

## DENTAL BOARD OF CALIFORNIA INFECTION CONTROL REQUIREMENTS

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## Infection Control Regulations

- California Dental Board
  - Minimum standards for infection control
- California Department of Occupational Safety and Health
  - Bloodborne pathogens rule
- California Department of Public Health
  - Medical waste management act

## Dental Board of California

- Minimum Standards for Infection Control
  - First passed in 1994
  - Latest revision effective August 20, 2011
    - Changes in definitions
    - Expanded scope to include all DHCP
    - Specific steps and practices for disinfection and sterilization

## California Dental Board Regulations

- Standard Precautions
- Written protocol developed, maintained and periodically updated (available to all DHCP)
  - Instrument processing
  - Operator cleanliness
  - Management of injuries
- Copy of the regulation conspicuously posted in each office
- Follow the Cal/OSHA Bloodborne Pathogens Standard

## Standard Precautions

- The same infection control procedure for all patients regardless of health history
- All body fluids with the exception of sweat considered as potentially infectious

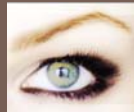


## Bloodborne Diseases

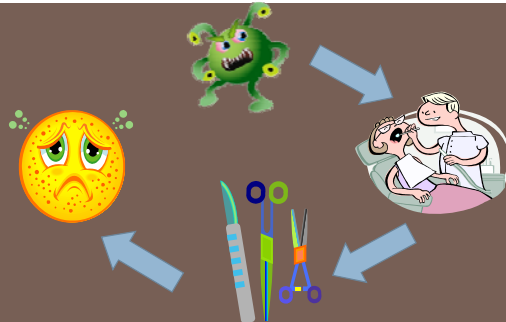
- Human Immunodeficiency Virus (HIV)
- Hepatitis B Virus (HBV)
- Hepatitis C Virus (HCV)

## Modes of Transmission

- Direct contact with blood and body fluids
- Indirect contact with contaminated instruments or surfaces
- Contact of mucosa of the eyes, nose or mouth with droplets or spatter



## Chain of Infection



## Chain of Infection



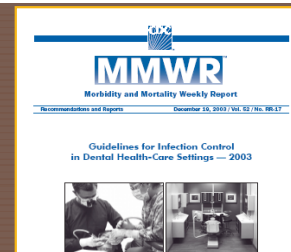
## Healthcare Worker to Patient HBV Transmission

- Multiple clusters in various healthcare settings
  - Including dentistry
- Most HCW were HbeAg positive
- HCW that were not HbeAg positive had high viral HBV DNA levels
- No transmissions from dentist to patient have been documented since 1987

## Infection Control Strategies

- Vaccinations
- Engineering controls
- Standard precautions
- Safer work practices
- Administrative controls

## Infection Control Precautions



## Hepatitis B Vaccine

- Vaccination available since 1982
  - ▣ Now a routine childhood vaccination
- 3 injections over a 6-month period
- Given in the deltoid muscle
- Must be offered to all at-risk employees
  - ▣ At no cost to employees

## Post-immunization Testing

- Anti-Hbs test
- >10 milli – International Units
- Consider repeating the series if no antibodies are detected

## Booster Injections

- CDC does not recommend boosters
  - ▣ Immune memory remains intact

## Immunizations

Hepatitis B

Measles/Mumps/Rubella

Varicella

Tdap

Polio

Influenza



## Tdap

- Tetanus, Diptheria, acellular pertussis
- Recommended for all health care personnel as soon as feasible
  - ▣ Regardless of time since last Td dose
- Resume routine boosters of Td after Tdap

## Personal Protective Equipment (PPE)

- Whenever there is a potential for:
  - ▣ Aerosol spray
  - ▣ Splashing or spattering of:
    - Droplet nuclei
    - Blood
    - Chemical or germicidal agents
    - OPIM

## Personal Protective Attire

- Chemical-resistant utility gloves when handling hazardous chemicals (in addition to appropriate, task-specific PPE)



## Masks and Protective Eyewear

- Mask and eye protection or face shield and mask
- Change masks between patients
- Clean reusable face protection when soiled, disinfect between patients



