OSHA Bloodborne Pathogens and Infection Control Made Easy for Dentistry

Version 131 A

Why is Infection Control Important

To make sure we protect both the healthcare worker and the patient from disease

What is the goal?

Goal: Break the Chain of Infection

Pathogen (sufficient evidence & relevant systems)

Susceptible Host (i.e., one that is not immune)

Source (allows pathogens to survive & multiply)

Entry (portal that the pathogens can enter the host)

Mode (of transmission from source to host)
Exposure Control Plan

- A written plan that identifies jobs and tasks where occupational exposure to blood or other potentially infectious materials occurs
- Required for OSHA compliance
- Describes how the employer will:
  - Use engineering and work practice controls
  - Assure use of personal protective equipment
  - Provide training
  - Provide post-exposure medical follow-up
  - Provide hepatitis B vaccinations
  - Use signs and labels for prevention

Exposure Control Plan

- Must be reviewed at least annually to reflect changes in tasks, procedures, or assignments which affect exposure, and technology that will eliminate or reduce exposure
- The annual review must document the employer’s consideration and implementation of “safer medical devices”
- Must solicit input from potentially exposed employees in the identification, evaluation and selection of engineering and work practice controls
- This plan must be accessible to employees

Immunizations

- Recommended to reduce the potential for disease transmission to both healthcare worker and patient
- The following are recommended by the CDC
  - Varicella
  - Measles
  - Mumps
  - Rubella
  - Influenza
  - Hepatitis B
Work Restrictions From the CDC

These policies encourage workers to seek care and report their illnesses

<table>
<thead>
<tr>
<th>Disease</th>
<th>Work restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conjunctivitis</td>
<td>Until no discharge</td>
</tr>
<tr>
<td>Diarrheal disease</td>
<td>Until symptoms stop</td>
</tr>
<tr>
<td>Measles</td>
<td>About one week</td>
</tr>
<tr>
<td>Pertussis</td>
<td>5 days after antibiotics</td>
</tr>
<tr>
<td>Strep Group A</td>
<td>24 hrs after antibiotics</td>
</tr>
<tr>
<td>Varicella</td>
<td>Until lesions crust</td>
</tr>
<tr>
<td>Viral respiratory illness</td>
<td>Until symptoms stop</td>
</tr>
<tr>
<td>Shingles/zoster</td>
<td>Cover lesions</td>
</tr>
</tbody>
</table>

Preventing the Transmission of Bloodborne Pathogens

- Standard Precautions
- Work Practice Controls
- Engineering Controls
- Postexposure management

Standard Precautions

- Using the same infection control procedures for all patients
- Assuming all patients are infectious
- Infection control policies determined by the procedure, not from our view/opinion of the patient
What are the Essentials for Standard Precautions?

- Hand washing
- The proper use of PPE
- Cleaning and disinfecting environmental surfaces
- Following proper sterilization policies and procedures

Work Practice Controls

Means changing the way you work to have a safer outcome and reducing the risk to the employee

Engineering Controls

- Controls that isolate or remove the bloodborne pathogens hazard
- Examples include scalpel blade removers, needle re-capping devices, instrument washers, ultra-sonic cleaners, etc.
**Occupational Exposure Incidents**

Occupational exposure incidents may include injuries such as needle sticks, splashes to mucous membranes (inside of eyes, nose, or mouth) and exposure of non-intact (cut, scraped) skin.

**Post Exposure Wound Care**

- Clean wound with soap and water
- Flush mucous membranes with water
- There is no evidence of benefit for:
  - Applying antiseptics or disinfectant
  - Squeezing puncture sites
  - Using of bleach and other caustic agents

**Post Exposure Management**

- Immediate evaluation and follow-up by a qualified health-care professional
- Have the required paperwork for both the exposed employee and the source patient “ready-to-go”
- Review the circumstances surrounding the incident and how to prevent it from happening again
Post Exposure Report

- Date and time of the incident
- Details, to include, what, where, why and how the exposure occurred
- Information about the source person
- Information about the exposed person
- Must provide a copy of the OSHA Bloodborne Disease Pathogens Standard to the treating medical facility

Epidemiology of Bloodborne Disease Pathogens

**Epidemiology** is the study of the patterns, causes, and effects of health and disease conditions in defined populations

**Bloodborne Pathogens** are microorganisms carried in the blood that can cause disease

Common Bloodborne Pathogens include:
- Hepatitis B (HBV)
- Hepatitis C (HCV)
- Human Immunodeficiency Virus (HIV)

Hepatitis B Virus (HBV, HepB)

