

University of California at Los Angeles
School of Dentistry
10833 Le Conte Avenue
Los Angeles, California 90095-1668



UCLA Dental Center Infection Control Manual

Revised April 2018

ACKNOWLEDGEMENT

Sincere appreciation is extended to Dr. Sam Westock, UCLA Class of 1995, Sandra Laderas and Cara Batson Infection Control Officers, Eric Castro (Health & Safety Specialist), and Dr. Fariba Younai (Professor, Oral Biology & Medicine, Chair, Health & Safety Committee) for their contributions to the production of this manual.

Copyright 2018 UCLA School of Dentistry

UCLA Dental Center Infection Control Manual. Printed and bound in the United States of America. All rights reserved. No part of this publication may be reproduced in any form or by any electronic or mechanical means, including information storage and retrieval systems without permission in writing from the publisher, except by a reviewer, who may quote brief passages in a review.

ADMINISTRATIVE INFORMATION

DEPARTMENT	UCLA School of Dentistry
EFFECTIVE DATE	March 2018
Location of Written Infection Control Manual	UCLA School of Dentistry 10833 Le Conte Ave Room B3-011 CHS Los Angeles, CA 90095
Responsible Managers	UCLA School of Dentistry Environmental Health & Safety Specialist
Emergency Contacts	Mochi Li Environmental Health & Safety Specialist UCLA School of Dentistry Office: (310) 825-4306 moli@dentistry.ucla.edu
Alternate Responsible Persons	Fariba S. Younai D.D.S. Professor of Clinical Dentistry Oral Medicine and Orofacial Pain Vice Chair, Division of Oral Biology and Medicine Tel: (310) 794-1093 fyounai@dentistry.ucla.edu

FORWARD

The UCLA School of Dentistry (SOD) Infection Control Manual provides the guidelines necessary to ensuring safety in the provision of patient care in the SOD clinics. Due to the nature of care provided, certain specialty clinics require treatment protocols unique to their areas. Originally drafted in 1995, the policies and procedures in this manual describe the School's *Infection Control Program*, many of which are consistent with the requirements of an OSHA required Exposure Control Plan. These include topics on exposure determination, schedule and methods for implementation of the Bloodborne Pathogens (BBP) Standards, Aerosol Transmissible Diseases and Procedures for handling exposure incidents. In addition, this manual includes topics related the effective use of PPE, engineering and workplace practices, housekeeping and post-exposure management protocols, other components of the OSHA Bloodborne (BBP) Pathogens Standard, aerosol transmissible diseases (ATDs), and/or other potentially infectious material (OPIM). The manual must be made accessible upon request to all student, residents, employees, Environment, Health & Safety (EH&S), Cal/OSHA, and other regulatory agencies local, state, and federal.

The manual must be reviewed annually and updated whenever there are new or newly re-organized hazards that may affect employee risk exposure. All reviews and updates must be documented (see Revision Log). Exposure incidents shall also be reviewed periodically.

All dental providers, including dental students and residents, are responsible for knowing and practicing all protocols contained herein and as specified in each specialty clinic.

If you have any questions regarding this ECP, contact UCLA EH&S Injury Prevention Division, Biosafety Division or the School of Dentistry's Environmental Health & Safety Specialist for assistance.

REVISION LOG

Rev No.	Revision Description	Author (s)	Date
1	General Update	Sandra Laderas	1999
2	General Update	Sandra Laderas/Fariba Younai	2002
3	General Update	Sandra Laderas/Fariba Younai	2005
4	General Update	Fariba Younai/Cara Batson	2010
5	General Update	Fariba Younai/Eric Castro	2015
6	General Update	Fariba Younai/Mochi Li	2018

TABLE OF CONTENTS

<i>Chapter</i>		<i>Page</i>
ONE	Infection Control Program <i>General Principles, Exposure Determination, Bloodborne Pathogen Standards, Dental Item Classification, Personnel Training</i>	6
TWO	Standard Precautions <i>Immunization, Medical History, Respiratory Hygiene, Protective Attire and Barrier Techniques, Preparation of the Dental Treatment Room, Intraoperative procedures, Safety Needles, Preparing DTR between patients and at the end of the day, Housekeeping, Hazard Communication</i>	11
THREE	Hand Washing <i>Hand washing Agents and Equipment, Guidelines and Technique</i>	19
FOUR	Sterilization <i>Physical Design, Sterilization Process, Critical Items Monitoring, Shelf-life, Wrapping Compatibility, Sterilization tables</i>	21
FIVE	Disinfection <i>Levels of Disinfection Germicidal Factors, General Agent Categories, Semi-Critical, Non-critical Items, Reference charts</i>	31
SIX	Oral Radiology <i>Barrier Control, Dental Treatment Room, Lab Control Casts, Prostheses, and Miscellaneous items, Daily and Weekly Cleaning and Disinfection</i>	35
SEVEN	Dental Laboratory <i>Use of Barriers, Laboratory Infection Control, Casts and Prostheses, Daily & Weekly Cleaning, Laboratory Disinfection Tables</i>	36
EIGHT	Waste Management <i>Classification. Disposal of Regulated Waste, Disposal of General Waste, Gowns & Other Wastes</i>	42
NINE	Exposure to Bloodborne Diseases <i>Infectious Diseases that Spread by Bloodborne Exposures, Inhalation of Airborne Particles and Direct Contact, Prevention, Treatment, Documentation, Sharps Log, CCLE Questionnaire</i>	45

UCLA DENTAL CENTER POLICIES AND PROCEDURES

APPENDICES	A Quality Assurance Program	49
	B Infection Control Inspection Report	50
	C Hepatitis B Vaccination Declaration	51
	D Bloodborne Exposure Protocol	52
	E Loss of Foreign Object in Oral Cavity	53
	F Infection Control Measure	55
	G Policy for Health Care Personnel	60

	Infected with Bloodborne Pathogens	
H	Policy on Dental Students Identified as Hepatitis B Carriers or Positive for the Immunodeficiency Virus (HIV)	63
I	California State Board of Dental Examiners Infection Control Regulations	64
J	Sharps Injury Log	68
K	Incident Questionnaire Completion Procedures	69

REFERENCES		73
-------------------	--	----

CHAPTER ONE

INFECTION CONTROL PROGRAM

The goal of an Infection Control program is to eliminate the potential for transmission of micro-organisms and the spread of infectious agents.

I. GENERAL PRINCIPLES

- A. Ongoing assessment of infection control policies are necessary to ensure that the SOD's infection control program follows the most up to date information on emerging diseases and scientific advances in the field. Infection control measures are in place to reduce the likelihood of disease transmission for most common bloodborne infections (HIV, hepatitis and herpes viruses), respiratory infections (tuberculosis, influenza), aerosol transmissible diseases, OPIMs, and CDC-defined emerging diseases such as rotavirus, norovirus, severe respiratory syndrome coronavirus, multidrug-resistant *Mycobacterium tuberculosis*, and nontuberculous mycobacteria such as *Mycobacterium chelonae*.
- B. Protecting employees by eliminating or minimizing their occupational exposure to aerosol transmissible pathogens (ATPs) that are contained in infectious airborne particles such as HIV, hepatitis and herpes viruses & respiratory conditions like tuberculosis and influenza and emerging diseases caused by rotavirus, norovirus, severe respiratory syndrome coronavirus, multidrug-resistant *Mycobacterium tuberculosis*, and nontuberculous mycobacteria such as *Mycobacterium chelonae*. Complying with the CAL/OSHA "Aerosol Transmissible Disease Standard" (Title 8, Code of California Regulations, Section 5199) <http://www.dir.ca.gov/title8/5199.html>; and providing an exposure control plan that is consistent with the requirements of the Cal/OSHA "Injury and Illness Prevention Plan" (Title 8, Code of California Regulations, Section 3203).
- C. Scheduled and random inspections of the school's clinics provide opportunities for targeted trainings of students, faculty and staff. Infection control is a top priority in an overall quality assurance program addressing occupational health and safety.
- B. All clinical personnel subject to occupational exposure to bloodborne pathogens, airborne pathogens, and/or OPIM must be offered HBV vaccination. Personnel records must include written verification of HBV vaccination, immunity, or waiver of offered vaccination with statement of understanding of risks.
- C. All clinical personnel subject to occupational exposure to tuberculosis (TB), must participate in an annual tuberculosis screening program. Personnel records must include written verification of TB testing.
- C. A Blood-borne Pathogen airborne pathogens, and/or OPIM Exposure protocol must be established to manage percutaneous exposures to potentially infectious

agents. This should include proper triage, treatment, and follow-up care of both the injured and source individuals. Documentation of all pertinent circumstances permits review, evaluation, and modification of policies and procedures.

- D. All patients shall be treated under the concept of “standard precautions”. The Centers for Disease Control and Prevention (CDC) has combined the concept of “universal precautions” with the Occupational Safety and Health Administration (OSHA) Blood-Borne Pathogen Standards and has taken them one step further. Under standard precautions, infection control procedures apply to the care of ALL patients and consider ALL human blood or other human body fluids (except sweat), mucous membranes and non intact skin surfaces as potentially infectious.
- E. The prevention of cross-contamination, whether between dental care worker (DCW) and patient or between patients, is paramount. This principle underscores the establishment of all policies and procedures. For example, materials and supplies required to treat an individual patient should be issued as a unit dose whenever practical.
- F. Ventilation and resuscitation devices should be easy to access in ALL areas where the need for resuscitation is predictable. These disposable devices minimize the need for unprotected mouth-to-mouth resuscitation.
- G. The use of disposable, impervious barriers is applied wherever practical, and especially where adequate cleaning and disinfection is difficult or impractical. Otherwise, an acceptable method of cleaning and disinfecting is by the spray-wipe-spray technique. An agent who has the Environmental Protection Agency (EPA) registration, is Cal-EPA has approved, has American Dental Association (ADA) acceptance, and cleans and disinfects in one step is ideal. Cleaning as a separate step from disinfection and sterilization is of high priority and cannot be overemphasized.
- H. DCW who have exudative or open skin lesions or weeping dermatitis on the hands, face or upper extremities or obvious illness (i.e. fever, severe colds, flu, conjunctivitis, etc.) shall refrain from direct patient care and handling patient care equipment until such conditions are resolved.
- I. Eating, drinking, smoking, applying cosmetics or lip balm and handling contact lenses are prohibited in work area where there is a reasonable likelihood of occupational exposure. Food and drink shall not be kept in refrigerators, freezers, shelves, cabinets or on countertops or bench tops where blood or other potentially infectious materials are present.
- J. A waste management system, including collection, transfer, and final disposal of general and regulated waste must be established to meet federal, state and local requirements.
- K. A written protocol shall be developed for proper instrument processing, operatory cleanliness and management of injuries.

Rationale: Scientific information as well as professional and public concerns over the risks of bloodborne disease transmission have kept the topic of dental office infection control in the forefront. While certain aspects of this concern represent fears over the risks of Human Immunodeficiency Virus (HIV) transmission, other aspects of this concern are scientifically justified due to the higher incidence of hepatitis B transmission between dental patients and dental personnel.

II. EXPOSURE DETERMINATION

All dental students, residents, trainees in SOD's other educational programs with clinical responsibilities and the clinical faculty are considered to have exposure to BBP and airborne diseases at all times. Faculty with occasional clinical assignments and staff with potential to come into contact with patients are considered to have exposure to BBP and airborne diseases sometimes. All faculty and staff assigned to the administrative units with no patient contact are considered to have no exposure to BBP or airborne diseases.

III. BLOODBORNE PATHOGENS STANDARD

The Occupational Safety & Health Act was passed in 1970 by the US Congress. The Occupational Safety and Health Administration (OSHA), created within Department of Labor, is charged with ensuring safety & protection against hazards in the workplace. The agency sets Standards for:

1. reducing workplace hazards
2. maintaining records & reporting injury/illness
3. training programs for employees

The Bloodborne Pathogens Standard (BBP) that is enforced by OSHA, appeared in Federal Register on December 6, 1991 and went into effect on March 6, 1992. This standard covers workplaces with more than one employee with exposure to HBV & HIV. The BBP Standard has several components:

1. Exposure Control Plan
2. Engineering and Workplace Practices
3. Personal Protective Equipment (PPE)
4. House keeping
5. Hepatitis B Vaccination, post-exposure evaluation and follow-up
6. Information and training

In addition to the Federal Standard, many states have their own BBP standards. In California, The Division of Occupational Safety and Health (DOSH), also known as Cal/OSHA, enforces the California code of regulations, title 8 (8 CCR), bloodborne pathogens section 5193 (c) (1) that requires each employer having employee(s) with occupational exposure, to eliminate or minimize employee exposures to bloodborne pathogens. The requirements of the Cal/OSHA Exposure Control Plan are the same as the Federal Plan. Appendix D of the Cal-OSHA Title 8 Standard 5199 in the Dental Setting includes the following pathogens under the Aerosol Transmission Standard.

Agent/Specimen	Form <i>(ex: human samples, patient isolates, cultures, etc.)</i>
HIV	Blood, oral and respiratory secretions
Hep C	Blood, oral and respiratory secretions
Hep B	Blood, oral and respiratory secretions

IV. DENTAL ITEM CLASSIFICATION

Based on the pathways through which cross contamination may occur, dental items are classified as critical, semi-critical or non-critical.

1. **Critical Items**: Materials and instruments used to penetrate soft tissue or bone, areas of the body which are normally sterile. These items must be sterilized. Examples include: surgical instruments, suture needles, hand instruments, burs, endodontic files, etc.
2. **Semi-critical Items**: Equipment, instruments or materials that are not used to penetrate soft tissue or bone but contact oral tissues. These items require sterilization or high level disinfection. Examples are plastic impression trays, mouth mirrors, etc.
3. **Non-critical Items**: Equipment, devices or instruments that contact intact skin. They may be exposed to aerosol sprays, spatter, or splashing of blood or touched by contaminated hands. An intermediate level or low level disinfection is required. Examples include the dental chair, unit and x-ray heads.

V. PERSONNEL TRAINING

- A. All new dental health care workers should receive initial training with annual update training thereafter. Infection control training should include and explain the following:
 1. Epidemiology of bloodborne diseases and symptoms.
 2. Modes of transmission of infectious diseases and bloodborne pathogens.
 3. The use and limitations of infection control practices that will reduce or prevent exposure.
 4. Explanations of or information on the following are included in the training:
 - an explanation of the Infection Control Manual and availability;
 - a general discussion bloodborne pathogens, airborne pathogens, and/or OPIMs and their transmission;
 - a discussion of use and limitations of engineering and work practices controls and personal protective equipment;

- information on types, selection, use, handling and disposal of personal protective equipment
 - Hepatitis A and B vaccine information;
 - emergency response procedures involving blood or OPIM;
 - information on how to handle exposure incidents;
 - an explanation of the post-exposure evaluation and follow-up program;
 - an explanation of signs, labels and/or color coding.
- B. Pregnant dental health care workers are to be educated and made aware that bloodborne pathogens can be transmitted to their unborn.
- C. All Central Service Room (CSR) personnel or surgical assistants will receive additional documented training in sterilization and aseptic techniques.
- D. All infection control training sessions will be documented with names and signatures of persons in attendance with the presenter names, dates, and content summaries; maintain records for five years.
- E. Facilities and/or licensees with one or more employees shall comply with infection control precautions mandated by the California Occupational Safety and Health Administration.
- F. A copy of the California Board of Dental Examiners Infection Control Regulations shall be conspicuously posted in the dental facility.

CHAPTER TWO

STANDARD PRECAUTIONS

Standard Precautions defines the approach to be taken for all patient care. Patients with HIV, hepatitis B and hepatitis C may be unaware of their infections or do not indicate their status in their medical work-up. Therefore, standard precautions will be used with all patients by assuming that all body fluids, contaminated instruments and materials are infectious.

I. IMMUNIZATION

All DHCW's, including laboratory personnel, who may be occupationally exposed to blood and saliva, must receive the HBV vaccine or otherwise possess immunity due to prior exposure.

Rationale: Prior to requiring hepatitis B vaccination of all healthcare workers, DCWs were shown to have much higher rates of hepatitis B infection than the general population. Additionally, transmission of HBV infection from DCWs to patients has been documented. Currently, this disease does not have an effective and targeted treatment and may lead to severe and even fatal consequences. The vaccines currently used are safe and effective by stimulating the production of protective antibodies in up to more than 95 percent of those immunized

II. MEDICAL HISTORY REVIEW

Review of each patient's current medical conditions and medications will be done before the initiation of any dental exam or treatment.

