IV: INFECTION CONTROL

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General Practice Residency Program
The University of Texas Health Science Center
Dental Branch

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REFERENCE: http://www.ada.org/prof/resources/topics/cdc/guidelines_cdc_infection.pdf

INTRODUCTION

Dental professionals are exposed to a wide variety of microorganisms in the blood and saliva of patients. These microorganisms may cause infectious diseases such as the common cold, pneumonia, tuberculosis, herpes, hepatitis B, and acquired immune deficiency syndrome (HIV). The use of effective infection control procedures in the dental office and the dental laboratory will prevent cross-contamination that may extend to dentists, dental office staff, dental technicians, and patients.

Although much attention is currently focused on HIV, the dental health team is far more at risk to the hepatitis B virus (HBV) than to the human immunodeficiency virus (HIV) that causes AIDS. HBV is more common in the general population, and 0.3% of the U.S. population are HBV carriers. Experience has shown that patients with hepatitis B or who are HBV carriers can be treated without transmission of disease in a dental office when recommended infection control procedures are used. As HIV appears to be much more difficult to transmit than HBV, it is believed that the same procedures will prevent the transmission of HIV in the dental office.

The purpose of this manual is to establish a criteria and protocol for effective infection and hazardous chemical control in the General Practice Residency Program. This applies to the University Dental Center at Hermann as well as all other patient/patient related contact areas. This criteria follows all recommendations of the American Dental Association (ADA), the U.S. Public Health Centers for Disease Control (CDC) and the U.S. Department of Occupational Health and Safety Administration (OSHA).

EXPOSURE DETERMINATION

A. ***CATEGORY I***

Tasks that involve exposure to blood, body fluids, or tissues. “All procedures or other job-related tasks that involve an inherent potential for mucous membrane or skin contact with blood, body fluids or tissues, or a potential for spills or splashes of them, are Category I tasks.”

Category I personnel in the University Dental Center (UDC) include ***dentists*** and ***dental residents and students, dental hygienists*** and ***dental hygiene students***, ***dental assistants*** and ***dental assisting students***, and ***laboratory technicians***.

CATEGORY II

Tasks that involve no exposure to blood, body fluids or tissues, but employment may require performing unplanned Category I tasks. “The normal work routine involves no exposure to blood, body fluids or tissues, but exposure may be required as a condition of employment.”

Category II personnel include clerical or nonprofessional workers who may, as part of their duties, help clean up the office, handle instruments or impression materials, or those who send out dental materials to laboratories. No UDC personnel are classified as Category II.

C. ***CATEGORY III***

Tasks that involve no exposure to blood, body fluids or tissues. Persons who perform these duties are not called upon as part of their employment to perform or assist in emergency medical care or first aid or to be potentially exposed in some other way.”

Category III personnel in the UDC include ***front office staff and office manager.***

BARRIER TECHNIQUES

A. ***HAND WASHING***

Hand washing is considered to be one of the most important procedures in preventing nosocomial (operator induced) infections. The purpose of hand washing is to remove resident bacteria and transient organisms acquired from contact with patients or contaminated surfaces.

Hands should be washed thoroughly with antimicrobial handwash solution at the beginning and end of each clinic session, before gloving and after degloving, and anytime they become contaminated. All jewelry should be removed and fingernails trimmed and cleaned utilizing a nail cleaner. False fingernails should not be worn as contamination may occur from fungal growth occurring between the false and natural nail.

The first handwash should consist of two consecutive 15 second handwashes with soap and water. The thumbs, fingertips and areas between fingers and around the fingernails should receive particular attention. A single 15 second wash is sufficient for other handwashes.

Precautions must be taken to avoid hand injuries during procedures. If an injury, such as needlestick, occurs or gloves are torn, cut, or punctured, gloves should be removed as soon as is compatible with the patient's safety. Hands should be washed thoroughly and regloved before completing the dental procedure. Dentists, dental hygienists, and dental assistants who have exudative lesions or weeping dermatitis should refrain from all direct patient contact and from handling patient care equipment until the condition is resolved.

B. ***GLOVES***

Gloves must be worn to prevent skin contact with blood, saliva, or mucous membranes and when touching items or surfaces that may be contaminated with blood, body fluids or secretions.

After each patient contact, gloves must be removed and hands washed and regloved with new gloves before treating the next patient. Repeated use of a single pair of gloves by disinfecting them between patients is not acceptable. A second pair of gloves, such as examining gloves, may be placed over a first pair of gloves when it is necessary to briefly examine a second patient.

