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

► give examples of things that influence the development of an infectious disease;
► list ways to prevent some sharps injuries in a dental environment;
► understand the importance of having a hazard communication program for your dental facility;
► list some of the components of a hazard communication program.

Scenario 1
The incident:
Mary Alice was the first endodontics patient of the day for Herman - a 4th year dental student. She had deep caries in #27 and was in pain. Herman administered anesthesia as a mandibular block and carefully recapped the needle anticipating a subsequent injection. After a few minutes Herman proceeded to expose the pulp chamber. Mary Alice winced with pain so Herman stopped and administered more local anesthetic, safely recapping the needle afterwards. This second injection did not help, so Herman informed his instructor (Dr. Gilfer) of the situation. Dr. Gilfer then inserted a new carpusle into the syringe, uncapped and bent the used needle to achieve better access into the tooth and administered the anesthetic directly into the pulp chamber of #27. This took care of Mary Alice’s pain. Dr. Gilfer then put the syringe/needle in the instrument cassette. Herman completed the procedure on Mary Alice without further incidents. Myrtle, the dental assistant assigned to Herman’s section, came to clean up the operatory and transport the instruments to the sterilization area. As she closed the instrument cassette she felt a sharp pain in her forefinger. She had been stuck right through her heavy utility gloves by the bent used needle protruding up through the perforations in the instrument cassette.

Potential consequences:
Sharps injuries involving a contaminated anesthetic needle could lead to bloodborne diseases caused by hepatitis B, C

Learning Objectives Continued on page 2
and D viruses (HBV, HCV, HDV) or human immunodeficiency virus (HIV). The injury also could lead to a bacterial infection. The chance of Myrtle acquiring a blood-borne disease is small but not zero. The incidence of disease through percutaneous exposure is about 6% to 30% for HBV (in unvaccinated persons), 2% for HCV and 0.3% for HIV. Many factors determine if such an exposure incident will lead to disease. These include:

- the disease status and stage of the source patient (e.g., a patient with hepatitis B who is HBsAg-positive AND HBeAg-positive is more infectious than one who is just HBsAg-positive);
- the amount of fluid (disease agent) transferred during the exposure;
- the susceptibility of the exposed person (e.g., vaccination against hepatitis B);
- the administration of an appropriate prophylactic regime to the exposed person (e.g., against HIV disease);
- nature (extent) of the injury;
- virulence and route of entry of the microbe(s) involved.

Prevention:
Several mistakes led to this exposure. Dr. Gilfer never should have placed the anesthetic syringe with the used needle attached back in the instrument cassette. The bent used needle on the syringe was protruding up in the air above the plane of the other instruments. Myrtle closed the lid of the instrument cassette without looking at what she was doing and received the injury.

It's dangerous to bend a used needle for administration of anesthetic. Get a fresh one. Used injection needles should be immediately and carefully removed from the syringe and placed into a nearby sharps container. A safe approach to removing a needle from the syringe is to safely recap it first and then remove it from the syringe. If a subsequent injection for the same patient is anticipated, the needle may be safely recapped and the syringe placed in a stable fashion on the bracket table or nearby tray. Bent needles usually cannot be properly recapped and should be safely removed from the syringe (e.g., using hemostats to “grab” the needle hub) and discarded immediately after use.

Never recap a needle using a two-handed technique. Use a one-handed scoop technique or a cap holder.

When placing instruments back into a cassette at chairside, watch out that those long-tipped, bent, periodontal probes don’t protrude through holes in the top or bottom of the instrument cassette.
the cassette. Make sure cassettes to be purchased are not too shallow allowing certain instrument tips to protrude through the perforations. Never place a used needle back in the cassette or tray. Discard it in a sharps container at chairside. Needles in the cassette or tray have to be unnecessarily handled again for disposal, and this may put someone else at risk for injury.

Remember, heavy utility gloves used for operatory clean-up will give some extra protection to the hands, but they are not puncture-proof.

Related regulations and recommendations:

- “Consider sharp items (e.g., needles, scalers, burs, lab knives, wires) that are contaminated with patient blood and saliva as potentially infective and establish engineering controls and work practices to prevent injuries” (Centers for Disease Control and Prevention - CDC).
- “Place used disposable syringes and needles, scalpel blades, and other sharp items in appropriate puncture-resistant containers located as close as feasible to the area in which the items are used” (CDC).
- “Contaminated sharps shall be discarded immediately or as soon as feasible in containers that are closable; puncture resistant; leakproof on sides and bottom; and labeled or color-coded” (Occupational Safety and Health Administration - OSHA).
- “During use, containers for contaminated sharps shall be easily accessible to personnel and located as close as is feasible to the immediate area where sharps are used or can be reasonably anticipated to be found” (OSHA).