III. RESPIRATORY HYGIENE/COUGH ETIQUETTE

Respiratory hygiene/cough etiquette measures were added to Standard Precautions in 2007. These measures are designed to limit the transmission of respiratory pathogens spread by droplet or airborne routes. The strategies target primarily patients and individuals accompanying patients to the dental setting who might have undiagnosed transmissible respiratory infections, but also apply to anyone (including DCW) with signs of illness including cough, congestion, runny nose, or increased production of respiratory secretions.

DCW should be educated on preventing the spread of respiratory pathogens when in contact with symptomatic persons.

- A. Implement measures to contain respiratory secretions in patients and accompanying individuals who have signs and symptoms of a respiratory infection, beginning at point of entry to the facility and continuing throughout the visit. Post signs at entrances with instructions to patients with symptoms of respiratory infection to:
 1. Cover their mouths/noses when coughing or sneezing.
 2. Use and dispose of tissues.
- B. Perform hand hygiene after hands have been in contact with respiratory secretions.
- C. Provide tissues and no-touch receptacles for disposal of tissues.
- D. Provide resources for performing hand hygiene in or near waiting areas.

- E. Offer masks to coughing patients and other symptomatic persons when they enter the dental setting.
- F. Provide space and encourage persons with symptoms of respiratory infections to sit as far away from others as possible. If available, facilities may wish to place these patients in a separate area while waiting for care.
- G. Educate DHCP on the importance of infection prevention measures to contain respiratory secretions to prevent the spread of respiratory pathogens when examining and caring for patients with signs and symptoms of a respiratory infection.

IV. PERSONAL HYGIENE

The following guidelines apply to all clinic personnel, including students, residents, faculty, and staff, who may come into contact with blood, body fluids, and tissues.

1. Hair should be cleared away from the face.
2. Facial hair should be covered by a face mask or shield.
3. Jewelry should not be worn on the hands or arms during patient treatment.
4. Nails must be clean and short.

Rationale: Hair and nails are known to harbor higher levels of bacteria than skin. Long nails are more difficult to clean and may potentially penetrate gloves. Jewelry should be removed for the same reasons. DCW with injured or cracked skin, erosions, or eczema on hands or arms should exercise additional caution such as using mild soaps and lotion until lesions are healed.

V. PROTECTIVE ATTIRE AND BARRIER TECHNIQUES

A. Gloves

Hands must be washed prior to donning and after removing gloves. Gloves are to be removed or covered with overgloves (“food handling” gloves) if leaving the Dental Treatment Room (DTR) and discarded after each patient. Medical gloves shall not be washed before or after use.

Sterile gloves shall be worn in surgical procedures involving the incision and/or reflection of soft tissue and bone exposure.

Medical exam gloves are to be worn whenever there is a potential for contact with blood, blood-contaminated saliva or mucous membranes

Heavy duty gloves shall be worn to process instruments before sterilization or high level disinfection.

B. Clinical Apparel

1. Reusable or disposable clinical gowns will be worn when clothing is likely to be soiled with blood or other bodily fluids. Change clinical gowns daily or when visibly soiled prior to the end of the day.
2. Remove clinical gowns when leaving the clinics, laboratories and work areas. All soiled gowns are turned in at the end of each work day in appropriately-marked hampers, and not to be stored with personal items. When applicable, soiled gowns are to remain in the Dental Center clinics for proper laundering.
3. Full surgical scrubs are required for surgical procedures. Shoes worn with surgical scrubs should be washable or cleanable, plain type shoe leather or canvas. Surgical shoe covers may be worn over street shoes as an alternative, and disposed of at the end of the day.

C. **Masks /Face Protection**

For all patient care, surgical masks & protective eyewear with side shields or chin length plastic face shields in conjunction with a mask are to be worn. After each patient and during patient treatment if applicable, masks shall be changed if moist or contaminated.

D. **Eyewear**

Protective eyewear is to be worn during all patient exams and treatment and in the decontamination room. Prescription eyewear may be worn with the addition of side shields. Patients should wear eye protection during dental treatment. The patient may wear their own glasses or alternative eye protection (e.g., safety goggles). All eyewear are to be cleaned & disinfected between patients.

E. **Headwear**

In surgical procedures or in the presence of significant aerosols, disposable protective headwear should be worn.

VI. **PREPARATION OF THE DENTAL TREATMENT ROOM (DTR)**

There will be NO eating, drinking, applying cosmetics or lip balm in work areas, i.e., Central Sterilization or Dental Treatment areas. These actions in areas where aerosols are produced and other potentially infectious materials are present, are specifically prohibited by Cal/OSHA regulations.

- A. Difficult to disinfect surfaces and items such as, but not limited to light handles, bracket tables or x-ray tube heads and control panel are to be covered with an impervious backed paper, a plastic barrier, aluminum foil, or a clear plastic wrap. Patient chairs may be covered with a large plastic bag that is placed over the entire chair, and controls. Between patients, the covers must be removed, discarded, and replaced with a clean covering.

- B. Whenever possible, supplies and equipment should be dispensed in unit dose packages. Instrument cassettes, individual instruments, burs, gauze, and cotton rolls can all be distributed in unit doses for a given patient procedure.
- C. Handpieces are to be sterilized before and after each patient treatment appointment.
- D. Dental unit lines are purged with air or flushed with water for at least 2 minutes at beginning of the day and end of the day and for 30 seconds after each patient. This practice reduces the microbial load of the water used in the dental unit. In addition, to ensure a high quality of water used during dental treatment with a bacterial burden of ≤ 500 CFU/mL, other methods should be used. One approach is to use a self-contained water system in lieu of unfiltered or untreated general water supply. Periodic water testing with a commercial testing kit must be used to monitor water quality.
- F. Anti-retraction valves (one-way flow valves) in dental unit water lines may be installed and maintained to prevent the draw back of microorganisms into the water lines.

VII. INTRAOPERATIVE ASEPTIC PROCEDURES

- A. Consider having patients brush their teeth and rinse with an antimicrobial mouth rinse such as chlorhexidine gluconate 0.12% (Peridex) for 30 seconds before dental treatment. This may reduce the microbial concentration of their oral flora and may lower the number of microbes that are produced during dental treatment from aerosols and spatter.

Rationale: There are several mouthrinses available for patient use prior to dental treatment. All OTC mouthrinses will reduce the number of oral microbes in the patient's mouth when used; however, only an antimicrobial mouthrinse will keep the number of oral microbes significantly reduced through long appointments due to its extended residual activity.

- B. Use a dental dam and a high velocity evacuation (HVE) device whenever possible.
- C. Organize all necessary items prior to seating patient.
- D. Packaged sterilized items such as instrument cassettes, packaged burs and handpieces, etc., are to remain sealed until patient arrives.
- E. The unit dose concept is mandatory when dispensing cotton and gauze supplies. No open cotton and gauze supplies are to be kept in the DTR.

- F. Use single handed re-capping techniques or needle re-capping devices for the safe management of anesthetic needles.
- G. No nitrile or surgical gloves are to be worn (unless over-gloves are utilized) while viewing and handling radiographs, making notations of dental records or taking photographs during dental treatment.

Note: A sterile coolant/irrigant shall be used for surgical procedures involving the incision of soft tissue and the exposure of bone. The sterile coolant/irrigant is deemed sterile when delivered using a device or process that has a Food and Drug Administration (FDA) marketing clearance for delivery of a sterile coolant/irrigant.

Rationale: Establishing defined areas in the operatory by organizing the placement of instruments, items, and materials and by controlling their flow during dental procedures avoids cross contamination. Institutions may designate specific areas of the operatory that correlate with the degree of contamination and that may require subsequent cleaning and disinfecting procedures.

VIII. SAFETY NEEDLES AND SAFETY SHARPS

In response to the Cal/OSHA emergency regulation effective July 1, 1999, requiring “engineered sharps protection”, UCLA School of Dentistry’s Health and Safety Committee has determined that exceptions to their use apply at the current time: (1) engineering control in available devices are not more effective in preventing exposure incidents, and (2) there is not specific and reliable information about the safety performance of such devices. The committee is continually exploring present and new devices that claim engineered sharps protection. In the meantime, current needles, syringes and needle-capping techniques will remain standard operating procedures in the SOD clinics.

IX. PREPARING THE DTR BETWEEN PATIENTS

- A. Utility gloves are always worn while handling contaminated materials or cleaning contaminated surfaces, equipment, or instruments.
- B. All non-sharp, contaminated disposable materials will be placed in proper waste containers.
- C. All used disposable sharps will be placed in sharps containers located in the DTR. Disposable sharps are defined as needles, scalpel blades, suture needles, matrix bands, and anesthetic carpules. Never bend, break or re-cap needles by hand; use a single handed scoop technique or a needle re-capping device.
- D. All needles are to remain capped when not in use.

- E. No pre-loaded anesthetic syringe can be stored and open in the anesthesia tray for a future patient.
- F. Sharps containers are to be replaced when they are three-quarters full and disposed of according to waste management guidelines (see chapter 8).
- G. Close instrument cassettes after re-assembling all used instruments in proper order, remove handpieces from couplings, transport to CSR for processing and sterilization.
- H. Place all contaminated disposable items in the general waste receptacle. Invert the large plastic chair cover, place all contaminated disposable items used on the patient into the inverted bag, tie off the top of the bag, and discard the plastic bag in the general waste receptacle.
- I. All bio hazardous and infectious waste materials will be placed into a separate red infectious waste bag and the waste bag will be placed into a red bio hazardous container. These items must be disposed of according to waste management guidelines.
- J. All unprotected high-touch areas (countertops, computer key board). dental unit, dental chair and dental light) are to be disinfected with an intermediate level Cal-EPA registered ADA approved disinfectant using the spray, wipe, spray technique. The initial spray-wipe is to remove all debris (clean), spray surface again and allow the surface to remain wet for the appropriate amount of time specified by the manufacturer.
- K. Pre-clean & surface disinfect bottles, jars, plastic boxes, etc. before replacing in storage cabinets (cements, impression materials- cartridges and tubes,)
- L. Disinfect all eyewear protection.
- M. Remove gloves and wash hands and any possibly exposed skin surfaces.
- N. Remove face mask, handling it only by the cloth tie or by the elastic strings, never touching the mask itself.

X. SECURING THE DTR AT THE END OF THE DAY

- A. Follow steps A-N section VIII above.
- B. At the end of the day purge all dental unit water lines for 30-60 seconds.
- C. Flush evacuation system by suctioning each evacuation hose with hot water for several minutes.

XI. HOUSEKEEPING

Inspect, clean, and disinfect on a regular basis all trays, bins, drawers, pails, cans and receptacles that have the potential for contamination with blood or other potentially infectious materials (OPIM). Disinfect and clean these containers immediately or as soon as possible upon visible contamination.

XI. HAZARD COMMUNICATION

Biohazard sharps containers can be in any color as long as it is labeled “BIOHAZARD” and has the universal biohazard symbol on the container. Biohazard bags must be red in color and also identified with the word “BIOHAZARD” and international biohazard symbol. Red biohazard bags must be marked with ASTM D1709 Dart Resistance and D1922 Tear Resistance and sized to fit the container.

Biohazard waste containers must be lined with a red biohazard bag and placed in areas where biohazard waste may be generated. Waste containers must be easily accessible by employees. When ready for disposal (when $\frac{3}{4}$ full or within 7 days), the biohazard bag must be sealed shut (via a knot, tape, twist tie, etc.) and transported within a secondary container with a tightly fitted lid. The biohazard waste container holding the biohazard bag can be used as the secondary transport container. All biohazard waste containers must be labeled with “BIOHAZARD” and the universal biohazard symbol on all lateral sides and the lid. Biohazard waste must be taken to an approved Biohazard Waste Accumulation Site for disposal. After a biohazard container is emptied, the container must be disinfected and a new bag placed into the emptied container. Never carry a biohazard waste bag by hand when transporting.

XII. Spill Response

A. Evaluate location, level and type of contamination.

HAZARD	REPORT IMMEDIATELY	Clean-Up
Small spills (<1/2 cup) of blood, blood products, OPIM, wastewater with visible blood	<ul style="list-style-type: none">○ Supervisor	Trained service personnel (e.g., custodial staff) can clean-up (follow clean-up procedure).
Large spills (>1/2 cup) of blood, blood products, OPIM, wastewater with visible blood	<ul style="list-style-type: none">○ Supervisor○ EH&S Hotline 310-825-9797	EH&S will assess the appropriate response to follow.
Chemicals, Radiological, Suspicious vials, cultures, red biohazard bags,	<ul style="list-style-type: none">○ Supervisor○ EH&S Hotline 310-825-9797	EH&S will assess the appropriate response to follow.

B. Clean up only what you are trained to clean up.

- Your response depends on risk of infection and location of spill.
- You must minimize potential for infection to yourself, others & the environment.
- During the spill response, minimize generating splash, spray or aerosols. .
 - a. Keep unauthorized personnel away from area. Cordon off the affected work area if it is accessible to the public.

- b. Immediately inform your supervisor of any contaminated work area that you are not able to clean-up, or if you have an exposure or injury.

Clean up Procedure

1. When a spill occurs, immediately contact your supervisor and/or EH&S depending on size of spill (See above chart.) Put up warning signs and cordon off the area if the contaminated area is accessible to the public.
2. Wear proper PPE that is appropriate for the procedure and risk of exposure during the cleanup.
 - o Do not use contaminated PPE during the clean-up.
 - o As much as possible, use clean or decontaminate gloves throughout the clean-up.
3. Use tools (dustpan, tongs, etc.) to pick up sharp objects and immediately disposed in a sharps container. In the event that the area has small broken glass items contaminated with blood or OPIM that cannot be picked up, flood the area with disinfectant *prior to* clean up.
4. Contaminated Area:
 - o Contain the contaminated area by placing absorbent paper towels or pads on top of biohazard materials.
 - o If small in size, spray the contaminated area with disinfectant, allow sufficient kill time based on pathogen and type of disinfectant, wipe up, and rinse down. For spills with potential BBP risk, minimum 10% bleach in water for 10 minutes contact time.
 - o If it is large contaminated area, place absorbent pads like paper towel. Slowly pour disinfectant on paper towels around & into the area. Let sit for the contact time 5 – 10 minutes. Wipe up and rinse down.
5. Dispose of paper towels or absorbent pads as regular trash unless the paper towel/absorbent pads are soaked with blood or OPIM.
6. Remove or decontaminate gloves. Put on a new pair of gloves.
7. Clean area again with disinfectant & paper towels
8. Dispose of gloves as biohazard waste.
9. Wash hands with soap and water.

C. A dedicated spill kit is not necessary in the Dental Clinic. All the required contents of the kit (PPE, disinfectant, tools) are readily available throughout the School of Dentistry Dental Clinic.

CHAPTER THREE

HAND WASHING

Hand washing is one of the most important procedures in preventing the transfer of microorganisms from one person to another. The skin harbors two types of flora, transient and resident. Transient bacteria do not survive and multiply on the skin and are easily removed because they are not firmly attached. Resident organisms can survive and multiply on the skin and are usually of low virulence and are not easily removed.

Rationale: Hand washing is an extremely effective procedure for the prevention of many infections that are acquired from the transmission of organisms on the hands. Cool water prevents cornstarch (if used) from penetrating the skin pores and minimizes the shedding of microorganisms from the subsurface layers of the skin. “Residual” antiseptic handwash has a long lasting antimicrobial effect on skin that improves with more frequent use of throughout the day.

I. HAND WASHING AGENTS

A. Iodophor:

1. Effective against all gram-negative and gram-positive bacteria and viruses.
2. Does not have a long-acting germicidal action.
3. If used frequently, may cause severe drying of the skin.

B. 4% Chlorhexidine Gluconate; 3% PCMX:

1. Effective in reducing resident and transient flora.
2. Sustained antimicrobial effect.
3. Does not affect the skin adversely.
4. Approved as a surgical scrub.

C. Anti microbial hand-cleansing agents

1. Economical
2. Mild but effective for general cleansing

II. HAND WASHING EQUIPMENT AND SOAP DISPENSERS

A. Sinks should have electronic, elbow, foot, or knee-action faucet controls.

- B. Non-hand-actuated soap dispenser controls are preferable. Empty, disassemble, and clean all refillable hand-cleansing agent dispensers on a regular basis. Do not use bar soaps.

