Infection Prevention & Dentistry – Avoiding the Hazards & Pitfalls

Presented by:

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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Acronym</th>
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<tbody>
<tr>
<td>AAMI</td>
<td>Association for the Advancement of Medical Instruments</td>
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<tr>
<td>ABHR</td>
<td>Alcohol Based Hand Rub</td>
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<td>ADA</td>
<td>American Dental Association</td>
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<td>ANSI</td>
<td>American National Standards Institute</td>
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<td>APIC</td>
<td>Association for Professionals in Infection Control and Epidemiology</td>
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<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
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<td>CLIA</td>
<td>Clinical Laboratory Improvement Act</td>
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<td>DUWL</td>
<td>Dental Unit Water Lines</td>
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<td>EEO</td>
<td>Equal Employment Opportunity</td>
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<td>EPA</td>
<td>Environmental Protection Agency</td>
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<td>EPPA</td>
<td>Employee Polygraph Protection Act</td>
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<td>EtO</td>
<td>Ethylene Oxide</td>
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<td>FDA</td>
<td>Food and Drug Association</td>
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<td>FLSA</td>
<td>Fair Labor Standards Act</td>
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<td>FMLA</td>
<td>Family and Medical Leave Act</td>
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<tr>
<td>GHS</td>
<td>Globally Harmonized System</td>
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<tr>
<td>H1N1</td>
<td>Hemagglutinin Type 1 and Neuraminidase Type 1</td>
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<td>HAZCOM</td>
<td>Hazard Communication</td>
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<td>HBV</td>
<td>Hepatitis b Virus</td>
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<td>HIPAA</td>
<td>Health Insurance Portability and Accountability Act</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>IC</td>
<td>Infection Control</td>
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<td>IIPP</td>
<td>Injury and Illness Prevention Program</td>
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<td>IP</td>
<td>Infection Prevention</td>
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<tr>
<td>MCV4</td>
<td>Meningococcal Vaccine</td>
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<td>MMR</td>
<td>Mumps, Measles, Rubella Vaccine</td>
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<tr>
<td>MSDS</td>
<td>Material Safety Data Sheet</td>
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<tr>
<td>OPIM</td>
<td>Other Potentially Infectious Materials</td>
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<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
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<td>PPE</td>
<td>Personal Protective Equipment</td>
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<td>PPM</td>
<td>Parts Per Million</td>
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<td>SDS</td>
<td>Safety Data Sheets</td>
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<td>SMD</td>
<td>Safer Medical Device</td>
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<td>SUD</td>
<td>Single Use Device</td>
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<td>USERRA</td>
<td>Uniformed Services Employment and Reemployment Rights Act</td>
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Infection Prevention

Documents

- Guidelines for Infection Control in Dental Healthcare Settings – 2003

"Repeated outbreaks resulting from unsafe practices, along with breaches of infection control noted in ambulatory surgical centers during inspections by the Centers for Medicare and Medicaid, indicate the need for better infection prevention across our entire health care system, including outpatient settings."

July 13, 2011
Michael Bell
Deputy Director
Division of Healthcare Quality Promotion
Centers for Disease Control & Prevention
Summary of Infection Prevention Practices in Dental Settings March 29, 2016

- Infection prevention must be made a priority in any dental health care setting
- At least one individual with training in infection prevention – the infection prevention coordinator – should be responsible for developing written infection prevention policies and procedures
- Provide supplies necessary for adherence to Standard Precautions (e.g. hand hygiene products, safer devices to reduce percutaneous injuries, PPE)

Other Applicable Documents

- Summary of Infection Prevention Practices in Dental Settings March 29, 2016
- Guide to Infection Prevention for Outpatient Settings: Minimum Expectations for Safe Care, April 2011
  - "For the purposes of this document, ambulatory care is defined as care provided in facilities where patients do not remain overnight"
- ST-79 AAMI Comprehensive guide to steam sterilization and sterility assurance in health care facilities, 14 October 2013 (Rev Pending 9-2017)
- Immunization of Health-Care Personnel, Recommendations of APIC November 2011
- Guidelines Preventing the Transmission of Mycobacterium Tuberculosis in Health-Care Settings, 2005
- Guidelines for Environmental Infection Control in Health-Care Facilities, 2003
- Appendix B Immunizations Strongly Recommended for Health-Care Personnel (HCP), December 19, 2003
- Appendix C Methods for Sterilizing and Disinfecting Patient-Care Items and Environmental Surfaces, December 19, 2003
- Guideline for Hand Hygiene in Health-Care Settings, 2002
- Guideline for Infection Control in Health Care Personnel, 1998
- NAC 631.178

The Arizona State Board of Dental Examiners has adopted the most current State OSHA required procedures for worker protection and the most current CDC recommended infection Control Practices for Dentistry as the guidelines for infection control Complaints will be evaluated on the criteria of the named documents listed below.

