Dental Public Health Project Descriptive Report Form

Name of Project
Integrating Dental Hygienists into Interprofessional Hospital Care Teams
Executive Summary
Integrating dental hygienists into hospital care teams enhances both patient outcomes and interprofessional collaboration. In critical care settings, dental hygienists provide specialized expertise in oral assessment and oral bacterial biofilm management, while promoting a comprehensive approach to managing medically complex patients, all key components that are often overlooked. By collaborating with nursing and medical staff, dental hygienists help standardize oral care practice; deliver bedside education to patients, caregivers, and medical staff; and reinforce evidence-based oral care protocols. These efforts improve oral care compliance and may reduce the risk of hospital-acquired infections, including ventilator associated pneumonia (VAP) and non-ventilator hospital acquired pneumonia (NV-HAP). From an institutional perspective, improving oral care and reducing hospital-acquired infections carries significant operational and financial benefits. Prevention efforts with improved oral care compliance may decrease the median length of hospital stay, thus improving bed availability while enabling additional surgical procedures. These efforts can contribute to increased institutional revenue and reduce avoidable intensive care costs associated with prolonged hospitalization and complications. Educationally, hospital-based interprofessional experiences provide significant educational value for dental hygiene students by enhancing their knowledge, fostering a sense of belonging, and instilling their confidence in providing patient care. These experiences foster critical thinking, broaden clinical perspectives, and reinforce the value of oral care in comprehensive patient care. Overall, incorporating dental hygienists into hospital teams supports higher quality, patient-centered care while strengthening interdisciplinary collaboration.
Name of Program or Organization Submitting Project
Mayo Clinic and Rochester Community and Technical College

Detailed Project Description

Project Overview

1. What problem does the project address? How was it identified?

This project addresses the persistent gap in oral care compliance within hospital settings and its association with preventable hospital-acquired infections, such as VAP and NV-HAP. According to evidence-based protocols, oral care for ventilated patients should be performed every two to four hours by gently brushing teeth with a soft bristled suction toothbrush for 2 minutes using a non-chlorhexidine antiseptic solution and suctioning oral secretions. For non-ventilated patients, patients should be instructed to brush with toothbrush and toothpaste at least twice per day, but ideally four times per day. Oral care, specifically tooth brushing, is cost effective and one of the most modifiable interventions to decrease hospital acquired infections. There are multiple studies showing the association between oral bacteria and ventilator associated pneumonia; however. despite established evidence linking oral bacterial biofilm to systemic complications, oral hygiene practices in hospitalized patients are often inconsistent, deprioritized due to competing clinical demands, or inadequately performed.

This problem was identified through both institutional data and clinical observation. Baseline oral care compliance rates within the hospital were below acceptable standards, despite the availability of oral care protocols and supplies. Additionally, variability in documentation within the electronic health record (EHR) and inconsistent adherence to the oral care guidelines highlighted a disconnect between protocol and practice.

Bedside observations further revealed that nursing staff often lacked confidence or time to perform comprehensive oral care, particularly for medically complex or intubated patients. These findings aligned with broader organizational goals to improve oral care compliance, leading to the development of a pilot program that embedded a dental hygienist in the intensive care unit (ICU) to deliver oral care to hospitalized patients every 2–4 hours. This initiative subsequently supported the creation of an interprofessional hospital rotation for dental hygiene students.

2. Who are the target populations?

The primary target population included critically ill patients in the ICU, particularly those who are intubated, medically complex, or have limited ability to perform oral care. This includes both adult and pediatric populations, many of whom experience prolonged hospitalizations, multiple co-morbidities, and varying levels of respiratory support. These patients are at increased risk for rapid oral bacterial biofilm accumulation and subsequent systemic complications.

A secondary target population included bedside nursing staff and other healthcare providers responsible for providing daily oral care. Enhancing their knowledge, skills, and confidence in oral care delivery is essential to sustaining improvements beyond direct dental hygiene intervention. A tertiary population included dental hygiene students participating in hospital-based interprofessional rotations. These learners benefit from experiential learning while simultaneously contributing to comprehensive patient care and team-based practice.