III. HAND WASHING GUIDELINES:

Hands should be washed:

- A. For two consecutive 15 second periods at the beginning of each day.
- B. Between patients, before and after going to lunch, taking a break or using the bathroom, or any time they become contaminated.
- C. Prior to placing gloves and after removing gloves.
- D. At the end of the day.

IV. HAND WASHING TECHNIQUE:

Staff involved in patient care must:

- A. Remove all jewelry and other ornaments from the hands and wrists.
- B. Long or false fingernails increase the risk of puncturing gloves, and thus should be avoided.
- C. Technique:
 1. Wet hands under warm running water.
 2. Apply soap to work into lather.
 3. Vigorously rub hands together, entwining the fingers.
 4. Clean under fingernails using the fingernails of the opposite hand, a nail cleaner or a soft brush
 5. Continue for 15 seconds scrubbing the wrists and the lower forearms.
 6. Rinse with cool water.
 7. Perform second 15 second hand wash.
 8. Rinse soap off under cool, running water.
 9. Dry hands with paper towels.
 2. For invasive procedures, surgical teams must scrub their nails, hands, and forearms up past the elbows to mid-biceps area with an anti-microbial soap for 5 minutes and use a sterile towel to dry hands and arms.

CHAPTER FOUR

STERILIZATION

A variety of sterilization methods and many types of liquid chemical disinfecting agents are available. Heat sterilization is preferable for all materials and equipment that can withstand high temperatures.

I. PHYSICAL DESIGN: Dental Treatment Facilities (DTF's) should have a Central Sterilization Room (CSR) or Central Sterilization Facility. The critical elements of CSR design are:

1. **Designated Work Areas.** These areas must include work areas for receiving, cleaning, processing, sterilizing, storing, and issuing.
2. **Functional Flow of the Sterilization Process.** Materials and equipment must flow from receiving to issuing without physically retracing or impinging on a preceding step or area. Contaminated items are not to be processed in an area common to the handling of sterilized items.
3. **Traffic Control.** Pre-sterilization and sterilization areas are to be off limits to anyone not involved in the sterilization process.
4. **Receiving and Cleaning.** Ideally, this area will be physically separate from the sterilized area. Use of appropriate equipment such instrument cassettes and ultrasonic cleaning units will minimize handling of contaminated materials and instruments.
5. **Processing.** Ample work surface is critical. All inspecting, sorting, wrapping, and packaging of contaminated materials occur here.
6. **Sterilization.** Certified sterilization units are mandatory with regular sterilization testing and periodic maintenance.
7. **Sterile Storage and Issue.** Physically separate storage and issue areas from contaminated processing and sterilization areas.

II. THE STERILIZATION PROCESS

- A. **Management of Contaminated Instruments.** Take contaminated instruments directly to the receiving area of the CSR following a patient's treatment. Do not unnecessarily handle contaminated instruments or materials in the DTR's or other patient treatment areas.
- B. **Instrument Cleaning.** Break down packs and place disposable items and soiled linen in appropriate containers. Immerse instruments in an EPA registered, ADA approved pre-soak before any additional handling. Process instruments using one of the following methods, listed in order of preference:

Rationale: This procedure is an initial step in the decontamination process. The primary reason for initially placing instruments in a liquid chemical germicide (or water) is to keep dental materials on instruments from drying prior to cleaning and sterilization procedures. Although placement in a liquid chemical germicide will lower the number of microorganisms present on the instruments and equipment, these instruments should be considered contaminated by DCW. Utility gloves should continue to be worn by workers handling these items.

This step does not achieve high-level disinfection or sterilization of instruments and equipment. Instruments must be cleaned and sterilized before re-use with another patient.

1. ***Ultrasonic Cleaning.*** The unit is much safer and more effective than manual scrubbing. Always use the units per manufacturer's instructions. Solutions must be capable of removing protein, blood, and other debris and be changed daily or when visibly soiled.
 2. ***Automated Washer Processing.*** While convenient, most washers cannot clean as effectively as ultrasonic cleaning can. Automated washing after ultrasonic cleaning is preferred.
 3. ***Manual Scrubbing.*** This is the least desirable method of cleaning instruments. While wearing general purpose utility rubber gloves, face mask, plastic apron, hair cover, and eye protection follow the following sequence:
 - a. Pre-rinse in running water.
 - b. Soak in pre-soak solution (enzymatic solution)
 - c. Clean only one (1) or two (2) instruments at a time.
 - d. Wash and scrub instruments with long-handled brush.
 - e. Final rinse.
- C. **Drying** - All washed items should be allowed to dry by heat or hand-dried by using disposable paper towels.
- D. **Pre-sterilization steps:**
1. Inspect and sort instruments.

2. Dip instruments requiring special attention in rust inhibitor.

Sterilized packs, instruments, decontaminated supplies and equipment are to be stored and dispensed from CSR's only.

E. **Wrapping and Packaging:**

Critical and semi-critical instruments shall be packaged before sterilization if they are not to be used immediately. Properly manage by:

1. Use of trays, cassettes or bags.
2. Opening all hinged instruments.
3. Wrapping loosely to allow steam or dry heat to circulate freely throughout the pack.
4. Using chemical heat sensitive indicators.
5. Labeling packs with dated processing labels.

F. **Sterilization Methods**

1. **Steam Heat Sterilization (Autoclave)**

- a. Requires approximately 250 degrees F at 15 to 30 psi.
- b. Arrange all packs loosely in the chamber.
- c. Use perforated or mesh bottom trays.
- d. Follow manufacturer's instructions on sterilizers and sterilizing agents.
- e. Biological monitoring at least weekly.
- f. Maintain a consolidated sterilization log for CSR sterilizers containing sterilizer identification number, sterilization dates, duration and temperature of cycle, operator's name, biological monitoring results, repair and preventive maintenance dates, and a synopsis of actions taken.
- g. Allow all sterile bags, trays, and packs to cool on a wire rack before moving to storage areas to prevent condensation formation. Resultant contamination may occur due to the warm packs on a cool surface.

2. **Dry Heat Sterilization:**

- a. Sterilization time depends on temperature. A typical dry heat cycle is 30 minutes at 320 degrees F, plus the time required to bring the load up to temperature. Be sure to follow the manufacturer's instructions.

3. **Chemical Vapor Sterilization:** Requires 20 minutes at 270° F.

4. **Ethylene Oxide Sterilization:** Follow manufacturer's instruction on existing equipment.

5. **Liquid Chemical Sterilization:** Treat these products as high level disinfectants rather than sterilants because it is impossible to adequately monitor the effectiveness of this sterilization technique.

III. EXAMPLES OF “CRITICAL ITEMS” REQUIRING STERILIZATION

- A. Heat stable critical and semi-critical instruments shall be cleaned and sterilized before use.
- B. Surgical and all hand instruments.
- C. Handpieces, sonic scalers and tips, low speed motor attachments.
- D. Burs and Diamonds. Cleaned in an ultrasonic cleaner and dried before sterilizing.
- E. Gates-Glidden Burs and Endodontic Files. Arrange set in gauze packs or endodontic file holder and seal in peel packs before autoclaving. Restock and dry heat sterilize file storage boxes weekly. Broaches are used once and discarded into a sharps container.
- F. Rubber Products. Use steam or dry heat on heat stable rubber and use ethylene oxide or chemical on non-heat stable rubber. Propy cups are used once and discarded.
- G. Extracted Teeth for Pre-clinical Laboratory Course. Submerge teeth in 10% buffered formalin solution for at least two weeks in tightly sealed jars. Before use, rinse the teeth thoroughly while wearing utility gloves.
- H. Screw-cap glass tubes are recommended with heat sterilization using biological and chemical indicators to monitor.

NOTE: ALL “CRITICAL ITEMS” REQUIRE STERILIZATION. All items are sterilized before any service or repair.

IV. STERILIZATION MONITORING

- A. **Types of sterilization monitoring:**
 - 1. **Process Indicators.** Usually in tape form to distinguish processed packs and trays from those that have not been cycled.
 - 2. **Chemical Indicators.** Chemical dyes on strip that change color are placed inside an instrument pack to determine whether the conditions necessary for sterilization have been met.
 - 3. **Biological Monitors.** Also known as spore-testing, bacterial endospores are used to determine the effectiveness of sterilization.

B. Guidelines for Biological Monitoring:

1. Monitoring should occur at least weekly.

Test Procedure:

- a. Monitors should be used according to manufacturer's directions
- b. Use a biological monitoring system compatible with the specific sterilization method.
- c. While processing a normal load, place monitors in an instrument pack and seal the package.
- d. Place the pack with the biological monitor in the center of the sterilizer load.
- e. Use unprocessed biological monitors for controls.

3. **Evaluation Criteria:**

Designated, trained personnel must evaluate the results. A test is satisfactory if control monitor is positive and the test monitor is negative. If a CSR log is maintained, make appropriate log entries.

4. **Positive Test Monitor Results:**

- a. Notify your Clinic Director or Supervisor.
- b. Make proper log entries if CSR log maintained.
- c. Re-sterilize all packs processed since the last negative test.
- d. Notify the repair department for corrective action.
- e. After corrective repair action, re-test the sterilizer using biological monitors to confirm negative results.
- f. Review the sterilization log for recent repairs or maintenance, if CSR log is maintained.

C. Guidelines for Process & Chemical Indicators:

1. Use chemical indicators inside and process indicators outside each pack. Screw top test tubes for burs if used must have internal indicators.
2. Follow manufacturer's instructions when reading the processed indicators.
3. Only biological monitoring can identify whether or not sterilization has actually occurred.

- D.** Liquid chemical disinfectant or sterilants cannot be biologically monitored, and therefore should only be used as high-level disinfectants.

SHELF-LIFE OF STERILIZED ITEMS

WRAPPING METHOD	Shelf life
Paper envelope	30 days
Double muslin wrap	30 days
Double muslin wrap, plastic covered, heat sealed	180 days
Peel packs, heat sealed	180 days
Peel packs, tape sealed, double folded	180 days
Parchment paper or Dennison wrap	30 days
Glass test tubes with screw on caps	indefinite

*The shelf-life of a packaged item is event related and depends on the quality of the wrapping material, the storage conditions, the conditions during transport, and the amount of handling. These expiration times are provided as a means of setting uniform standards.

WRAPPING AND STERILIZER COMPATIBILITY

MATERIAL	WATER VAPOR	CHEMICAL VAPOR	DRY HEAT
Cloth	yes	yes ¹	May char
Paper	yes	yes	May char
Nylon or plastic tubing	no ²	no ²	yes ³
Paper, plastic combination	yes	yes	no
Aluminum foil	no	no	yes
Glass container	yes ⁴	yes ⁴	yes
Metal tray	yes	yes	yes

1. Use white or well laundered cloth, as dye can cause residue buildup on chamber walls and metering valve.
2. Use only as an overwrap after product has been sterilized using a different wrapping material. Heat sealed overwrapping will extend a 30 day shelf-life to 180 days.
3. Some are compatible. Check manufacturers recommendations.

STERILIZATION PACKAGING MATERIALS

MATERIAL	NATURE	THICKNESS OR GRADE	SUITABLE FOR	
			STEAM	DRY HEAT
Muslin	Textile	140 count	Yes	Yes
Jean cloth	Textile	160 count	Yes	No
Broadcloth	Textile	200 count	Yes	No
Kraftbrown	Paper	30-40 lb.	Yes	No
Kraft white	Paper	30-40 lb.	Yes	No
Glassine	Coated paper	30 lb.	Yes	No
Parchment	Paper	Patapar 27-2T	Yes	No
Crepe	Paper	Dennison wrap	Yes	No
Cellophane	Cellulose film	Week sterilizable	Yes	No
Polyethylene	Plastic	1-3 mils	No	No
Polypropylene	Plastic	1-3 mils	No	No
Polyvinyl	Plastic	1-3 mils	No	No
Nylon	Plastic	1-2 mils	No	No
Polyamide	Plastic	1-2 mils	No	No
Aluminum	Foil	1-2 mils	No	Yes
Peel packs	Paper with plastic		Yes	No
Test tubes	Glass with heat resistant caps		No	Yes

*Specifically not recommended due to difficulty in eliminating air from packs.

STERILIZATION AND DISINFECTION OF DENTAL INSTRUMENTS, MATERIALS. AND SOME COMMONLY USED ITEMS*

Steam Autoclave	Dry Heat Oven	Chemical Vapor	Ethylene Oxide	Chemical Agents	Other Methods	
Angle attachments	+	+	+	++	+	
Burs						
Carbon Steel	+	++	++	++	-	Discard
Steel	++	++	++	-		Discard
Tungsten-Carbide	+	++	++	++	-	Discard
Condensers ++	++	++	++	+		
Dappen Dishes	++	+	+	++	+	
Endodontic instruments (broaches, files, reamers)	++	++	++	++	-	
Stainless steel handles	+	++	++	++	+	
Stainless w/plastic handles	++	++	-	++	-	
Fluoride gel trays						
Heat resistant plastic	++	=	-	++	-	
Nonheat resistant plastic	=	=		++	-	Discard (++)
Glass Slabs ++	++	++	++	+		
Hand Instruments						
Carbon Steel	-	++	++	++	-	
	[Steam autoclave with chemical protection (2% sodium nitrite)]					
Stainless Steel	++	++	++	++		
Handpieces*	(++)*	-	(+)*	++		
Contra-angles	++	-	++	++		
Prophylaxis angles* (disposable preferred)	+	+	+	+		Discard (++)
Impression trays						
Aluminum metal	++	+	++	++	-	
Chrome-plated	++	++	++	++	+	
Custom acrylic resin	=	=	=	++		Discard (++)
Plastic (preferred)	=	=	=	++	+	Discard (++)
Instruments in packs	++	+	++	++	=	
Instruments tray setup restorative or surgical	+	+	+	++	=	
	Size limit	Size limit	Size limit	Size limit		
Mirrors -	++	++	++	+		
Needles						
Disposable	=	=	=	=	=	Discard (++) Do Not Reuse

++Effective and preferred method.

+ Effective and acceptable method.

- Effective method, but risk of damage to materials

= Ineffective methods with risk of damage to materials.

* Since manufacturers use a variety of alloys and materials in these products, confirmation with the equipment manufacturers is recommended, especially for handpieces and their attachments

Sterilization Table (continued)

	Steam Autoclave	Dry Heat Oven	Chemical Vapor	Ethylene Oxide	Chemical Agents	Other Methods & Comments
Nitrous oxide						
Nose piece		(++)*	=	(++)*	++	(+)* Discard (++)
Hoses	(++)*	=	(++)*	++	(+)*	
Orthodontic Pliers						
High-quality stainless		++	++	++	++	-
Low-quality stainless		-	++	++	++	-
W/plastic parts		=	=	=	++	+
Pluggers & Condensers		++	++	++	++	+
Polishing wheels & disks						
Garnet and cuttle		=	-	-	++	=
Rag ++		-	+	++	=	
Rubber +		-	-	++	-	
Prostheses, removable		-	-	-	+	+
Rubber dam equipment						
Carbon Steel Clamps		-	++	++	++	-
Metal frames		++	++	++	++	+
Plastic frames		-	-	-	++	+
Punches -		++	++	++	+	
Stainless steel clamps		++	++	++	++	+
Rubber items						
Prophylaxis cups		-	-	-	++	- Discard (++)
Saliva ejectors, plastic		-	-	-	-	Discard (++) (single use/disposable)
Stones						
Diamonds		+	++	++	++	-
Polishing ++		+	++	++	-	
Sharpening		++	++	++	-	-
Surgical instruments						
Stainless steel		++	++	++	+	-
Ultrasonic scaling tips		+	=	=	++	+
Water-air syringe tips		++	++	++	++	- Discard (++)
X-ray equipment						
Plastic film holders		(++)*	=	(+)*	++	+
Collimating Devices		-	=	=	++	+

++Effective and preferred method.

+ Effective and acceptable method.

- Effective method, but risk of damage to materials

= Ineffective methods with risk of damage to materials.