## Protective Attire



- Reusable or disposable
- Under same conditions as other PPE
- Changed daily or between patients if moist or soiled
- Remove before leaving patient care or laboratory areas
- Laundered as per Cal/OSHA

## Hand Hygiene – Soap and Water

- At the start and end of each workday
- If contaminated or visibly soiled
- Thoroughly dried
- Before placing and after removing gloves (unless using hand sanitizer)



## Alcohol-based Handrubs

- Alternative to soap and water
- Good antimicrobial
- For hands free of debris
- Not a cleaning agent



## Patient Care Restrictions

- Refrain from direct patient care and handling patient care equipment if:
  - Weeping dermatitis
  - Exudative lesions
  - Hand condition making DHCP or patient more susceptible to opportunistic infection or exposure



## Exam Gloves

- For contact with mucous membranes, blood, OPIM
- During pre-clinical, clinical, post-clinical and laboratory procedures



## Exam Gloves

Remove gloves that are torn, cut or punctured



Do not wash, disinfect or sterilize gloves for reuse

## Heavy-duty Utility Gloves

- When processing contaminated sharps
- When using surface disinfectants or other chemical germicides



## Needle and Sharp Safety

Post-exposure management

## Use Scoop Technique or...



## Mechanical Device



## Mechanical Devices



## Sharps Containers

- Disposable needles, syringes, scalpels, etc.
- Close as possible to point of use



## Evaluate Work Practices



## Retracting Tissue Using Fingers



## Handling Sharps



## Instrument Transfers



## Exposure Incident

- Percutaneous injury
- Splash to mucous membrane or nonintact skin
  - involving a patient's blood or saliva



## Post-exposure Management

- Prompt reporting of injuries
- Interview of patient
- Testing of patient and exposed worker
- Referral for medical counseling
- Written report documenting details of incident, including whether or not a safety device was involved

## Transmission Risk After Needlestick

Source	Risk
HBV	
HBsAg <sup>+</sup> and HBeAg <sup>+</sup>	22.0%-31.0% clinical hepatitis; 37%-62% serological evidence of HBV infection
HBsAg <sup>+</sup> and HBeAg <sup>-</sup>	1.0%-6.0% clinical hepatitis; 23%-37% serological evidence of HBV infection
HCV	1.8% (0%-7% range)
HIV	0.3% (0.2%-0.5% range)



## Postexposure Management for HIV

- Collect source patient information
  - Types of medications if patient is HIV-positive
- Testing of exposed worker
  - Baseline, 4-6 weeks, 12 weeks, 6 months
- Risk assessment by qualified healthcare professional
- Post-exposure prophylaxis, if indicated by assessment

## Postexposure Management for HBV

- Vaccinated responders
  - No PEP
- Unvaccinated person
  - HBIG
  - Begin vaccine series
- Vaccinated nonresponder
  - HBIG x2 (or more, if recommended by healthcare provider)

## Postexposure Management for HCV


- IG, antivirals not recommended for prophylaxis
- Follow-up after needlesticks, sharps, or mucosal exposures to HCV-positive blood
  - Test source for anti-HCV
  - Test worker if source anti-HCV positive
    - Anti-HCV and ALT at baseline and 4-6 months later
    - For earlier diagnosis, HCV RNA at 4-6 weeks
  - Confirm all anti-HCV results with RIBA
- Refer infected worker to specialist for medical evaluation and management