C. ***GOWNS***

All dental personnel must wear long-sleeve protective gowns over clothes or scrub uniforms to prevent skin and mucous-membrane exposure when contact with blood or other body fluids is anticipated. Gowns must be worn in proper fashion, covering scrubs/clothing and tied in the rear. Those procedures which require the use of long-sleeved gowns include:

1. Any surgical procedure.
2. Any non-surgical periodontal procedure ("routine" dental prophylaxis may be evaluated on an individual patient basis).
3. Any procedure requiring the use of a high-speed handpiece.
4. Any known high-risk patient.
5. Any other procedure where splattering of blood, saliva, or other body fluids is anticipated.

Note: Any procedure where large amounts of blood, saliva, or other body fluids will soak through the gown, fluid-resident gowns are required.

Head covers and yellow or blue disposable gowns ***must*** be used during invasive (i.e. surgical) procedures that are likely to result in the splashing of blood or other body fluids. Gowns must be changed at least semi-daily or more often if they are visibly soiled. After use, protective attire should be removed and placed in laundry or disposal red bags before leaving the clinic area at the

end of the day. In addition, whenever leaving the clinic area during the day, a clean outer coat or jacket must be worn. Personnel may wear street clothes to work and change to scrub uniforms.

D. ***MASKS/HEAD COVERS***

Surgical masks or chin-length plastic face shields must be worn to protect the face, the oral mucosa and the nasal mucosa from spatter of blood and saliva. Masks should be changed after each patient, except in cases where spatter or aerosol production does not occur (i.e. brief examination). In lengthy procedures, masks should be changed if they become damp and should not be worn longer than 1-2 hours consecutively. Head covers should be worn for all surgical procedures. Hair which is shoulder length or longer must be tied in the rear.

E. ***PROTECTIVE EYEWEAR***

Protective eyewear such as goggles or face shields must be worn to protect the eyes from splatter and aerosols of blood and saliva. Protective eyewear must have solid, not perforated, side protection. "Regular" eyeglasses are not acceptable for use unless specifically designed/modified and approved for protection.

F. ***RUBBER DAM***

Routine use of the rubber dam provides one of the most effective barriers and is a deterrent to the creation of aerosol contaminants. Except when not possible or practical, a rubber dam must be used in all appropriate procedures.

G. ***CONTROL OF DENTAL OPERATORY AEROSOLS***

To reduce microbial levels in dental aerosols, the daily flushing of water lines and the presence of antiretraction valves reduce microbial levels in the dental unit water supply. In addition, it has been shown that patients that brush their teeth or rinse with a mouthwash before treatment will reduce the microbial concentration of their oral flora. Three ten-second rinses can temporarily reduce a patients' oral microbial count by up to 97%. A rubber dam must also be used whenever possible to reduce the microbial level of dental aerosols.

The following techniques aid in the reduction and protection against aerosol production:

1. Use of ***high-volume evacuation (suction)***.
2. ***Cleaning cavity preparations with water alone***, rather than a combination of an air and water spray
3. Polishing restorations with ***rubber points and finishing burs*** versus bristle brushes.
4. ***Lids on ultrasonic cleaners*** should be utilized to reduce spread of aerosols into the dental treatment room.
5. Because bacterial aerosol particles can remain airborne long after a procedure is completed, ***eating and drinking is not allowed*** in the dental treatment rooms, laboratory, or sterilization area. Smoking is not permitted anywhere by anyone in the University Dental Center. Applying cosmetics or lip balm, and handling contact lenses are confined to rest room areas or offices (ie resident's office).
6. Each unit is equipped with a ***bottled fluid*** line for use of distilled H_2O or germicidal agents in all handpiece and air/water syringes. When germicides are utilized, flushing with water should immediately follow the germicide to prevent corrosion and disintegration of tubing. Indications for use are the known high-risk patient and for regular and daily disinfection.

H. ***BARRIERS***

Plastic barriers are used routinely in the dental center. This includes (but is not limited to) placing over chairs, bracket tables, x-ray machines. Wraps are located in the main clinic and treatment room areas and changed after each patient use.

NEEDLESTICK PROTOCOL

A needlestick is defined by the CDC as being one of the following:

a. Percutaneous inoculation with a needle contaminated with patient blood or saliva.
b. Percutaneous inoculation with any instrument contaminated with patient blood or saliva.
c. Patient blood or saliva contact with an open wound, non-intact skin or mucous membrane.