* Since manufacturers use a variety of alloys and materials in these products, continuations with the equipment manufacturers is recommended, especially for handpieces amid their attachments

ADA Council on Dental Materials, Instruments, and Equipment, Council on Dental Practice, and Council on Dental Therapeutics



ORGANIZATION FOR SAFETY & ASEPSIS PROCEDURES (OSAP)

Chemicals for Immersion Sterilization of Heat-Sensitive Instruments

October, 1998

Chemical Classification	Alkaline:	Product	510(K) #	TB Directions Intermediate-level Disinfection		Sterilization		For More Information		
				Temp	Time	Temp	Time			
GLUTARALDEHYDE	3.4%	Cidex Plus	K923744	25°C	20 min	Quant	25°C	10 hrs	Advanced Sterilization Products	
		ProCide Plus	K932922	20°C	45 min	Quant	20°C	10 hrs	Metrex	
		Banicide Plus	K931592	25°C	90 min	Quant	25°C	10 hrs	Pascal	
	2.5%	Cida-Steryl Plus	"	"	"	"	"	"	"	Huntington/Ecolab
		CoeCide XL Plus	"	"	"	"	"	"	"	GC America
		Security 3.4%	"	"	"	"	"	"	"	Kerr
		Cida-Steryl 28	K931052	25°C	90 min	Quant	25°C	10 hrs	"	Huntington/Ecolab
	2.4%	CoeCide XL	"	"	"	"	"	"	"	GC America
		ProCide	K932922	20°C	45 min	Quant	20°C	10 hrs	"	Metrex
		Acidic:								
HYDROGEN PEROXIDE PARACETIC ACID	2.5%	Banicide	K914749	22°C	45 min	Quant	22°C	10 hrs	Pascal	
		Sterall	"	"	"	"	"	"	"	Colgate
	2.0%	Sporox	K970230	20°C	30 min	Quant	20°C	6 hrs	"	Sultan Chemists
Cidex PA		K960513	20°C	25 min	AOAC	20°C	8 hrs	"	Advanced Sterilization Products	

NOTE: Sterilization by immersion in a chemical is only appropriate for those items which may be damaged through steam, dry heat or chemical vapor sterilization. Glutaraldehydes, hydrogen peroxide, and paracetic acid may NOT be used as surface disinfectants. All products for immersion must be FDA-cleared.

20°C = 68°F; 22°C = 72°F; 25°C = 77°F

*Tests for TB label claim: Quant = Quantitative; AOAC = Association of Official Analytical Chemists

All products are to be used full strength, undiluted on precleaned instruments. Other products are available. Listing does not imply endorsement, recommendation or warranty. Purchasers are legally required to consult the package insert for changes in formulation and recommended product uses.

This chart is a publication of the Organization for Safety & Asepsis Procedures (OSAP). OSAP assumes no liability for actions taken based on the information herein. Updated tables are available from OSAP by calling 410-571-0003; FAX: 410-571-0028.

©OSAP. All rights reserved. October, 1998

CHAPTER FIVE

DISINFECTION

No single chemical agent will meet all criteria for total disinfection. Always follow label directions precisely. Give strict attention to the proper use of the product with regard to dilution, method and duration of application, shelf-life, temperature requirements, and, if applicable, re-use life.

I. LEVELS OF DISINFECTION. EPA classifies disinfectants as high, intermediate, or low level based on the contact time of the solution and the biocidal activity of an agent.

- A. **High-level Disinfection** - kills some, but not necessarily all bacterial spores. This process kills *mycobacterium tuberculosis var bovis*, a laboratory test organism used to classify the strength of disinfectant chemicals and other bacteria, fungi and viruses.
- B. **Intermediate-level Disinfection** - kills *mycobacterium tuberculosis var bovis* that indicates less resistant organisms such as hepatitis B and HIV are also killed. This method does not affect bacterial spores.
- C. **Low-level Disinfection** - is the least effective disinfection process. It does not kill bacterial spores or *mycobacterium tuberculosis var bovis*.

II. FACTORS INFLUENCING GERMICIDAL PROCEDURES.

- A. Bioburden.
- B. Nature of the Material.
- C. Organic Debris Present.
- D. Type and Concentration of the Germicide. Generally, higher concentrations of a chemical agent are more effective and require a shorter time to disinfect.

III. GENERAL CATEGORIES OF LIQUID CHEMICAL AGENTS.

*Identify the product label has an EPA registration number on it.

- A. **Glutaraldehyde-** Based Solutions. High level sterilants or disinfectants require proper ventilation since vapors are extremely toxic.
- B. **Iodophors-** Intermediate level disinfectants only if the label claims tuberculocidal activity. Iodophors, stain pastel or white vinyl with repeated exposure.
- C. **Chlorine Dioxide-**Based solutions may be used for high level disinfection of semi-critical items not subject to corrosion. Irritating to the skin and eyes.
- D. **Phenolics-** If, the label claims tuberculocidal activity, use as intermediate level disinfectant. Irritating to the skin and mucous membranes.

IV. EXAMPLES OF “SEMI-CRITICAL ITEMS” REQUIRING CHEMICAL DISINFECTION

- A. Dental light handles, plastic impression trays, photographic mirrors and some radiographic positioning devices.
- B. Nitrous Oxide Masks and breathing tubes.

NOTE: ALL “SEMI-CRITICAL ITEMS” RECEIVE AT LEAST HIGH LEVEL DISINFECTION.

V. EXAMPLES OF “NON-CRITICAL ITEMS” REQUIRING CHEMICAL DISINFECTION OR BARRIERS

- A. Dental Delivery System consisting of: counters, chair, unit, and light; portable dental units; surgical table, surgical chair; or x-ray apparatus. In between patients, counter tops and dental unit surfaces shall be cleaned with disposable towels followed by an intermediate-level disinfectant.
 - 1. Use disposable barriers, changing barriers after each patient, to reduce the number of surfaces requiring disinfection.
 - 2. Disinfect hand operated control, switches, and handles after each patient.
 - 3. Follow manufacturer’s instructions when disinfecting the light lamp head and protective shield.
 - 4. Low-level disinfectants shall be used for visibly soiled areas such as floors, walls and other housekeeping surfaces

NOTE: ALL “NON-CRITICAL ITEMS” REQUIRE AT LEAST INTERMEDIATE LEVEL DISINFECTION.

Decision Factors: Surface Cleaning and Disinfection

I. Requirements

Look for the following:

- A. Environmental Protection Agency (EPA) registration number and toxicity category;
- B. That it is labeled as a "Hospital Disinfectant", i.e., germicide registered by the US EPA as effective against the test microorganisms *mycobacterium tuberculosis var bovis*, or *Salmonella choleraesuis*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* for use on nonliving objects in dental and medical facilities;
- C. Virucidal and tuberculocidal claims;
- D. Compatibility with surfaces, conditions of use and staff who will use it;
- E. Cleaning as well as disinfecting properties (for easier inventory management);
- F. Low allergenicity;
- G. Ease of use;
- H. Clear, easy-to-follow instructions;
- I. A reasonable contact time, i.e., 10 minutes or less;
- J. Acceptable storage and disposal requirements; and
- K. A reasonable use life and shelf life.

2. Choices

- a. Cleaning ability: Water-based (good) vs. alcohol-based (usually poor)
- b. Application method: Pump spray (preferable), aerosol spray (less preferable), wipe
- c. Minimize disadvantages:
 - 1. Chlorines - corrosive; damages clothes, plastics, rubber; usually prepared daily
 - 2. Iodophors - removable stains, prepare daily
 - 3. Synthetic phenols - film accumulation, damages plastics and rubber

3. Available Products:

Check for EPA registered disinfectant products at:

<https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants>

a. Water based intermediate disinfectants:

1. **Pump Spray:**

- a. Concentrate: Chlorines (*Chlorox*)
(dilute before use) Iodophor (*Iodofiv, Biocide*)
Synthetic phenols (*Omni II, ProPhene, Vital Defense-D, Asepti-phene 128*)
- b. Pre-diluted: Chlorines (*Dispatch*)
Synthetic phenols (*ProSpray*)
Accelerated hydrogen peroxide (*Optim1*)

2. **Aerosol Spray:** none

b. Alcohol-based:

1. **Pump Spray:**

(*Coe Spray, Aseptiphen*)

2. **Aerosol Spray:**

- a. AccusolAerosol(*Lysol IC Disinfectant Spray*)
- b. Standard Aerosol (*Citrace, Lysol IC Disinfectant Spray, Asepti-Steryl*)

Chemical Agents for Surface Disinfection Reference Chart



Organization for Safety & Asepsis Procedures (OSAP)

P.O. Box 6297
Annapolis, MD 21401
www.osap.org
410-571-4003
Fax: 410-571-4028
Email: osap@clark.net

* Temperature: 20°C=68°F; 25°C=77°F
** Studies by Klein and DeForest suggest that hydrophilic are more resistant than lipophilic viruses and therefore represent a better gauge of a disinfectant's virucidal efficacy. Hydrophilic viruses include various strains of Polio, Coxsackie, Rhinovirus and Rotavirus.
*** Demonstrates activity toward Adeno virus (resistance level between hydrophilic and lipophilic.)

CHEMICAL CLASSIFICATION		PRODUCTS					FOR MORE INFORMATION CONTACT		
Advantages	Disadvantages	Example of Active Ingredient and Listed on Product Label	Name	EPA Reg #	Dilution	TB Time	TB Temperature*	Hydrophilic Virus Kill**	Total Time for Surface Disinfection
Alcohols									
Do not use for environmental surface disinfection. Rapid evaporation rate. Diminished activity with bioburden.									
Rapid acting; Broad spectrum; Economical (Bleach)	Discard diluted solutions daily; Diminished activity by organic matter; Corrosive	sodium hypochlorite; chlorine dioxide	Clorox Dispatch (0.55%)	5813-1 56392-7	1:100 None	10 min 2 min	20°C 20-25°C	Yes Yes	10 min 2 min
Broad spectrum; Few reactions; Residual biocidal activity	Unstable at high temperatures; Dilution & contact time critical; Discoloration of some surfaces; Inactivated by hard water	butoxypropoxy-polyethoxyethanol iodine complex	Iodophor Biocide Iodophor Disinfect.	4959-16	1:213	10 min	20°C	Yes	10 min
Broad spectrum; Residual biocidal activity	Discard daily for most diluted solutions; Degrades certain plastic over time; Difficult to rinse; Film accumulation	WATER-BASED Dual Phenolics phenylphenol and benzylchlorophenol or tertiary amylphenol	Omi II ProPhene Vital Defense-D ProSpray Birex Dual Phenol Germicidal Cleaner BiArrest-2	46851-1 46851-5 1043-92 67813-3 67813-1	1:32 none 1:256 1:256	10 min 10 min 10 min 10 min 10 min	20°C 20°C 20°C 20°C 20°C	Yes Yes No No No	10 min 10 min 10 min 10 min 10 min
Broad spectrum; Contains detergent for cleaning; Few reactions	Easily inactivated by anionic detergents and organic matter; Deleterious to some materials	ALCOHOL-BASED tertiary amylphenol and/or phenylphenol plus ethyl alcohol or isopropyl alcohol	PUMP CoeSpray Asepsi-phen RTU AEROSOL Lysol IC Disinfect. Asepsi-Steryl Discide Disinf Spray Citrace Medicide/ADC Disinfect Deodor.	334-417 777-53 706-69 56392-2 334-214	none none none none	10 min 10 min 10 min 10 min	20°C 20°C 25°C 20-25°C 25°C	Yes Yes Yes Yes No	10 min 10 min 10 min 10 min
Broad spectrum; Reduced storage (tablets)	May not be used for immersion (hard surfaces only); Chlorine smell	disobutylphenoxy-ethoxyethyl dimethyl benzyl ammonium chloride; isopropanol sodium bromide; sodium dichloro-isocyanurate dihydrate	Cavicide DisCide TB Precise QTB GC Spray-Cide SaniTex Plus Asepticare II Microstat 2	46781-6 1839-83 1130-15 1130-13 70369-1	None None None None 2 tablets per quart	10 min 10 min 6 min 10 min 5 min	20°C 20°C 20°C 20°C 20°C	Yes Yes Yes Yes Yes	10 min 10 min 10 min 10 min 5 min

IMPORTANT INFORMATION

All products to be used as disinfectants on pre-cleaned surfaces must be EPA-registered. Listing does not imply endorsement, recommendation or warranty. Other products available. Purchasers are legally required to consult the package insert for changes in formulation and recommended product uses. Check compatibility of material before use on dental/medical equipment. This chart is a publication of the Organization for Safety & Asepsis Procedures (OSAP). OSAP assumes no liability for actions taken based on the information herein.

©OSAP October 1998. All rights reserved.

CHAPTER SIX

ORAL RADIOLOGY

Dental personnel must maintain infection control standards in the radiology area comparable to those used in the Dental Treatment Room. Also refer to the UCLA Dental Clinic Handbook, Appendix A: Dental School Policy for the Use of Ionizing Radiation.

- I. **HAND WASHING-** Follow recommended handwashing procedures.
- II. **PERSONAL PROTECTIVE EQUIPMENT-** Gloves, mask, and gown must be worn while exposing and processing contaminated film packets.
- III. **FILM POSITIONING DEVICES-** When possible, sterilize film positioning devices. When necessary, disinfect by complete immersion in a disinfectant following manufacturer's instructions for high level disinfection.
- IV. **PANORAMIC UNIT BITE BLOCKS.** Use disposable bite block covers for each patient, or treat bite blocks as you would a film positioning device.
- V. **INTRAORAL FILM PACKETS.** Always cover film packets with disposable plastic or use pre-packaged film packets. Wear gloves while taking radiographs. Place exposed packets removed from a patient's mouth directly into a paper cup.
- VI. **PROCESSING TECHNIQUE:**
 - A. Remove contaminated wrappings from x-ray film packets being careful not to touch the uncontaminated packets.
 - B. Drop the film packets onto a paper towel or any uncontaminated surface.
 - C. Properly dispose of contaminated wrappings and the lead insert (see chapter 8).
 - D. Remove gloves and wash hands thoroughly.
 - E. Carry uncontaminated film packets to darkroom, Insta-velop (manual film processor) or automatic film processor.
 - F. Remove uncontaminated packaging from actual film and process using standard procedures for tanks, Insta-velop (manual film processor) or automatic processor.
- VII. **X-RAY CHAIR.** Change barrier covers after each patient. Use an intermediate level disinfectant daily or whenever visibly contaminated.
- VIII. **X-RAY TUBEHEAD AND CONTROLS.** Cover with plastic wrap or disposable drapes, change after each patient. A plastic bag may be used over the tubehead/tube. Place barrier over unit control switches. Exercise care if wiping tubehead and controls to prevent disinfectant from leaking into the seams and exposed control areas.

CHAPTER SEVEN

DENTAL LABORATORY

The key to preventing micro-organism transfer in the dental laboratory is by breaking the chain of infection at critical exchange points.

I. USE OF BARRIER:

A. Surface Barriers

Designated areas in the dental laboratory where staff or technicians disinfect incoming and outgoing items are to be established. Place barriers whenever possible to prevent cross contamination.

B. Personnel Protection

1. All dental lab personnel should receive HBV immunization as all DHCWs.
2. Wear long smocks or smock-type laboratory coats. Change daily or when visibly soiled. Lab coats are not to be worn outside the laboratory or Dental Treatment Facility.
3. Wear face masks, gloves, and eye protection when handling contaminated items and during all disinfection procedures. Eye protection and masks are to be worn whenever polishing, grinding, or working with any rotary instrument. Splash shields shall be used in dental laboratories.
4. Exercise meticulous personal hygiene. Hands are to be washed using a liquid antiseptic soap after de-gloving when working on contaminated cases, and when leaving the laboratory.
5. Refrain from drinking and eating in laboratory areas. Designated eating and drinking areas may be established if space limitations permit. No smoking in lab at any time.
6. No jewelry to be worn on hands and wrists.

II. TRANSITION FROM THE DTR TO THE LABORATORY:

- A. Rinse and disinfect impressions, mould and shade guides, prostheses, and intraoral devices that can be disinfected with an intermediate disinfectant, before transferring the items to the laboratory. Place casts and prostheses in a self-sealing plastic bag or overglove to prevent contact with adjacent materials.

- B. All intra-oral items such as impressions, bite registrations, prosthetic and orthodontic appliances shall be cleaned and disinfected in the Dental Treatment Room with an intermediate level disinfectant before manipulation in the laboratory before placement in the patient's mouth.
- C. Use individual Instrument Tray Set-Ups whenever possible. Sterilize all instruments including lab instruments that can withstand high heat. Disinfect all other items.
- D. Unit Dose Concept: Dispense enough for only one patient when using such items as impression materials, petroleum jelly, waxes, pressure indicator paste, disposable brushes, and orthodontic brackets and wires.

