INFECTION CONTROL

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TEAM HUDDLE: Understanding the Responsibility of Infection Prevention and Control

Dental infection prevention and control is a system of policies and procedures designed to ensure the use of best practices to reduce the risk of transmitting potentially dangerous microbes from the treatment environment and support areas. An effective infection control program hinges on the understanding of the WHAT, the WHY, and the HOW of the preventive policies and procedures as well as techniques that enhance compliance.

LEARNING OBJECTIVES

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

• describe ways to limit the spread of contamination by minimizing aerosols and spatter.
• describe the potential contamination problems caused by using chairside supply carts and drawers.
• describe the infection control benefits of a pre-procedural mouth rinse.
• describe an aseptic retrieval procedure when using bulk supplies.
SCENARIO: The Incident

Dr. Moon, a pediatric dentist in private practice, hired his sister-in-law (Tessa – a dental assistant) as a chairside assistant and backup instrument processing assistant. Since Tessa was returning to the workforce after a 15-year hiatus, she told her brother-in-law she would like the office ICC (Marci) to shadow her for a few days to make sure she was up to date on the procedures in the office. Marci worked with Tessa to correct the problems listed below.

Potential Consequences and Prevention

1. She retrieved a cotton roll at chairside from a lidded jar by lifting the lid and reaching in to grasp the cotton roll while wearing her contaminated gloves.¹

This breach violates the infection control principle to:

Limit the spread of contamination.

WHAT: Use an aseptic retrieval procedure when obtaining supplies.

WHY: Any surface touched with contaminated gloves has potential to be involved in cross-contamination if used with a subsequent patient. If contaminated gloved hands are used to retrieve an item from a bulk container (e.g., a lidded glass jar of cotton rolls), the lid becomes contaminated and likely adjacent items in the container become contaminated as well.

Cross-contamination occurs when those items are used with a subsequent patient.

HOW: Unit dose the required materials. Touch as few surfaces as possible while at chairside. The lids of containers should be barrier protected so they don’t have to be cleaned and disinfected between patients. Use sterile cotton forceps (“pick-ups”) to retrieve a single item from the contents of bulk containers. Include dedicated forceps with each set of instruments to be sterilized.

*Note: Marci brought this to Tessa’s attention who discarded the ancillary contaminated supply items and cleaned and disinfected the lid before the next patient.

2. She left the sliding top of the chairside supplies cart open for a short time during treatment of one of the patients.²

This breach violates the infection control principle to:

Limit the spread of contamination.

WHAT: Prevent cross-contamination from supplies.

WHY: Having supplies available at chairside is convenient and eliminates the assistant having to leave the patient to retrieve items. However, items at chairside are highly subject to contamination with dust and patient spatter that can lead to cross-contamination of patients if not properly protected.

HOW: Aseptic retrieval systems must be in place for supplies at chairside. Supply carts should not be used at chairside because of their high risk of becoming a fomite in cross-contamination.

If carts must be used, a strict protocol for aseptic retrieval must be developed to ensure cross-contamination does not occur. Since the cart will likely be touched
3. She touched the independent water reservoir pick-up tube with contaminated hands just before she added the fresh water bottle at the beginning of the day.\(^c\)

This breach violates the infection control principle to:

**Limit the spread of contamination.**

**WHAT:** Maintain good quality treatment water and use an aseptic technique when adding fresh water or treatment solution to the reservoir.

**WHY:** Hands become contaminated every time they touch a non-sterile surface. These contaminants are then transferred to subsequent surfaces touched. A contaminated water bottle pick-up tube contaminates all the treatment solution in the bottle, and this water enters the patient’s mouth. Even though the solution used may be antimicrobial, it’s important to avoid any unnecessary contamination of the system.

**HOW:** The pick-up tube should be cleaned and thoroughly rinsed every time the water/treatment solution is changed. Do not touch the cleaned tube with bare hands or contaminated gloves. Careful manipulation can allow the cleaned bottle of water/treatment solution to slide over the tube. If it is necessary to stabilize the tube during bottle placement, the tube can be held with sterilized cotton forceps when adding the bottle.

\(^c\) Note: Marci immediately informed Tessa who decontaminated the pick-up tube before the fresh water bottle was added.

4. She forgot to change the disposable air/water syringe tip after the first patient of the day.\(^d\)

This breach violates the infection control principle to:

**Limit the spread of contamination.**

**WHAT:** Use a disposable device with only one patient followed by proper disposal.

**WHY:** Disposable devices are designed to be used on only one patient.

**HOW:** New employees may wish to use a check-list for operatory preparation and clean-up until they become familiar with the steps. Such a check-list should come from the office’s standard operating procedures.

\(^d\) Note: Marci informed Tessa who replaced the tip before the next patient.