- Guidelines for Infection Control in Dental Health-Care Settings, 2003
- 29 CFR 1910.1030 – Bloodborne Pathogens Standard
ARIZONA STATE BOARD OF DENTAL EXAMINERS
INFECTIOUS DISEASE CONTROL INSPECTION

Pursuant to A.R.S. 32-1201.01(14), Unprofessional conduct: Any conduct or practice which does or would constitute a danger to the health, welfare or safety of the patient or the public:

<table>
<thead>
<tr>
<th>NAME OF DENTIST(S):</th>
<th>INVESTIGATORS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCATION:</td>
<td>DATE &amp; TIME:</td>
</tr>
<tr>
<td></td>
<td>VISIT: 1 2</td>
</tr>
</tbody>
</table>

A. DENTAL OPERATORIES

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
<th>N/A OR UNKNOWN</th>
<th>SEE COMMENTS</th>
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</thead>
<tbody>
<tr>
<td>1. Do dentists and clinical staff members practice a hand washing protocol prior to putting on gloves and after removing gloves?</td>
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<tr>
<td>2. Do dentists and clinical staff members wear gloves during procedures where there is a possibility of exposure to blood or saliva?</td>
<td>[ ]</td>
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<tr>
<td>3. Do dentists and clinical staff members routinely wear a face mask or face shield when performing treatment which creates an aerosol or spatter of blood or saliva?</td>
<td>[ ]</td>
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<tr>
<td>4. Do dentists and clinical staff members routinely wear protective eyewear with side shields or face shield when there is a potential for spatter from a bloodborne pathogen or saliva?</td>
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<tr>
<td>5. Do dentists and clinical staff members wear an outer garment, e.g. gowns, lab coats or lab jackets when there is a potential for spatter from a bloodborne pathogen or saliva?</td>
<td>[ ]</td>
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<td>6. Are disposable coverings (barrier wrapping) used to prevent contamination of surfaces?</td>
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<td>7. Where barrier wrapping is not used, is the operatory properly disinfected after each patient encounter, including dental chair, light, counter, x-ray unit using a spray-wipe-spray technique?</td>
<td>[ ]</td>
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<tr>
<td>8. Are handpieces and components heat sterilized between every patient treatment?</td>
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</table>
9. Is aseptic technique performed adequately (avoidance of cross contamination during all procedures)?
   a. By Dentist
   b. By Dental Hygienist
   c. By Dental Assistant

10. Is there a puncture resistant Sharp’s container (red and labeled) located as close to treatment area as possible?

11. Are all items that enter the mouth either disposed of or autoclaved?

**B. X-RAY ROOM**

1. Is the x-ray unit disinfected after each patient encounter or protected with disposable coverings?

2. Is a method used to prevent cross contamination of x-ray films (contaminated packet envelop vs. clean film) during processing of films?

**C. CENTRAL STERILIZATION**

1. Is there a clean area and dirty area?

2. Is the autoclave/chemiclavewire monitored on a weekly basis for effectiveness by using a biological monitor?

**D. DISPLAY OF LICENSE(S)**

1. Is the current Triennial Certificate for each licensed Dentist prominently displayed?

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**AAMI The Association for the Advancement of Medical Instrumentation**

**ST-79 Rev Pending September 2017**
Program Requirements

• Prevent & control the spread of infectious disease within your facility
  o Patient to Staff Member
  o Patient to Patient
  o Staff Member to Patient
  o Staff Member to Staff Member

Safe Work Practices

• Limit the surfaces touched
• Change PPE when torn or heavily soiled
• Keep hands away from face
• Cough etiquette/respiratory hygiene
• Hand hygiene

Program Requirements

• Comprehensive Infection Control Evaluation
• Review/Revise Annually
  ▪ Reflect changes in technology to eliminate or reduce exposure to infectious agents
  ▪ Document evaluation of available technology that will eliminate or reduce exposure to infectious agents
• Risk Assessment
  ▪ Who is at risk
    ▪ DDS, DMD, MD
    ▪ RDH, RN, LPN
    ▪ RDA, CDA, COA, DA, CST, ST, MA
    ▪ Sterilization
    ▪ Front Desk
  ▪ What types of risk do they incur
    ▪ Bloodborne
    ▪ Airborne
  ▪ What diseases are specific to my area
    ▪ Immune compromised patient population
    ▪ Seasonal exposure to certain infectious agents
    ▪ How do I manage diseases present in either patients and staff
    ▪ How do I identify disease in patients upon presentation and prevent transmission
Training Requirements

- Frequency
  - At initial assignment
  - When new tasks or procedures affect their exposure
  - As lapses in technique/procedure are observed
  - Annually thereafter
  - Including those employed by outside agencies and available by contract or on a volunteer basis
- Must address
  - Exposure risks
  - Prevention strategies, Infection Control policies/procedures
  - Injury management and location of facility
  - Facility maintenance
  - Environment of care management
  - Work area restrictions
  - Disease/illness return to work restrictions
    - CDC – Work Restrictions
  - Sterilization procedures
    - Sterilization flow
    - Use-dilution, material compatibility, storage, shelf-life, and safe-use disposal
    - Sterilization documentation
    - Proper packaging
    - Quality control

Safe Injection Practices

“Safe injection practices are basic but they are not optional – they are every provider’s responsibility.”