III. LABORATORY INFECTION CONTROL

A. Case Pans

It is preferable to line and cover case pans with a removable plastic bag when contaminated items are involved. Disinfect all pans following completion of each case. Avoid reusing packing materials.

1. Impressions Received

- a. If not already disinfected, spray or immerse impressions in a disinfectant before pouring with gypsum product, following manufacturer's directions. Place in zip-lock plastic bag or overglove.
- b. Thoroughly debride and rinse impressions under running water before pouring.
- c. When preparing slurry water, use set stone which has not been poured against an impression.
- d. Soak reusable impression trays in pre-soak for designated time, scrub in soapy water, rinse, dry and seal in peel packs for autoclaving.

2. Prostheses Received

- a. If not already disinfected, clean by scrubbing with a brush and bactericidal soap. Store the brush in a 2% glutaraldehyde solution between uses replacing solution at least weekly. Autoclave brushes weekly.
- b. After cleaning, place prostheses in a beaker or container of disinfectant and ultrasonically clean for 10 minutes with cover in place. Beakers used with contaminated prostheses must have solution discarded, and the beaker sterilized or disinfected before re-use. Change solutions daily or whenever visibly soiled. Separate beakers should be used for new and non-contaminated prostheses.

IV. CASTS, PROSTHESES, AND MISCELLANEOUS LABORATORY ITEMS

- A. Disinfect casts with an appropriate surface disinfectant following manufacturer's instructions.
- B. Change and sterilize brushes, rag wheels, and acrylic burs, and discard pumice for each prosthesis.
- C. Add a disinfectant to the pumice. Use a different pumice mixing cup for each use.
- D. New Prostheses: Work with burs and instruments designated for new prostheses. Disinfect prostheses for designated time using appropriate solution, rinse and store in a sealed plastic bag.
- E. Minor adjustments: Do not allow "rush" cases to jeopardize the process of disinfection and separating contaminated from non-contaminated materials, instruments, and supplies.
- F. Polishing Area: A unit dose polishing area physically removed from the dental laboratory is the ideal alternative. This contains a polishing unit, and pumice catch pans enclosed in plastic for polishing and grinding agents.
- G. Outgoing Casts and Prostheses: Casts and prostheses will be placed in plastic bags for shipping to prevent contamination from packing materials and handling.
- H. Disinfection of Laboratory Spaces, Instruments, and Equipment: Maintain separate instruments and materials used in a patient's mouth and used on new prostheses.
 - 1. Change pumice, rag wheels, and brushes used on new prostheses daily.
 - 2. Use two separate polishing lathes if possible; one for new prostheses and one for prostheses that have made intraoral contact.

V. DAILY CLEANING AND DISINFECTION

- A. The case reception area and plaster bench.
- B. Work areas should be covered with paper that is changed daily or at completion of each contaminated case.
- C. Laboratory instruments such as spatulas, knives, and wax carvers following disinfectant manufacturer's instructions.
- D. Rubber mixing bowls should be disinfected at the completion of each contaminated case.
- E. Chucks, switches, handles, tubing, air hoses, and lab handpieces should be covered with barriers and/or disinfected after use.

F. Model trimmer - spray with disinfectant.

VI. WEEKLY DISINFECTION.

A. Disinfect work stations, including exposed equipment, work surfaces, and drawers.

B. Sinks should be emptied, cleaned, and scrubbed with soap or disinfectant, and thoroughly rinsed.

C. Iodophor disinfectants are recommended for surface disinfection of contaminated countertops, walls and floors.

V. ANNUALLY

A. Change plaster trap annually at a minimum.

STERILIZATION I DISINFECTION OF PROSTHODONTIC MATERIALS AND INSTRUMENTS*

Articulators/facebows	C S/D
Bowls/water baths	
Stainless steel	AC, CV, DH
Rubber	Spray - wipe - spray
Facebow forks	AC, CV
Impression trays	
Aluminum	AC, CV, DH
Chrome-plated	AC, CV, DH
Custom acrylic resin	CSID
Plastic	Discard
Spatulas and knives (plastic/wooden handled)	C S/D
Wax rims, wax bites	C S/D

STERILIZATION / DISINFECTION OF POLISHING AGENTS*

Burs	
Carbon steel	DH, CV
Steel	AC, CV, DH , C S/D
Tungsten carbide	AC, CV, DH , C S/D
Contouring/finishing strips	
Garnet and cuttle	Discard
Diamond	AC, CV, DH
Polishing points, wheels, disks and brushes	
Garnet and cuttle	Discard
Rubber points/wheels	AC, C S/D, Discard
Rubber prophy cups	Discard
Rag/Felt	AC, CV
Brushes	AC, CV
Stones	
Diamond	AC, CV, DH , C SID
Abrasive (polishing)	AC, CV, DH, C SID

* AC = Autoclave; CV = Chemical vapor; C S/D = Chemical sterilization/disinfection;
DH = dry heat. BOLD - preferred method

Adapted from: Merchant, V.A. and Molinari, J.A.: Dental Advisor 5(3)7, 1988.

Position Paper



LABORATORY ASEPSIS

Material:	Acceptable processing methods:
Alginate	1:213 iodophors; 1:10 sodium hypochlorite solution
Polysulfide	glutaraldehydes; 1:213 iodophors; 1:10 sodium hypochlorite solution; complex phenolics*
Silicone	glutaraldehydes; 1:213 iodophors; 1:10 sodium hypochlorite solution; complex phenolics*
Polyether#	1:213 iodophors;# 1:10 sodium hypochlorite solution# ; complex phenolics#*
ZOE impression paste	glutaraldehydes; 1:213 iodophors
Reversible hydrocolloid	1:213 iodophors; 1:10 sodium hypochlorite solution
Compound	1:213 iodophors; 1:10 sodium hypochlorite solution
Impression trays:	
Aluminum	heat sterilize via autoclave, chemical vapor, or dry heat; ethylene oxide sterilization
Chrome-plated	heat sterilize via autoclave, chemical vapor, or dry heat; ethylene oxide sterilization
Custom acrylic resin	discard after intraoral use on a patient; disinfect with tuberculocidal hospital disinfectant for reuse during the same patient's next visit
Plastic	discard

Polyethers can be sensitive to immersion. Immersion for up to ten minutes or disinfection by spraying is the method of choice.

* Complex phenols cannot be reused and cost significantly more than bleach or iodophors. For these reasons, some experts contend that their practical use is limited to spraying.

Adapted from: Merchant, VA. Infection control in the dental laboratory environment. In Cottone JA, Terezhalmay GT, Molinari GT. Practical Infection Control in Dentistry, second edition. Philadelphia:Williams & Wilkins, 1996:239-248; Dean MC, Wooten RK. Special infection control considerations: restorative dentistry, periodontics, pediatric dentistry, prosthodontics, endodontics, orthodontics, and oral and maxillofacial surgery. In Cottone JA, Terezhalmay GT, Molinari GT. Practical Infection Control in Dentistry, second edition. Philadelphia:Williams & Wilkins, 1996:272-273; and Miller CH, Palenik CJ. Laboratory and radiographic asepsis. Infection Control and Management of Hazardous Materials for the Dental Team, second edition. St. Louis: Mosby (1998):213-215.

©1998 OSAP

Organization for Safety & Asepsis Procedures • OSAP Foundation
P.O. Box 6297 • Annapolis, MD 21401 • 800-298-OSAP (6727) • Email: osap@clark.net • Fax: 410-571-0028

CHAPTER EIGHT

WASTE MANAGEMENT

I. WASTE CLASSIFICATION

- A. Regulated Medical Waste: This includes infectious and biohazardous waste defined as a solid or liquid that contains pathogens in adequate numbers and with sufficient virulence to cause infectious disease in susceptible hosts exposed to the waste. This waste could pose a threat to human health or the environment, and includes:
1. Microbiological waste - cultures and discarded live and attenuated viruses.
 2. Pathological waste - human tissues, with the exception of teeth, removed surgically.
 3. Blood and blood by-products.
 4. Absorbent materials containing large volumes (greater than 20 ml of blood and blood products, saliva, nasopharyngeal secretions, etc.) which are liquid and are relatively slow to dry.
 5. Sharps - hypodermic needles, syringes and scalpel blades, Endodontic files/reamers, matrix bands, viscoustat, impression material syringes, irrigation syringes, ortho wires. Needles include but are not limited to the ones used for local anesthesia, IV lines, root canal irrigation, acid etching and in association with the placement of retraction cords.
 6. Anesthetic carpules will be considered “sharps” and infectious waste due to their potential to transmit disease if they become broken.
- B. General Waste: General waste which does not pose a significant risk of causing or transmitting communicable disease or infection under ordinary circumstances. This type of waste includes:
1. Absorbent materials containing blood, saliva, nasopharyngeal secretions, etc. and which are non-liquid and dry relatively fast.
 2. Infectious waste which has been sterilized.
 3. All solid or liquid waste generated during patient care not classified as infectious.
 4. General Waste shall include, but not limited to, waste such as empty specimen containers, bandages, dressings and absorbent materials containing non-liquid blood, surgical gloves, decontaminated biohazardous waste, and other materials which are not biohazardous.

5. All waste must be disposed of according to applicable federal, state and local recommendations.

II. DISPOSAL OF REGULATED MEDICAL WASTE

- A. Disposal of regulated waste can be accomplished in two ways:
 - OPTION I - Contain and use a Biohazard Disposal Service; keep records and manifests of pick up and disposal.
 - OPTION II - Contain, sterilize and dispose in general waste.
- B. All waste that is designated as regulated shall be bagged in biohazard red bags. Sharps are to be in sharps containers.
- C. The routine procedure of autoclaving medical/dental waste prior to disposal is indicated only for those items considered infectious (biohazardous) waste. The only dental operatory waste identified as infectious are waste products saturated (relatively slow to dry) with blood or blood products or other secretions. These products can be autoclaved before disposal in the regular trash system, or if liquid, disposed of according to section E., below. Gauze saturated, but not oozing upon compression, is considered non-infectious since it does dry within a short period of time. Even when a known, high risk patient is being treated, the waste generated from this case is not considered infectious unless it is with blood or secretions, oozing upon compression. In these cases, this waste must be autoclaved prior to disposal.
- D. Red bags shall be used for the storage and disposal of regulated medical wastes.
- E. Liquid infectious waste (e.g. liquid from self-contained suction apparatus) will be disposed of by pouring the liquid into the sanitary sewer system through clinical sinks, not handwashing sinks. Personal protective attire (gloves, masks, and eye protection) will be worn during the handling and disposal of liquid infectious waste and follow-up cleaning processes.
- F. Sharps Containers
 1. Disposable needles, syringes, scalpel blades and/or other sharp items and instruments shall be placed in puncture resistant containers for disposal.
 2. Sharps containers are considered full and need to be replaced when they are 3/4 full to prevent the “sharps” from sticking out of the container. Do not overfill!
 3. Needles shall not be bent or broken prior to disposal.
 4. All materials disposed of in Sharps containers shall be managed in the manner prescribed for biohazardous wastes whether or not the materials are actually biohazardous wastes.

5. Anesthetic carpules are disposed of as infectious (biohazardous) waste by placing carpule into a Sharps container. This is due to their potential to transmit disease if they become broken.

III. DISPOSAL OF GENERAL WASTE

- A. Even though practically all waste generated on our dental clinics will be considered non-infectious, certain obvious precautions should be taken by all individuals handling trash. All general medical solid waste removed from patient treatment operatories is to be bagged and sealed before disposal in the designated receptacles. Medical solid waste shall be stored outside in a locked dumpster (at night), in a totally enclosed locked room, or totally inside the clinic.
- B. Teeth without attached tissue are considered non-infectious and may be thrown away as general waste. If the extracted teeth are deemed as infectious or biohazardous waste by the attending surgeon or dentist (with attached tissue broken restorations, etc.), they are to be disposed of as regulated medical waste. Alternatively, they may be disposed of by double wrapping in paper, sterilized by autoclaving (except teeth with amalgam restorations), and thrown away as non-infectious waste.

IV. GOWNS

Cover gowns used as personal protective equipment shall be placed within designated laundry hampers, or if disposable, disposed of as general waste.

XII. OTHER WASTE

Clinical hazardous waste include: scrap amalgam, empty amalgam carpules and extracted teeth with restorations collected in appropriately labeled containers and covered with 10% formalin, containers containing chloroform, x-ray developer and fixer, and lead foil from x-ray films. Hazardous waste must be delivered to the campus hazardous waste pick-up area.

Empty IV sedation vials and vials with small amounts of pharmaceuticals are collected as "Pharmaceutical Waste" and delivered for pick-up by a pharmaceutical waste hauler.

CHAPTER NINE

EXPOSURE TO BLOODBORNE DISEASES

Health care personnel are at continual occupational risk to needlestick, sharps, and mucosal exposure to blood and body fluids. Such exposure can result in Human Immunodeficiency Virus (HIV), Hepatitis B (HBV), Hepatitis C (HCV) and other serious infection to the health care provider. Standard policies and procedures must be established for prevention, treatment, and documentation. A Bloodborne Exposure Protocol must be established in all clinical areas.

I. PREVENTION

- A. All health care personnel are at increased risk for Hepatitis B and thus should be vaccinated. Over 90% of persons receiving the Hepatitis B vaccine series sero-convert if the inoculation site is the arm.
- B. Needles, syringes and sharps must be handled with extreme care to prevent accidental cuts, spills or spraying. Never clip, cut, or bend needles or syringes. Sharps containers must be used for discarding sharps. Never force a needle, needle and syringe apparatus, or other sharps into a full sharps container. Sharps containers should be properly disposed of when three-quarters full.
- C. When an injury occurs, scrub the site immediately with antimicrobial hand soap such as 4% chlorhexidine gluconate or povidone iodine.
- D. Standard Precautions: Patient history and examination cannot reliably identify all patients infected with bloodborne pathogens. Gloves must be used for all anticipated exposures to blood and body fluids. Additional protective gear (gowns, masks, and eyewear) must be worn whenever there is the likelihood that blood or other potential contaminates may be sprayed or splattered during procedures. Always thoroughly wash hands before and after contact with patients, even if gloves are used. If hands come in contact with blood or body fluids, immediately wash with antimicrobial soap.
- E. Surgical masks do not prevent inhalation of *M. tuberculosis* droplet nuclei, and therefore, standard precautions are not sufficient to prevent transmission of this organism. Recommendations for expanded precautions have been developed to prevent transmission of *M. tuberculosis* and other organisms that can spread by airborne or droplet inhalation (i.e., coronavirus causing Severe Acute Respiratory Syndrome - SARS). The mainstay of these recommendations is early identification, isolation and treatment of infected individuals. Elective dental care is deferred until patient's non-infectious status is confirmed by a physician. The use of specially engineered masks (N95) are recommended for screening of patients suspected as having these respiratory infections.
- F. Although no convincing evidence exists for the transmission of Creutzfeldt-Jacob Disease (CJD) or other prion diseases in the dental environment, for the known CJD patients, it is recommended that single-use disposable items be used as much

as possible. Difficult to clean instruments (i.e., endodontic files, braches, burs) should be discarded after use and other instruments may be sterilized with conventional steam-autoclave for at least 18 minutes under 134° C.

- G. In recent years, Methicillin Resistant *Staphylococcus aureus* (MRSA) has become a prevalent nosocomial pathogen in the US. The main mode of MRSA transmission is via hands which may become contaminated by contact with an infected patient or environmental surface. Standard precautions that apply to prevention of MRSA transmission include handwashing, appropriate use of disposable gloves, using masks and gowns, appropriate disinfection of equipment and environmental surfaces and avoiding direct contact with active lesions.

II. TREATMENT

- A. A plan of action for treatment and follow-up of bloodborne exposures must be established. For example, in the UCLA Medical Center, personnel that experience accidental puncture or have mucous membrane contact are to report the incident immediately to a designated Infection Control Officer who will contact the School of Dentistry Environmental Health & Safety Specialist.
- B. The exposed individual, and the source patient if available, are directed by the Infection Control Officer and/or the Environmental Health & Safety Specialist for appropriate treatment and follow-up. The source case is directed to the UCLA Hospital Clinical Laboratories for appropriate testing (rapid HIV test, anti-HBV and anti-HCV). The exposed individual is referred to the UCLA Medical Center Occupational Health Unit for exposure assessment and appropriate follow-up including post-exposure prophylaxis (PEP) when indicated.