3. Describe the project goals.

The primary goal of this project was to integrate dental hygienists into hospital-based interprofessional care teams to increase oral care compliance and provide comprehensive patient care. Specific goals include:

1. **Improve oral care compliance**: Increase adherence to evidence-based oral care protocols through direct care and bedside education.
2. **Enhance interprofessional collaboration:** Establish dental hygienists as essential contributors to critical care teams, fostering communication and shared responsibility for oral health.
3. **Reduce hospital-acquired infections:** Decrease the risk of VAP and NV-HAP by addressing oral bacterial biofilm as a modifiable risk factor. Highlight the potential for improved patient outcomes, decreased length of stay, and reduced healthcare costs associated with preventable complications.
4. **Support dental hygiene education:** Provide dental hygiene students with immersive interprofessional experiences that build clinical competence and align with the Commission on Dental Accreditation (CODA) 2-15 standard emphasizing the importance of interprofessional education by requiring dental hygiene programs to provide students with opportunities to engage in collaborative learning experiences with other health care disciplines.

4. What lessons learned would be useful for others seeking to implement a similar project, including what did not work?

Several key lessons emerged that may guide others implementing similar initiatives. First, interprofessional buy-in is critical; early and ongoing engagement with nursing leadership, physicians, and administrative stakeholders is essential. Positioning oral care as a shared responsibility tied to patient outcomes built support. Second, education alone is not enough. While initial assumptions suggested that providing education to nursing staff would improve oral care compliance, education by itself did not result in sustained change. Instead, bedside education and role modeling by dental hygienists proved far more effective in influencing practice behaviors. Third, workflow integration must be intentional. Successful implementation required aligning oral care with existing clinical workflows and embedding oral care into routine care schedules and documentation systems.

Data collection and feedback were essential drivers of improvement. Utilizing electronic health record (EHR) documentation and dashboards to track oral care compliance provided meaningful feedback to units, reinforcing accountability. Another important lesson was to start small and scale strategically. Pilot testing in a single ICU allowed for refinement of processes prior to expansion, whereas broader implementation without a pilot phase would likely have introduced additional barriers. Role clarity also proved important; clearly defining the dental hygienist's role within the care team minimized confusion and overlap with nursing responsibilities, while positioning the hygienist as both a clinician and educator strengthened their value.

Quality improvement tools were utilized as part of the initiative aimed at reducing VAP and improving oral care compliance in the hospital setting. A Pareto chart was employed to identify and prioritize the most significant barriers to oral care as reported by bedside

nurses, allowing the team to focus on the highest-impact challenges.[1] The most significant barrier to oral care was insufficient time, followed by the perception that it was not a priority compared to other acute patient needs in the critical care setting. A fishbone diagram was developed to systematically analyze potential root causes across key domains, including equipment, personnel, procedures, policies, measurement, training, education, environment, and organizational culture. To support clear and consistent communication among healthcare providers, the Situation, Background, Assessment, Recommendation framework (SBAR) was also implemented. Additionally, a post-intervention numeric graph was used to track and display trends in VAP incidence over time, enabling evaluation of the effectiveness of the interventions. Together, these quality improvement tools provided a comprehensive framework for identifying problems, guiding interventions, and measuring outcomes.

Equally important were insights into what did not work. Passive strategies, such as distributing protocols or educational materials without active engagement, were ineffective. Similarly, assuming adherence to existing protocols without direct observation led to an overestimation of compliance. Ultimately, sustainability requires a culture change that prioritizes oral health as an essential component of patient care. This shift depends on continuous reinforcement and strong leadership support. Overall, this project demonstrates that integrating dental hygienists into hospital care teams is both feasible and impactful, with success dependent on intentional collaboration, workflow alignment, and a systems-based approach that elevates oral health within comprehensive patient care.

Resources, Data, Impact, and Outcomes

1. **What resources were necessary to support the project, such as staffing, volunteers, funding and collaboration with other agencies or organizations?**

   Successful implementation of this project required a combination of staffing, institutional support, interdisciplinary collaboration, and existing infrastructure. A key resource was the integration of a dental hygienist into the hospital setting. Dental hygiene students served as valuable contributors through supervised clinical rotations, expanding the reach of oral care delivery. Collaboration with nursing staff, nurse managers, physicians, respiratory therapists, and hospital leadership was essential to ensure alignment with patient care priorities.

   Additional resources included access to hospital-approved oral care supplies, many of which carried the ADA Seal of Acceptance, as well as the use of standardized oral assessment tools such as the Modified Eilers Oral Assessment Guide. This guide is a validated observational tool for systematic assessment of oral integrity and function, enabling healthcare providers to quantify oral health status, monitor progression of mucosal changes, and guide oral care interventions in medically vulnerable populations.

