tubs) which have a reasonable likelihood for becoming contaminated with blood or other potentially infectious materials shall be inspected and decontaminated on a regularly scheduled basis and cleaned and decontaminated immediately or as soon as feasible upon visible contamination. (OSHA)
- Immediately or as soon as possible after use, contaminated reusable sharps shall be placed in appropriate containers until properly reprocessed. These containers shall be puncture resistant; labeled or color-coded; and leakproof on the sides and bottom. (OSHA)
- Contaminated reusable sharp instruments must not be stored or processed in such a way that employees are required to reach by hand into the container to retrieve the instruments. (OSHA)
- Assign responsibilities for reprocessing of dental equipment to dental healthcare personnel with appropriate training. (CDC)
STRATEGIES FOR INSTRUMENT PROCESSING

The overall goal of instrument processing is to ensure that contaminated instruments will be made safe for use on a subsequent patient. Each step in the process (Figure 1, Page 1) must be performed precisely or the desired end result will not be achieved.

**Workspace Design**

1. The instrument processing area should be centrally located in a low-contamination, low-traffic environment.

2. The physical design should be based on workflow, and the work areas need to be divided into:
   - receiving and cleaning; (discarding waste, holding, cleaning, corrosion control, lubrication, drying)
   - packaging; (wrapping or bagging, adding internal and external processing and sterilization indicators, labeling packages)
   - sterilization; and
   - sterile storage.

3. Work areas can be cordoned off by using a line of colored tape on countertops to indicate separate areas (e.g., Red for contaminated; Yellow for clean; Blue for sterile). Proper placement of signs in the respective work areas can indicate the specific activity or items present at those sites. For example: “Decontamination Area”; “Contaminated Items Only”; “Clean Packaging Area”; “Cleaned Items Only”; “Non-sterile Items”; “Sterile Items Only”; “Sterile Storage”; “Do Not Touch”; “Caution – Hot”.

4. It’s not enough just to designate “contaminated” and “sterile” work sites in instrument processing areas, but everyone in the facility needs to know what the designations mean. Situations may arise when an employee who does not regularly work in the processing area might be sent to obtain sterile instruments.

5. If housekeeping personnel are allowed to enter the instrument processing area, their training needs to include what they can and cannot touch in that area including the rationale for those directives.

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**Important Workspace Considerations**

- The instrument processing area should be separated from the clinical operatories and dental laboratory.
- It should contain a deep sink with hands-free controls for rinsing instruments, and if space permits, a separate handwashing sink with hands-free control.
- Sinks should not be located near clean instruments that can be contaminated through splashing. A one or two-foot high plastic wall next to that sink can prevent this.
- Accessories should include a hands-free soap dispenser, a foot-operated or other hands-free trash receptacle.
- The flooring should be uncarpeted, seamless, with a hard surface to reduce trapping of dirt and to facilitate cleaning.
- There should be negative air flow state cleaning.
- Portable fans should not be used for they circulate unfiltered air that continually contaminates surfaces.
- Be careful about positioning steam sterilizers below cabinets (particularly wood cabinets) that may be damaged by steam exiting the chamber.
- The countertops beneath sterilizers need to be heat-resistant.
- The storage areas for supplies and sterile items need to be closable.
- Supplies related to the work in each designated area should be located in that area.

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**Transporting Contaminated Instruments**

Protection against sharps injuries during transport of contaminated instruments to the instrument processing area can be achieved by using the proper container.

1. First remove the contaminated exam gloves, perform hand hygiene and don heavy utility gloves.

2. Carefully place the contaminated instruments into a leakproof container (e.g., tub; pan) that has solid sides, bottom and a cover and is red* or marked with a biohazard symbol. These containers need to be decontaminated between uses.

3. To avoid reaching by hand into a container of loose contaminated instruments (as prohibited by OSHA), a perforated basket with a handle (e.g., ultrasonic cleaning basket) can be placed inside a larger transport container before the contaminated instruments are added at chairside. Lifting out the basket of instruments prevents having to reach into the container to transfer the instruments to a holding solution, ultrasonic cleaner, or instrument washer.

4. Perforated instrument cassettes that house the contaminated instruments and are used at chairside can eliminate the direct handling of those instruments through transport activities and the instrument processing procedures.

5. If mobile carts are used to transport containers to and from the instrument processing area, those carts need to be covered and decontaminated between use and labeled (e.g., “Contaminated” or “Sterile”) to avoid confusion and possible intermingling of items.

* If a red container is used rather than a biohazard symbol, then all in the facility need to be trained to know that a red container indicates a biohazard.
What’s Wrong With This Picture?