III. DOCUMENTATION

- A. Confidentiality - Results of the source individual's testing shall be made available to the exposed employee, and the employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.
- B. Appropriate documentation shall be completed to insure reporting requirements.
- C. A Sharp Injury Log is to be completed when an employee sustains an exposure from a contaminated sharp only. A sharps injury log must be maintained for a minimum of five years from the date the exposure incident occurred. Each exposure incident must be recorded within 14 working days of the date of the incident and the log must be maintained in such a manner as to protect the confidentiality of the injured employee. The log must include the following information, if known or reasonably available:
- Date and time of exposure incident,
 - Type and brand of sharp involved in the exposure incident,
 - A description of the exposure incident, which must include the job classification of the exposed employee, the department or work area where

the exposure incident occurred, the procedure the that the exposed employee was performing at the time of the incident, how the incident occurred, and the body part involved in the exposure incident,

OHF maintains a record of each exposure incident involving a sharp (Note: Exposure incidents shall be recorded on the Sharps Injury Log within 14 working days of the date the incident is reported to the employer as mandated under T8 CCR 5193).

- D. Dental provider completes Incident Investigation Reporting Questionnaire on CCLE. The questionnaire includes a summary of incident, how the injury occurred, what instrument the provider was injured with, what part of your body was injured, and if anything could have prevented this incident. The procedure to complete to attached in appendix J.

Appendices

APPENDIX A

UCLA Dental Center QUALITY ASSURANCE PROGRAM

Infection Control Officers serve to monitor compliance to policies and procedures on a daily basis to insure quality assurance. Scheduled and random inspections are held to identify strengths and weaknesses. Semi-annual staff meetings within each Clinic or Laboratory with the Director, Manager or Supervisor and the Infection Control Officer improve and refine the overall Infection Control Program for that Clinic or Lab. Annual reports from each Clinic to the Director of Infection Control will ensure a comprehensive and consistent set of policies and procedures for all Clinics.

THIRD FLOOR

Cynthia Wagner	Group B
Sha’Ron Botts	Group C
Madona Castro	Group D
George Touma	Central Service
Irma Correa	AEGD
Walter Amaya	Endodontics
Sylvia Aquino, Connie Daino	Center for Esthetic Dentistry

SECOND FLOOR

Nanci Collantes	Group A
Francesca Moore-Miller	Orthodontics
Lorena de la Torres	Pediatric Dentistry

FIRST FLOOR

Susan Gerski	Oral Diagnosis
Sylvia Swartz	Oro-facial Pain
Lisa Yi	Oral Radiology

A & B Levels

Torre Moody	Oral & Maxillofacial Surgery
Blanca Lozano	Maxillofacial Pros/HospDentistry
Sandy Ferrer	Periodontal Surgery
Jason McKnelly	Implant Center

EXTRAMURAL CLINICS

Tina Charley	Oral Facial Pain
Marcela Hamparsumian	Faculty Group Periodontal Prctice (100 Med Plaza)
Rochelle Bache	Faculty Group Dental Practice (100 Med Plaza)
Debra Thomas	Venice Dental Clinic

**UCLA Dental Center APPENDIX B
SITE INSPECTION
CHECKLIST**

	UCLA SCHOOL OF DENTISTRY Infection Control Inspection Report
	10833 Le Conte, CHS - Box 951668, Los Angeles, CA 90095-1668 • Phone: 310-825-4306 • www.dentistry.ucla.edu/resources/environmental-health-safety

Clinic:	# of Operatories Occupied:
Date / Time:	

	NA	Yes	No	Total
Properly follow hand-washing protocol.				
No drink or food present in the operatory.				
Properly purges water lines for 2 minutes before patient care.				
Properly applies anti-contaminant barriers in the operatory.				
Opens sterile instrument pouches after the patient is seated.				
Wears gloves when making contact with patient and/or sterile supplies, instruments, and equipment.				
Once gloved, does not make contact with other potentially contaminated surfaces during patient care.				
Properly replaces gloves during patient care.				
Properly wears mask and eye-protection during patient care.				
Wears gown when interacting with patient in the clinic area.				
Wears gown that is visibly clean.				
Properly uses aspirating devices.				
Properly recaps anesthetic needles.				
Patient wears eye protection.				
Properly decontaminates impressions, small equipment, and dental chair and unit.				
Properly disposes sharp devices.				
Properly disposes single-use instruments and devices.				
Cleans and packages instruments and other devices.				
Wears heavy-duty utility gloves worn & brush with long handle when cleaning instruments				
Properly disposes regular waste, ties up clear plastic bag and place on the floor of the operatory.				
Properly disposes biohazardous waste (if applicable).				
Raises chair and place foot control on top of the chair.				

Comments:

Recommendations:

APPENDIX C

UCLA Dental Center
Hepatitis B Vaccination Declaration



714 Tiverton Drive, Los Angeles, CA
90095

Hepatitis B Vaccine Declination (MANDATORY)

I understand that due to my occupational exposure to blood or other potentially infection materials, I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to me; however, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated, I can receive this vaccination at no charge to me. California Code of Regulations, Title 8, section 5193, subsection (f) (2) (D)

I decline the Hepatitis B Vaccination Series. I am aware that I may change my mind at a later date.

Signature

Date

Job Title/Department

Print Name

UCLA ID number

Revision Date: May 12, 2015

APPENDIX D

UCLA Dental Center BLOODBORNE EXPOSURE PROTOCOL

Immediately wash injured site with soap and water. Bandage as necessary.

UCLA School of Dentistry
BLOODBORNE EXPOSURE PROTOCOL
During Business Hours (8:00AM – 4:00 PM)

Wound Care

- Immediately wash injured site with soap and water and bandage as necessary.
- Flush mucous membranes with water.

Incident Follow-Up

- 1) Injured worker reports immediately to an Infection Control Officer (ICO).
- 2) Infection Control Officer (ICO) completes 2 copies of “UCLA Incident Report & Referral for Medical Treatment” form and a Rapid HIV, Hep B, & Hep C Test form if a Source Case is involved (Please include, Source Case Dental School chart #, Ronald Reagan chart #, and Serostatus on report if available).
- 3) ICO notifies Mochi Li - Environmental Health & Safety Specialist moli@dentistry.ucla.edu - (310)825-4306 Pager # 98408-Dial “231” to use automatic paging system. Back-up Lisa Gotori-Koga (x57141).
- 4) ICO refers injured worker and Source Case for immediate testing at Occupational Health Facility x55703 or x56771 (OHF) CHS 67-120. If no phlebotomist on duty for Source Case testing, referral is made to UCLA Medical Center Clinical Laboratory (200 Medical Plaza, room 145) – if possible, register Source Case first x58911.
- 5) Mochi Li notifies Dr. Fariba Younai (pager #18180 and x41093). Back-up Dr. Diana Messadi (pager # 17419 and x67399).

Testing and Follow-Up

- 6) Injured Worker and Source Case are tested for HIV (unless positive) and Hepatitis C (unless positive); Source Case is tested for Hepatitis B (unless carrier); injured worker’s immunity to Hepatitis B is confirmed.
- 7) Injured Worker receives Post-Exposure Prophylaxis (PEP) for HIV pending Source Case’s rapid HIV test result.
- 8) Injured worker is instructed to contact OHF if signs and symptoms of HCV conversion develop over the following 6 months.
- 9) Injured Worker completes “Incident Questionnaire” on CCLE.

After 4:00 PM

Wound Care

- Immediately wash injured site with soap and water and bandage as necessary.
- Flush mucous membranes with water.

Incident Follow-Up

- 1) Injured worker reports immediately to an Infection Control Officer (ICO).
- 2) Infection Control Officer (ICO) completes 2 copies of “UCLA Incident Report & Referral for Medical Treatment” form and a Rapid HIV, Hep B, & Hep C Test form if a Source Case is involved (Please include, Source Case Dental School chart #, Ronald Reagan chart #, and Serostatus on report if available).
- 3) ICO notifies Mochi Li - Environmental Health & Safety Specialist moli@dentistry.ucla.edu - (310)825-4306 Pager # 98408 - Dial “231” to use automatic paging system. Back-up Lisa Gotori-Koga (x57141).
- 4) ICO refers the injured worker (not the Source Case) to Ronald Reagan Hospital Emergency Room (ER), and informs staff they have had a Blood Borne Exposure to be covered by Workman’s Comp. and that follow-up will be through OHF.
- 5) Mochi Li notifies Dr. Fariba Younai (pager #18180 and x41093) Back-up Dr. Diana Messadi (pager #17419 and x67399).

DO NOT send the Source case to the Emergency Room (see #7)

Testing and Follow-Up

- 6) Injured Worker receives Post-Exposure Prophylaxis (PEP) for HIV by ER staff if Appropriate.
- 7) Next Day, Injured Worker makes appointment at Occupational Health Facility and Arik Baharouzi will contact Source Case to come in for appropriate testing as normal business hours protocol. Injured Worker and Source Case are tested for HIV (unless positive) and Hepatitis C (unless positive); Source Case is tested for Hepatitis B (unless carrier); injured worker’s immunity to Hepatitis B is confirmed. Once the source case’s HIV and HCV test results are known, the injured worker is advised by OHF if HIV prophylaxis is indicated and to report signs and symptoms of HCV conversion over the following 6 months.
- 8) Injured Worker completes “Incident Questionnaire” on CCLE.

EXTRAMURAL CLINICS

Infection Control Officer: Call Hospital Exposure Coordinator at Occupational Health Facility (OHF) at x56771 for an appointment.

While waiting:

- Injured worker completes “Employee’s Referral Slip for Industrial Injury” form from Infection Control Officer* and goes to Occupational Health Facility, CHS 67-120 and informs staff they have had a Bloodborne Exposure to be covered by Worker’s Compensation.

APPENDIX E

UCLA Dental Center

LOSS OF FOREIGN OBJECT IN THE ORAL CAVITY

While it may be inevitable that dental items, such as crowns, parts of broken instruments, files, posts, etc., may be lost in a patient's oral cavity during treatment, prevention is clearly the key concept to remember. Seating the patient in an upright position, using rubber dam isolation, packing the oral cavity with gauze or similar barrier, turning the patient's head to one side, or other techniques may all be useful in minimizing the risk of such a mishap. Your clinical judgment and experience will assist you in anticipating and preventing these accidents.

However, the following procedures are provided to assist you and your patient in the event a foreign object is lost in the oral cavity:

1. Immediately, but carefully, position the patient's head in such a manner to prevent inhalation or swallowing of the object. Attempt to locate and retrieve the object. Ask the patient if the object might have been inhaled or swallowed.
2. If the object is not located, have the patient carefully position him or herself in an upright and slightly forward position to allow the patient to spit or cough up the object. Consider having the patient rinse out with water. Thoroughly examine the patient's chair, bracket table and surrounding counters and floor for the lost object.
3. Inspect the entire dentition, particularly if the object is small and can lodge subgingivally. If a dental radiograph would be useful, expose and develop an appropriate film.
4. Follow the instructions on the next page if the object is not located.

If the lost foreign object cannot be located after all reasonable efforts, and the object is presumed swallowed or inhaled, the following protocol is to be followed to insure the health of the patient:

Obtain the following from an Infection Control Officer:

- Radiology Consultation Request Form
- Recharge Authorization for Emergency Services
- Confidential Report of Incident (to be completed and returned to 10-135)

The faculty supervisor must complete the Radiology Consultation Request Form, indicating the requested film (usually a chest film), a description of the foreign object, and diagnostic request. Assistance may be obtained from the SOD Environment & Safety Specialist x54306.

For example:

Procedures Requested: *Chest film*

Clinical History Pertinent to this Radiology Consultation: *Patient swallowed or inhaled metallic dental crown, approximately 6 x 8 x 10 mm at 3.30 p.m. Rule out aspiration.*

Requesting Physician Name: *Faculty Supervisor's Name*

Attending Physician Name: *N/A*

Report Will Be Sent To: *Dr. Jeffery Goldstein, Dental School Clinic, Rm. 10-135*

The staff person will assist the treating provider or faculty supervisor in obtaining a hospital ID number for the patient in question by calling x58911. This will require the patient's date of birth, place of birth, mother's maiden name, social security number, telephone, emergency contact person, insurance or Medi-Cal information.

Escort the patient to Hospital Radiology, 1st floor UCLA Ronald Reagan Hospital, with Radiology Consultation Request and Recharge Authorization forms. You and the patient should wait for the chest film and diagnosis.

If the object is determined to be swallowed, inform the patient about potential discomfort. In the event it is desirable to retrieve the object, provide appropriate instructions.

However, if the object is determined to be inhaled, escort the patient to the Hospital Emergency Medicine Center. Inform their staff the object should be retrieved. The treating provider or faculty supervisor should provide assistance and support to the patient until he or she has been released.

Complete Confidential Report of Incident and submit to Patient Services, Room 10-135.

APPENDIX F

UCLA Dental Center **INFECTION CONTROL MEASURES**

GENERAL

The practice of “standard precautions” shall be observed to prevent contact with blood or other potentially infectious materials. Refer to specific terminology as outlined in Appendix H: California Board of Dental Examiners, Infection Control Regulations. All individuals shall comply with the following minimum precautions to minimize the transmission of pathogens in health care settings.

ENGINEERING AND WORK PRACTICE CONTROLS

1. Health care workers who have exudative lesions or weeping dermatitis shall refrain from all direct patient care and from handling patient care equipment until the condition resolves.
2. Hands must be washed with antimicrobial soap and water before and after wearing gloves, and after removing other personal protective equipment. Following contact with blood or other potentially infectious materials, hands and any other skin area must be washed immediately with soap and water; mucous membranes must be flushed immediately with water.
3. All treatment must be performed in such a manner as to minimize splashing, spraying, spattering, and generating droplets of blood or other potentially infectious materials. Rubber dam isolation and high speed evacuation shall be used in dental procedures whenever feasible.
4. When administering multiple injections of local anesthesia, recapping of needles must be done by using a one-handed scoop technique or by use of a mechanical device which eliminates the need for two handed capping. Contaminated needles and other disposable sharps must be discarded in approved “sharps” containers; no bending, shearing or breaking of needles is permitted.
5. Immediately or as soon as possible, contaminated reusable sharps shall be placed in a biohazard-labeled, puncture-resistant, leak proof sharps container.
6. Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure.
7. Food and drink shall not be stored in refrigerators, freezers, shelves, cabinets or on counter tops or bench tops where blood or other potentially infectious materials are present.

8. Specimens of blood or other potentially infectious materials shall be placed in a biohazard-labeled container that prevents leakage during collection, handling, processing, storage, transport, or shipping.
9. Contaminated equipment shall be disinfected before servicing, storage, or transport. A readily observable label shall be attached to the equipment if portions remain contaminated.

PERSONAL PROTECTIVE EQUIPMENT AND PRACTICE

Gowns, gloves, protective eye wear, and masks shall be provided in all Clinics. Dental health care workers shall observe the following guidelines:

Before Each Patient Treatment

1. Health care workers shall wash hands and put on new gloves before treating each patient. Gloves shall not be washed before or after use.
2. The appropriate armamentaria for the anticipated dental procedure must be pre-planned and sterilized for use. Clinical mobile cabinets and tackle boxes are reserved for the exclusive storage of sealed sterilized bags or cassettes of instruments, and clinical supplies. Once a bag or cassette is opened, all instruments within it must be re-sterilized.
3. The cubicle area must be prepared with appropriate barriers. All counter tops are to be covered with moisture-impervious disposable coverings. Light and syringe handles are to be covered with foil or plastic wrap. Bracket table and patient's chair are covered with plastic bags (or headrest cover). Red biohazard waste bags are to be used in all surgical procedures to contain regulated medical waste. Between patients, the covering must be removed, discarded and replaced with clean covering.
4. A clinical gown must be worn. Patient's record and radiographs must be on display. Sterilized bags of instruments and cassettes should remain sealed until the patient is seated. Opening the bags in the patient's presence will promote his or her sense of security in proper infection control measures.
5. At beginning of day, before attaching handpieces, air-water syringes, and ultrasonic units, and at end of day, waterlines shall be flushed for 2 minutes. Between patients, during day, flush waterlines for 30 seconds. In addition, at end of day, waterlines shall be purged with air for 2 minutes.
6. Obtain or update the medical-dental history. Consult with patient's physician as indicated.
7. Disinfect prostheses and appliances to be delivered to the patient.