Michael Bell, MD,
Centers for Disease Control and Prevention
November 28, 2012
Unsafe Injection Practices and Disease Transmission

Reuse of syringes combined with the use of single-dose vials for multiple patients undergoing anesthesia can transmit infectious diseases. The syringe does not have to be used on multiple patients for this to occur.

1. A clean syringe and needle are used to draw the sedative from a new vial.
2. It is then administered to a patient who has been previously infected with hepatitis C virus (HCV). Blood flow into the syringe contaminates the syringe with HCV.
3. The needle is replaced, but the syringe is reused to draw additional sedative from the same vial for the same patient, contaminating the vial with HCV.
4. A clean needle and syringe are used for a second patient, but the contaminated vial is reused. Subsequent patients are now at risk for infection.

7 Rights of Medication Administration

- Right Patient
- Right Medication
- Right Dose
- Right Route
- Right Time
- Right Person Administering the Medication
- Right Place

Basics of Safe Injection

- Disinfect the rubber septum with alcohol
- Do not use needles or syringes for more than one patient
- Do not use single use vials, ampules or bags on more than one patient
- All containers (single use or multi-use) are ALWAYS entered with a new needle and new syringe
- Use single dose vials/amps whenever possible
- Do not combine leftover contents of vials – ever
- All IV infusion fluids, administration sets, filters, connectors, needles and syringes will be disposed of according to appropriate city, state, and federal guidelines.
Multidose Vials

- Dedicate multidose vials to a single patient whenever possible.
- If multidose vials will be used for more than one patient, they should be restricted to a centralized medication area and should not enter the immediate patient treatment area (e.g., operatory)
- If a multidose vial enters the immediate patient treatment area, it should be single patient use only and discarded immediately after use
- Date multi dose vials when first opened and discard within 28 days (or earlier per manufacturer)

One & Only Campaign

- One Needle, One Syringe, Only One Time

Single Use Only Medications

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Single Use Device

- *Clean and reprocess reusable dental equipment according to manufacturer instructions. If the manufacturer does not provide such instructions, the device may not be suitable for multi-patient use*
- Single-use devices (SUDs) are labeled by the manufacturer for only a single use and do not have reprocessing instructions
- They may not be reprocessed except by entities which have complied with FDA regulatory requirements and have received FDA clearance to reprocess specific SUDs as outlined in FDA Guidance for Industry and FDA Staff
- Single Use Only Items
  - Discard unused portion
  - Single patient use only
  - Unit dose
  - Disposable
- The reprocessing of single-use devices by health care facilities is regulated by FDA, and all premarket and postmarket requirements must be met if a health care facility chooses to reprocess a single-use device
  - 510K
Examples I should look into:


Personal Protective Equipment (PPE)

- Required when “reasonably anticipated” to encounter any type of hazard (chemical or biological)
- Provided by the employer at no cost to the employee
- Readily accessible/available
- Must be removed before leaving the work area
- Includes resuscitation equipment

PPE Concerns
- Lack of PPE
- Over Use of PPE
- Reusing PPE

Single use only
- Masks
  - Are single use only and should NEVER be reused (EVER)
- Gloves
  - Remove/discard gloves when
    - Torn and
    - When heavily soiled (even during use on the same patient) and
    - When completed with care, before leaving the area
  - Do not wear the same pair of gloves for the care of more than one patient
  - Do not remove gloves and re-don used gloves for care of the same patient
  - Do not wash exam gloves between uses

- Gowns
- Most Caps
- Shoe Covers
- Many face shields

PPE should be donned according to the following sequence:
- Gown first
- Mask or respirator
- Goggles or face shield
- Gloves last
Personal Protective Equipment (PPE) (continued)

- PPE should be removed according to the following sequence:
  - Gloves
  - Face shield or goggles
  - Gown
  - Mask

- Reusable PPE
  - Always clean and decontaminate between uses
  - Do not store goggles on your head

Environment of Care

- No eating, drinking, applying cosmetics, lip balm or contact lenses where blood or Other Potential Infectious Materials may be present - 29 CFR 1910.1030 (d)(2)(ix)
  - LID OR NO LID

- Separate refrigerators
  - Medications
  - Food
  - Specimens

Take Home Thoughts:

These staff might need training:

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Do we reprocess 1x use items:

