Empower Through Connections

Empowerment is the development of confidence in one’s own abilities. Last year we looked at empowerment through effective communication, leadership, motivation of others and proactive attitudes. This year we’ll continue this series by discussing empowerment through connections with people, places and things. We’ll explore various incidents (scenarios) of improper infection prevention and safety that could occur in a dental facility. Then we’ll describe how empowerment through connections can help prevent such incidents and include a listing of related regulations and recommendations. The first issue was titled “Connect with Policies and Training”. Following the current issue will be, “Empower by Connecting with Compliance”, “Empower by Connecting with Products and Equipment”, “Empower by Connecting with People”, and “Empower by Connecting with Research”.

Empower by Connecting with Places

Scenario 1
The incident:
Dr. Higgenbothem was the only dentist in a small town in Idaho. His wife of 35 years was the only employee serving as hygienist, assistant and front office person. One Tuesday a middle-aged dentist (Dr. Segred) from New York City who was visiting his Aunt came in to see Dr. H complaining of a painful lower left canine. Mrs. H seated Dr. Segred and took the medical history. Dr. H then examined his mouth and noted he had caries at the margin of a previous restoration.

Since an x-ray showed only a slight periapical lesion, Dr. H said he would have to either remove the tooth or perform root canal treatment to relieve pain. Dr. S said go ahead with the endodontic treatment even though he was very disturbed at the lack of infection control practiced by both Dr. and Mrs. H. But the nearest other dentist was miles away. Dr. S was amazed that neither Dr. nor Mrs. H wore a mask but they did wear gloves. None of the operatory surfaces were covered, and uncovered handpieces and the 3-way syringe with tip were already in their holders when he was seated. Dr. S asked if the handpieces were sterile and Mrs. H said: “Yes, I just wiped them down with alcohol”. He also asked if the water being used was good quality. Mrs. H looked at him with a puzzled expression and said: “Yes, it’s good city water”.

After administering local anesthesia Dr. H passed the syringe to Mrs. H, and as she was removing the needle she said: “Ouch”. She dropped the needle on the instrument tray, went to the sink, removed

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Learning Objectives

After reading this publication, the reader should be able to:
► describe some major advances or changes in infection prevention since 1980.
► describe several ways to learn about current infection prevention regulations, recommendations, techniques, products and equipment.
► describe why it is important to heat sterilize dental handpieces and have good quality dental unit water.
► list several Web sites that give important infection prevention information.

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Empower by Connecting with Places
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her left glove, squeezed her injured finger, rinsed it off, dried her hand, put on a fresh glove and returned to chairside. All of this was in view of Dr. S who was waiting for the anesthetic to take effect. Subsequently, the endodontic treatment went well. The canal was debrided, widened, filled and a temporary filling placed. Then Dr. H said to Dr. S: “I’m a little isolated here and don’t often get a chance to talk to other dentists. I was wondering if your treatment techniques back in New York are any different from mine?” Dr. S almost read him the “riot act” but instead decided to give him and Mrs. H some suggestions on how to empower themselves by connecting with different places to update their infection prevention procedures.

Potential Consequences:
It was obvious that Dr. H’s infection prevention procedures for the office were outdated. It appeared that the procedures in effect at the time of his graduation from dental school in 1978 had not been updated where appropriate. Proper personal protective barriers were not used. The practice of not wearing masks allowed spatter and dental aerosols from patient treatment to contaminate the treatment providers’ lips and mouth and possibly be directly inhaled or aspirated.

The Centers for Disease Control and Prevention (CDC) had recommended the use of masks as well as gloves, protective eyewear and protective clothing for dental procedures in 1986. Since no operatory surfaces were covered, it’s possible that difficult to clean light handles, knobs, electrical switches, holders and other surfaces remained contaminated, if cleaning and disinfection even occurred. Handpieces and the 3-way syringe tip were “disinfected” (with alcohol) rather than cleaned and heat sterilized, so the contamination inside these items could possibly be transferred into Dr. S’s mouth. Also, use of alcohol as a surface disinfectant is not recommended since it is not a good cleaning agent and it also evaporates quickly. Since the inside of both high-speed handpieces (e.g., the turbine chamber) and low-speed handpieces become contaminated with patient materials upon use,1,3 just wiping off the outside before reuse allows those internal contami-nants to possibly enter the next patient’s mouth.

