Section 12 Dental Unit Waterlines

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Dental Unit Waterlines

Studies have demonstrated that dental unit waterlines can become colonized with microorganisms, including bacteria, fungi, and protozoa. These microorganisms colonize and replicate on the interior surfaces of the waterline tubing and form a biofilm, which serves as a reservoir that can amplify the number of free-floating (i.e., planktonic) microorganisms in water used for dental treatment. Certain reports associate waterborne infections with dental water systems, and scientific evidence verifies the potential for transmission of waterborne infections and disease in hospital settings and in the community.

The number of bacteria in water used as a coolant/irrigant for non-surgical dental procedures should be as low as reasonably achievable and, at a minimum, <500 CFU/mL. Additionally, the ADA has set a goal of <200 CFU/ml.

Procedures to Maintain Dental Unit Water Quality

Most Dental Units in the College of Dentistry have an independent water source in the form of a water bottle which attaches to the dental unit. The Postgraduate Orthodontics (room 131) and Undergraduate Pediatric Dentistry (room 231) clinics have an innovative water purification system called VistaClear that works through a complex combination of methods including: purified media to alter the oxidation/reduction potential of the water, then, ceramic mechanical filtering (up to .90 microns), and finally chemical agents. Filters are changed at least annually.

Procedures for Dental Units with independent water source

- Water Reservoir
  - The water bottle should be filled at the start of each day.
  - The water bottle should be emptied at the end of each day and placed back on the dental unit.
  - Every three weeks the maintenance staff will switch out the water bottle with a disinfected bottle. The old bottle will be subjected to mechanical forces using a bottle brush to disrupt any bacterial growth and soaked in bleach to kill pathologic microorganisms.

- Sterisil System
  - The College of Dentistry uses the Sterisil system to destroy any potentially harmful pathogens present in the dental unit water system.
  - The Sterisil system consists of a straw that is installed by a quick connect to the existing water pickup tube within the water reservoir bottle.
The straw is made of a silver impregnated resin which reduces biofilms and leaves effluent water at less than 10 cfu.

The Sterisil straw will be exchanged for a new one every year by the maintenance staff (and more frequently if waterline testing indicates).

Regardless of the water source, waterlines in all units will be run for 20-30 seconds between each patient to flush out any materials that might have entered the system.

Dental Unit Waterline Monitoring
Testing will occur in every dental clinic quarterly. One dental unit in each clinic will be chosen each cycle. No unit will be repeated until every unit has been tested.

- The service ConFirm is used to provide waterline monitoring
- When the package from ConFirm arrives place refrigerant pack in the styrofoam lid and place in freezer overnight.
- Collecting the water sample
  1. Obtaining samples should always be conducted just prior to any scheduled waterline maintenance or treatment. Samples must be shipped on Monday, Tuesday or Wednesday only. Do not ship samples on any day preceding a holiday.
  2. Flush waterlines for a minimum of 2 minutes before taking samples.
  3. Collect water samples using the provided sterile collection vials. Fill vials to approximately ¾ full. Do not touch the outlet of the waterline or the interior of the collection vial. Note: The collection tubes contain a dehydrated chlorine neutralizer which is visible in the bottom of the vial.
  4. Label each DUWL sample. Use a permanent marker or the labels provided. Indicate the sample location and the source. For example, samples taken from the air/water syringe in the Endodontics clinic, Operatory 3 will be labeled as: Endo, Op3, a/w.
  5. Complete the sample submission form and return with samples.
  6. Complete the internal monitoring form and keep in the college’s central sterilization file.
- Drop the samples off at the Office for Clinical Affairs for mailing. Place the frozen refrigerant pack with the water samples in the styrofoam shipper, then inside the mailer box.
• Complete US Express Mail shipping label and affix to box. *The package must be mailed the same day the samples are taken, and sent overnight.*

• Results will be faxed or e-mailed to the College after 7 days of incubation.

• Any units that have high test results will be reported to maintenance for a “shock” treatment and evaluation of that clinic area’s waterline maintenance program.