____________________________________________________________________________________

PPE to evaluate for reuse:

____________________________________________________________________________________
Environment of Care (continued)

Adequate Cleaning Procedures
Inadequate cleaning puts subsequent patients seen at risk for acquisition of the organism

Spaulding’s Classification

A strategy for sterilization or disinfection of inanimate objects and surfaces based on the degree of risk involved in their use

EH Spaulding, 1939

- Non Critical Instruments/Items/Surfaces
  - Contact intact skin, but not mucous membranes
  - Disinfected between patients with an:
    - Intermediate-disinfectant (e.g., EPA-registered hospital disinfectant with a tuberculocidal claim) or
    - Low-level disinfectant (e.g., EPA-registered hospital disinfectant with HIV and HBV claim).
  - Effective March 2016:
    - CLEAN AND DISINFECT CLINICAL CONTACT SURFACES THAT ARE NOT BARRIER PROTECTED WITH AN EPA-REGISTERED HOSPITAL DISINFECTANT AFTER EACH PATIENT. USE AN INTERMEDIATE LEVEL DISINFECTANT (I.E. TUBERCULOCIDAL CLAIM) IF VISIBLY CONTAMINATED WITH BLOOD

- EPA Listed Antimicrobial Products
  - D List (low level)
    - Effective against Human HIV-1 and Hepatitis B/C Virus
  - E List (intermediate level)
    - Effective against Mycobacterium tuberculosis, Human HIV-1 and hepatitis B virus
    - Required for blood/ Other Potentially Infectious Materials spills in excess of 10cc (or 1:10 sodium hypochlorite)
  - Clostridium Difficile & Norovirus are ONLY killed with bleach
  - B List (tuberculocidal)

- Decontamination Techniques
  - Used for low and intermediate level solutions only
  - Spray/wipe/spray
  - Wipe/wipe
  - Spray/wipe/wipe
  - Spray/rinse/spray

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Environment of Care (continued)

- Barrier Protection
- Contact/Dwell Time
  - The minimum time a pre-cleaned surface MUST remain wet before considered decontaminated
  - The minimum time an object must remain COMPLETELY immersed in a solution prior to removal
- Clinical Contact Surfaces
  - Computers
  - Countertops
  - Drawer Handles
  - Light Handles
  - Pens
  - Telephones
  - Radiograph Equipment
  - Blood Pressure Cuffs
  - Pulse Oximeters
- Housekeeping Surfaces
  - Sinks
  - Floors
  - Walls

Floors

- Carpet/Upholstery
  - Avoid using carpeting and cloth-upholstered furnishings in dental operatories, laboratories, and instrument processing areas
  - In reprocessing, the floors, walls, ceiling, and work surfaces should be constructed of nonporous materials that will withstand frequent cleaning and wet conditions
- Hard surfaces
  - Hospital grade disinfectant
    - *Staphylococcus aureus*
    - *Salmonella choleraeuis*
    - *Pseudomonas aeruginosa*
  - A hospital grade disinfectant should be used for floors
  - The solution used to mop floors should be changed at not less than 60 minute intervals to minimize the risk of microbial cross contamination
  - Mop heads should be laundered with detergent in water $>160^\circ F (>71^\circ C)$ for $>25$ minutes each day of use and dried thoroughly prior to reuse
  - Consider disposable cloths/mop heads
Environment of Care (continued)

Spaulding’s Classification

A strategy for sterilization or disinfection of inanimate objects and surfaces based on the degree of risk involved in their use

EH Spaulding, 1939

- Non-Critical Instruments
  - Contact intact skin, but not mucous membranes
- Semi-Critical Instruments:
  - May contact mucous membranes or non-intact skin but do not penetrate soft tissue
  - Heat sterilize
  - High-level disinfect ONLY if heat sensitive
  - Sheathing does not change semi-critical status
    - When probe covers are available, use a probe cover or condom to reduce the level of microbial contamination
    - Do not use a lower category of disinfection or cease to follow the appropriate disinfectant recommendations when using probe covers because these sheaths and condoms can fail
- Be sure to check with the manufacturer of your semicritical devices for durability and heat tolerance when exposed to sterilization devices and techniques
- Semi-critical devices I should evaluate

- Critical Instruments:
  - Penetrate mucous membranes or contact bone, the bloodstream or other normally sterile tissues of the body
  - Heat sterilize between uses or use sterile single-use, disposable devices

Review

- Low/Intermediate Level Disinfection
  - Non critical items
  - Clinical contact surfaces
- High Level Disinfection
  - Heat sensitive semi critical items
- Sterilization
  - All heat tolerant semicritical and critical items
**Instrument Processing**