Scenario 2

The incident:
A dental assistant in Dr. Herbert’s office phoned in sick. The doctor called a temporary employment agency, and they sent over Carla (new to Dr. Herbert’s office) to help out. As soon as she arrived she was told to quickly clean up some bloody instruments by soaking them in a liquid sterilant to “soften up” the debris before ultrasonic cleaning. She found and donned some heavy utility gloves, saw the sterilizing dish containing a solution and grabbed the dirty instruments from the tray. Just as she was about to place the instruments in the dish, Dr. Herbert came in behind her, tapped her on the shoulder and said “how’s it going?” This startled Carla, and as she gasped, she dropped the instruments into the solution. The sterilant splashed into her eyes and mouth, and her eyes began to sting. Dr. Herbert lead her to the sink and told her to cup her hand under the running water, bring it to her eye and open and close her eye in the water. The doctor tried to identify the sterilant solution, but there were no markings on the sterilizing dish. He looked on the label of the sterilant bottle sitting next to the dish for emergency instructions, but that part of the label was worn and illegible. He unsuccessfully tried to find the phone number of a poison control center. In the meantime Carla’s eyes kept stinging, so they rushed her to the emergency room of a nearby hospital.

Potential consequences:
Chemical splashes in the eyes can lead to severe irritation or worse. Chemical contamination of the mouth could lead to local irritation or systemic problems. In this scenario there was also some degree of risk of acquiring an eye infection since bloody instruments were involved.

Prevention:
There were multiple breaches of protocol and disregard for safety regulations and recommendations. Carla received no training about specific office safety procedures. She was immediately put to work without an office safety orientation and not given an opportunity to ask questions. The hiring dentist and the temporary employment agency share the employee training responsibility and should communicate with each other to determine who will provide the necessary information.

Carla had wisely donned heavy gloves, but was not wearing a mask or eye protection. There was no written protocol in Dr. Herbert’s office on how to handle exposure situations. The dish containing the sterilant was not labeled, so there was confusion about the identity of the solution. There were no eyewash stations to efficiently flush out the chemical. There were no MSDSs that would have described emergency procedures after an exposure to that particular chemical. Thus several factors slowed down the response time during which Carla’s eyes were stinging. Also liquid chemical sterilants/high-level disinfectants should not be used as a holding (presoak) solution due to their level of toxicity and less efficient cleaning properties. Enzyme solutions or detergents would be more appropriate as presoaks for helping to remove dried blood on instruments. Use of automated

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cleaning equipment (e.g., ultrasonic cleaner or washer-disinfector) does not require presoaking or scrubbing of instruments and can increase productivity, improve cleaning effectiveness, and decrease worker exposure to blood and body fluids. Thus, using automated equipment can be safer and more efficient than manually cleaning contaminated instruments.

Related regulations and recommendations:

Bloodborne pathogens

- “Masks in combination with eye protection devices, such as goggles or glasses with side shields, or chin-length face shields shall be worn whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose or mouth contamination may be reasonably anticipated” (OSHA). Also see the CDC recommendations.
- “Do not use liquid chemical sterilants/high-level disinfectants for environmental surface disinfection or as a holding solution” (CDC).
- “Employers shall ensure that all employees with occupational exposure participate in a training program that must be provided at no cost to the employee and during working hours” (see the standard for details - OSHA).

Hazardous chemicals

- “Employers shall develop (or make available), implement, and maintain at each workplace, a written hazard communication program which at least describes how the criteria specified in (see the Hazard Communication Standard) for labels and other forms of warning, material safety data sheets, and employee information and training will be met” (see the standard for details-OSHA).
- “Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area” (OSHA).
- “Employers who produce, use, or store hazardous chemicals at a workplace in such a way that the employees of other employer(s) may be exposed… shall additionally ensure that the hazard communication programs developed and implemented…include: the methods the employer will use to provide the other employer(s) on-site access to material safety data sheets (MSDS) for each hazardous chemical the other employer(s)’ employees may be exposed to while working; the methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace’s normal operating conditions and in foreseeable emergencies; and, the methods the employer will use to inform the other employer(s) of the labeling system used in the workplace” (OSHA).
- “The employer shall maintain in the workplace copies of the required MSDS for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s)” (OSHA).
- “…the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked” (see the standard for details - OSHA).
- “The employer shall ensure that labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift” (OSHA).