5. She forgot to offer a patient a pre-procedure mouth rinse.\(^e\)

This breach violates the infection control principle to:

**Limit the spread of contamination.**

**WHAT:** Consider using a pre-procedural antimicrobial mouth rinse with each patient, especially before procedures requiring a prophylaxis cup or ultrasonic scaler.

**WHY:** The application of antiseptics on the skin or mucous membranes before surgery reduces the number of microbes on the surface so there will be fewer to enter the underlying tissues. Use of a pre-procedural antimicrobial mouth rinse by the patient before treatment is based on a similar principle of reducing the number of oral microbes. This temporary reduction lowers the number of microbes that may escape the patient’s mouth during treatment through aerosols, spatter, or direct contact.\(^1\) Thus fewer microbes contaminate the dental team and the operatory environment.

**HOW:** The mouth rinse used should have antimicrobial activity for the longest lasting results (e.g., chlorhexidine gluconate, cetylpyridinium chloride, povidone-iodine, essential oils).

\(^e\) Note: Marci took Tessa aside and told her to offer the patient the mouth rinse.
Strategies For Using Aseptic Techniques
(Further understanding and tips)

Clean versus Contaminated Zones
The Centers for Disease Control and Prevention (CDC) have recommended to divide the instrument processing area into different zones separating the contaminated instruments from the sterile instruments. This helps prevent instrument cross-contamination—the intermingling of “clean” with “dirty.” This general concept can be extended to the entire office by designating “contaminated zones” and “clean zones.” Clean zones may include:

- front office,
- staff offices,
- waiting/reception area,
- storage rooms,
- lunch rooms,
- sterile instrument storage areas.

Contaminated zones include areas that may be contaminated with patient materials such as:

- treatment areas,
- x-ray areas,
- instrument processing room,
- dental laboratory.

After donning personal protective equipment (PPE), staff can move from clean zones to contaminated zones but never from contaminated zones to clean zones without taking appropriate precautions (e.g., removing contaminated PPE, performing hand hygiene, cleaning and disinfecting items being carried).

Touching Surfaces
Another general concept is to touch as few surfaces as possible with saliva or blood-contaminated fingers. The fewer surfaces contaminated the less time it takes to decontaminate the area. Any surface that is touched should be barrier protected or subsequently cleaned and disinfected.

Besides the problems mentioned in the previous scenario with chairside supply carts in Dr. Moon’s office, drawers at chairside can have similar problems. Drawers are convenient and perhaps prevent having to leave chairside to retrieve an item, but, like carts, they can allow their contents to become contaminated by spatter, dust and contaminated fingers every time they are opened. If they must be used, avoid opening during the generation of patient spatter and use an aseptic retrieval system (e.g., sterilized cotton forceps) and a protective barrier over the drawer handle. The barrier is changed after each patient.

Did You Know?
We need to be mindful of things we might touch with contaminated hands/gloves, particularly our faces and hair. One study of college students performing office-type work showed they contacted their face an average of 16 times an hour.

Minimizing Aerosols and Spatter
Using high-volume evacuation (HVE) is an excellent way to reduce aerosol and spatter. The HVE system can be cleaned by flushing with a detergent or water-based detergent-disinfectant. Do not flush with bleach to avoid damage to metal parts. Disposable traps are available. Flush a detergent-disinfectant down the system followed by water to decontaminate before cleaning/changing the trap.

Besides providing some comfort to the patients against the pooling of saliva, the saliva ejector also lowers the number of oral microbes that may escape the mouth to contaminate the dental team and environment. Patients should not be told to close their lips around the ejector and “spit.” The seal formed by the lips can cause a reverse flow of material in the vacuum line towards the patient’s mouth in about 20% of the cases. A disposable saliva ejector with a one-way valve that prevents backflow can be considered. Also, avoid positioning the high volume evacuation line above the patient’s head, for this may result in backflow.

The rubber dam benefits the patient and the dental team by serving as a barrier between the patient’s oral microbes and the operative tooth site and the dental team. Simultaneous use of the rubber dam and HVE provide the best approach to minimizing dental aerosol and spatter of the patient’s microbes. However, biofilm microbes and any disinfecting chemicals that may be present in the water from dental unit waterlines can be aerosolized and sprayed into the face, neck, chest, and arms of the care provider in the presence or absence of a rubber dam.

Disposables
Disposable devices have become more common in healthcare. They are intended to be used on one patient and then properly discarded. They are not intended to be cleaned or disinfected or sterilized for re-use.

From an infection control point of view, disposable items have a major advantage over their reusable counterparts. Cross-contamination from patient to patient is prevented because the item is used on one patient and then discarded. Potential disadvantages of disposables are that they may not perform as well as the reusable counterpart; may be more expensive; and since many are made of plastic, they may add nonbiodegradable material to the environment.