If a needlestick exposure occurs, the wound should be cleansed immediately with soap and water. The incident must then be reported immediately to the dental director or attending dentist. The individual will then be routed as follows:

All UT personnel at Memorial Hermann Hospital or outside of Dental Branch:

Student/Employee Injuries -- UT Health Services 713-500-3267
Needlesticks -- Safety and Infection Control Nurse-pager 713-684-3800
Needlesticks after hours -- 24 Hour Pager 713-951-8013

HOUSEKEEPING

A. *USE AND CARE OF INSTRUMENTS*

1. *Cleaning Prior to Sterilization*

Instruments must be cleaned prior to sterilization. Blood, saliva and other debris act as barriers which compromise all practical methods of sterilization or disinfection.

Contaminated instruments should first be ***immersed*** in the disinfectant immersion tray for at least ten minutes before being handled for sterilization.

Instruments must then be ***scrubbed*** using a combination of the following methods: Heavy rubber gloves should be worn to protect the hands from infection. In addition, a mask and protective eyewear should be used. Scrub instruments with brush or sponge. When possible, dismantle instruments to clean hard-to-reach areas. All instruments should be rinsed and dried.

Placement of instruments directly onto the floor of an ultrasonic cleaner limits its potential to clean. An ultrasonic cleaner basket should be used to insure optimal cleaning action and eliminate the need for the operator to place his/her hands into the dirty cleaning solution in order to remove instruments.

2. *Inspection*

Prior to packaging, instruments should be checked for signs of rust or cracks and proper opening as well as closely monitored for the need for lubrication, sharpening, repairing, replacement or disposal.

3. *Needles*

A sterile syringe, a new disposable needle, and new local anesthetic solutions must be used for each patient. Since an individual patient may require multiple injections of anesthetic or other medications from a single syringe, a number of techniques are acceptable to minimize the likelihood of injury:

1. Recap the needle by laying the cap on the tray or placing the cap in a holder so that the needle can be guided into it without injury, or

2. Recap the needle by holding the cap with forceps.

Disposable needles should not be bent or broken after use. Needles should not be manually removed from disposable syringes or otherwise handled manually. Discard disposable syringes, needles, scalpel blades, and other sharp items into puncture-resistant containers located as close as is practical to the area in which they have been used. Hemostats or pliers may be used to handle sharp items.

B. ***EQUIPMENT AND SURFACES***

1. ***Dental Handpieces***

After each patient, ***flush the handpiece*** with water by running it for 20 to 30 seconds and discharging into a sink or container. After each patient, a chemical germicide should be used for flushing followed immediately with water to purge the disinfectant from the lines.

Scrub the handpiece thoroughly with a detergent and hot water to remove any adherent material.

First ***disinfect the surface of the handpiece*** by applying a chemical germicide that is registered with the EPA as a "hospital disinfectant" and is tuberculocidal at use-dilution. Remove any chemical residue by rinsing with sterile water or wiping with alcohol-soaked gauze. Then ***sterilize all handpieces*** according to the manufacturer's recommendation (either autoclave or gas) ***after each patient use. Lubricate handpieces daily*** according to manufacturer's recommendations.

2. ***Air/Water Syringes, Ultasonic Scalers, & High-Speed Evacuation Tips***

Each unit has multiple sterilizable 3-way syringe tips and disposable high-volume evacuation tips. Each syringe must be flushed as described for handpieces after each patient use. The tip must be removed and sterilized with the same technique(s) as other instruments or a disposable tip used . Besides flushing the high-speed vacuum line with germicide after each patient, all lines must be flushed with a cleaner at the end of the day.

3. ***Dental Unit, Chair, & Lights***

The dental unit and chair must be disinfected after each patient use. Disposable covers are used to reduce the number of surfaces to be sanitized. When chair adjustments are not foot controlled, hand controls are covered during treatment and wiped with a disinfecting solution between patients. The 3-way syringe handle, saliva ejector coupling and unit switches and handles are wiped by an acceptable disinfectant following each patient visit unless covered during treatment. Dental protective light shields should be wiped with disinfectant solutions without causing damage to their surface. Light handles should be covered with a piece of aluminum foil, plastic wrap or headrest cover or wiped with an acceptable disinfectant after each patient visit. Disposable light handle attachments are used for surgical and known high-risk procedures. Paper or plastic headrest covers and bracket tray covers must be changed after each patient visit.

