0996 Cross-contamination of PSP Sensors in a Preclinical Setting

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Previous studies reporting a single operator using PSP sensors in pure culture of S. mutans suggested the efficacy of the barrier envelopes. Also, it was suggested that there may be some additional benefit of a Prophene™ plus wipe. The current study was designed to determine if these conclusions would extend to multiple uses with intraoral exposure and naive operators.

Objectives: This study examined the effectiveness of barrier envelopes in preventing sensor contamination. Methods: Thirty-six dental hygiene students were randomly assigned to either Dry (wipe barrier with dry paper towel) or Disinfectant (Prophene™ plus wipe followed by dry wipe) groups. Each student served as operator and patient. The sterile, enveloped sensor was placed in the peer mouth to simulate an exposure. Orally-exposed barriers were treated using the assigned protocol, sensors repackaged in fresh envelopes and the simulation, disinfection and repackaging procedures repeated. Following the fourth cycle, sensors were aseptically removed from the barriers to 50ml trypticase soy broth (TSB) and vortexed for 20 sec. Immediately (initial) and after incubation at 37°C for 24h, ten µl of TSB were spotted on mitis-salivarius agar for recovery of oral streptococci. The theoretical limit of detection was 5,000 CFU/sensor. In addition, aliquots of the TSB were assayed for biomass (A660nm). Data were analyzed using Wilcoxon Rank Sum test. Results: Only 4/18 and 1/18 of the respective groups (Dry and Disinfectant) had detectable CFU on initial plating. None exceeded 10⁴ CFU. These differences were not significant. Following 24h incubation, 11/18 from Dry and 18/18 from Disinfectant had detectable CFU (p<0.05). Conclusions: The findings of this study support previous research regarding the effectiveness of barrier envelopes in minimizing microbial contamination of the PSP sensor. This study concludes that barrier envelopes still reduced contamination when sensors were used multiple times in the hands of inexperienced operators.