

Understanding the Risks of Dental Unit Waterlines

On October 31, 2022 the Centers for Disease Control and Prevention (CDC) released a Health Alert Network advisory on the risks of dental unit waterlines. There have been multiple outbreaks of non-tuberculosis *Mycobacteria* (NTM) in 2015, 2016 and most recently in 2022, specifically in pediatric settings. These outbreaks all have confirmed high levels of bacteria originating from their waterlines that caused infections in children highlighting the need for a comprehensive dental unit waterline maintenance, testing and monitoring program.

Dental units, or dental delivery systems, are equipment that is used during a dental procedure. The dental unit provides tubing for water and compressed air to travel through to operate certain instrumentation that is used in dental procedures. This piece of equipment is essential to complete dental procedures as it is what powers the handpieces and suction for the dentist and team.

Dental unit waterlines are the tubing or hosing lines that run from the dental unit water source to the instrumentation that uses water (e.g., air/ water syringe, handpiece or ultrasonic scaler tip) during a procedure. The water used in dental procedures has the potential to encounter a procedural field allowing direct contact to the bloodstream or other sterile tissue. Ensuring that dental unit water is safe before use is an important part of infection prevention and patient safety.

The tubing in dental units is particularly narrow, usually at only 1/8-1/16 of an inch. The narrow tubing provides a high surface area that water comes into contact with on a constant basis for extended periods of time. The high surface area, in addition to low water pressure, low flow rates, and frequent stagnation make dental unit waterlines a suitable place for microbial biofilm growth.

Biofilm contains microorganisms that have the potential to cause human disease. In addition to non-tuberculosis *Mycobacteria*, some of the more common pathogens identified in dental unit waterlines are *Pseudomonas* and *Legionella*. All of these pathogens have been associated with outbreaks and traced back to dental unit waterlines.

A comprehensive maintenance, testing, and monitoring program specific to dental unit waterlines is the best way to mitigate the risk of biofilm growth in dental unit waterlines.

References:

Centers for Disease Control and Prevention. (2022). Health Alert Network: Outbreaks of Non-tuberculosis *Mycobacteria* Infections Highlight Importance of Maintaining and Monitoring Dental Waterlines. Retrieved from <https://emergency.cdc.gov/han/2022/han00478.asp>

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