4. ***Countertops and Surfaces***

Countertops and surfaces must be wiped to remove any extraneous organic matter and subsequently disinfected with a suitable chemical germicide. Disinfection is done by saturating gauze with Lysol and wiping surface. This is left in place for 3 minutes. The procedure should be repeated and then the surface dried with towels.

5. ***Unit water and evacuation lines***

Guidelines for maintaining optimal water quality in dental waterlines include:

a) Waterlines must be allowed to run and discharge water for several minutes at the beginning of each clinic day.
b) High-speed handpieces must run to discharge water and air for a minimum of 20 to 30 seconds after use on each patient.
c) Dental personnel must routinely follow the instructions of the dental unit's manufacturer for the proper maintenance of waterlines.
d) Each dental unit is equipped with an independent reservoir system which may be filled with water or a chemical solution, e.g. 0.12% chlorhexidine.
e) Disinfectant solutions are run through all evacuation lines after each patient visit and at the end of the day. Chairside traps are cleaned daily.

C. ***STERILIZATION/DISINFECTION***

1. ***Chemical Vapor Under Pressure Sterilizer (Harvey Chemclave)***

This sterilizer uses chemical vapor under pressure. Because chemical vapors are less corrosive than steam, they do not dull sharpened instruments. Chemical vapor sterilizers use a specific mixture of formaldehyde, alcohols, ketone, acetone, and water. A disadvantage of the chemical vapor sterilizer is that residual chemical vapor escapes into the air when the chamber door is opened. Allowing the sterilizer to cool for at least 20 minutes prior to opening will significantly reduce the residual vapor level.

2. ***Glutaraldehyde***

Three types of glutaraldehyde are available; alkaline, neutral, and acidic. While they possess a wide range of biocidal activity, they all destroy microorganisms by damaging their proteins and nucleic acids. The UDC uses a 2.65% solution. A glutaraldehyde monitor has recently become available to test the effectiveness of disinfection with gultaraldehyde.

3. ***Sterilization Monitoring***

Biological spore monitors are used to demonstrate that sterilization has occurred and are the only accurate test for sterilization. Verification of sterilization efficacy must be done at least weekly.

a. *Chemical Indicators* - Indicators are used on all bags and indicator tape is used on all packs. Items sent to central sterilization for ethylene oxide treatment have indicator included in the bags.

b. Biological Spore Monitors (BSM) - Bacterial spores are more resistant to destruction by heat than are vegetative forms of bacteria and viruses. Therefore, they are used to verify the effectiveness of sterilizers. They should be placed in the "most challenging" area of the load being tested. All chemical vapor, water vapor, and dry heat sterilizers must be monitored, at least weekly, with a spore test.

c. Ampules - The spores may be contained either outside or inside the ampules.

1. <u>Spores Contained Outside the Ampule</u>, e.g. Attest, Proof.

This is the method for monitoring steam and chemical vapor under pressure sterilizers in the Dental Center.

2. Spores Contained inside the Ampules, e.g. Kilit, Chemspor.

Glass ampules containing B.stearothermophilus, suspended in a culture medium, may only be used in steam autoclaves.

d. *Positive Biological Spore Monitor Tests* - If the spores are not killed in the BSM, the sterilizer should be checked for proper use and function and the spore test repeated.

4. ***Storage and Shelf Life***

Sterile instruments and packs should be stored in a cabinet or drawer to reduce contact with aerosols and dust. They should be handled as little as possible before being used. Outdated packs (greater than 6 months) or packs suspected of being contaminated must be rewrapped and resterilized. Rotate packs so that older ones are used first. Instruments removed from a cabinet for use during a procedure must be resterilized.

