



Dental Unit Waterlines Toolkit



Wisconsin Healthcare-Associated Infections (HAI) Prevention Program
Division of Public Health, Wisconsin Department of Health Services

About this toolkit

This toolkit is intended to help support oral health clinics in maintaining safe water quality for use in dental units. Clinics should note that this toolkit is not a policy or procedural document. Clinics are encouraged to use the content of this toolkit as a resource when creating their own policies and procedures.

This toolkit includes background on dental water treatment and describes recommended processes for ensuring water used in dental units is safe, according to evidence-based guidance provided by the CDC (Centers for Disease Control and Prevention) (<https://www.cdc.gov/dental-infection-control/hcp/summary/index.html>) and the Association for Dental Safety (ADS) (<https://www.myads.org/>), formerly known as the Organization for Safety, Asepsis, and Prevention (OSAP). It is important to note that water for surgical procedures is not covered in this toolkit, as CDC recommends (<https://www.cdc.gov/dental-infection-control/hcp/dental-ipc-faqs/oral-surgical-procedures.html>) the use of sterile water or saline for irrigation during oral surgical procedures. Conventional dental units should not be used to deliver sterile water for oral surgical procedures.

Always check with the dental unit manufacturer to determine how to properly treat, maintain, and test your dental unit waterlines. Follow all manufacturer instructions for use (IFU).

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Dental unit waterlines and water safety

Facility dental unit waterline management

Designate a clinic staff member who can take charge of the dental unit waterline management in the facility. This person should develop written policies and protocols specific to the facility. Any staff member that performs functions related to the treatment and testing of waterlines should be trained. Document this training and retain records of it.

Key steps for water safety

There are several key steps to keeping water safe in oral health care settings including:

- Treat water daily
- Flush waterlines regularly
- Shock the waterlines
- Test water quality regularly

Additional information on each of these steps is included below.

Step 1: Treat water daily

Water that is known to be of acceptable quality according to the Environmental Protection Agency (EPA), should **not** be used in dental units without additional treatment. Dental unit waterlines are narrow, dark, and have a slow, non-continuous flow of water, which makes them an ideal place for bacterial growth, also known as biofilm. Even water that entered the unit in acceptable condition can become contaminated with high levels of bacteria within just days. Contaminated waterlines have been linked to outbreaks in oral health care settings. By treating the water daily, bacterial numbers are significantly reduced.

Regardless of its source (including municipal, well, bottled or distilled), **water should never be used in dental units without daily treatment**. Daily water treatment may be accomplished through the use of an antimicrobial cartridge (commonly referred to as a straw), tablets, or an in-line system. No matter which method is utilized, it is imperative to follow all applicable instructions for use (IFU).



Straw method: This method involves inserting a treated straw that continually releases germicide into the dental unit's bottle of water, which is refilled as needed throughout the day.



Tablet method: This method involves inserting tablets into the dental unit's water bottle. When the water level is low, completely discard all of the water, rinse the bottle, and refill with tap water before inserting the new tablet(s). Allow tablets to dissolve.



In-line method: This method involves a water system that releases metered amounts of germicide. These are often managed by an outside vendor.



Did you know? Treated water should be left in waterlines.

Many continuous water treatment product IFUs state to leave treated water in waterlines at all times. In other words, avoid purging the lines at the end of the day. Be aware that different water treatment products are effective for different lengths of time. Follow IFUs carefully.

Step 2: Flush waterlines regularly

Regular flushing of the waterlines helps reduce bacterial growth by ensuring regular flow of treated water through the waterlines. Flushing at the beginning of the day clears stagnant water. Flushing in between patients reduces the chance of backflow of any patient material that could have been introduced to the lines during patient treatment.



Flush the waterlines at the beginning of the day for two minutes. While this does not reliably improve the water quality, it can help clear stagnant water from the lines. <https://stacks.cdc.gov/view/cdc/6743>



Flush any instruments connected to the waterline for 20 to 30 seconds after every patient to physically flush away debris that may have entered the turbine, air, or waterlines.

Step 3: Shock the waterlines

Regular shocking of the waterlines involves using strong disinfectants to treat the inside of the waterlines. This provides an extra level of assurance that safe water is delivered to patients during treatment. While regular treatment of the dental unit water provides assurance that bacterial levels in the water running through the lines are low, the stronger disinfectants used when shocking help loosen and remove biofilm that has formed on the inside of the waterlines. When shocking, be sure to include all waterlines, including those that are infrequently used.

