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Effects of a Chlorhexidine Irrigant on Dental Unit Waterline Contamination. R. PUTTAIAH, C.M. SARGENT*, R. SPEARS, R. CEDERBERG, D. POWERS. Baylor College of Dentistry, The Texas A&M University System Health Science Center, Dallas, Texas.

Dental unit waterlines harbor biofilms and microorganisms that contaminate dental treatment water. The purpose of this study was to evaluate in-vitro efficacy of a 0.12% chlorhexidine gluconate solution (CHG) in controlling both the biofilms and the contamination of the treatment water when used with different dilutions. An automated multi-group dental unit waterline simulation system built to scale and function replicating 4 dental unit waterline system was used in this study. Three treatment groups (G1, G2 and G3) and one control group (G4) were evaluated in this 6 week study. G1 and G3 had mature naturally occurring biofilms in the lines while G2 and G4 had lines free of biofilm. G1 and G3 demonstrated initial contamination in excess of 400,000 colony forming units per mL (CFU/mL) while the others less than 100 CFU/mL. G1, G2 and G3 were treated with undiluted solution over the first weekend. G1 used 1:5 a dilution as an irrigant/coolant for simulated daily use during the first week and a 1:20 dilution for the remainder of the study. G2 used a 1:10 dilution and G3 used a 1:5 dilution throughout the study and served as a control. G4 used tap water as an irrigant/coolant throughout the study. Baseline and post study scanning electron microscopy was conducted on representative samples of lines from each group to study the presence/absence of biofilms. Heterotrophic plate counts using R2A agar were conducted at baseline and twice weekly for each group and the absolute CFU/mL were converted to log₁₀ values. Results indicated that the biofilms were controlled in all treatment groups. Heterotrophic plate counts indicated that the effluent contamination in the lines was reduced to ≤ 10 CFU/mL in all treatment groups and remained, while the control group reached contamination levels $\geq 40,000$ by the third week of the study. The results in this study suggest that the periodic contact of a 0.12% CHG solution over the weekend followed by use of up to 1:20 dilution of the 0.12% CHG solution as an irrigant is effective in controlling dental unit waterline biofilms and dental treatment water contamination. Support by Diagnostic Sciences, Baylor College of Dentistry - TAMUS HSC and Dentsply Preventive Care.

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New Protocols for Hard Surface Disinfectant Efficacy Testing. J.BARZYK*, N.J. GRIMAUDDO, E.A.LADO (University of Florida, College of Dentistry, Gainesville, FL).

Hard surface disinfection is a major concern in dental practice for controlling the spread of infectious diseases. The goal of obtaining approval for a disinfectant has superceded attempts to develop a universal method for evaluating the efficacy of disinfectants. The purpose of this project was to develop and analyze new methods of disinfectant efficacy evaluations compared to the accepted standard test designed by the Association of Official Analytical Chemists (AOAC). AOAC protocol 961.02 was compared to two experimental protocols that utilized frosted glass rods to simulate more closely irregular clinical work surfaces as opposed to smooth glass slides. *Pseudomonas aeruginosa* ATCC 15442 was cultured in thioglycollate medium and used for the three protocols. Frosted glass rods were inoculated with *P. aeruginosa*, sprayed with a test disinfectant, not wiped or wiped dry with sterile gauze and placed into media. 360 trials each of sterile distilled water, bleach (sodium hypochlorite), Biosurf® (ethanol-based), Biotext® (ethanol-based), and Birex se® (phenol-based) were completed for each protocol and read for growth after 48 h. Positive results were gram-stained identifying *P. aeruginosa* in all samples. The total pass rate for each protocol was 58.4%(std.dev. 43), 65.4%(std.dev. 42), and 69.9% (std.dev.42). The three protocol differences were not statistically significant. Biosurf® and Biotext® exhibited significantly higher kill rates in all three protocols (98%). Bleach and phenol-based disinfectants were consistent in all three tests with kill rates of 60% and 40%, respectively. This data supports the theory that the new efficacy protocols are comparable to AOAC standards and should be acceptable as a more clinically relevant hard surface disinfectant testing method. Supported by UFCO Student Summer Research Fellowship and Colgate-Palmolive Co.