5. ***Chemical Disinfection***

Adequate instrument debridement is a prerequisite for effective instrument disinfection as disinfectants can be rendered ineffective by soiled or heavily contaminated instruments.

a. *Iodophor*, e.g. Wexcide. Iodophor compounds contain 0.05-1.6% iodine and surface-active agents, usually detergents, which carry and release free iodine. The antimicrobial activity of the iodophor is greater than that of iodine alone. Because the vapor pressure of iodine is reduced in the iodophor, its odor is not as offensive. In addition, iodophors do not stain as readily as iodine. Intermediate levels of disinfection can be achieved after 10-30 minutes of contact. Iodophors are EPA approved as effective when diluted 1:213 with water.

b. *Glutaraldehyde*, e.g. Cidex, Sporicidin, Sterilize, Glutarex, Banicide. Usually a 10 minute immersion in glutaraldehyde will provide an intermediate level of disinfection. Read the label to determine shelf life after activation and reuse life and dilution factors. Glutaraldehydes are best used as immersion disinfectants. It is not practical to use glutaraldehydes as surface disinfectants. Surfaces wiped down with glutaraldehyde need to have the residual disinfectant film wiped off with sterile water. As previously mentioned this is the method employed by the UDC.

c. *Chlorine*. Sodium Hypochlorite. A solution of sodium hypochlorite (household bleach) prepared fresh daily is an inexpensive and very effective germicide. A concentration of sodium hypochlorite with a concentration of 5000 ppm chlorine is achieved by diluting household bleach in a ratio of 1:10. Sodium hypochlorite possesses a strong odor and can be harmful to eyes, skin, colored clothing and metals.

The ADA Council on Dental Therapeutics has identified certain products commonly used as disinfectants that are not recommended for disinfection of the dental treatment area or laboratory. These products include alcohol and the guaternary ammonium compounds.

D. ***MISCELLANEOUS***

1. ***Anesthetic Cartridges***

Only those cartridges to be used in a surgical procedure need be disinfected. This can be accomplished by briefly (<3 minutes) soaking in alcohol and methylene blue.

2. ***Burs and Diamonds***

Burs (carbide) are single use items and are discarded after each procedure. Diamonds, however, are multi-use and require high level disinfection. Clean in an ultrasonic cleaner and dry diamonds before sterilizing. They should be sterilized in ethylene oxide gas through central sterilization or autoclaved in the dental clinic.

3. ***Cotton and Gauze Supplies***

These supplies should be placed in tray or pack setups and sterilized in steam or chemical vapor units. Store opened packages of gauze pads, cotton rolls and cotton pellets in a covered container. Use clean forceps to dispense only enough supplies for immediate use. Hands should not be used to dispense these items from bulk-storage containers. Rather, sterile tongs or forceps should be used.

4. ***Faucet Aerators***

Faucet aerators should be removed and cleaned at least monthly. They can harbor microorganisms that can compromise hand washing procedures.

5. ***Irrigation Solutions/Sterile Saline***

After opening sterile solutions, they may be used for irrigation purposes for up to one week if proper decanting procedures are followed. Opened containers must be dated.

6. ***Nitrous Oxide Mask***

Unless disposable, the mask and breathing tubes should be cleaned and then sterilized by ethylene oxide gas (as described by manufacturer). If the mask or breathing tubes cannot be sterilized before the next patient use, they should be wiped with two separate gauze/pads saturated with an acceptable disinfectant.

7. ***Eyewash Stations***

Eyewash stations are located in the clinic, and sterilization in the event of an exposure to the eye(s).

8. ***Refuse Containers***

All disposable items that are contaminated (saturated) with blood, saliva, or other oral material are disposed of in a red bag. Replacement red bags are located in the sterilization area.

9. ***Rubber/Plastic Products***

Heat labile rubber and plastic products are best sterilized in ethylene oxide. Hard-rubber bite blocks and some other rubber products may be placed in a steam or chemical vapor sterilizer. Rubber prophy cups should be used once and then discarded.

10. ***Sharps Container***

Discard needles, used carpules, suture needles, scalpel blades and unusable burs into a puncture resistant receptacle separate from other refuse. Sharps containers are placed in a biohazard box and the BFI Company will pick up and dispose of the box.

E. ***WASTE CONTROL***

1. ***Disposable Materials***

Items such as gloves, masks, wipes, gauze, paper drapes and surface covers that are contaminated with blood or body fluids are carefully handled and discarded in sturdy, impervious ***red*** plastic bags in order to minimize human contact. These are then placed in BFI biohazard boxes for disposal.

2. ***Blood, Suctioned Fluids or Other Liquid Waste***

Blood is collected in sealed disposable canisters and placed in a ***red*** bag. Other suctioned fluids are collected by the vacuum system or drain which is connected to a sanitary sewer system in compliance with applicable regulations.