At a minimum, waterlines should be shocked:

- Before the initial use of a dental unit.
- Before starting a new daily treatment method.
- Monthly, until two consecutive passing tests are achieved.
- Quarterly, after two consecutive monthly passing tests are achieved.
- Whenever results of water testing demonstrate bacterial levels above accepted cutoffs (in other words, a failing result is obtained on water testing)
- As otherwise indicated by IFU or facility policy.

There are many commercially available shocking products available. It is imperative that IFUs are followed for the dental unit as well as the shocking product being used. Keep a log of when shocking was performed, including date, location, person who performed shocking, product

used, and any follow-up that may be needed. A [sample water shocking log](#) is available in this toolkit.

Step 4: Test water quality regularly

It is important to ensure that water used for routine oral treatment meets EPA regulatory standards for drinking water (≤ 500 CFU/mL of bacteria). This is achieved by regular testing of the water. <https://stacks.cdc.gov/view/cdc/6743>

Water testing process

Waterline testing and frequency

Lines to be tested include:

- Highspeed handpiece lines.
- Air and water syringe lines.
- Ultrasonic scaler lines.
- Infrequently or unused lines.

Test your clinic's waterlines:

- When equipment is new.
- When changing the water treatment protocol.
- When a different person takes on responsibility for treating dental unit waterlines.
- After repair of waterlines.
- As otherwise indicated by IFU.

Waterline testing process

- Follow the IFU for the testing product your clinic uses. There are commercial test kits available for both send out and in-clinic use.
- Always collect water aseptically.
 - Wear clean gloves.
 - Do not contaminate the sample.
- Test waterlines either individually or by pooling equal amounts of different water sources together. When troubleshooting units that have not passed water quality testing, pooling samples is not appropriate.
- Prior to shocking, test water quality.

Document the testing process

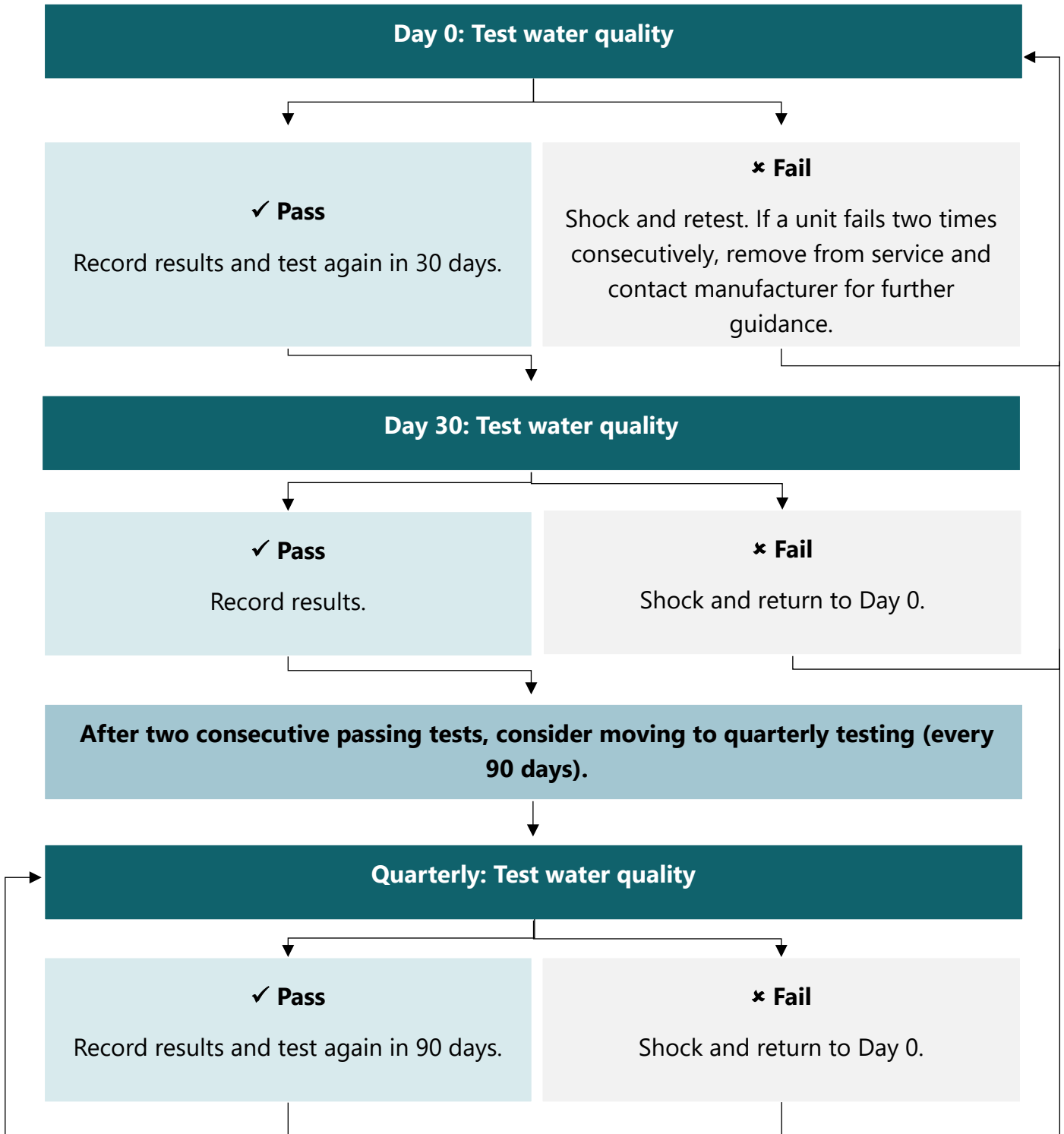
Record the results of your clinic's water testing on the log sheet provided with the testing kit or by creating a water testing log sheet. A sample [water testing log sheet](#) is provided within this toolkit.