- Viral liver disease causing severe liver damage including cirrhosis and liver cancer
- Incidence in US is dropping due to a successful vaccination program
- 1.25 million chronically infected Americans
- 30% of them show no symptoms
- For those who do show symptoms, the onset is generally between 5-6 months and includes:
  - Jaundice
  - Dark urine
  - Abdominal pain
How to Prevent Hepatitis B Infection in Your Office

- Get vaccinated!
- Use Standard Precautions
- Personal Protective Equipment
- Housekeeping/disinfection is important because the virus can survive for up to a week on hard surfaces
- Engineering controls
- Work practice controls

Hepatitis B Vaccination Requirements

Must make available, free of Charge, to all employees at risk of exposure unless:
- employee has had the vaccination
- antibody testing reveals immunity

There is presently no recommendation for a booster shot if you have already been immunized

Hepatitis C Virus (HCV, HepC)

- Hepatitis C infection is the most common chronic bloodborne infection in the U.S.
- Approximately 3.2 million people in the U.S. infected
- Of those infected with Hepatitis C:
  - 85% will remain infected for life
  - 60 – 70% will develop chronic liver disease
  - 10 – 20% will develop cirrhosis
  - 1 – 5% will develop liver cancer
- Slow onset of symptoms which include:
  - Jaundice
  - Dark Urine
  - Abdominal pain
  - Flu-like symptoms
How To Prevent Hepatitis C Infections At Work

- NO VACCINE AVAILABLE
- Standard precautions
- Housekeeping/disinfection important because the virus may be able to survive on hard surfaces for up to six weeks
- Personal Protective Equipment
- Engineering controls
- Work practice controls

HIV in the United States

- 1.2 million people are living with HIV in the United States, with a fifth unaware of their status
- Last year over 50,000 people were diagnosed with HIV infection in the United States

HIV

- Attacks the immune system
- Destroys white blood cells
- Leaves patient immune suppressed
- Many people show no symptoms for years
- Eventually leads to the development of AIDS (Acquired Immune Deficiency Syndrome)
- Early signs and symptoms very similar to flu: fever, fatigue, enlarged lymph nodes, headache
How to Prevent HIV Infection at Work

- Engineering controls
- Work practice controls
- Personal Protective Equipment
- Standard precautions

Treat everyone as though they have HIV!

Average Risk of Transmission After Needlestick From a Patient With HIV, HBC or HBV

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Risk (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV</td>
<td>0.3</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>1.8</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>30.0</td>
</tr>
</tbody>
</table>

Hand Hygiene

One of the most important means of preventing disease transmission
Efficacy of Hand Hygiene Preparations in the Reduction of Bacteria

Source: http://www.cdc.gov/handhygiene/materials.htm

<table>
<thead>
<tr>
<th>Good</th>
<th>Better</th>
<th>Best</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain Soap</td>
<td>Antimicrobial soap</td>
<td>Alcohol-based hand rub</td>
</tr>
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Hand Hygiene Techniques

Before a surgical procedure perform a “surgical scrub”

Use antimicrobial soap and scrub hands and forearms for the length of time recommended by the manufacturer (usually about 2-6 minutes)

Hand Hygiene

Waterless alcohol gel
- May use if hands are not visibly soiled
- Very effective against microorganisms
- Gentler to skin than soap/water
- Takes less time than soap/water
- Recommended by CDC
Skin Care

- Use approved hand lotions or creams
- Check with the manufacturer for compatibility
- Some lotions prematurely break down latex gloves

Hand Hygiene Recommendations

- Artificial nails are NOT recommended
- Keep your fingernails short with smooth edges to aid in proper cleaning and disinfecting
- Do not wear sharp rings or other hand jewelry that would compromise the fit and integrity of the glove

“PPE” Personal Protective Equipment

- OSHA states, “PPE is appropriate only if it does not allow fluids to pass through to undergarments or skin”
- Employers must provide and maintain the PPE needed for employee safety
Face Mask

- Its function is to protect the lungs
- Must be replaced between patients or if visibly contaminated
- Should have a high BFE (bacterial filtration efficiency) rating
- A higher quality mask will have a ASTM rating of 3

Safety Eyewear

What is wrong with this picture?

- Each day, about 2,000 U.S. workers sustain job-related eye injuries
- Approximately 60 percent of workers sustaining eye injuries were not wearing proper protective eyewear
- An estimated 90 percent of eye injuries could be prevented through the use of protective eyewear
Protective Clothing

Wear long-sleeved washable or disposable scrubs, clinic jacket or lab coat to protect skin of the forearms and clothing likely to be contaminated with blood or saliva.

Gloves

Gloves should be worn whenever hand contact with blood or other potentially infectious materials is likely to occur. Gloves should also be worn when touching contaminated items or surfaces.

