Dental Unit Water Quality

Dental unit waterlines (i.e., plastic tubing that carries water to the high-speed handpiece, air/water syringe, and ultrasonic scaler) promote bacterial growth and development of biofilm due to the presence of long narrow-bore tubing, inconsistent flow rates, and the potential for retraction of oral fluids. Dental health care personnel and patients could be placed at risk of adverse health effects if water is not appropriately treated.

All dental units should use systems that treat water to meet drinking water standards (i.e., ≤ 500 CFU/mL of heterotrophic water bacteria). Independent reservoirs—or water-bottle systems—alone are not sufficient. Commercial products and devices are available that can improve the quality of water used in dental treatment.

Consult with the dental unit manufacturer for appropriate water maintenance methods and recommendations for monitoring dental water quality. During surgical procedures,1 use only sterile solutions as a coolant / irrigant using an appropriate delivery device, such as a sterile bulb syringe, sterile tubing that bypasses dental unit waterlines, or sterile single-use devices.

Guidance on dental unit water quality can be found in the *Guidelines for Infection Control in Dental Health-Care Settings* — 2003 (available at: www.cdc.gov/mmwr/PDF/rr/rr5217.pdf), and the CDC Boil-Water Advisories and the Dental Office Fact Sheet (available at: http://www.cdc.gov/oralhealth/infectioncontrol/faq/dentalunitwaterquality.htm).

Key Recommendations for DENTAL UNIT WATER QUALITY in Dental Settings

1. Use water that meets EPA regulatory standards for drinking water (i.e., ≤ 500 CFU / mL of heterotrophic water bacteria) for routine dental treatment output water.
2. Consult with the dental unit manufacturer for appropriate methods and equipment to maintain the quality of dental water.
3. Follow recommendations for monitoring water quality provided by the manufacturer of the unit or waterline treatment product.
4. Use sterile saline or sterile water as a coolant / irrigant when performing surgical procedures.

Low-Speed Motor/Attachment Evaluation

Number of operative operatories: _____

Optimal # motors per operatory = 3

Current # operative motors: _____

Brand:_____

RPMs: _____

Current # contra/latch heads:_____

Number motors needed:_____

Number attachments needed: _____

Hygiene Handpiece Evaluation

Number of hygiene operatories: _____

Optimal # motors per operatory = at least 3

Current # hygiene motors: _____

Brand:_____

RPMs: _____

Number hygiene motors needed: _____

HAYES
REPAIRS | SALES | TRAINING
www.hayeshandpiece.com

Excerpted from the Centers for Disease Control and Prevention

Oral Health Division Recommendations

Summary of Infection Prevention Practices in Dental Settings

Basic Expectations for Safe Care

Sterilization and Disinfection of Patient-Care Items and Devices

Instrument processing requires multiple steps using specialized equipment. Each dental practice should have policies and procedures in place for containing, transporting, and handling instruments and equipment that may be contaminated with blood or body fluids. Manufacturer's instructions for reprocessing reusable dental instruments and equipment should be readily available — ideally in or near the reprocessing area. Most single-use devices are labeled by the manufacturer for only a single use and do not have reprocessing instructions. Use single-use devices for one patient only and dispose of appropriately.

Cleaning, disinfection and sterilization of dental equipment should be assigned to DHCP with training in the required reprocessing steps to ensure reprocessing results in a device that can be safely used for patient care. Training should also include the appropriate use of PPE necessary for safe handling of contaminated equipment.
Patient-care items (e.g., dental instruments, devices, and equipment) are categorized as critical, semicritical, or noncritical, depending on the potential risk for infection associated with their intended use.

- Critical items, such as surgical instruments and periodontal scalers, are those used to penetrate soft tissue or bone. They have the greatest risk of transmitting infection and should always be sterilized using heat.
- Semicritical items (e.g., mouth mirrors, amalgam condensers, reusable dental impression trays) are those that come in contact with mucous membranes or non-intact skin (e.g., exposed skin that is chapped, abraded, or has dermatitis). These items have a lower risk of transmission. Because the majority of semicritical items in dentistry are heat-tolerant, they should also be sterilized using heat. If a semicritical item is heat-sensitive, DHCP should replace it with a heat-tolerant or disposable alternative. If none are available, it should, at a minimum, be processed using high-level disinfection.

Note: Dental handpieces and associated attachments, including low-speed motors and reusable prophylaxis angles, should always be heat sterilized between patients and not high-level or surface disinfected. Although these devices are considered semicritical, studies have shown that their internal

HAYES
REPAIRS | SALES | TRAINING

surfaces can become contaminated with patient materials during use. If these devices are not properly cleaned and heat sterilized, the next patient may be exposed to potentially infectious materials.

Digital radiography sensors are also considered semi-critical and should be protected with a Food and Drug Administration (FDA)-cleared barrier to reduce contamination during use, followed by cleaning and heat-sterilization or high-level disinfection between patients. If the item cannot tolerate these procedures then, at a minimum, protect with an FDA-cleared barrier. In addition, clean and disinfect with an Environmental Protection Agency (EPA)-registered hospital disinfectant with intermediate-level (i.e., tuberculocidal claim) activity between patients. Because these items vary by manufacturer and their ability to be sterilized or high-level disinfected also vary, refer to manufacturer instructions for reprocessing.