3. ***Sharp Items***

Sharps must be subjected to the following method of treatment and disposal: ***Direct placement in a puncture-resistant, leak-proof container, and when full, sealed and placed in a red bag for eventual deposition.***

4. ***Human Tissue***

Teeth and incidental tissue are disposed of by ***deposition in the red bag (which is incinerated followed by deposition in a sanitary landfill).*** Teeth should not be returned to patients, except in the case of primary teeth in children.

Teeth that are retained for research or teaching purposes must be sterilized first and then stored in an anti-microbial solution.

5. ***Liquid Chemicals***

Carefully pour all chemical liquids into a drain connected to a sewer while flushing with copious amounts of water unless labeling or applicable regulations prohibit such a practice.

As of May 23, 1988, the federal Occupational Safety and Health Administration (OSHA) began enforcing a new national regulation on the rights of employees to know the potential dangers associated with chemicals defined by OSHA as hazardous that they may encounter on the job. This regulation preempts existing state and local right-to-know laws, except in those states that have OSHA-approved right-to-know programs.

All employees must be aware of the OSHA rules and regulations of the dangers of hazardous chemicals present in the workplace and be familiar with handling these substances safely. This is so noted by the employees' signatures noting completion of this document.

The purpose of the new regulation is to help employees understand and deal with chemical hazards to which they may be exposed during the course of their employment.

F. ***LAUNDRY***

Contaminated linens and towels are deposited in laundry receptacles located in the surgical suites and sterilization room. Clean gowns are located in the rear hall .

G. ***LABORATORY***

1. ***Impressions***

Impressions should immediately be rinsed upon removal from the patient's mouth to remove saliva, blood, and debris. Then they should be treated (sprayed) with disinfectant until saturated and covered with a disposable towel saturated with disinfectant for ten minutes. The impressions may then be rinsed and poured in stone.

2. ***Impression Trays***

Reusable trays should be scrubbed in soapy water after use and sealed in 4" transparent tubing. Sterilize in a steam or chemical vapor sterilizer. If the trays are to be hung in a cabinet, place two heat seals 1" apart at the top of the tube and punch a hole between them. The tray can then be hung for an extended period of time without compromising sterility.

3. ***Prosthesis Brought into the Laboratory***

a. *Preparation* - All prosthetic devices should be scrubbed with an appropriate sized brush using a bacteriocidal soap. After scrubbing, place the prosthesis into a container filled with a disinfectant. Place the container into an ultrasonic cleaner for up to 10 minutes, depending on the manufacturer's instructions. Cover the ultrasonic cleaner to reduce aerosol spread into the laboratory area.

b. *Shipment to Commercial Laboratory* - All appliances must be disinfected before shipment to a support laboratory facility. Casts and appliances may be placed in a plastic bag to prevent contamination of, or from the shipping box, foam insulation or paperwork. All appliances returned from a support lab facility should be considered contaminated and be disinfected.

H. ***DENTAL RADIOLOGY***

1. ***Hand Washing***

A rigid hand washing policy must be followed by all personnel involved with radiology patients. Hands must be washed between patients and after opening contaminated film packets in the darkroom.

2. ***Film Holding Devices***

a. *Sterilization* - When practical, film holding devices should be heat sterilized between patients. For those items unable to withstand heat sterilization, ethylene oxide is used.

b. *Disinfection* - If sterilization is not practical, bite blocks, aiming devices and arms should be immersed in chemical disinfectant between patients according to the manufacturer's instructions.

c. *Panoramic Unit Bite Blocks* - Disposable bite block covers should be used between patients. When disposable covers are not available, treat them as you would a film holding device.

d. *Handling Intraoral Film Packets* - Intraoral film removed from a patients mouth should be placed directly into a disposable container such as a paper cup or towel for transfer to the darkroom. Wrappers should be discarded directly into a refuse container or into a disposable towel to prevent contamination of the

darkroom counter. Contaminated packets should be opened in the darkroom, using disposable gloves and the films should be dropped out of the packets without touching the films.

3. ***Intraoral X-Ray Tubehead and Exposure Buttons***

These items should be wiped with a disinfectant or recovered following each patient visit. Do not allow disinfectant liquid to leak into the tubehead seams or the exposure button switch.

PREVENTION, HEPATITIS B VACCINATION, AND POST-EXPOSURE EVALUATION AND FOLLOW-UP

A. VACCINATION AGAINST HEPATITIS B

The Occupational Safety and Health Administration (OSHA) requires that all dental personnel having patient contact, including dentists, dental students and dental auxiliary personnel, receive the hepatitis B vaccine.

