INFECTION CONTROL

In each dental office, the dentist has the ultimate responsibility of making sure that infection control is maintained at its highest level. Usually a full-time employee (a dental assistant) is designated as the infection control coordinator. The job of this person is to ensure compliance with all regulations regarding the performance of aseptic technique in the office. Aseptic techniques refer to creating a procedure free of disease producing microorganisms.

A number of governmental agencies such as OSHA and CDC have established guidelines for infection control in medical and dental offices. Also, the ADA supports these guidelines for the maintenance of infection control in medical and dental offices.

The Occupational Safety and Health Administration (OSHA), a branch of the Department of Labor, is a governmental regulating body, which enforces the rules and regulations relative to the infection control environment in a dental office.

OSHA’s Bloodborne Pathogens Standards applies to any facility where employees can be exposed to body fluids such as a medical or dental office.

OSHA may review procedures and practices in a dental office for compliance when:

1. An employee or patient complaint is made.
2. Periodically in an office of eleven or more employees.
3. When requested by an office.

The OSHA Bloodborne Pathogen Standard:

Each office must:

1. Periodically review standard.
2. Devise ways of protecting and training employees using written plan.
3. Train all new employees and offer training to all employees annually.
4. Provide necessary materials for employees to meet standards.
5. Provide and properly dispose protective equipment.
6. Offer procedure for each employee to obtain hepatitis B vaccination.
7. Provide written procedure for the event of an exposure.
8. Explain biohazards and labeling to employees.
10. Develop procedure for keeping records of hepatitis B vaccinations and exposures.

OVERALL GUIDELINES FOR INFECTION CONTROL:

GENERAL

1. Sterilize everything that can be sterilized.
2. Use disposables whenever possible. (Easier to dispose of than disinfect.)
3. Use barriers whenever possible. (Easier to dispose of than disinfect.)
BIOHAZARD WASTE DISPOSAL

1. Blood or blood soaked items that may release blood or infectious material.
2. Tissue and extracted teeth.
3. Contaminated needles, surgical blades or disposable sharps
   (Dispose in a puncture proof, biohazard container.)
4. Disposable gowns, eyewear, gloves, and masks
5. Headrest covers.
6. Cotton goods and paper goods contaminated with body fluids.

Sharp instruments and needles should be placed in a puncture-resistant sharps container and sent to an outside biohazard agency for safe disposal. Other disposable materials used in a procedure should be placed in a closeable, leak proof container and properly labeled or color coded. This should also be transported to an outside biohazard agency for safe disposal.

If an employee is exposed, the employer should immediately make available a confidential medical evaluation. This should be made available to employee at no cost. There should be a complete written report, following OSHA guidelines, prepared for the office on the incident.

BARRIERS

OPERATOR BARRIERS
1. Disposable gloves.
2. Disposable face masks, eyewear, and shields.
3. Lab jackets.

PATIENT BARRIERS
1. Eyewear
2. Rubber dam
3. Patient drape or napkin
4. Evacuation/suction tips

GENERAL SURFACE BARRIERS
1. Full chair covers
2. Dental light handle covers
3. Air/water syringe covers
4. Tray and cabinet covers
5. Self stick barrier film

NONBARRIER DISINFECTION

When it is not possible to provide barriers, utilize spray-wipe-spray-wipe technique. First an area of surface is sprayed and wiped to remove debris and cleaned. Then a spray is used for disinfection purposes and should remain on the surfaces for a period of time as suggested by the manufacturer.
There are number of different types of disinfectant sprays available. You will usually use what is currently being used in your office. However, it is important to make sure disinfectant is EPA approved. Always review manufacturer’s instructions.

Give the students the name of the disinfectant used in your office.

DEMONSTRATE SPRAY AND WIPE TECHNIQUE AND PLACEMENT OF PERSONAL BARRIER FOR OPERATOR AND PATIENT AND SURFACE BARRIERS.

MICROBIOLOGY

The study of microorganisms is called microbiology.

The types of microorganisms are:

1. Bacteria
2. Viruses
3. Protozoa
4. Riskettsiae
5. Yeasts and Molds

BACTERIA are single-celled plants that contain no Chlorophyll. Some bacteria (Aerobic) need oxygen to live, some (Anaerobic) are destroyed by the presence of oxygen, and some (Facultative anaerobic) live with or without oxygen.

Bacteria may form spores which is a resistant form of the bacteria and may not be destroyed by dry heat, chemicals, or boiling water. Spores are very resistant and may live in that form for many years. When the spore finds a good environment that offers warmth, moisture, food and darkness it may begin to grow.