During Patient Treatment

1. All patients must be treated as potentially infectious.

2. Whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials may be generated, mask and eye protection or mask and face shield must be worn. After each patient, and during patient treatment if applicable, masks shall be changed if moist or contaminated. Whenever hand contact with blood, other potentially infectious materials, or mucous membranes is anticipated, providers must wear medical exam gloves. Sterile gloves shall be worn in connection with surgical procedures involving soft tissue or bone. Hands must be scrubbed with soap and water before donning gloves. Gloves must be replaced when punctured, cut or torn. Overgloves or ungloved hands should be used to perform procedures such as making chart entries or answering the telephone in the midst of patient treatment, or upon leaving the cubicle.
3. Sterile coolant/irrigants shall be used for surgical procedures involving soft tissue bone. Sterile coolant/irrigants are deemed to be sterile when delivered using a device or process that has a Food and Drug Administration (FDA) marketing clearance for delivery of sterile/coolant irrigants to the patient. Delivery of sterile/coolant irrigants shall be in accordance with the manufacturer's directions.
4. Single-use disposable instruments (e.g. prophylaxis, angles, prophylaxis cups and brushes, tips for high-speed evacuators, saliva ejectors, disposable air-water syringe tips) shall be used for one patient only and discarded appropriately.
5. When developing radiographic film in a darkroom, gloves are worn to open the exposed and contaminated film packet, being careful not to touch the film. Ungloved hands or overgloves may be used to develop and fix the film(s). When using a "portable darkroom," the following procedure is followed: Use film covered by plastic envelope. Without removing the film from the plastic envelope, expose the film using standard technique. The envelope is then opened with gloved hands, and the film "dumped" out onto a clean surface being careful not to touch the film. Remove gloves, wash and dry hands, then proceed with processing the film using the portable darkroom. Put on new gloves upon resuming patient treatment.
6. Clinical gowns must be removed immediately or as soon as possible if penetrated by blood or other potentially infectious materials.
7. Use a mouthrinse to reduce the oral flora, and use rubber dam isolation whenever possible during restorative procedures. All regulated medical waste must be collected in the red biohazard bag.
8. Avoid personal injury with sharp instruments and needles. When recapping needles, use a one-handed scoop technique, or use a mechanical device designed for holding the needle sheath, or a mechanical device which eliminates the need for two handed capping.
9. Minimize the formation and spread of aerosols, splatters, and droplets by using high-volume suction during treatment.
10. Impressions, bite registrations, mould and shade guides, and removable appliances are to be rinsed in running tap water, disinfected with intermediate-level disinfectant solution. In the instance when a case is to be delivered to the Professional Lab, the item is placed in a sealed plastic bag.

11. The carrying device used in water baths should be lined with foil or paper towel that is discarded after each patient use. The water bath trough is washed and sterilized.
12. Pumice wheels must be washed and sterilized after each patient use. Laboratory pumice may be used with disinfectant but must be discarded after each patient use..

After Each Patient Treatment

1. Pre-rinse and place contaminated dental instruments in an enzymatic solution prior to scrubbing. An ultrasonic cleaner is ideal; the lid must be in place during operation to prevent aerosol spread.
2. All sharps waste are to be discarded in approved biohazard sharps containers marked for this purpose. Needles shall not be bent or broken prior to disposal. Remove clear plastic bag from patient's chair (or headrest cover). Invert and use as container for all disposable items to be discarded such as foil, used sterilization bags, counter-top paper, etc. When used for regulated waste, all red biohazardous waste bags must be sealed and discarded in large red biohazard waste container.
3. Wear heavy-duty utility gloves and use a scrub brush with a long handle for scrubbing dental instruments. Minimize splatter and droplet formation.
4. After washing and drying, all instruments, handpieces, and 3-way syringe tips are to be packaged.
5. Portable dental equipment such as electrosurgery, ultrasonic scaling, and light-cure units must be surface disinfected after each patient use.
6. Spray all contaminated work surfaces with surface disinfectant and wipe down with paper towels. Respray and allow to dry. In the instance where blood splatter has occurred, all unprotected contaminated surfaces are to be wiped down with a 1:10 bleach solution.
7. Flush high-evacuation system with tap water until the solids collector appears clear. Flush all water lines for 2 minutes; air purge for two minutes after flushing.
8. Clean sink; rinse and save screen.
9. After each patient, face shields and protective eyewear shall be cleaned and disinfected, if contaminated.
10. Inspect entire cubicle to insure a clean and disinfected work area before leaving. Wash utility gloves before removing. Wash hands with soap and water. Remove clinical gown. Return all re-useable items to Central Service.

ASEPTIC TECHNIQUES FOR THE DENTAL LABORATORY

1. All impressions should be handled as though they are potentially infectious, i.e. with gloves and masks and protective outer-wear and glasses. After the impression is removed from the mouth, it should be rinsed thoroughly with tap water to remove particulate

- matter. Spray with disinfectant for the prescribed time and rinse before pouring with dental stone.
2. If not already disinfected at chairside, impressions should be taken to a specific area of the laboratory and sprayed with or dipped in disinfectant solution for the prescribed time. Rinse before pouring.
 3. All outgoing casts or finished prosthesis, should also receive the same treatment as above and placed within a plastic container.
 4. Pumice containers can be lined with a plastic throw-away bag to prevent contaminated pumice from accumulating in corners. These can be removed after each case or whenever feasible and inverted to keep residual contaminated pumice inside the bag and discarded appropriately.
 5. Fresh pumice should be used for each patient's item(s) using an iodophor disinfectant as its wetting agent.
 6. All lathes using wheels for polishing should be appropriately shielded and these can be wiped with a disinfectant during the day or after each use.
 7. Cloth wheels or polishing wheels should be only used on one case at a time, removed and rinsed in tap water then placed in a disinfectant solution for the prescribed time, or autoclaved.
 8. Bur should be cleansed with wire brush, placed in a solution using an anti-rust agent to prevent corrosion and dulling, blotted lightly and packaged for sterilization.
 9. Work-bench tops: If paper covers are used they can be discarded in appropriate containers. Whenever contamination occurs, counters can be cleansed with a mild detergent and then disinfected with a disinfectant agent such as 10 % hypochlorite or an iodophor.
 10. Work-bench drawers should be orderly and void of any debris.

APPENDIX G

UCLA Dental Center **POLICY FOR HEALTH CARE PERSONNEL INFECTED WITH BLOODBORNE PATHOGENS**

I. Preamble:

Over two decades into the HIV/AIDS epidemic evidence indicates that human immunodeficiency virus (HIV) transmission from an infected worker to a patient is a highly unlikely and rare event. Nevertheless, the Dental Center at the University of California Los Angeles recognizes that minimizing the transmission of bloodborne and other nosocomial pathogens from infected providers to their patients is of paramount concern. After careful analysis of the risks of transmitting bloodborne infections, including hepatitis B virus and HIV, from infected worker to patients during the performance of invasive procedures or other patient care activities, the UCLA Dental Center conclude that enforcing a high standard of infection control applicable to all health care personnel is the best strategy for protecting patients from accidental infections.

UCLA has determined that: (1) the risk posed by infected health care personnel who comply with mandated infection control policies and practice standards is minimal, and does not warrant exclusion from patient care activities; and (2) routine screening of health care personnel for the presence of bloodborne infections is not recommended.

In reaching this decision, the following factors were considered: the safety and concerns of the general public, relevant California state laws regarding privacy of patients in regard to HIV testing; policy decisions made by other organizations; the fact that the blood test to determine exposure to HIV may not be conclusive; epidemiologic evidence estimating the magnitude of transmission risks; the potential impact on access to care among patients at risk for bloodborne infections; and the relative risks posed by other hazards associated with patient care activities.

II. Premises:

- A. A bloodborne infection is defined as an infection caused by any pathogen present in blood or other body fluids transmissible via the parenteral, mucosal, or non-intact skin route.
- B. For the purpose of this policy, an exposure is defined as an incident in which an individual is exposed to the blood or blood-contaminated body fluid of another individual by the parenteral mucosal, or non-intact skin route.
- C. It is the ethical and professional responsibility of health care providers whose blood is the source of a patient exposure to report the exposure and to undergo testing for bloodborne pathogens.

- D. Health care personnel include but are not limited to dental employees, clinicians, laboratory workers, researchers, house staff, students, and volunteers.
- E. Invasive procedures are defined as procedures in which the integrity of the skin, mucous membrane, or tissue is interrupted by needles, instruments, or other devices, and where the potential for bleeding exists.
- F. Health care workers at risk for bloodborne infections should be encouraged to seek diagnostic testing and medical care when indicated.
- G. Health care personnel are entitled to privacy and are not obligated to disclose their bloodborne infection status to patients, colleagues, or administrators.
- H. Patients have a right to know that health care workers are not required to have testing for bloodborne infections.
- I. All health care personnel are expected to comply with UCLA infection control policies.

III. Statement of Policy:

A. Compliance with UCLA Infection Control Policy

Health care workers who violate UCLA infection control policies will be subject to restriction of clinical privileges, work reassignment, or other action which will be determined on a case-by-case basis as deemed appropriate by the responsible department.

B. Health Care Personnel with Bloodborne Infections

1. Health care personnel who are fit for duty as affirmed by their treating physician may continue their regular patient care activities including the performance of invasive procedures regardless of their bloodborne infection status providing that UCLA infection control policies and procedures are followed. Evaluation of health care providers whose fitness for duty is questioned will proceed according to existing mechanisms at UCLA.
2. UCLA will have available a mechanism to provide confidential consultation to health care workers who are considering modification or discontinuation of their professional activities as a consequence of their bloodborne infection.

3. When there is compelling evidence that a health care provider has been involved in the transmission of bloodborne pathogens to a patient clinical privileges and/or patient care responsibilities will be reviewed for appropriate action by the Patient Care Committee.

C. Management of Patient Exposure

1. Patients will be informed that health care personnel are not required to have screening for bloodborne infections.
2. Patients who sustain an exposure as defined by Premise B will be informed that such an exposure has occurred. UCLA has procedures to insure appropriate post-exposure follow-up through the Occupational Health Facility.
3. Following a patient exposure as defined in Premise B, it is ethical and professional responsibility of the source health care worker to undergo testing for human immunodeficiency virus and hepatitis. The test results will be confidential and handled pursuant to appropriate procedures.

APPENDIX H

UCLA Dental Center **POLICY ON DENTAL STUDENTS IDENTIFIED AS HEPATITIS B CARRIERS OR POSITIVE FOR THE IMMUNODEFICIENCY VIRUS (HIV)**

All entering and current dental students identified as Hepatitis B Carriers or HIV positive will be counseled and treated immediately by the following individuals:

1. **Student Health Physicians** - The UCLA Student Health Service will designate physicians specifically to interpret and discuss Hepatitis B and/or HIV test results and to recommend further testing as well as discuss medical complications of the students' situation. The students testing results will then be forwarded to the Assistant Dean for Dental Student Affairs.
2. **Associate Dean for Dental Student Affairs** - The Associate Dean will be notified by the Student Health Service of any student who is identified as a Hepatitis B carrier or positive for HIV. The Associate Dean will present practical considerations and requirements that the student may face if forced to disclose his/her disease state, to include difficulty in obtaining professional liability, disability, health and life insurance and the inability to be licensed in certain states. In consultation with designated infectious diseases specialists at the UCLA medical Center, a prescribed clinical program with the affected student may be developed and monitored.
4. **Associate Dean for Clinical Dental Sciences** - The Associate Dean will be given the name of all affected students for information only.
5. Counseling and medical treatment will continue as appropriate throughout the dental program by the UCLA Student Health Service.

Confidentiality will be maintained by the above mentioned persons and that no other person would be informed as to which students are affected except when the student wishes to make it known.

THIS POLICY IS SUBJECT TO CHANGE DEPENDING ON THE AVAILABILITY OF FACTUAL INFORMATION WHICH MAY IMPACT ON THE HEALTH CARE OR LEGAL RESPONSIBILITIES OF THE SCHOOL OF DENTISTRY TO ITS ACADEMIC AND PUBLIC COMMUNITY.

APPENDIX I

California State Board of Dental Examiners **INFECTION CONTROL REGULATIONS**

Section 1005. Minimum Standards for Infection Control

(a) Definitions of terms used in this section:

- (1) "Standard precautions" is a set of combined precautions that include the major components of universal precautions (designed to reduce the risk of transmission of blood borne pathogens) and body substance isolation (designed to reduce the risk of transmission of pathogens from moist body substances). Similar to universal precautions, standard precautions are used for care of all patients regardless of their diagnoses of personal infectious status.
- (2) "Critical instruments" are surgical and other instruments used to penetrate soft tissue or bone.
- (3) "Semi-critical instruments" are surgical and other instruments that are not used to penetrate soft tissue or bone, but contact oral tissue.
- (4) "Non-critical instruments and devices" are instruments and devices that contact intact skin.
- (5) "Low-level disinfection" is the least effective disinfection process, kills some bacteria, viruses and fungi, but does not kill bacterial spores or mycobacterium tuberculosis var bovis, a laboratory test organism used to classify the strength of disinfectant chemicals.
- (6) "Intermediate-level disinfection" kills mycobacterium tuberculosis var bovis indicating that many human pathogens are also killed, but does not necessarily kill spores.
- (7) "High-level disinfection" kills some, but not necessarily all bacterial spores. This process kills mycobacterium tuberculosis var bovis, bacteria, fungi, and viruses.
- (8) All germicides must be used in accordance with intended use and label instructions.
- (9) "Sterilization" kills all forms of microbial life.
- (10) "Personal Protective Equipment" includes items such as gloves, masks, protective eyewear and protective attire (gowns/labcoats) which are intended to prevent exposure to blood and body fluids.
- (11) "Other Potentially Infectious Materials" (OPIM) means any one of the following: (A) human body fluids such as saliva in dental procedures and any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; (B) any unfixed tissue or organ (other than intact skin)

from a human (living or dead); (C) HIV-containing cell or tissue cultures, organ culture and blood, or other tissues from experimental animals.

(b) Licensees shall comply with infection control precautions mandated by the California Division of Occupational Safety and Health (Cal-DOSH).

(c) All licensees shall comply with and enforce the following minimum precautions to minimize the transmission of pathogens in health care settings:

(1) Standard precautions shall be practiced in the care of all patients.

(2) A written protocol shall be developed by the licensee for proper instrument processing, operatory cleanliness, and management of injuries.

(3) A copy of this regulation shall be conspicuously posted in each dental office. Personal Protective Equipment:

(4) Health care workers shall wear surgical facemasks in combination with either chin length plastic face shields or protective eyewear when treating patients whenever there is potential for splashing or spattering of blood or OPIM. After each patient, and during patient treatment if applicable, masks shall be changed if moist or contaminated. After each patient, face shields and protective eyewear shall be cleaned and disinfected, if contaminated.

(5) Health care workers shall wear reusable or disposable protective attire when their clothing or skin is likely to be soiled with blood or OPIM. Gowns must be changed daily or between patients if it should become moist or visibly soiled. Protective attire must be removed when leaving laboratories or areas of patient care activities. Reusable gowns shall be laundered in accordance with Cal-DOSH Bloodborne Pathogens Standards. (Title 8, Cal. Code Regs., section 5193)

Hand Hygiene:

(6) Health care workers shall wash contaminated or visibly soiled hands with soap and water and put on new gloves before treating each patient. If hands are not visibly soiled or contaminated an alcohol based hand rub may be used as an alternative to soap and water.

(7) Health care workers who have exudative lesions or weeping dermatitis of the hand shall refrain from all direct patient care and from handling patient care equipment until the condition resolves.

Gloves:

(8) Medical exam gloves shall be worn whenever there is a potential for contact with mucous membranes, blood or OPIM. Gloves must be discarded upon completion of treatment and before leaving laboratories or areas of patient care activities. Healthcare workers shall perform hand hygiene procedures after removing and discarding gloves. Gloves shall not be washed before or after use.

Sterilization and Disinfection:

(9) Heat stable critical and semi-critical instruments shall be cleaned and sterilized before use by using steam under pressure (autoclaving), dry heat, or chemical vapor. FDA cleared chemical sterilants/disinfectants shall be used for sterilization of heat-sensitive critical items and for high-level disinfection of heat-sensitive semi-critical items.