Can you identify the breach(es) in infection prevention and safety procedures in this photo taken after completion of a treatment procedure? Check your answer below.

Answer: The contaminated dental instruments are being transported in an open tray, increasing the risk of sharps injury. The gloves are of the wrong type: heavy duty utility gloves should be used when handling contaminated instruments to protect against sharps injury.

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TEAM HUDDLE DISCUSSION GUIDE

1. Is there any confusion in your instrument processing room as to the location of sterile items and clean items not yet processed through a sterilizer?

2. How are your sterile instrument packages or cassettes identified as being “sterile”?

3. Are your instrument transport containers in compliance with the OSHA Bloodborne Pathogens Standard?

Glossary

Critical item: Any instrument that penetrates tissue, contacts bone, enters into or contacts the bloodstream or otherwise normally sterile tissue (e.g., surgical instruments, periodontal scalers, scalpel blades, surgical burs).³

Culture of safety: (Same as safety culture) A prevention strategy based on the shared commitment of everyone in the facility toward ensuring the safety of the work environment, dental personnel, and patients.

Links to Resources


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**Step 1:** Go to http://bit.ly/OSAPICIPAPRIL2017 and purchase the CE exam through the OSAP Store. OSAP members, 1 CE credit $15. Non-members, 1 CE credit $20.

**Step 2:** OSAP will send you a purchase confirmation email and a separate email with the link to the online CE exam. Click on that link to access the exam.

**Step 3:** Complete the online exam. You have 2 attempts to pass with 7 out of 10 correct answers. When finished, you can print out or download your CE record of completion for your records. Your record of completion will also be emailed to you.

**QUESTIONS FOR ONLINE QUIZ**

1. The CDC recommends that the instrument processing facility should be divided into areas for 1) receiving, cleaning, and decontamination, 2) preparation and packaging, 3) sterilization, and 4): a. sterilization monitoring. b. waste removal. c. handwashing. d. sterile storage.
2. What is the rationale for designating specific work spaces in the instrument processing facility? a. It makes the work go faster b. It helps prevent the intermingling of sterile and non-sterile items c. It allows for better cleaning and surface disinfection of the facility d. It’s easier to determine compliance with OSHA rules for instrument processing
3. Portable fans shouldn’t be used in the instrument processing area because they: a. are too noisy and upsetting to personnel. b. circulate contaminated unfiltered air. c. use too much electricity. d. may fall over.
4. What is the rationale for having an uncarpeted, seamless, hard surface floor in the instrument processing area? a. It is esthetically the most pleasing b. It is the most comforting to stand on c. It is the least expensive type of flooring d. It reduces the trapping of dirt and facilitates cleaning
5. OSHA indicates that containers used to transport contaminated instruments to the instrument processing area need to be leakproof on the sides and bottom, covered, and marked with a biohazard symbol or: a. color-coded. b. labeled with the word “danger”. c. imprinted with the OSHA logo. d. made of glass so the contents can be seen.
6. According to the CDC, which of the following is a critical item? a. Mouth mirror b. Amalgam syringe c. Air/water syringe tip d. Periodontal scaler
7. What is the most efficient way to minimize sharps injuries from contaminated instruments during their transport to the instrument processing area? a. Use instrument cassettes b. Dump them onto the transport trays c. Use tongs to pick up each item and place in the transport container d. Scoop them up using a large spatula and place in the transport container
8. How should an anesthetic needle be handled after use? a. Place back into the instrument tray at chairside b. Safely recap and dispose of into a sharps container near chairside c. Wrap in a gauze pad and discard in the regular trash container at chairside d. Immediately transport to a sharps container in the instrument processing room
9. Which office personnel should be trained on the meanings of the designated workspaces in the instrument processing area? a. Instrument processing personnel b. Front office personnel c. Clinical personnel d. All personnel
10. What gloves provide the most protection to the hands during instrument processing? a. Sterile surgeon’s gloves b. Food handler’s gloves c. Heavy utility gloves d. Exam gloves

**KEY TAKEAWAYS**

1. Proper instrument processing plays a key role in providing the Safest Dental Visit™.
2. Increased risks for sharps injuries and spread of contaminants occur if contaminated instruments are not properly transported to the instrument processing area.
3. Designation of the instrument processing area into workspaces or stations for receiving, cleaning, and decontamination; preparation and packaging; sterilization; and storage helps prevent the intermingling of non-sterile and sterile instruments which could jeopardize patient safety.
TEAM HUDDLE HIGHLIGHTS

1. When did you last evaluate your instrument processing procedures?

2. Are you transporting contaminated instruments in a safe manner?

3. Is your instrument processing area designed to prevent the intermingling of sterile and non-sterile instruments?

Read on!