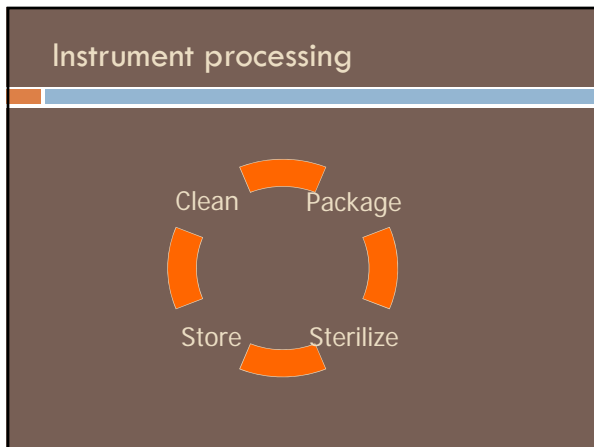
# Instrument Processing


## Categories of Patient Care Items

Category	Definition	Reprocessing	Examples
<b>Critical</b>	Penetrate soft tissue or bone	Sterilization	Surgical instruments, periodontal scalers, surgical dental burs
<b>Semicritical</b>	Contact mucous membranes or non-intact skin	Sterilization or high-level disinfection	dental mouth mirrors, amalgam condenser, handpieces
<b>Noncritical</b>	Contact intact (unbroken) skin	low- to intermediate-level disinfection	X-ray head/cone, Blood pressure cuff, facebow

- ## Sterilization of Instruments
- Critical and semicritical instruments
    - ▣ Cleaned
    - ▣ Heat sterilize
    - ▣ High level disinfect or sterilize using chemical germicides only if item cannot be heat sterilized
    - ▣ Discard if disposable
  - Heat sterilize all high-speed handpieces, low-speed handpieces, and all other attachments (e.g.: reusable air/water syringe tips, ultrasonic scaler tips, etc.)

- ## Single-use Items
- Used for one patient and discarded appropriately
    - ▣ Disposable prophylaxis angles, prophylaxis cups and brushes, plastic high speed evacuator tips, saliva ejectors, disposable air/water syringe tips, gloves
- 



- ## Instrument Processing Flow
- 
- Receiving, cleaning, and decontamination
  - Preparation and packaging
  - Sterilization
  - Storage



## Cleaning Before Sterilization



## Washer/Disinfectors

- Suitable for cassettes or baskets



## Hand Scrubbing



## Drying Instruments

- Dry instruments carefully
- Remove debris that was not cleaned mechanically
- Wear heavy-duty gloves to process instruments



## Packaging Instruments

- Carefully place instruments in pouch or wrap
- Use materials compatible with type of sterilizer



## Storage

- Critical and semicritical instruments or containers must be wrapped or packaged
- Date each package and indicate the specific sterilizer if more than one is used
- Remain sealed and stored in a manner that prevents contamination.



## Marking Sterilization Packs

### Printed Tags



Load No. Ster. No.  
4 3  
STERILIZED  
INDEFINITE SHELF LIFE  
8/20/11

### Sharpie Industrial Pen (13601)



## Loading Sterilizer



## Heat-Based Sterilization

- Moist heat (steam) under pressure
  - Autoclaving
- Dry heat
  - Static air (convection, oven-type)
  - Forced air (rapid heat transfer)
- Unsaturated chemical vapor
  - Proprietary formula of alcohol/formaldehyde

## Liquid Chemical Sterilant/Disinfectants

- Only for heat sensitive critical and semicritical items
- Package or wrap upon completion of disinfection
- Heat tolerant or disposable alternative available for most items



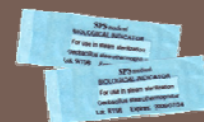
## Chemical Indicators



- Measure key parameters of the sterilization process (e.g. time, temperature)
- Visual change when the desired parameter has been achieved
- Single parameter indicators, multi-parameter indicators

## Biologic Monitoring

- Contain bacterial spores resistant to heat sterilization
- Highest level of confirmation for sterilization
- Required weekly for all sterilizers
- Maintain records for 12 months



## Sterilizer Monitoring Service

- Offered by Dugoni School since 1994
- All proceeds go to student scholarship
- Provided 5 scholarships in 2009
- Competitively priced
- Contact 415-929-6622

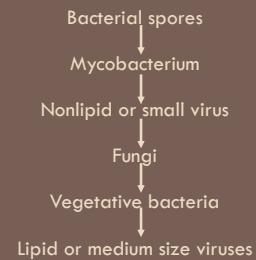
## Disinfection

Clinical contact surfaces  
Housekeeping surfaces

## Survivability of Organisms on Surfaces

HIV	• Hours
HSV	• Hours
Rhinovirus	• 14 Hours
Staph	• 5 Days
HBV	• 7 Days
TB	• 6 to 8 Months