- Transport containers
  - Instruments should be placed in an appropriate container at the point of use to prevent percutaneous injuries during the transport to sterile reprocessing
  - Marked with a biohazard label or other means of identifying contaminated contents
- Linear process
- The central processing area(s) ideally should be divided into at least three areas:
  - Decontamination
  - Packaging
  - Sterilization and storage
  - Physical barriers should separate the decontamination area from the other sections to contain contamination on used items
Instrument Processing

- The central processing staff should wear personal protective equipment
  - Fluid impervious apron/gown
  - Goggles
  - Masks
  - Utility gloves
    - Operators
    - Approved gloves

"DHCP wear puncture- and chemical-resistant utility gloves when cleaning instruments and performing housekeeping tasks involving contact with blood or OPIM"

Summary of Infection Prevention Practices in Dental Settings
CDC, March 2016

- Label Areas
  - Dirty
  - Clean/Sterile
- Pre-cleaning
  - Presoak should begin as soon as possible after instruments are used
  - Must be enzymatic
- **Never** use glutaraldehyde for holding or precleaning
- Keep the lid on ultrasonic units
- Vertically soaking lumened instruments prevents air bubbles ensuring solution contact
- If scrubbing required, always use a long brush
  - Clean/disinfect/sterilize brushes daily
Solution Management

- **TTURD**
  - **Time**
    - Time in solution determined by manufacturer
      - In ultrasonic vs. manual
      - Daily limits
    - Post activation use life
  - **Temp**
    - Diluent temp
    - Processing temp/ultrasonic
    - Monitor & document
  - **Use pattern**
    - Mechanical vs. ultrasonic
    - Material compatibility
  - **Reuse**
    - Single use only
    - 8 hours
    - Daily
    - When cloudy
  - **Dilution**
    - Vessel volume
    - Measure solution
Pre-Cleaning
- Dishwashers/Disinfectors
  - High-level claims for some equipment
- Have manufacturer guidelines for reprocessing each item readily available and accessible
- Items composed of more than one part or piece should be disassembled to expose all surfaces to the cleaning process
- Open all articulating instruments prior to precleaning and packaging
- Instruments must be completely immersed in solution
- Adequate contact with solution
- Flush lumen

Cold Sterilization/High Level Disinfection
- **Never** use glutaraldehyde based solutions (or any high-level disinfectant) as a surface disinfectant or holding solution
- **Never** use glutaraldehyde as pre-cleaning solution prior to steam/heat sterilization
- Glutaraldehyde is most commonly used high-level disinfectant
- Glutaraldehyde alternatives
  - Ortho-phthalaldehyde (OPA)
  - Sporox II
  - Compliance
- Be certain to flush the lumen devices, both precleaning and with cold sterilant solution (e.g. Nola, scopes) and with appropriate water solutions following high level disinfection
- Be certain all items are completely submerged
- Cold sterilization dwell time
- Cold sterilization quality control
- Rinse
  - Three separate copious volumes of water - DISCARD
  - Sterile water as indicated
Instrument Processing

- Lubrication - articulating instruments
- Dry instruments
- Visually inspect for rust
- Visually inspect for cleanliness
- If visibly free of rust & contaminants on all surfaces, proceed to bagging/pouching/wrapping

If it isn’t clean, it isn’t sterile
Instrument Packaging

- Only items sterilized and packaged in materials cleared by the FDA for maintenance of sterility can be stored
  - Allow adequate air removal from and steam penetration of the package contents
  - Provide an adequate barrier to microorganisms or their vehicles
  - Resist tearing or puncture
  - Allow a method of sealing that results in a complete seal that is tamper-evident and provides seal integrity
  - Allow for ease of aseptic presentation
  - Be non-linting
- All articulating instruments should be bagged and sterilized in open position
- Never rubber band or tape instruments together
- Never staple, pin or otherwise close pouches/wrappers
- Surgical supplies such as syringes, needles, dressings, cotton balls, and similar items should be individually packaged
- Syringes should be packaged so that the barrel lies next to the plunger
- Concave and broad, flat instruments should be placed on their side
- Similar items requiring the same cycle parameters should be grouped together
- Always seal pouches at opening
- Pouches
  - Seal integrity
    - No “short-sheeting”
  - Dual indicators
    - Internal indicator
    - External indicator
  - Process specific
    - Steam
    - Chemiclave
    - Dry Heat
    - Ethylene Oxide
  - 20% longer
Sterilization

- Cassettes
  - Avoid tenting and gapping
  - Sequential wrap: two sheets of the standard sterilization wrap, one wrapped after the other
  - Non-sequential wrap: two sheets wrapped at the same time so that the wrapping needs to be performed only once
  - Internal indicator (process specific)
  - External indicator (process specific)
  - Inspect wrappers for integrity

Label Pouches

- Mark all instrument pouches and wrappers prior to processing
- Labels should remain secure until use
- Only mark on plastic side
- Only mark on sterilizer indicator tape
- Use permanent markers

