



(QAPI 144) Multiprong Interventions, Organizational Behavioral Changes, and Ongoing Monitoring

Reduce Dental Unit Water Line Biofilm Growth, June 2021 to Nov 2023

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Background: Community Health Services, Inc (CHS) is a Federally Qualified Health Center (FQHC) located in Hartford, CT. CHS has five service lines including a high-volume dental clinic. CHS has 13 dental operatories, each with a municipal water source. Each operatory has an iodine filter between the main water source and the operatory chair. The CHS Facility Team changes the filters per the manufacture's information for use (IFU). A water bottle system was present but clamped off many years ago, and thus inoperable. The facility contracts with a Preventative Maintenance Contractor (PMC) who also conducts repairs. In 2021, the need for a Dental Unit Water Line (DUWL) policy and routine procedures for the care and maintenance to reduce, eliminate and monitor biofilm were identified. Administration tasked the Infection Control Manager (ICM) to develop and implement a cost-effective DUWL policy and procedures consistent with best practices and professional recommendations. The ICM also ensures that the Dental Assistants (DAs) and the Registered Dental Hygienists (RDHs) staff are trained and competent related to the policy and procedures.

DUWLs supply the instruments attached to the dental chair unit; however, due to DUWLs' small-diameter long tubing, low or inconsistent flow rates, and the potential for the retraction of oral fluids, DUWLs are prone to bacterial growth and biofilm. Thus, DUWLs care and maintenance are important for quality, safe patient care. The American Dental Association (ADA), the Organization for Safety, Asepsis and Prevention (OSAP), the Centers for Disease Control and Prevention (CDC) and The Joint Commission (TJC) provide general DUWL guidance. However, these recommendations are dated and the availability of specific DUWLs policies, procedures, protocols, monitoring and resources are generally lacking.

Organizational culture, staff buy-in, and adapting behavior changes for conducting infection prevention and control (IPC) practices are key to compliance. The CHS Dental Director, the dental staff, and the facility director have long standing tenure. CHS has an established Infection Control Liaison (ICLs) Program – the CDA and one of the DAs in this project are established dental ICLs. The ICM started in 8/2020; the CQO in 12/2021, the PM in 10/2022. In 2023 Senior Management Team (SMT) revitalized Intentional Culture initiatives.

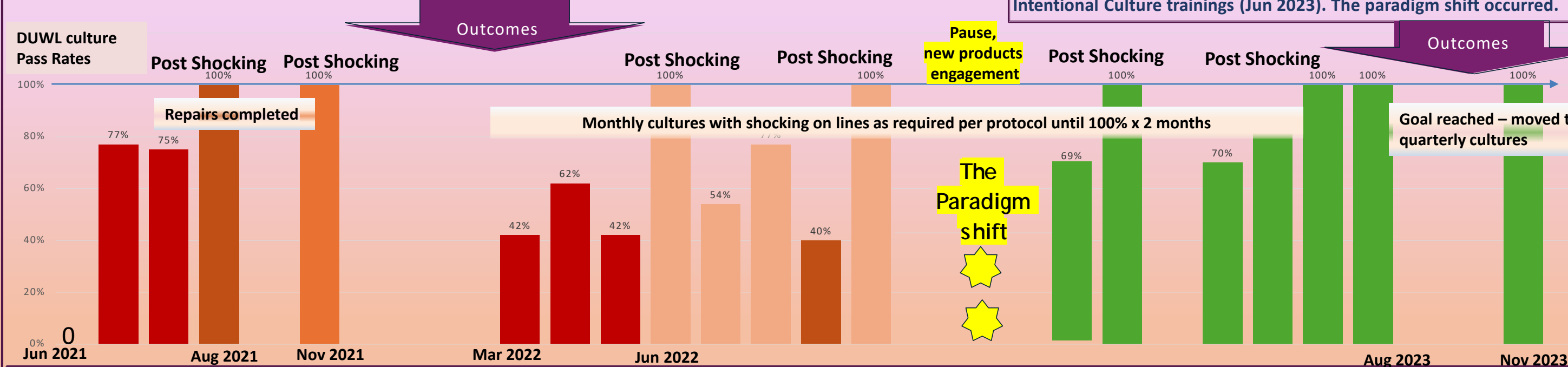
References:

- [dental-unit-water-quality-organization-for-safety-asepsis-and-prevention-white-paper-and-recommendations-2018.pdf \(osap.org\)](#)
- [HAN Archive - 00478 | Health Alert Network \(HAN\) \(cdc.gov\)](#)
- [Infection Prevention & Control in Dental Settings | Division of Oral Health \(cdc.gov\)](#)
- [Dental Unit Water Quality \(cdc.gov\)](#)
- [Dental Unit Waterlines | FDA](#)

Methods/TimeLine: The Goal was to reach two consecutive DUWL culture results with 100% pass rate. The ICM collaborated with administration, the Dental Director and staff using a collaborative science-based approach, studying the literature, recommendations and IFUs. The ICM listened to the staff explain the history and share their current knowledge, practices and asked for their input for possible solutions for developing and implementing a DUWL policy and procedures (Jun 2021). The ICM developed a DUWL competency aligned with the policy and conducted education (Jul 2021–present). Staff competencies were repeated by ICM and the PMC to help with learning and behavior changes. The OSAP DUWL White Paper was circulated to DD and staff. The ICM, Facility Manager and ICLs assessed DUWLs in the 13 operatories. The ICM conducted baseline DUWL cultures with the PMC (Aug 2021). All DUWLs culture results did not pass and required shocking (Aug 2021). The PMC was engaged to repair the water bottle system and shock the DUWLs (Completed Nov 2021 due to back order with parts). The PMC contractor shocked the DUWLs using 70% hydrochloric acid (bleach). Immediate re-culture results were negative. the ICM was instructed to develop an inhouse cost effective culture monitoring and shocking system using bleach (Nov 2021-Aug 2022). Culture results were difficult to read due to the black background of the culture medium. The bleach solution used for shocking was unpleasant to the staff and patients and highly corrosive with ongoing use. Both factors led to staff frustration with the process. A new Dental PM joined the dental team. Repairs and identifying DUWL infection control practice breaks was a multi month process. Tensions mounted (Jan 2023) due to the ongoing difficulties with using bleach, the dark culture medium and the change in ICP practices.



Methods/TimeLine: The CDA presented new product options to the DD. The DD and staff attended an online CDC DUWL program (Jan 2023). The DD and staff met with a sales representative. A new pleasant smelling shocking product was introduced and selected. (Jan/Feb 2023). The use of a culture medium with a light-colored background that was easier to read, was also implemented. Staff became engaged in all aspects of the process including testing. ICM repeated education but stepped back as more of a support role. The sales rep helped to transition to the new products for the first cycle of testing and shocking (Feb/Mar 2023). The DD met with the ICM and supported bimonthly staff meetings. Senior Leadership conducted Intentional Culture trainings (Jun 2023). The paradigm shift occurred.



Quantitative Results: Initial DUWL culture results were 100% failure; 100% pass rate after shocking by Aug 2023 100% pass with no shocking needed was achieved. The goal of two consecutive culture results at 100% was met. The next scheduled quarterly testing also revealed 100% pass rate (Nov 2023). Two consecutive cycles with 100% pass rate without shocking intervention were achieved.

Qualitative Results: Staff buy-in, adaptive behavior changes, and teamwork shifted over a 16-month period and paralleled the excellent outcomes. These are key elements needed to improve infection prevention and control practices.

Discussion: The timeline of the interventions illustrates the importance of the impact of organizational culture, staff buy in, administrative support, and adaptive behavior changes on the project outcomes. The DUWLs was a new policy and procedure for all and had a significant learning curve. The ICM collaborated with administration, the DD and staff using a collaborative science-based approach; however, identifying a department champion, and being attentive to your own constructive compassionate human interactions and knowing when to step back and step in were also critically important. At times science, communication and behavior changes have both synergistic negative and positive effect on the project outcomes. The staff's ownership, dedication, and pride in their work led to excellence. Team building takes time; yet is a key element for improving outcomes.

Next Steps/ Recommendations: Continue Quality Improving activities and metrics, ongoing monitoring, staff engagement, and annual competencies. Advocate for, encourage and participate in updated dental guidelines.