What’s Wrong With This Picture?

Can you identify any breach in infection control and safety procedures in this photo? Check your answers below.

1. The operator is not wearing gloves.
2. The operator is not wearing a face shield.
3. The operator is not wearing long sleeves to protect arms from splatter.
4. The patient is not wearing protective eyewear.

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Did You Know?

Did you know that the CDC has superb information on prevention of sharps injuries? This is great for teaching purposes during office staff meetings or in the classroom. See http://www.cdc.gov/sharpssafety/resources.html for the free material.

A summary of this information follows.

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Did You Know? Continued from page 4

1. Workbook for Designing Implementing, and Evaluating a Sharps Injury Prevention Program (168 pages) also available on a CD.
2. Sharps Safety for Health Care Professionals (Brochure)
3. PowerPoint slide sets
   - Workbook overview (42 slides)
   - Background (22 slides)
   - Safer Sharps Devices (15 slides)
   - Safe Work Practices (24 slides)
4. Three different posters

Around the World

If you’re planning an international trip, check out the three “Ps” of safe and healthy travel from the CDC:

Be Proactive:
- Learn about your destination.
- See a doctor before you travel.
- Think about your health status.

Be Prepared:
- Pack smart.
- Plan ahead for illnesses or injuries during your trip.
- Know what to do if you become sick or injured on your trip.
- Know and share important information about your trip.

Be Protected:
- Pay attention to your health during your trip.
  - Use sunscreen and insect repellent as directed.
  - Be careful about food and water.
  - Try not to take risks with your health and safety.
  - Limit alcohol intake, and do not drink alcohol and drive.
  - Wear a seatbelt.
  - Wear protective gear when doing adventure activities.
  - Respect your host country and its people by following local laws and customs.
  - Pay attention to your health when you come home.

“Thanks” to our SPONSORS

OSAP thanks the following companies that help to underwrite each issue of this special series of Infection Control In Practice in 2010.

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DentalEZ Group ➤ dentalez.com
DentalEZ’s six brands provide a full line of products for the operatory.

Dentsply ➤ dentsply.com
Delivering solutions ‘For Better Dentistry’ which benefit practitioners and patients globally.

DUX ➤ duxdental.com
Trustworthy innovation for superior infection control products, staff safety and patient comfort.

Henry Schein ➤ henscheindental.com
We’re here for you! Supplies, equipment, services and technology for dental practices.

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Hu-Friedy helps dental professionals perform at their best by providing superior products, knowledge and support.

Medicom ➤ medicom.com
Medicom, proud leaders in disposable infection control products since 1988.

Midmark ➤ midmark.com
Midmark Corporation, A provider of innovative solutions that work for you.

Miele ➤ miele.com
Developed specifically to clean dental instruments and accessories and to reduce the risk of infection by providing high-level disinfection.

North Bay/Bioscience ➤ nbbs.com

Patterson Dental ➤ pattersondental.com
Dental’s most trusted partner for service, supplies, equipment and technology.

PDI, The healthcare division of Nice-Pak ➤ pdipdi.com
Live a healthier life with clinically proven products that safely clean, disinfect and control disease infection.

SciCan ➤ scican.com
SciCan Inc., the final word in all dental instrument reprocessing.

Septodont ➤ septodontusa.com
Septodont, providing better dentistry through pain control, restoratives and infection control products.

SmartPractice ➤ smartpractice.com

Sultan Healthcare ➤ sultanhealthcare.com
Products to complete the cycle of infection control.

TotalCare ➤ kerntotalcare.com
Offering high-quality infection prevention products to protect staff and patients in the dental operatory.
Roadmap to OSAP

If you have received this newsletter from a friend or associate, you can access other helpful resources and timely information on infection control and safety by becoming a member of the OSAP community.