Take Home Thoughts:

Three potential cross contamination scenarios:

- Semi-critical items not being sterilized:
- Solutions we might use incorrectly:
- Are instruments open and dual indicator pouches used:

Sterilizer Types

- Dry Heat
- Unsaturated Chemical Vapor
- Steam
  - Gravity Displacement
  - Pressure Pulse
  - Class B/Pre-Vac
    - Bowie Dick
Sterilizer Loading

- Allow for proper sterilant circulation
- Non-perforated containers should be placed on their edge (e.g., basins)
- Small items should be loosely placed in wire baskets
- Textiles should be placed on edge so that all fabric layers are perpendicular to the shelf
- Placing metal items above textile items should be avoided
- Peel packs should be placed on edge in perforated or mesh bottom racks or baskets
- Paper side of one pouch next to the plastic side of the next pouch

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<th>Sterilizer</th>
<th>Loading Technique</th>
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<tr>
<td>StatIM 2K, 5K, 7K</td>
<td>On edge with rack or paper side down</td>
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<tr>
<td>Midmark M3, M7, M9, M11</td>
<td>Lengthwise or edge with paper side down</td>
</tr>
<tr>
<td>SciCan Bravo</td>
<td>On edge</td>
</tr>
<tr>
<td>Delta Q</td>
<td>On edge, paper side down</td>
</tr>
<tr>
<td>Tuttnauer E, EK, EA, EKA</td>
<td>On edge with rack, or plastic down if flexible</td>
</tr>
<tr>
<td>Tuttnauer EZ</td>
<td>On edge or plastic down</td>
</tr>
<tr>
<td>Tuttnauer M, MK</td>
<td>On edge with rack, one layer only flat, plastic down</td>
</tr>
<tr>
<td>Lisa</td>
<td>Verticle if possible, otherwise plastic down</td>
</tr>
<tr>
<td></td>
<td>Cassettes verticle</td>
</tr>
</tbody>
</table>

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Sterilizer Loading

- Large peel packs may be placed flat (tabletop)
- Perforated trays should be placed so the tray is parallel to the shelf
- Choose the correct cycle
  - Unwrapped
  - Wrapped
  - Hollow
  - Solid
  - Plastics
  - Glass
  - Rubber

Immediate Use/Flash Sterilization

- Thorough cleaning and drying of instruments precedes the unwrapped sterilization cycle
- Include BI's -- ONLY immediate use biological indicators may be used
- Mechanical monitors are checked and chemical indicators used for each cycle
- Items are transported aseptically to the point of use to maintain sterility

Association for the Advancement of Medical Instrumentation

"Instrument inventories should be sufficient to meet anticipated surgical volume and permit the time to complete all critical elements of reprocessing."

AAMI ST79 2013
Immediate Use Statement

Unloading

- Allow packages to dry in the sterilizer before they are handled to avoid contamination
- Packs should not be touched until they are cool and dry
- Confirm release criteria met AND document
Sterilization Documentation

- For each sterilization cycle record
  - The date & time
  - The type of sterilizer and cycle used
  - The load identification number
  - The load contents
  - The exposure parameters (e.g., time and temperature)
  - The operator’s name or initials
  - The results of Bowie-Dick testing, if applicable
  - Results of mechanical, chemical, and biological monitoring (release criteria)

“. . . Basically, the information on the "load content" listing should be sufficiently detailed to enable you to identify and retrieve instruments and devices from circulation and bring them back to the reprocessing area should an instrument/device recall be issued. This would mean that the contents of each package in the load are described in detail – type of item, number of each type, ultimate destination of the items (e.g., surgery vs. exam room). . . .”

CDC-INFO: Inquiry - LOAD CONTENTS DEFINED
Email response 05/12/2014

Once instruments or implements have been sterilized, items should remain wrapped until they are needed for use.


"The current operating principles of dry heat technology preclude packaging of any type during sterilization. This has rendered the DDS series of sterilizers non-compliant in locales that require bagging of instruments during sterilization. We are currently investigating a number of steam options to expand our sterilization portfolio.”

April 25, 2013
Dentonix

http://208.106.197.14/JournalPost/2013/04/25/dds-7000-updates/69

Quality Control

- Event Based Sterilization
  - Product, once sterilized, should remain sterile until some event causes the item to become contaminated (e.g., tear in packaging, packaging becomes wet, seal is broken)
  - If processed items are subject to degradation, use expiration dates per manufacturer guidelines (e.g. latex)
Biological Indicators (Spore Test)

- Chemical indicators and/or integrators are NOT a substitute for biological indicators
- Weekly at minimum
- Daily preferred

"If a sterilizer is used frequently (e.g., several loads per day), daily use of biological indicators allows earlier discovery of equipment malfunctions or procedural errors and thus minimizes the extent of patient surveillance and product recall needed in the event of a positive biological indicator."