(10) Critical and semi-critical instruments or containers of critical and semi-critical instruments sterilized by a heat or vapor method shall be packaged or wrapped before sterilization if they are not to be used immediately after being sterilized. These packages or containers shall remain sealed unless the instruments within them are placed onto a setup tray and covered with a moisture impervious barrier on the day the instruments will be used and shall be stored in a manner so as to prevent contamination.

(11) All high-speed dental hand pieces, low-speed hand piece components used intraorally, and other dental unit attachments such as reusable air/water syringe tips and ultrasonic scaler tips, shall be heat-sterilized between patients.

(12) Single use disposable instruments (e.g. prophylaxis angles, prophylaxis cups and brushes, tips for high-speed evacuators, saliva ejectors, air/water syringe tips) shall be used for one patient only and discarded.

(13) Needles shall be recapped only by using the scoop technique or a protective device. Needles shall not be bent or broken for the purpose of disposal. Disposable needles, syringes, scalpel blades or other sharp items and instruments shall be placed into sharps containers for disposal according to all applicable regulations.

(14) Proper functioning of the sterilization cycle shall be verified at least weekly through the use of a biological indicator (such as a spore test). Test results must be maintained for 12 months.

Irrigation:

(15) Sterile coolants/irrigants shall be used for surgical procedures involving soft tissue or bone. Sterile coolants/irrigants must be delivered using a sterile delivery system.

Facilities:

(16) If items or surfaces likely to be contaminated are difficult to clean and disinfect they shall be protected with disposable impervious barriers.

(17) Clean and disinfect all clinical contact surfaces that are not protected by impervious barriers using a Cal-EPA registered, hospital grade low- to intermediate-level disinfectant after each patient. The low-level disinfectants used shall be labeled effective against HBV and HIV. Use disinfectants in accordance with the manufacturer's instructions. Clean all housekeeping surfaces (e.g. floors, walls, sinks) with a detergent and water or a Cal-EPA registered, hospital grade disinfectant.

(18) Dental unit water lines shall be anti-retractive. At the beginning of each workday, dental unit lines shall be purged with air, or flushed with water for at least two (2) minutes prior to

attaching handpieces, scalers and other devices. The dental unit line shall be flushed between each patient for a minimum of twenty (20) seconds.

(19) Contaminated solid waste shall be disposed of according to applicable local, state, and federal environmental standards.

Lab Areas:

(20) Splash shields and equipment guards shall be used on dental laboratory lathes. Fresh pumice and a disinfected, sterilized, or new ragwheel shall be used for each patient. Devices used to polish, trim or adjust contaminated intraoral devices shall be disinfected or sterilized.

(21) Intraoral items such as impressions, bite registrations, prosthetic and orthodontic appliances shall be cleaned and disinfected with an intermediate-level disinfectant before manipulation in the laboratory and before placement in the patient's mouth. Such items shall be thoroughly rinsed prior to placement in the patient's mouth.

(d) The Board shall review this regulation annually. _____ [FN1] Cal/EPA contacts:
WEBSITE www.cdpr.ca.gov or Main Information Center (916) 324-0419.

Note: Authority cited: Section 1614, Business and Professions Code. Reference: Section 1680, Business and Professions Code.

APPENDIX J

Sharps Injury Log

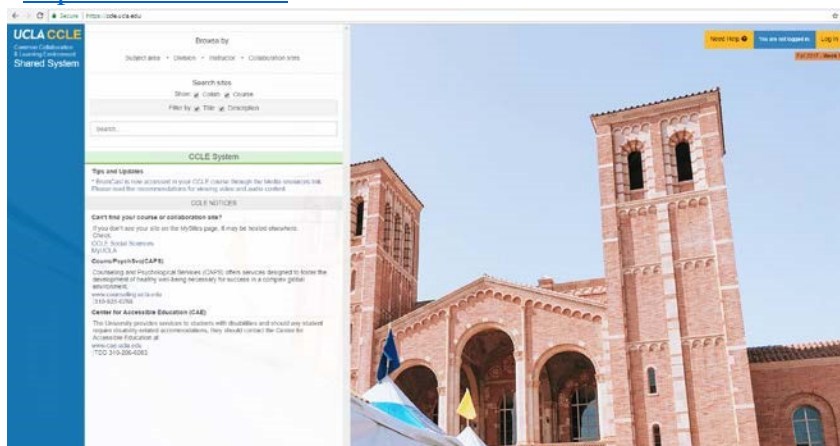
Date of Incident	Name/Title	Type of Needle	Incident Description	Abatement

HISTORY

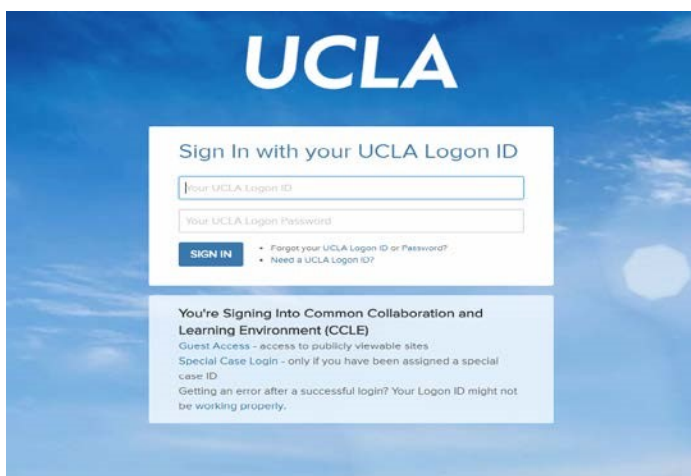
1. New section filed 6-29-94; operative 7-29-94 (Register 94, No. 26).
2. Repealer and new section filed 7-8-96; operative 8-7-96 (Register 96, No. 28).
3. Repealer of subsection (a)(5) and subsection renumbering, amendment of subsections (b)(7), (b)(10), (b)(18)-(19) and (b)(23) and repealer of subsection (c) and subsection relettering filed 10-23-97; operative 11-22-97 (Register 97, No. 43).
4. Change without regulatory effect amending subsection (b)(4) filed 12-7-98 pursuant to section 100, title 1, California Code of Regulations (Register 98, No. 50).
5. Amendment of subsections (b)(11), (b)(13) and (b)(15) filed 6-30-99; operative 7-30-99 (Register 99, No. 27).
6. Amendment filed 3-1-2005; operative 3-31-2005 (Register 2005, No. 9).

APPENDIX J CCLE Questionnaire Complete Procedure

1. Go to <https://ccle.ucla.edu/>



2. Logon with your Bruin Online username and password



3. After you are signed on, the on left upper side, under “Browse By,” click on “Collaboration Sites”

My sites

Browse by

Subject area

Division

Instructor

Collaboration sites

Search sites

Show:

Collab Course

Filter by:

Title Description

Search...

My sites

Class sites

Term:

No classes found for Fall 2017.

Collaboration sites

Sort by: Site name Start date

Dentistry

Incident Reporting

Office of Residential Life

Office of Residential Life Rules for Residents

Residential Life CCLE Modules

- Under “Available collaboration site categories,” click on “Dentistry.”

Collaboration sites

Show:

Collab Course

Filter by:

Title Description

Search...

Available collaboration site categories

Academic Governance	Medicine
Arts and Architecture	Nursing
Basic Biomedical Sciences	Office of Information Technology
College Academic Counseling	Office of Instructional Development
Common Collaboration & Learning Environment	Office of Residential Life
Dentistry	Office of the Vice Chancellor for Research
Education and Information Studies	Physical Science
Engineering and Applied Science	Public Affairs
Health and Wellness	Public Health
Humanities	School of Music
International Institute	School of Theater, Film, and Television
IT Collaborations	Social Science
Law	Student Affairs
Letters and Science-Interdisciplinary	UCLA Recreation
Library	UCOP Sandbox
Life Science	UCSD
Management	Unaffiliated Sites

- Under “Categories in Dentistry,” click on “Safety Training.”

Collaboration sites in Dentistry

Show:
 Collab Course

Filter by:
 Title Description

Search...

Categories in Dentistry

Cariology (CAR)	Periodontics (PER)
Clinical (CL)	Postgraduate Programs (PG)
Education Technology Support	PPID Advance Standing (AS)
Faculty Development (FD)	Preceptor and Advanced Clinical Training Program (ACT)
Growth, Development and Aging (GDA)	Professionalism and Doctoring (PFD)
Interdisciplinary Systems (IDS)	Restoration of Form, Function and Esthetics (RFEE)
Oral Biology (OB)	Safety Training (SF)
Oral Systemic Disease (OSD)	Selectives (SEL)

6. Under “Sites in Safety Training,” click on “Incident Reporting.”

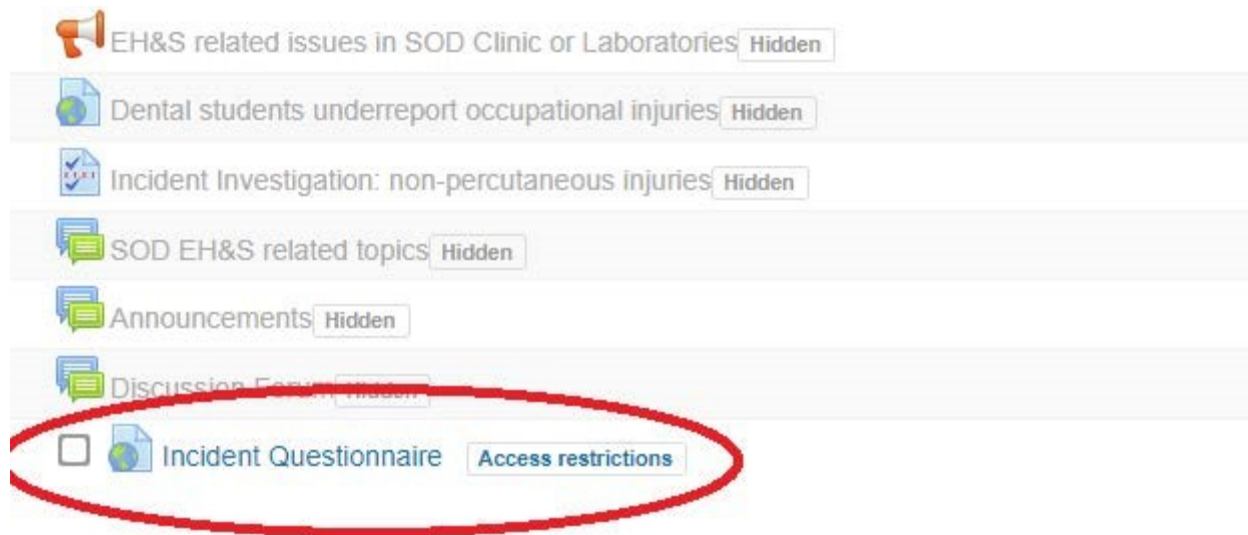
Search

Sites in Safety Training (SF)

Site name	Project lead
Hanau Safety Training	N / A
Incident Reporting	LI, MOCHI / YOUNAI, FARIBA
Student Laboratory Safety Manual	GOMEZ, MIGUEL

a. THE ENROLLMENT KEY: incident

8. Enter the enrollment key, and click “enroll me in this course”
9. At the very bottom, click on “Incident Questionnaire.”



10. Click on “Incident Questionnaire: percutaneous injuries” to complete the questionnaire.

Incident Reporting

Incident Investigation Reporting Questionnaire



11. Email the School of Dentistry EHS Specialist, Mochi Li at moli@dentistry.ucla.edu of completion when done.

Thank you!

REFERENCES

1. American Association of Medical Instrumentation (AAMI). Good hospital practice: steam sterilization and sterility assurance (AAMI SSSA-1988). Arlington, VA: Association for the Advancement of Medical Instrumentation, 1988.
2. AAMI. Good hospital practice: steam sterilization using the unwrapped method (flash sterilization). Arlington, VA: Association for the Advancement of Medical Instrumentation, 1986.
3. American Dental Association (ADA) brochure, Infection control: fact and reality, a supplement to ADA News, February 22, 1988.
4. ADA. Infection Control Recommendations for the Dental Office and the Dental Laboratory. August, 1992.
5. American Operating Room Nurses (AORN). Recommended practices for in-hospital sterilization. In AORN Standards and Recommended Practices for Preoperative Nursing. Denver: Association of Operating Room Nurses, 1989.
6. American Society for Healthcare Central Service Personnel. Training Manual for Central Service Technicians. Chicago, Illinois, 1993.
7. Block, S. S., Disinfection, Sterilization and Preservation (3rd edition) Philadelphia: Lea and Febiger, 1983.
8. Caldon, William DMD; Dasher, David DDS; Mayhew, Robert DMD, PhD, Infectious disease transmission within the dental office; realistic measures for control, Wilford Hall USAF Medical Center and Office of the Assistant Secretary of Defense (Health Affairs).
9. California Board of Dental Examiners Infection Control Regulations. 1999.
10. California Occupational Safety and Health Association (Cal-OSHA) Guidelines, October 1992.
11. Centers for Disease Control (CDC), Summary of Infection Prevention Practices in Dental Setting: Basic Expectations for Safe Care. Atlanta, GA: US DHHS, CDC, National Center for Chronic Disease Prevention and Health Promotion, Division of Oral Health; March 2016.
12. Centers for Disease Control (CDC), Guidelines for Infection Control in Dental Health Care Setting, 2003. MMWR December 19, 2003/52(RR17);1-61
13. Centers for Disease Control (CDC), Recommended Infection Control for Dentistry. 1993.

14. Centers for Disease Control, Recommendations for Preventing Transmission of Human HIV and HBV to Patients During Exposure-Prone Invasive Procedures. July 12, 1991.
15. Centers for Disease Control, Update: Universal precautions for prevention of transmission of human immunodeficiency virus, hepatitis B virus and other blood borne pathogens in health care settings, MMWR, June 24, 1988, Vol. 37, No. 24.
16. Cottone, James DMD; Terezhalmay, Geza DDS; Molinari, John Ph.D. Practical Infection Control in Dentistry. Pennsylvania, 1995.
17. Garner, J. S. and Favero, M. S., Centers for Disease Control, Guideline handwashing and hospital environmental control, American Journal of Infection Control, 14 (3); 110-129, 1986.
18. Hospital Infection Control Journal, Infectious Waste Management, Vol. 13, No. 9, September 1986.
19. Journal of the American Dental Association (JADA), Biological indicators for verifying sterilization, Vol. 117, October 1988.
20. Journal of Dental Education (JDE), Recommended Clinical Guidelines for Infection Control in Dental Education Institutions, Vol.55, No. 9, 1991
21. JADA, Guidelines for infection control in the dental office and commercial dental laboratory, Vol. 110, June 1985.
22. JADA, Hepatitis B and the dental profession, Vol. 110, April 1985.
23. JADA, Infection control recommendation for the dental office and the dental laboratory, Vol. 116, February 1988.
24. Joint Commission on Accreditation for Healthcare Organizations (JCAHO). Accreditation Manual for Hospitals. Chicago: Joint Commission on Accreditation for Healthcare Organizations, 1988.
25. Miller, Chris Ph.D.; Palenik, Charles MS. Infection Control and Management of Hazardous Materials for the Dental Team. Missouri, 1994.
26. Occupational Safety and Health Organization (OSHA). Federal Register, 29 CFR Part 1910. 1030. Occupational Exposure to Bloodborne Pathogens. Final Rule. December 6, 1991.
27. Organization for Safety & Asepsis Procedures (OSAP) Directory, Vol. II, 1999.
28. Perkins, J. J., Principles and Methods of Sterilization in Health Sciences (2nd edition). Springfield, IL: Charles C. Thomas, 1969.
29. State of California, Department of Public Relations.
https://www.dir.ca.gov/DOSH/REU/bloodborne/REU_BBPdent1.html

30. United States Air Force. Dental Items of Significance, United States Air Force Dental Investigative Service, No. 22, May 1986.
31. United States Environmental Protection Agency
<https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants>
32. United States Navy. Bumed Institute. 6600. Washington D.C., December 1993.31
33. Organization for Safety and Health Organization (OSAP) OSAP Surface Disinfectant Reference Chart – 2010 (www.osap.org)
34. Centers for Disease Control (CDC), Recommended Infection Control for Dentistry. 2003.
35. California Board of Dental Examiners Infection Control Regulations. 1999. (2010).