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Since a proper post-exposure protocol was not followed, and she had not received the hepatitis B vaccine, Mrs. H was at risk for possible serious consequences of systemic and/or local infections. What was unknown to all was that Dr. S was an asymptomatic carrier of hepatitis B (hepatitis B surface antigen-positive). Carriers of the hepatitis B virus do not respond to the vaccine. When Mrs. H took the medical history Dr. S told her that he had received the hepatitis B vaccination series. Since he did not get tested after the vaccination, he assumed he was immune. Carriers of the hepatitis B virus do not respond to the vaccine. Also after Mrs. H’s needlestick she changed only one glove (on the injured hand), so any environmental microbes contacted when she was away from chairside could have contaminated Dr. S upon her return.

Even though “good city water” is used as dental treatment water, biofilm still develops inside the dental unit waterlines because city water is not sterile. Incoming city water continually inoculates the dental unit waterlines facilitating the development of biofilm in those lines. This biofilm in turn releases more microbes into the flowing water that ends up in patients’ mouths. Thus, unless some intervention method is used to control biofilm development, city water that goes into a dental unit changes to poor microbial quality water coming out. If a dental unit is disconnected from city water and a self-contained bottle is used, care must be taken to keep that bottle clean or biofilm may form in it as well.

The microbial level in untreated dental unit water used for patient treatment can reach hundreds of thousands of bacteria per milliliter (the size of a quarter teaspoonful). This is much worse than the maximum allowed for drinking water, which is less than 500 per quarter teaspoonful. While dental unit water has not been implicated in causing widespread infections in dental patients, there are two reports of such infections. A report from England implicated *Pseudomonas aeruginosa* from dental unit water as the cause of oral infections in two medically compromised patients.4 Another report from Italy in 2011 showed that an 82 year-old women died from Legionnaires’ disease that was likely contracted from a dental office.5 The dental unit and the faucet water in that office contained the same genetic strain of *Legionella pneumophila* as was present in the lungs of the deceased patient.

Dr. S suggested several places that Dr. and Mrs. H can empower themselves by acquiring information about current infection prevention regulations, recommendations, techniques, products and equipment. These include professional meetings and seminars, government and other publications and infection prevention Web sites. He recommended the following infection prevention publications and Web sites:

**PUBLICATIONS**

- Centers for Disease Control and Prevention’s (CDC) main publication- Morbidity and Mortality Weekly Report (MMWR).
- Association for Professionals in Infection Control and Epidemiology’s (APIC) publication - The American Journal of Infection Control (AJIC).
- Organization for Safety, Assepsis and Prevention’s (OSAP) publication – Infection Control in Practice (ICIP).

**WEBSITES**

He also recommended that Dr. H join the Organization for Safety, Asepsis and Prevention and that the entire office staff attend its upcoming Annual Symposium June 21-23 in Atlanta. This is the premiere annual dental infection prevention meeting worldwide and this year will involve over 20 influential speakers, as well as new resources, exhibits and special programs for educators and consultants (see description on this page for details).

By the way, Dr. S was lucky as he did not have any post-op infections, and his canine tooth was later restored and crowned with no further problems. Mrs. H did have a minor local infection in her finger from the needlestick, but it subsided within 3 days after applying a little Neosporin™. She has not yet developed hepatitis. We don’t know if Dr. S was also a carrier of the hepatitis B antigen, in addition to the hepatitis B surface antigen (HBs AG), which would make him a more contagious carrier.

Some related regulations and recommendations

- Use water that meets regulatory standards set by the Environmental Protection Agency for drinking water (fewer than 500 CFU/mL of heterotrophic water bacteria) for routine dental treatment output water (CDC).⁶
- Consult with the dental unit manufacturer for appropriate methods and equipment to maintain the recommended quality of dental water (CDC).⁶
- Clean and heat-sterilize handpieces and other intraoral instruments that can be removed from the air and waterlines of dental units between patients (CDC).⁶
- Wear a surgical mask and eye protection with solid side shields or a face shield to protect mucous membranes of the eyes, nose, and mouth during procedures likely to generate splashing or spattering of blood or other body fluids (CDC)⁶ (OSHA).⁷
- Change masks between patients, or during patient treatment if the mask becomes wet (CDC)⁶ (OSHA).⁷
- Following a report of an exposure incident, the employer shall make immediately available to the exposed employee a confidential medical evaluation and follow-up (CDC)⁶ (OSHA).⁷

Explore and Learn at OSAP.org

Have you visited the “Practice Tips” (members only) page on the OSAP website lately?

Over the years, OSAP members have shared some very practical, time-saving, valuable practice tips. Please consider sharing YOUR tips. We provide complete attribution and a contact link to your email. From the OSAP home page go to: Resources > Practice Tips (members only).

Connect with others!
If you’re a blogger or tweeter check out the bottom left-hand menu on OSAP’s home page http://www.osap.org.