Biological Indicators

- Weekly at minimum
- FULLY LOADED
- Process Challenge Device
- Process a control
- Most difficult spot
  - Front/Center

Additional Testing

- If sterilizer moved
- Following major service
- Following failure (3x)
- Prior to 1st use
<table>
<thead>
<tr>
<th>Routine load release</th>
<th>Routine sterilizer efficacy monitoring</th>
<th>Sterilizer qualification testing (after installation, relocation, malfunctions, major repairs, sterilization process failures)</th>
<th>Periodic product quality assurance testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non implants</td>
<td>Implants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical monitoring</td>
<td>Physical monitoring of cycle</td>
<td>Physical monitoring of cycle External and internal chemical indicator monitoring of packages</td>
<td>Physical monitoring of Cycle Placement of BIs and, CIs within product test samples</td>
</tr>
<tr>
<td>of Cycle</td>
<td>Physical monitoring of cycle</td>
<td>Weekly, preferably daily (each day the sterilizer is used), monitoring with a PCD containing a BI. (The PCD may also contain a CI.)</td>
<td></td>
</tr>
<tr>
<td>External and internal</td>
<td>External and internal chemical indicator</td>
<td>For sterilizers larger than 2 cubic feet and for IUSS cycles, monitoring of three consecutive cycles in an empty chamber with a PCD containing a BI. (The PCD may also contain a CI.)</td>
<td></td>
</tr>
<tr>
<td>chemical indicator</td>
<td>External and internal chemical indicator</td>
<td>For table-top sterilizers, monitoring of three consecutive cycles in a fully loaded chamber with a PCD containing a BI. (The PCD may also contain a CI.)</td>
<td></td>
</tr>
<tr>
<td>monitoring of packages</td>
<td>Physical monitoring of every load with a PCD containing a BI and a Class 5 integrating indicator</td>
<td>For dynamic-air-removal sterilizers, daily Bowie-Dick testing in an empty chamber with a Bowie-Dick test pack</td>
<td></td>
</tr>
<tr>
<td>Optional monitoring</td>
<td>Monitoring of every load with a PCD</td>
<td>In IUSS cycles, monitoring is done in an empty chamber. For dynamic-air removal sterilizers, daily Bowie-Dick testing in an empty chamber</td>
<td></td>
</tr>
<tr>
<td>of the load with a PCD</td>
<td>containing a BI and a Class 5 integrating indicator</td>
<td>For sterilizers larger than 2 cubic feet and for table-top sterilizers, monitoring is done</td>
<td></td>
</tr>
<tr>
<td>containing one of the</td>
<td>Physical monitoring of cycle</td>
<td>in a fully loaded chamber.</td>
<td></td>
</tr>
<tr>
<td>following:</td>
<td>Physical monitoring of cycle</td>
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<td></td>
</tr>
<tr>
<td>• a BI and a Class 5</td>
<td>Physical monitoring of cycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>integrating indicator</td>
<td>Physical monitoring of cycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• a Class 5 integrating indicator</td>
<td>Physical monitoring of cycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• a Class 6 emulating indicator</td>
<td>Physical monitoring of cycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical monitoring of cycle</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Biological Indicator Options

- Strips (mail-out) vs. Ampules (in-office)

Sterilizer Failure

- Single steam sterilizer failure report does **NOT** indicate failure in the absence of an identifiable cause
- Instrument retrieval unnecessary in the absence of an identifiable cause
- A single positive spore test on an Ethylene Oxide sterilizer **DOES** indicate failure

Competency Verification

- To achieve and maintain competency, train each member of the staff that reprocesses semicritical and/or critical instruments as follows
  - Provide hands-on training according to the institutional policy for reprocessing critical and semicritical devices
  - Supervise all work until competency is documented for each reprocessing task
  - Conduct competency testing at the beginning of employment and regularly thereafter (e.g., annually)
  - Review the written reprocessing instructions regularly to ensure they comply with the scientific literature and the manufacturer’s instructions
- All stakeholders should identify what corrective actions will be implemented
- Complete for all clinical staff assigned to reprocess semi-critical & critical devices
- Certify those processes which are
  - High risk
  - High volume
  - With a high degree of errors
Dental Waterline Management

- ALARA
- 200,000 CFU/mL within 5 days of installation
- Regardless of source water used, untreated or unfiltered Dental Unit Water Lines are unlikely to meet drinking water standards
- Using self-contained source water with <500CFU/mL with untreated lines is futile
- Sterilizing handpieces only to run contaminated water through them is futile
- Biofilms
  - Small diameter
  - Low flow rate
- Management varies by equipment manufacturer
- Step One
  - Baseline cultures of all lines used
    - Flush waterlines for 2 minutes
    - Fill container without touching sides (cross contamination)
  - Minimum Expectations
    - <500cfu/mL per EPA/ADA
Dental Waterline Management (continued)