Member resources include:

► NEW OSAP discount on all Continuing Education at www.ineedce.com (see Member Orientation at OSAP website for details)
► Growing list of dental issues’ Toolkits posted on website, e.g., see recently added “Hepatitis B e antigen positive healthcare workers”
► Written referenced responses to your IC questions (“Ask OSAP”)
► Surface disinfectants chart
► Free online CDC Guidelines course
► Monthly online IC news summaries
► Annual infection prevention symposium – June 10-13, 2010 in Tampa, FL
► Infection Control Educator’s Kit
► Free downloads of mission trip IC guide, traveler’s guide and much more!

Member registration is easy.
Online at www.osap.org or by phone: 1-800-298-OSAP (6727) within the U.S. or 1-410-571-0003 outside the U.S.

Current membership levels:
► Individual member (within the U.S.) $110
► Individual member (outside the U.S.) $160
► Web-only member (anywhere) $100
► Student member $25
► Corporate memberships are welcome; please contact OSAP for more information.

Glossary

Bloodborne Pathogens Standard: An OSHA standard (law) that directs employers to protect employees from occupational exposure to blood and other potentially infectious material.1

Hazard Communication Standard: An OSHA standard (law) that directs employers to protect employees from occupational exposure to hazardous chemicals.2

HBsAg: Hepatitis B surface antigen is present on the surface of hepatitis B viruses and on virus-related particles. It is the major diagnostic antigen for viral infection and is present in acute and chronic stages.

HBeAg: Hepatitis Be antigen correlates with hepatitis B virus replication, high titer HBV in serum and infectivity of the serum.

Material Safety Data Sheet (MSDS): Written or printed material concerning the procedures for handling or working with a hazardous chemical that includes physical data, toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill/leak procedures. Material safety data sheets are required for each hazardous chemical present within a facility.

Links to Resources


Continuing Education

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 the 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 (1-410-571-0003).

For each item, pick the best answer.

1. The incidence of disease through percutaneous exposure is about ________ for hepatitis C virus.
   a. 6% to 30%  
   b. 2%  
   c. 0.3%  
   d. 0.01%

2. The presence of which of the following antigens during hepatitis B indicates the greatest infectiousness?
   a. HBsAg  
   b. HBcAg  
   c. HBeAg  
   d. HBsAg and HBcAg

3. According to the CDC where in the office should sharps containers be placed?
   a. As close as feasible to the area in which sharps are used  
   b. Near wastebaskets  
   c. In the sterilization room  
   d. In the dark room

4. Which of the following requires dental facilities to have Material Safety Data Sheets?
   a. CDC infection control guidelines  
   b. OSHA's Bloodborne Pathogens Standard  
   c. OSHA's Hazard Communication Standard  
   d. OSHA's Respiratory Protection Standard

5. CDC states that liquid chemical sterilants/high-level disinfectants should not be used:
   a. for surface disinfection or as a holding solution.  
   b. on plastic items.  
   c. for more than one day after which a fresh solution is to be prepared.  
   d. near open flames.

6. How was Carla possibly exposed to a hazardous substance?
   a. She was stuck by a used anesthetic needle.  
   b. She inhaled aerosols of oral fluids when using the air/water syringe on a patient.  
   c. She was hit in the eye by spatter droplets when a patient coughed on her.  
   d. She was splashed in the eye with a liquid sterilant.

7. Why was Mary Alice receiving dental care?
   a. She had a toothache.  
   b. She was in for a 6 months check-up.  
   c. She broke her upper dentures.  
   d. She was to receive a crown on #27.

8. The Workbook for Designing Implementing, and Evaluating a Sharps Injury Prevention program can be obtained from the:
   a. OSHA.  
   b. CDC.  
   c. FDA.  
   d. ADA.

9. Who has the responsibility for training a temporary dental assistant in regard to the prevention of exposure to bloodborne pathogens?
   a. The temporary employment agency  
   b. The hiring dentist  
   c. Both the temporary employment agency and the hiring dentist  
   d. OSHA

10. The written Hazard Communication Program, required for each dental facility, describes:
    a. how employees will be protected from exposure to HIV disease.  
    b. how employees will be protected from exposure to hepatitis B.  
    c. how employees will be protected from exposure to all hazardous microbes.  
    d. how employees will be protected from exposure to hazardous chemicals.

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What’s It All About?

This issue presents scenarios describing various breaches of safety and infection control protocol in the dental setting that may lead to injury or the spread of infectious disease agents. These include a sharps injury and eye exposure to a hazardous chemical and blood.

Read On!

In the next issue... Are You Exposing Yourself - Part II?