- Do not reuse disposable gloves
- Replace gloves if they become torn or punctured
- Use nitrile utility gloves for clean-up activities
- Use sterile surgical gloves for surgical procedures

CDC Recommendations

- Change mask between patients or during patient treatment if mask becomes wet
- Change PPE if visibly soiled or contaminated
- Remove barrier protection, including gloves, mask, eyewear, and protective clothing before departing the work area
- Wear sterile surgeon’s gloves when performing surgical procedures
- Have non-latex gloves available for allergic employees
Laundry

- Protective clothing must be removed before leaving the work area
- Should be handled as little as possible
- Contaminated clothing must be placed in a fluid resistant bag that has the biohazard label on it
- Cleaned by a professional service or cleaned in-house
- **Must not** be taken home

Sterilization

Instrument processing area should be separated into four main areas of activity:
1. Receiving, cleaning, and decontamination
2. Preparation and packaging
3. Sterilization
4. Storage

Critical Items

- Are items that penetrate soft tissue or bone
  - Must be heat sterilized (autoclave or dry heat) if heat stable
Semi-Critical Items

Are items that touch but do not penetrate mucous membranes
- Should be heat sterilized
- High-level disinfection is acceptable if not heat stable, but must use an FDA approved sterilant/disinfector

Cleaning Instruments

- Transport dirty instruments in a closed container such as a cassette
- Wear nitrile utility glove for handling instruments and decontamination procedures
- Use protective eyewear
- Instrument washers and ultrasonic cleaners do an excellent job and make the task safer

Instrument Washer
Ultrasonic Cleaner

For training in 2013 in conjunction with © HPTC workbook and on-line test.

Prep and Package for Sterilization

- Make sure all instruments are clean
- Only use FDA approved packaging
- Use an internal and external chemical indicator on all packages
- Packaging will allow for continued sterility during storage

For 2014 training in conjunction with © CTP workbook and on-line test.

External/Internal Chemical Indicators

For 2014 training in conjunction with © CTP workbook and on-line test.
Instrument Processing

• DO NOT handle package while they are wet
• Verify that the indicators have changed colors
• Rotate usage of your instruments—first in—first out

Sterilization

Steam Autoclave
• Do not overload or stack packages to prevent circulation and penetration of steam
• Stand pouches on edge with paper up
• If you are using cassettes, use a rack
• Do not interrupt a sterilization cycle
• Requires appropriate drying time

Adequate Autoclave Capacity

Make sure you have adequate sterilization capacity and a back up!
Sterilization Monitoring

**Chemical indicators** are used in heat sterilizers only indicate that a specific temperature has been reached.

**Physical indicators** include pressure gauges, indicator lights, buzzers, timers. While helpful, they do not prove sterility.

**Biological monitors** (spore tests) are designed to prove sterility. Heat sterilizers should be tested weekly.

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Biological Monitoring

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Environmental Surface Infection Control

- **Clinical Contact Surfaces** may include light handles, switches, x-ray equipment, chair side computers, drawer handles, faucet handles, countertops, pens, telephones and doorknobs (eliminate touching as many of these as possible).

- **Housekeeping Surfaces** include floors, walls and sinks.
Environmental Surface Disinfection

“Touch Surfaces”

Usually contacted and contaminated by staff during a dental procedure. Examples of touch surfaces include the X-ray exposure button, dental chair switches, headrest, and the air-water syringe. These surfaces require either between-patient cleaning/disinfection or protection with an impervious, single-use barrier.

Barrier Covers

- Used to cover areas not easily cleaned and disinfected
- Must be changed between each patient

Environmental Surface Disinfection

“Transfer Surfaces”

Are not touched directly by the dental worker, but usually are contacted by contaminated instruments. Examples of transfer surfaces include instrument trays and bracket tables. These surfaces should be maintained in the same manner as touch surfaces.
Environmental Surface Disinfection
“Splash-Spatter” and “Aerosol” Surfaces

Examples include the dental chair and any unused countertop areas. These surfaces need not be disinfected, unless visibly contaminated, but should be cleaned at least daily with soap and water.

Regulated Waste

Must be placed in closeable, leak-proof containers that contain all contents during handling, storing, transporting or shipping and be appropriately labeled or color-coded.

Every state is different when it come to regulated waste disposal. Know what your state requires!