## Descending Order of Resistance to Chemical Germicides



## Disinfectants

- Cal/EPA Registered Hospital disinfectant
- Low-level
  - Effective against HBV and HIV
  - Acceptable for disinfection if no visible contamination with blood/OPIIM
- Intermediate Level
  - Effective against *mycobacterium tuberculosis*
  - Must be used for visible contamination with blood or OPIIM

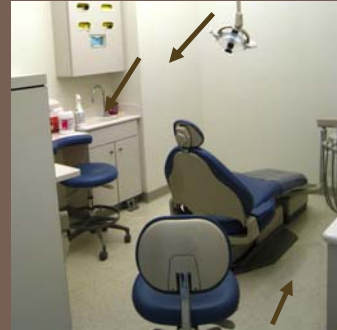
## Clinical Contact Surfaces



## Housekeeping Surfaces

- May serve as source of microorganisms
- Not directly involved in infectious disease transmission
- Do not require stringent decontamination procedures

## Housekeeping Surfaces



## Equipment Barriers

- For items or surfaces difficult or impossible to clean and disinfect
- Changed when visibly soiled or damaged and between patients



## Disinfecting Clinical Contact Surfaces

- Spray



## Disinfecting Clinical Contact Surfaces

- Wipe (clean)



## Disinfecting Clinical Contact Surfaces

- Spray
- Wait (disinfect)



## Clean Thoroughly Before Disinfecting



## Premoistened Disinfectant Wipes

- Wipe (clean)
- Wipe (disinfect)
- Wait



## Dental Waterlines

## Dental Unit Waterline Biofilm



## Dental Unit Water Lines

- Water lines shall be anti-retractive
- Flush lines with water or purge with air for at least two minutes at the beginning of the day **before** attaching devices
- Flush between patients for 20 seconds with devices attached

## Epidemiological Studies

- Abnormal Gram (-) nasal flora in 14 of 30 dentists
- Two studies found high Legionella antibody titers in DHCP compared to controls
  - No clinical legionellosis cases reported

## Dental Unit Water Quality

- Bacteria in water from untreated systems can exceed  $10^6$  CFU/mL
- Untreated dental units cannot reliably produce safe drinking water

American Dental Association

## Routine Dental Procedures

- Biofilm control not regulated for routine procedures
- In-line filter, bottled systems, and unit filter all provide superior water quality
  - If used properly



## Dental Unit Filter

- Dentapure and Sterisil
- 90 or 365 day filters
- Attaches at control box to filter all lines
- Filter resin bed with iodine or silver ion as disinfectant
- May need to change or decontaminate lines before installation



## Surgical procedures involving soft tissue or bone

### Use Sterile Irrigants



### Use Sterile Delivery Devices



<http://airforcemedicine.afms.mil/decs>

## Dental Lab

## Lab Equipment

- Splash and equipment guards on lathes.
- Fresh pumice and a sterilized or new rag wheel for each patient



## Disinfection of Devices

- Intraoral items such as impressions, bite registrations, prosthetic and orthodontic appliances shall be cleaned and disinfected (intermediate-level disinfectant) before manipulation in the laboratory and before insertion in the patient's mouth.
- Rinsed before inserting in patient's mouth



## Dental Laboratory

- Clean and heat sterilize heat-tolerant items used in the mouth
- Heat sterilize, high-level disinfect or discard laboratory equipment that touches contaminated appliances



## Contaminated Wastes

- Disposed of according to local state and federal standards
- Sharps and red bags



## Other Regulated Medical Waste

- Pharmaceutical waste
- Collect separately from biohazard waste
- Medical waste treatment facility for destruction



## Dental Radiology

- Wear gloves and other appropriate personal protective equipment as necessary
- Heat sterilize heat-tolerant radiographic accessories



## Dental Radiography Sensors

- Use fluid-proof barriers
- Or use intermediate EPA-registered disinfectant between patients



Thank you