All employees of the hospital must be vaccinated and will receive the vaccine upon employment, unless he/she can otherwise demonstrate adequate vaccination from previous exposure/vaccination. Review and documentation of such vaccination is maintained by the University of Texas Human Resources Department and the Director of the Dental Center.

B. MEDICAL HISTORY

A thorough medical history should be obtained and reviewed prior to initiating any treatment and updated at subsequent visits. Not all patients with infectious diseases, however, can be identified by medical history, physical examination, or readily available laboratory tests. Each patient must therefore be considered as potentially infectious and the same infection control procedures should be used for all patients.

COMMUNICATION OF BLOODBORNE PATHOGEN HAZARDS

A. *TRAINING PROGRAM*

All personnel will take part in regular in-service training sessions. This will include training for all new residents, auxiliary staff and attending staff persons. In addition, review and update seminars and training sessions will be held at least semi-annually.

B. *GOALS OF TRAINING PROGRAM*

1. Comply with all CDC, ADA, OSHA, University of Texas, and Memorial Hermann Hospital guidelines.
2. Educate all staff members on the importance of exposure control.
3. Reduce the risk of cross-contamination in the dental environment.
4. Help reduce pathogenic microorganisms found in the dental environment.
5. Reduce the likelihood that dental personnel might contract infectious diseases.
6. Protect the health and careers of all dental personnel.

C. *OSHA's HAZARDS COMMUNICATIONS PROGRAM*

1. ***Labeling***

Labels must be affixed to all chemical containers. Containers properly labeled by the

manufacturers do not need additional labels. The manufacturer should be notified immediately if it appears that a label is missing or incomplete.

Materials subject to Food and Drug Administration (FDA) labeling requirements, including most dental products, will already have such labels. No additional label(s) need to be placed on the products regulated by the FDA. All labels should contain:

a. The identity of chemical(s);
b. Appropriate hazard warnings;
c. The name/address of manufacturer or other responsible party.

2. ***MSDS***

Material safety data sheets (MSDS) are kept on file for all products that contain a hazardous chemical. These data sheets outline all essential information available from the manufacturer or supplier regarding composition of product, potential hazards, and treatment required in the event of toxicity.

3. ***FILE***

A file of all MSDS is maintained in a marked, yellow binder available to all staff, residents and employees in the Dental Center conference room. The file is kept up to date and includes a record of requests for MSDS to document attempts to comply with the OSHA standard.

4. ***TRAINING***

All employees receive training both at the time of their initial assignment and whenever a new hazardous material is introduced into their workplace or procedures for safe handling and emergencies are modified. Simply reading an MSDS sheet by an employee does <u>not</u> satisfy the intent of this regulation. The employee must be clear regarding the hazards of the chemicals and their handling, the operations where hazardous chemicals are present, the location and availability of the written hazard communications program including the list of chemicals, measures to prevent exposure, an explanation of the labeling and MSDS requirements, and an explanation of the OSHA rule.

This is accomplished through continuing education, staff meetings and discussions, and/or audiovisual. Training sessions will always include an opportunity for employees to ask questions to ensure that they understand the information presented.

5. ***REFERENCE MANUAL***

A reference manual for OSHA compliance is located in the Conference Room in the Dental Center and provides additional details regarding the overall exposure control program.

RECORDKEEPING

A record of all incidents of unusual or accidental exposure, e.g. needle sticks, will be kept and corrective measures to minimize the chances of recurrence must be taken.

In addition, records of employee training activities are kept on file in the Dental Center and include employee acknowledgment of completion of infection control education.

Additional recordkeeping information, such as for sterilizer monitoring, etc, is kept on file in the Dental Center and may be found in the filing cabinet in the Storage Room.

A. ***STERILIZATION MONITORING***

Daily, indicators on sterilized bags and packs are carefully inspected for positive sterilization. Weekly, each sterilizer in use in the Dental Center receives a BSM test and results are kept on file in the sterilization room. Spore monitoring records must be maintained for each sterilizer for a period of two years. Required items to record include the sterilizer serial number, date of test results, time and temperature conditions (if available) and operator.

B. ***TRAINING***

At the end of each training session, each employee will sign a form indicating participation with these forms maintained on file. Items exempt from the hazard communication regulation include:

1. Finished articles that do not release a hazardous chemical under normal use. (e.g. dental chairs, instruments, pencils, and copy machines.)

