

# NATURAL HISTORY OF DENTAL PLAQUE ACCUMULATION IN MECHANICALLY VENTILATED ADULTS

Deborah Jefferson, RN, MS  
Cindy Munro, PhD, RN, ANP  
Mary Jo Grap, PhD, RN, ACNP

Virginia Commonwealth University  
Richmond, VA 23298

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Purpose: Oral health is an important topic in the critically ill population. Dental plaque may serve as a reservoir in critically ill patients for potentially pathogenic microorganisms, such as methicillin resistant *Staphylococcus aureus* (MRSA) and *Pseudomonas aeruginosa*. Accumulation of dental plaque and bacterial colonization of the oropharynx is associated with a number of systemic diseases including ventilator associated pneumonia (VAP), COPD, endocarditis and bacteremia. Within 48 hours of admission to the ICU oropharyngeal flora of critically ill patients changes from the usual gram positive streptococci and dental pathogens found in healthy individuals to gram negative organisms, including pathogens that may cause VAP. Although no definitive research has been reported, theoretically, the removal of dental plaque could reduce the development of VAP. Mechanically ventilated patients are dependent on nurses to provide their oral care. Unfortunately, there are no evidence based oral care protocols for critically ill patients. Nurses rely on traditional routine comfort oral care measures which are not effective in plaque removal. Understanding the accumulation pattern of plaque in the intubated patient is essential to the development of an effective standardized oral care program.

Method: Dental plaque was measured in 66 critically ill patients who were control group subjects in a large clinical trial related to oral care intervention. Subjects were enrolled within 24 hours of intubation, and dental plaque was assessed on study days 1, 3, 5 and 7. Dental plaque was measured using the University of Mississippi Oral Hygiene Index; each tooth was divided into 10 standardized sections, and every section of every tooth was scored (plaque present or absent). A fluorescein plaque-disclosing rinse, visible only in ultraviolet light, was used to enhance discrimination of plaque. Placement of the endotracheal tube in relation to teeth was noted on each assessment as well.

Findings: The sample demonstrated diversity in race and gender (52% Black/African American, 44% White and 3% other; 72% male and 27% female). The mean age of the sample was 45 years old. The average length of intubation was 7 days. The mean DMF was 7.7 (plaque results will be presented).

Discussion: Patients arrive in critical care units with preexisting oral hygiene issues which vary over their ICU stay and theoretically increase their vulnerability to systemic disease. Knowing accumulation trends of plaque will guide the development of effective oral care protocols. Such protocols may decrease length of stay, length of intubation and hospital costs in critically ill patients.