Further details on aseptic techniques involving waste management, safe injection practices, sharps safety, waterline safety, and laboratory and radiological asepsis are available elsewhere.
What’s Wrong With This Picture?
Can you identify the breach(es) in infection prevention and safety in this photo of a dental treatment procedure?

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See all details and register today at: https://www.osap.org/bootcamp
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Take the Micro-Learning Silent Video Challenge!

Can you identify the actions in this short video that breach infection control or safety? Access the link below and challenge your knowledge.

https://youtu.be/K95YAGh6fpQ

The Scenario:
Use of Saliva Ejector

Without a barrier on the ejector handle, it is assumed it will be cleaned and disinfected afterwards. The patient has not been given protective eyewear. The clinician is not wearing protective eyewear and is not wearing outer protective clothing. This action risks a reverse flow of material in the vacuum line towards the patient’s mouth. Also, assuming the suction hose is operating for a clinical procedure, this can result in a reverse flow of material into the vacuum line towards the patient’s mouth. 

The Lesson: In this scenario, there is cross-contamination risk when the patient is told to close their lips around the disposable saliva ejector and ‘spit’. This action risks reverse flow of material in the vacuum line towards the patient’s mouth. Additionally, the patient has not been given protective eyewear and the clinician is not wearing protective eyewear orouter protective clothing. Without a barrier on the ejector handle, it is assumed it will be cleaned and disinfected afterwards.

Glossary
1. Fomite: An inanimate object that becomes contaminated and can serve as a source of microbial spread.
2. Unit dosing: All the necessary supply items needed for a given patient treatment are packaged and distributed at chairside along with the instruments.

Links to Resources
KEY TAKEAWAYS

1. Touch as few surfaces as possible with contaminated hands/gloves.
3. Use aseptic retrieval procedures to limit the spread of contamination.

QUESTIONS FOR ONLINE QUIZ

1. What is an advantage of properly using a disposable plastic item rather than its metal counterpart?
   a. The disposable is not involved in patient-to-patient spread of contamination
   b. The disposable can be disinfected rather than sterilized for reuse
   c. The disposable is designed for easy cleaning
   d. The disposable is always less expensive

2. What is an example of an aseptic retrieval procedure used at chairside during patient treatment when obtaining a cotton roll from a lidded glass jar of cotton rolls?
   a. Remove the contaminated gloves, remove the lid, and reach in to obtain the cotton roll
   b. Rinse the contaminated gloves with warm water, remove the lid, and reach in to obtain the cotton roll
   c. Use a barrier on the lid and use a sterilized cotton forceps to obtain a cotton roll
   d. Grasp the jar, take off the lid, tilt and shake the jar until a cotton roll falls out

3. What procedure will most contribute to cross-contamination when using a supply cart with a sliding top at chairside?
   a. Touched surfaces on the cart are cleaned and disinfected before use with the next patient
   b. Keep the sliding top closed during patient treatment that generates spatter
   c. Position the cart behind the patient’s head and leave the sliding top open
   d. Use an aseptic retrieval procedure to access the contents

4. What is a key aseptic technique when adding fresh water or other treatment solution to an independent water reservoir (bottle)?
   a. Touch the outside of the bottle only with sterile surgeon’s gloves
   b. Do not touch the pick-up tube with bare hands or contaminated gloves
   c. Wear protective clothing
   d. Wear a surgical mask

5. What is a “clean zone” in a dental office?
   a. Instrument processing room
   b. Dental treatment room
   c. Dental laboratory
   d. Lunch room

6. What zone should one never move to without taking proper precautions?
   a. Sterile instrument storage area to storage room
   b. Treatment room to lunch room
   c. Front office to reception area
   d. Storage room to front office

7. What procedure would be the least helpful in minimizing dental aerosols and spatter?
   a. Using a disposable air/water syringe tip
   b. Using high-volume evacuation
   c. Using a saliva ejector
   d. Using a rubber dam

8. What type of pre-procedural mouth rinse will give the least desirable results?
   a. Chlorhexidine gluconate
   b. Cetylpyridinium chloride
   c. Essential oils
   d. Water

9. What is the proper use of a disposable air/water syringe tip?
   a. Wash with an antibacterial soap for reuse with subsequent patients
   b. Disinfect for reuse with subsequent patients
   c. Sterilize for reuse with subsequent patients
   d. Use with one patient and discard

10. What is the proper use of the saliva ejector?
    a. Don’t tell the patient to close their lips around the ejector
    b. Use only when performing a dental prophylaxis
    c. Use only with children age 12 and under
    d. Never use a disposable ejector
TEAM HUDDLE HIGHLIGHTS

1. Are you touching as few surfaces as possible with contaminated gloves/hands?

2. Are you minimizing the generation of dental aerosols and spatter?

3. Are you using aseptic retrieval procedures to access supplies at chairside?

Read on!