

EFFECT OF CHLORHEXIDINE ORAL SPRAY VERSUS MECHANICAL TOOTHBRUSHING AND CHLORHEXIDINE GEL IN DECREASING VENTILATOR ASSOCIATED PNEUMONIA IN CRITICALLY ILL ADULTS

Peggy McCartt, RN,MN,CCRN,ARNP-Author
Dr. Joyce Stechmiller,PhD,ARNP-Co-Author
University of Florida
College of Nursing
PO Box 100197
Gainesville, FL 32610-0197

Pneumonia Chlorhexidine Toothbrushing

Objective: The purpose of this study is to determine if chlorhexidine 0.2% spray applied twice daily at twelve hour intervals versus chlorhexidine gel 0.2% applied every twelve hours with mechanical toothbrushing, can reduce bacterial colonization and ultimately aspiration of oral pathogens into the lungs, thereby reducing nosocomial ventilator associated pneumonia (VAP) in critically ill adults. The limited number of Randomized Controlled Trials (RCT's) conducted to reduce ventilator associated pneumonia is striking. The effectiveness of oral hygiene and the use of antimicrobial agents appears to be promising; therefore, research in this area should be conducted. The Centers for Disease Control (CDC) reports that aspiration of oral pharyngeal pathogens places patients at high risk for developing VAP. However, interventions aimed at preventing bacterial colonization have not been well studied. In addition, increasing nurses' knowledge about the effects of oral hygiene in reducing oral pharyngeal pathogens could help reduce the incidence of VAP. Research results would facilitate development of evidenced based standards related to oral care of critically ill adults at risk to develop VAP.

Design: A randomized control trial of orally ventilated patients using mechanical tooth brushing and chlorhexidine gel 0.2% applied every twelve hours, versus no tooth brushing and the application of chlorhexidine spray 0.2% applied twice daily at twelve hour intervals.

Population: Fifty orally intubated patients in three critical care units in a 321 bed acute care, not for profit, community hospital in Northeast Florida.

Variables: The dependent variables are: oral cultures, oral pH, Clinical Pulmonary Infection Score (CPIS) developed by Pugin et al, which is based on 6 clinical and laboratory variables: 1- white blood cell count, 2-temperature, 3-tracheal secretions, 4-oxygenation (calculated by PaO₂/FiO₂), 5-chest radiograph (radiologist's report) and 6-tracheal aspirate culture, cumulative score on the mini nutritional assessment, backrest elevation and the DMF score (number of decayed, missing or filled teeth) at baseline, 24 hours and 72 hours following implementation of study protocol.

Methods: Utilizing Grap, et al, (2004) analysis for oral cultures; oral culture scores will be assigned a (0-3) ranking, 0= no growth 1=few, 2=moderate or 3=many/large. Each variable in the CPIS is assigned points, and a total CPIS is calculated, with a final score ranging from 0-12. A score of 6 or more is considered to indicate pneumonia. Analysis of Variance will be used for continuous data and Chi Square analysis will be used for categorical data. Descriptive statistics to define group characteristics will be provided.

Findings: Research in progress.

Implications: Adult patients retain their teeth for a longer period of time and are therefore more susceptible to periodontal disease which has been shown to increase oral pathogens. Chemical prophylaxis may play a prominent role in decreasing nosocomial ventilator associated pneumonias and oral pathogens in critically ill adults.