Sample water testing log

Sample collection date	Team member who took sample	Room location	Device or water source(s)	Date sample read	Result (pass or fail)	Action taken (for example, move to next testing cycle, shock, or remove from service)
9/6/24	Mary	Op #1	High speed handpiece, air and water line	9/9/24	Pass	OK to continue using waterlines. Test again at next required interval per facility policy
9/6/24	Mary	Op #2	High speed handpiece, air and water line	9/9/24	Fail	Shock and retest; follow facility policy.

Water testing protocol

Where IFUs do not exist for frequency testing, the following protocol is suggested.



Additional resources

- **Infection prevention and control support for Wisconsin dental practices:** The Wisconsin Department of Health Services (DHS) Healthcare-Associated Infections (HAI) Prevention Program offers free, educational, collaborative, and non-regulatory infection prevention and control support services to Wisconsin oral health and dental clinics. Contact the HAI Prevention Program (<https://www.dhs.wisconsin.gov/hai/contacts.htm>) for more information.
- **Infection Prevention in Oral Health Settings webpage** (<https://www.dhs.wisconsin.gov/hai/oral-health.htm>): This webpage developed by the Wisconsin HAI Prevention Program provides a summary of basic infection prevention and control resources for dental and oral health clinics including private dental practices, dental schools, and federally qualified health centers offering dental services.
- **Information for Health Care Professionals webpage** (<https://www.dhs.wisconsin.gov/oral-health/resource-center.htm>): This webpage developed by the DHS Wisconsin Oral Health Program provides professionals with information about oral health and resources to share with patients.
- **Data and Reports webpage** (<https://www.dhs.wisconsin.gov/oral-health/data.htm>): This webpage contains interactive data dashboards, developed by the DHS Wisconsin Oral Health Program, on oral health and pregnancy, opioid prescribing, and dental professional shortages.
- **Dental Unit Waterlines: Questions and Answers webpage** (<https://www.myads.org/topics-duwl-questions-and-answers>): This ADS webpage contains answers to frequently asked questions about dental unit waterlines.
- **Dental Unit Water Quality: Organization for Safety, Asepsis and Prevention white paper** (<https://www.myads.org/assets/docs/resources/toolkits-topics/dental-unit-water-quality-organization-for-safety-asepsis-and-prevention-white-paper-and-recommendations-2018.pdf>): This paper from the Organization for Safety, Asepsis and Prevention includes recommendations and guidance regarding the use of dental units and dental water treatment devices for oral health settings.