- Noncritical patient-care items (e.g., radiograph head / cone, blood pressure cuff, facebow) are those that only contact intact skin. These items pose the least risk of transmission of infection. In the majority of cases, cleaning, or if visibly soiled, cleaning followed by disinfection with an EPA-registered hospital disinfectant is adequate. Protecting these surfaces with disposable barriers might be a preferred alternative.

Cleaning to remove debris and organic contamination from instruments should always occur before disinfection or sterilization. If blood, saliva, and other contamination are not removed, these materials can shield microorganisms and potentially compromise the disinfection or sterilization process. Automated cleaning equipment (e.g., ultrasonic cleaner, washer-disinfector) should be used to remove debris to improve cleaning effectiveness and decrease worker exposure to blood. After cleaning, dried instruments should be inspected, wrapped, packaged, or placed into container systems before heat sterilization. Packages should be labeled to show the sterilizer used, the cycle or load number, the date of sterilization, and, if applicable, the expiration date. This information can help in retrieving processed items in the event of an instrument processing / sterilization failure.

The ability of a sterilizer to reach conditions necessary to achieve sterilization should be monitored using a combination of biological, mechanical, and chemical indicators. Biological indicators, or spore tests, are the most accepted method for monitoring the sterilization process because they assess the sterilization process directly by killing known highly resistant microorganisms (e.g., Geobacillus or Bacillus species). A spore test should be used at least weekly to monitor sterilizers. However, because spore tests are only performed periodically (e.g., once a week, once a day) and the results are usually not obtained immediately, mechanical and chemical monitoring should also be performed.

Mechanical and chemical indicators do not guarantee sterilization; however, they help detect procedural errors and equipment malfunctions. Mechanical monitoring involves checking the sterilizer gauges, computer displays, or printouts; and documenting the sterilization pressure, temperature, and exposure time in your sterilization records. Since these parameters can be observed during the sterilization cycle, this might be the first indication of a problem.

Chemical monitoring uses sensitive chemicals that change color when exposed to high temperatures or combinations of time and temperature. Examples include chemical indicator tapes, strips or tabs, and special markings on packaging materials. Chemical monitoring results are obtained immediately following the sterilization cycle and therefore can provide more timely information about the sterilization cycle than a spore test. A chemical indicator should be used inside every package to verify that the sterilizing agent (e.g., steam) has penetrated the package and reached the instruments inside. If the internal chemical indicator is not visible from the outside of the package, an external indicator should also be used. External indicators can be inspected immediately when removing packages from the sterilizer. If the appropriate color change did not occur, do not use the instruments. Chemical indicators also help to differentiate between processed and unprocessed items, eliminating the possibility of using instruments that have not been sterilized.

Note: A single-parameter internal chemical indicator provides information regarding only one sterilization parameter (e.g., time or temperature). Multiparameter internal chemical indicators are designed to react to ≥ 2 parameters (e.g., time and temperature; or time, temperature, and the presence of steam) and can provide a more reliable indication that sterilization conditions have been met.

Sterilization monitoring (e.g., biological, mechanical, chemical monitoring) and equipment maintenance records are an important component of a dental infection prevention program. Maintaining accurate records ensures cycle parameters have been met and establishes accountability. In addition, if there is a problem with a sterilizer (e.g., unchanged chemical indicator, positive spore test), documentation helps to determine if an instrument recall is necessary.

Ideally, sterile instruments and supplies should be stored in covered or closed cabinets. Wrapped packages of sterilized instruments should be inspected before opening and use to ensure the packaging material has not been compromised (e.g., wet, torn, punctured) during storage. The contents of any compromised packs should be reprocessed (i.e., cleaned, packaged, and heat-sterilized again) before use on a patient.

Recommendations for the cleaning, disinfection, and sterilization of dental equipment can be found in the *Guidelines for Infection Control in Dental Health-Care Settings — 2003* (available at: www.cdc.gov/mmwr/PDF/rr/rr5217.pdf). Recommendations for the cleaning, disinfection, and sterilization of medical equipment are available in the *Guideline for Disinfection* and *Sterilization in Healthcare Facilities* (available at: http://www.cdc.gov/hicpac/pdf/guidelines/Disinfection_Nov_2008.pdf). FDA regulations on reprocessing of single-use devices are available at: http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm071434.

Key Recommendations for STERILIZATION AND DISINFECTION OF PATIENT-CARE DEVICES for Dental Settings

1. Clean and reprocess (disinfect or sterilize) reusable dental equipment appropriately before use on another patient.
2. 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.

a. Have manufacturer instructions for reprocessing reusable dental instruments / equipment readily available, ideally in or near the reprocessing area.

3. Assign responsibilities for reprocessing of dental equipment to DHCP with appropriate training.
4. Wear appropriate PPE when handling and reprocessing contaminated patient equipment.
5. Use mechanical, chemical, and biological monitors according to manufacturer instructions to ensure the effectiveness of the sterilization process. Maintain sterilization records in accordance with state and local regulations.

Adapted from: *Guide to Infection Prevention for Outpatient Settings: Minimum Expectations for Safe Care*
http://www.cdc.gov/hai/settings/outpatient/outpatient-care-guidelines.html