VIRUSES are the smallest of the microorganisms, approximately one-hundredth the size of bacteria. These microbes are neither animal nor plant. They are fairly easy to kill although some are very resistant such as the hepatitis B virus. Most are easy to kill by air or disinfection.

PROTOZOA are single-celled animals and may cause a number of diseases. They are fairly easy to kill with the exception of the sporulating protozoa.

RICKETTSIAE appear like tiny bacteria and need a live host for life. They are fairly easy to kill. They may cause Rock Mountain Spotted Fever or Typhus.

YEASTS AND MOLDS are plant organisms that lack chlorophyll. They are larger than bacteria but smaller than protozoa. They are fairly easy to kill with the exception of the sporulating varieties.

Most microorganisms do not cause disease. Microorganisms that cause disease are said to be pathogenic – disease producing. In the dental office we try to prevent the contamination of instruments and the working area through cleaning, disinfection, and sterilization.
The three key words used in preparing instruments for use in the dental office are:

1. Sanitization
2. Disinfection
3. Sterilization

Sanitization is the physical removable of dirt and debris from an instrument or surface. This is usually done in preparation for disinfection or sterilization.

Disinfection refers to the chemical or physical process of killing microorganisms. This will not kill spores or resistant viruses.

Sterilization is the total destruction of all forms of microbial life. All microorganisms.

SANITIZATION

This form of instrument or surface preparation physically removes dirt and debris from the object of sanitization. This process can be accomplished by hand scrubbing or ultrasonic cleaning. It is better to use an ultrasonic cleaner since hand scrubbing may cause microbes to become airborne with the possibility of spreading disease.

It is best to submerge instruments in warm water when scrubbing to prevent exposing the atmosphere to microorganisms which can facilitate the spread of disease.

The ultrasonic cleaner allows the assistant to submerge instruments in the cleaner and sound waves cause the removal of debris from the instruments.

Sanitization helps to decrease the number of microorganisms and remove substances that may hinder the process of disinfection or sterilization.

DISINFECTION

Chemical disinfectants may be used to disinfect surfaces in and around the dental operating area. The chair, unit, and light can be disinfected by chemical solution.

Some instruments may be disinfected prior to sterilization to help reduce the number of microorganisms. This might be done if there is a chance the Dental Assistant could stick himself or herself prior to sterilization.

Boiling water is considered disinfection but is seldom used nowadays.

STERILIZATION

LIQUID STERILIZATION may be accomplish with some chemicals where exposure to heat is not indicated for a particular instrument. Immersion time would be approximately 10 hours and the instruments are first thoroughly cleaned. The length of time makes this procedure somewhat objectionable.
HOT GLASS BEAD OR SALT STERILIZATION is used to sterilize burs and endodontic instruments. Temperature reaches approximately 450 degrees F or 234 degrees C. Burs and endodontic instruments are placed in for 20 to 30 seconds. This is a small device and can be used for only small instruments.

DRY HEAT STERILIZATION works very similar to an oven. Temperature reaches 340 degrees F or 171 degrees C. Instruments which may rust or hinged instruments can be effectively sterilized in dry heat for approximately one hour. There is no penetration with this method; therefore, materials or gauzes would not do well with dry heat sterilization.

CHEMICAL VAPOR STERILIZATION can be used effectively in a dental office. It is similar to an autoclave but uses a special solution to achieve the proper vapor for sterilizing. This procedure causes very little rust or corrosion of metals. The exposure time is approximately 20 minutes at 270 degrees F.

STEAM STERILIZATION (AUTOCLAVE) is probably the most used method of sterilization in dental offices. Instruments may be wrapped or placed in special bags prior to sterilization since the steam under pressure allows for effective penetration. Special bags or tablets which contain certain dyes can indicate that sterilizing temperatures were reached in the autoclave. Instruments can remain in the wraps or bags until use. Instruments used for a particular procedure can be wrapped and autoclaved and be available for use as needed. If properly stored, instruments should remain sterile for at least two months. Make sure packs or bags are dated. If instruments are not used in two months, you will want to autoclave them again and enter new date.

The autoclave operates like a pressure cooker in that it is steam under pressure that allows the temperature to exceed the boiling point of water, 212 degrees F.

Instruments may be sterilized in fifteen minutes at 250 degrees F. Emergency sterilization can be accomplished in three minutes at 270 degrees F. In Dr. de la Pena’s office, critical instruments are sterilized at 273 deg F for 30 minutes.