2. Drugs that are in final form for direct administration to the patient (e.g. pills). The FDA-required label on these products is sufficient.

C. ***HAZARDS***

A partial list of OSHA-identified chemicals is located in the MSDS file (located in the dental center conference room). This list is based on a) the OSHA Safety and Health Standards 29 CFR 1910 Subpart Z1 and b) the Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment, American Conference of Governmental Industrial Hygienists (ACGIH). The list is compiled by the ADA's Division of Scientific Affairs and is not all inclusive. Descriptions of many of these chemicals, possible hazards, handling recommendations, and applicable standards are provided in the publication Monographs on Materials and Therapeutics, Volume I: Safety and Infection Control in the Dental Office from the ADA.

CONSIDERATIONS FOR THE KNOWN HIGH-RISK PATIENT

While universal precautions are utilized on all patients, a patient with active symptoms of a communicable disease should receive a level of care which intercepts potential emergencies. ***Preventive home care should be emphasized and routine care postponed until symptoms have subsided.***

A. ***PRECARE PREPARATION***

If possible, the patient should be given the last appointment time of the day. This will allow for the overnight dispersion of aerosols and the natural demise of bacteria that may not have come in contact with the post-treatment disinfection process.

1. ***Location*** – Treated as any other patient.

2. ***Dental Unit*** – Wrap the handle of the 3-way syringe, the handle of the high-volume evacuation nozzle, and all handpieces with plastic wrap or aluminum foil. Place a disposable drape over the bracket table, handpiece holder, and 3-way syringe holder.

3. ***Dental Light*** – Wrap both lamp handles with aluminum foil or plastic wrap, or use detachable light handles.

4. ***Dental Chair*** – Cover the chair and controlling buttons with a disposable drape.

5. ***Surfaces*** – Treated as with all other patients.

6. ***X-Ray*** – Wrap the x-ray tube head with plastic or other disposable drape. Wear disposable gloves during placement and subsequent handling of films. Eject exposed films without touching the film and discard packets and gloves into a disposable towel. Disinfect all touched surfaces twice, using gauze sponges soaked in a high level disinfectant.

7. ***Materials***

    a. *Gowns.* Wear a gown that can be sterilized or is disposable.
    b. *Eyewear*. Wear protective eyewear, with side-shields.
    c. *Gloves and Masks*. Wear gloves and a surgical mask.
    d. *Rubber Dam*. Use a rubber dam, whenever possible, to reduce bacterial aerosols.
    e. *Chair.* Operate chair buttons through a drape or use foot controls.
    f. *Ultrasonic Scaling*. Ultrasonic scaling should be limited to minimize aerosol production. When scaling and root planning must be accomplished, it should be done using hand instrumentation.
    g. *Pre-Op Oral Rinsing*. Patients should be instructed to perform a 15 second rinse with chlorhexidine.

8. ***Postcare Handling of Septic Materials***

    After treating a high-risk patient, all instruments should be immersed in a disinfectant solution, scrubbed, and placed in sterilization bags. Disposable materials are placed in red bags. Other non-disposable sterilizable items are disinfected and scrubbed first, then placed in a clear plastic. Sterilized reusable items are then collected, cleaned and sterilized in the appropriate manner.

Figure 1

A Material Safety Data Sheet (MSDS) describes the chemical composition, hazards, safe handling, and emergency procedures for a hazardous chemical. It is required by OSHA to contain the following:

1. Identification--chemical and common names;
2. hazardous ingredient(s);
3. physical and chemical characteristics
4. fire and explosion hazard data;
5. health hazard data;
6. reactivity data;
7. spill and disposal procedures;
8. protection information;
9. handling and storage precautions, including waste disposal;
10. emergency and first aid procedures;
11. date of preparation of the MSDS;
12. name and address of manufacturer.

Figure 2

SOME GENERAL PRECAUTIONS

1. Handle chemicals properly in accordance with manufacturer's instructions.

2. Avoid skin contact with chemicals.

3. Minimize chemical vapor in the air.

4. Do not leave chemical bottles open.

5. Do not use flame near flammable chemicals.

6. Do not eat or smoke in areas where chemicals are used.

7. When appropriate, wear protective eyewear and masks.

8. Know proper cleanup procedures.

9. Dispose of all hazardous chemicals in accordance with MSDS instructions and applicable local, state, and federal regulations.