Biohazard Warning Labels

Required on:
- Containers of regulated waste
- Waste containers in each operatory
- Refrigerators and freezers containing blood or other potentially infectious materials
Regulated Waste in your Office

List items that may be Regulated Waste in your facility by category:

- **Absorbent material**: anything capable of absorbing liquid, like gauze & cotton products
- **Non-absorbent material**: anything that will not absorb liquid, like gloves, barrier covers
- **Sharps**: anything that is contaminated that can puncture or lacerate the tissue

Tuberculosis

- Bacterial infection
- **Caused by** *Mycobacterium tuberculosis* (also called *tubercle bacillus*)
- Is either latent (non-infectious) or active (infectious)
- Can be fatal if not treated properly
- Foreign-born people have a rate 10 times greater than US-born

Transmission of Tuberculosis

- TB spreads through the air when a person coughs, speaks, laughs, or sneezes
- Transmission occurs when a person breathes in the bacteria (called droplet nuclei) and becomes infected
- In most people, the immune response kills the bacteria
- In some people the bacteria remain alive but dormant. This is called "latent TB infection." These people are not infectious. About 10% of these people develop "active infection" and become infectious
Symptoms and Diagnosis

- The most common signs and symptoms of TB are fatigue, fever, weight loss, productive cough, and night sweats.
- The diagnosis of TB involves skin tests, chest X-rays, sputum analysis, and the PCR test, which determines the genetic make-up of the causative bacteria.

TB Risk Categories

- In a low risk facility, patients with TB are unlikely to be seen. Most dental offices are considered low risk.
- A medium risk facility is likely to see patients with TB.
- A potential for ongoing transmission facility has evidence of ongoing person-person transmission of TB.

TB Testing of Employees

- Baseline testing is recommended for all risk categories.
- Low risk facilities only need a baseline test. This includes most dental offices. No further testing needed.
- Medium risk facilities also need annual testing.
- Potential ongoing transmission facility employees must be tested every 8-10 weeks until evidence of transmission has ceased.
- Positive tests will require further evaluation.
Prevention of TB

- Identify possible TB patients
- TB patients should **not** be treated in your facility
- Instruct symptomatic patients to cover mouth and nose when coughing or sneezing
- Provide them with tissue
- Dispose of tissue in no-touch receptacles
- Have them wash hands soiled with respiratory secretions
- Place a mask on symptomatic patients and move them away from others
- Refer to a local hospital for diagnosis

Dental Unit Water Quality

- **Potable (drinkable) water:**
  - Less than 500 colony forming units (CFU's) of bacteria per ml. of water
- Dental unit water can be 10,000 CFU or more!
- Why? Dental unit design is ideal for growth!
- The American Dental Association statement and its challenge to industry:
  - Develop methods to control biofilms in dental unit water systems
  - Bacteria levels to not exceed 200 CFU/ml

Sources of Dental Unit Water Line Contamination

- **Source water.** Some cities water supplies have higher CFU/ml than other areas
- **Retracted oral fluids.** All new dental units have anti-retraction valves built in, but they can wear out. Many older units have no anti-retraction valves. This may allow for saliva/blood to be sucked into the dental unit
- **Biofilms.** These layers of microorganisms can easily form on the walls of dental unit waterlines
Measures to Improve Water Quality

- Independent water reservoirs
  - Isolates unit from municipal supply
  - Are basically water bottles that attach to the dental unit
  - Allows use of waterline treatment products
  - Allows offices to practice during times that municipal water supply is under a “boil water notice

Other Solutions

- Follow manufacturers guidelines for maintenance/disinfection of dental unit water
- Water purification/disinfection devices
- Check/replace anti-retraction valves
- Run all water containing devices (high-speed handpiece, ultrasonic scaler, 3-way syringe) for several minutes at the beginning of the day and between patients
- Periodically test water for bacteria levels (Compliance Training Partners recommends quarterly)

Before & After Treatment

- Actual SEM (Scanning Electron Micrograph) of a dental unit waterline before and after “shock” treatment

The Sterilex® Corporation
Water Test Kit

It is important to test the quality of the water coming from your dental unit. With an increased number of patients with compromised immune systems, keeping your waterline bacteria count low is extremely important.

Surgical Irrigation

- Sterile saline or water should be used as a coolant/irrigant in the performance of oral surgical procedures
- Delivery devices such as sterile bulb syringes or single-use sterile waterlines should be used to deliver water

Dental Laboratory

- Practice Standard Precautions in the lab
- Clean and disinfect all impressions, bites, models, appliances, etc., using an intermediate level disinfectant
- Make sure safety devices/engineering controls are used
Laser Safety

- Wear appropriate PPE including mask, gloves and long sleeved protective clothing
- Wear protective laser eyewear
- Implement proper evacuation/exhaust controls
- Make sure the laser warning sign is displayed

Chair-side Marketing Of Your Infection Control/Sterilization Program

- Always open the package of sterile instruments in front of the patient
- All staff members should be able to explain your infection control and sterilization system to the patient
- “Show-off” your sterilization center on tour!
- Remind patients that, “This office follows all OSHA and CDC regulations”
- Place this information on phone messages, brochures, website etc.

Question and Answer

If you have any questions that cannot be answered today, please contact the Compliance Training Partners Technical Services Department at 1-888-388-HPTC(4782)