Reader’s Poll Question
Have you ever been challenged in how to tactfully inform colleagues, employers or other office staff about breaches in infection prevention or safety?

a) Yes  b) No  c) Comments

Answer this month’s Reader’s Poll question by accessing this link.

http://www.zoomerang.com/Survey/WEB22FJHWUSZVX
The Annual Meeting of our School of Dentistry at the National University of Mexico will dedicate a session to Patient Safety in Dentistry. On May 4th, Dr. Bernardo Perea (Guest speaker from Madrid’s Complutense University) will present information on adverse events, study cases, and root cause analysis related to safe dental care. Topics will include:

• outcomes of interest at meetings and conferences in which infection control and safety issues are presented;

• guidelines or legislation pertaining to infection control or safety in the dental practice;

• common practices, job roles and titles that are used in various countries or regions to identify persons who are responsible for coordinating infection control and safety in the dental practice.

The Mexican Official Norm on Prevention and Control of Oral Diseases is undergoing review and update. This NORM contains a chapter on Infection Prevention and Control consistent with CDC (2003) recommendations.

Enrique Acosta-Gio, DDS, PhD
National University, Mexico

What’s Wrong with this Picture?

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

The patient being seated, although it may have been disinfected prior to the dental procedure, the chair headrest does not have a protective covering. The patient has not been given protective eyewear to put on dur-
Join OSAP

If you have received this newsletter from a friend or associate, you can access other helpful resources and timely information on infection prevention and safety by becoming a member of the OSAP community. EVERYONE has a role to play in ensuring safe, infection-free access to oral healthcare.

Now you can select the specific category of membership that fits your needs the best. Learn more about the benefits of OSAP membership at www.osap.org and discover how OSAP offers more ways to stay current, informed and connected with these membership categories:

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  Anyone interested in or involved with infection prevention in oral healthcare $115*

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Contact us 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.

Glossary

**Legionnaires’ disease:** A respiratory disease caused by inhalation or aspiration of *Legionella pneumophila* present in contaminated water systems.

**Exposure Control Plan:** A healthcare facility’s written protocols for reducing the risk of occupational exposure to patients’ body fluids. This plan is required by OSHA’s Bloodborne Pathogens Standard.

**Hepatitis B e antigen:** A soluble antigen and its presence in the blood indicates that the virus is replicating and that there are high levels of virus in the blood making the person highly contagious.

Links to Resources


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 each item, pick the best answer.

1. When were the CDC guidelines for infection control in dental settings most recently updated?

2. Which of the following correctly finishes the next sentence? City water going into untreated dental units:
   a. is sterile.     b. changes to poor microbial quality water coming out.
   c. destroys high-speed handpieces.  d. is usually brown in color.

3. A person who is positive for hepatitis B surface antigen and hepatitis Be antigen is:
   a. cured of hepatitis B.    b. highly contagious for hepatitis B.
   c. not susceptible to hepatitis A.   d. not a carrier of hepatitis B.

4. What is the CDC’s main publication?
   a. The American Journal of Infection Control     b. Infection Control in Practice

5. A carrier of the hepatitis B virus:
   a. cannot spread the virus.     b. does not respond to the hepatitis B vaccine.
   c. is not susceptible to hepatitis A.   d. is not susceptible to hepatitis C.

6. What type of harmful infection occurs in Legionnaires disease?
   a. Skin     b. Respiratory     c. Eye   d. Intestinal

7. What is the maximum number of bacteria allowed in a quarter teaspoon (one milliliter) of drinking water?
   a. 500    b. 100    c. 10    d. 1

8. What two bacteria have been implicated in causing infections from dental unit water?
   a. Staphylococcus aureus and Legionella pneumophila
   b. Streptococcus pyogenes and Staphylococcus aureus
   c. Pseudomonas aeruginosa and Staphylococcus aureus
   d. Pseudomonas aeruginosa and Legionella pneumophila

9. The microbial level in untreated dental unit water is:
   a. the same as drinking water.   b. higher than drinking water.
   c. lower than drinking water.   d. either the same as or lower than drinking water.

10. The Exposure Control Plan is part of:

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What's It All About?

This issue presents scenarios describing various breaches of infection prevention and safety protocol in the dental setting that may lead to the spread of infectious agents to patients. Always remember to connect with people, places and things to empower yourself and others with confidence on how to safely deliver oral healthcare.

Do you know where to obtain a model exposure control plan you can modify and use in your office?

Do you know where to obtain a model hazard communication program you can modify and use in your office?

Do you know important Web sites for general information about infection prevention?

Do you know of several printed publications that give general information about infection prevention?

Read On!

In the next issue: Empower by Connecting with Compliance