- Step Two
  - Shock Treatment
    - Duration
    - Frequency
    - Post shock flush
- Step Three
  - Maintenance
    - Microbial Stasis products
      - Added to each bottle/reservoir
      - Stable for 14-28 days
      - Slight color change
    - Annual combination products
- Reculture
  - The key element in maintaining clean water in Dental Unit Water Lines is controlling biofilm accumulation
  - Biofilm serves as a reservoir of microorganisms, and if not controlled, the biofilm will lead to continual contamination of Dental Unit Water Lines. Consequently, the water they deliver will never meet minimum expectations
- Sterile (single use) solutions for all surgical cases with separate delivery system

Do not advise patients to close their lips tightly around the tip of the saliva ejector to evacuate oral fluids

- Discharge air/water for 20-30 seconds
- Anti-retraction valves/ejectors
- Avoid heating water
- Separate water reservoirs
Amalgam Separation

- ADA Guidelines
- EPA Guidelines
- Memorandum of Understanding
- 2016 Deadline for compliance
  - Installation of amalgam separator
  - EPA-HQ-OW-2014-0693
- NO bleach in suction lines
  - Methylates the Hg
- Dispose of the following with an approved amalgam disposal company:
  - Teeth containing amalgam
  - All chairside traps involved in amalgam removal
  - All central traps in facilities that remove or restore with amalgam
  - All scrap amalgam

Hand Hygiene

- Alcohol based hand gel is the PREFERRED method for routine hand hygiene
- Perform hand hygiene:
  - Before and after touching the patient
  - Before handling an invasive device for patient care, regardless of whether or not gloves are used
  - After contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings
  - If moving from a contaminated body site to another body site during care of the same patient
  - After contact with inanimate surfaces and objects (including medical equipment) in the immediate vicinity of the patient
  - Before handling medications
  - After removing sterile or non-sterile gloves
Hand Hygiene 2016 Revisions

- After barehanded touching of instruments, equipment, and materials and other objects likely to be contaminated by blood, saliva or respiratory secretions
- Before and after treating each patient
- Before putting on gloves and again immediately after removing gloves
- Use soap and water when hands are visibly soiled (e.g. blood, body fluids); otherwise an alcohol based hand rub may be used
- Alcohol Based Hand Rub (ABHR)
  - Never use alcohol based handrubs near open flames
  - Never store alcohol based handrubs near high temperatures
  - Never store alcohol based handrubs near ignition sources
  - Isopropanol and ethanol are the only active ingredients the FDA has recognized
    - 60%–95%
  - Applying small volumes of alcohol based hand rub to the hands is NOT more effective than washing hands with plain soap and water
  - Use the amount of Alcohol Based Hand Rub recommended by the manufacturer
  - If hands feel dry after rubbing hands together for 10–15 seconds, an insufficient volume of product likely was applied
- IMMEDIATE Hand hygiene is ALWAYS the final step after removing and disposing of PPE
Hand Hygiene (continued)

- Soap and Water
  - Wash hands with soap and 
    warm water
    - When visibly dirty or visibly soiled with blood or other body fluids or
    - After using the toilet
    - If exposure to potential spore-forming pathogens is strongly suspected or proven, including outbreaks of *Clostridium difficile*, hand washing with soap and water is the preferred means
  - Hand washing should be performed using warm running water and plain or antimicrobial soap for a minimum of 20 seconds
  - Rinse hands with water and dry thoroughly with a disposable towel
  - Turn off water using paper towel
  - Use a paper towel to open the door upon exit

- Surgical Hand Antisepsis is required
  - 2-6 minutes
  - Antimicrobial soap
  - Up to forearms
  - Prior to surgical procedures
  - Prior to donning sterile surgical gloves
    - Biopsy
    - Periodontal Surgery
    - Apical Surgery
    - Implant Cases
    - Surgical Extractions
With regards to water temperature for handwashing purposes, temperatures 38°C (100.4°F) to 42°C (107.6°F) will feel warm on the hands but not so hot to cause irritation with repeated use.

CDC Inquiry Response
February 25, 2013

Soap Dispensers

- Never top off soap dispensers
- Cassette type refills preferred
IMMEDIATE

HAND HYGIENE IS ALWAYS
THE FINAL STEP AFTER REMOVING
AND DISPOSING OF PPE

Take Home Thoughts:

Evaluate instrument placement in sterilizers:

How do we identify/recall instruments:

Are hand hygiene standards being upheld?
We know you have a choice in continuing education, and appreciate that you chose to spend your time with us. Our goal for this program is to provide real world examples and solutions that you can implement in your practice.

If you should have future questions please feel free to contact our office at 702-360-3838 or 877-OSHA-911.

Thank you!
The Compliance Team