   Existing electronic health record systems (EPIC) were leveraged to document oral care practices, while Tableau dashboards were used to track and visualize compliance data. This dashboard was designed to monitor daily oral care compliance by comparing the number of documented oral care events recorded in the EHR against the expected oral care documentation opportunities based on patient airway status. Compliance criteria included a minimum of two documented oral care events per day for patients without an endotracheal tube and documentation every four hours for patients with an endotracheal tube. The project

[1] This cause analysis tool is considered one of the seven basic quality tools.

was primarily supported through internal institutional resources and external educational partnerships.

2. What process measure data (counting) were collected, such as number of sealants placed or people served?

Process measure data focused on tracking the consistency of oral care. This included the frequency of oral care provided per patient (e.g., every 2–4 hours depending on ventilatory status), and oral care compliance rates documented within the EHR. Additional process measures included the number of dental hygiene student rotations, and interdisciplinary collaboration during patient care activities. Interdisciplinary collaboration included close partnerships with bedside nursing staff to model and reinforce high-quality oral care practices at the point of care.

The dental hygienist provided hands-on education and guidance on proper oral care techniques, identification of adverse oral conditions and abnormal findings such as oral candidiasis and gingival tissue trauma, and the clinical significance of maintaining oral health in critically ill patients. Education also included the appropriate use and purpose of specialized oral care products, such as moisturizing mouth spray for patients experiencing severe xerostomia to improve patient comfort, support oral tissue integrity, and reduce complications associated with dry mouth and poor oral hygiene.

3. What outcome measure data (results) were collected, such as improvement in health?

Outcome measures were centered on both clinical and system-level impact. Clinical outcomes included trends in oral health status, such as reductions in oral biofilm accumulation as measured by standardized indices, and broader indicators such as rates of mortality, VAP and NV-HAP. While multifactorial in nature, these outcomes were monitored in relation to improved oral care practices. System-level outcomes included potential reductions in hospital length of stay and decreased utilization of intensive care resources associated with preventable complications. Educational outcomes were also evaluated, including increased confidence, interprofessional awareness, and perceived value of oral health among students.

The implementation of a dental hygienist in the ICU increased oral care compliance rates by 15% for non-ventilated patients and 10% for ventilated patients. When comparing the median length of stay from the previous nine months to the pilot month that included a dental hygienist, control patients who underwent cardiovascular surgery without complications maintained a median length of stay of six days both before and during the pilot. However, patients who developed VAP experienced a 23-day reduction in median length of stay during the pilot, while patients with NV-HAP experienced a 7-day reduction. These improvements contributed to an overall decrease in ICU costs per patient and increased bed availability, allowing for additional surgical procedures to be performed. There were no deaths related to hospital acquired infections during the month of the dental hygiene pilot.

4. How frequently were data collected?

Data were collected on an ongoing basis, with oral care compliance documented in real time within the EHR. Outcome data, such as data on infection rates and length of stay, were evaluated over longer periods to account for variability and to better understand their impact.

5. **How were the results shared?**

   Results were shared through multiple channels to support transparency and engagement. Internally, findings were communicated with unit leadership and staff through meetings, dashboards, and quality improvement reports. Educational outcomes and experiences were shared with academic partners to inform curriculum development and interprofessional training.

   Externally, results were disseminated through professional presentations, publications, and stakeholder communications to highlight the role of dental hygienists in hospital-based care. These efforts not only reinforced the value of the project but also supported broader adoption of similar models in other healthcare settings.

Budget and Sustainability

1. **What was the budget for the project?**

   There was no available budget for this project, which leveraged existing institutional resources and academic partnerships. The primary costs were associated with personnel time and training. Personnel costs that should be considered include the expense associated with a 1.0 FTE dental hygienist, meaning it includes salary, benefits, and the opportunity cost of reallocating the dental hygienist from a revenue-generating role to a non-revenue-generating role within the ICU. In this setting, oral care is categorized as a nursing responsibility and is therefore included within the overall hospital room charges rather than generating separate reimbursable revenue.

2. **What was the sustainability plan for the project?**

   Sustainability was a central focus of the project and was achieved through integration into existing clinical workflows, culture, and infrastructure rather than reliance on temporary resources.

Key sustainability strategies include:

- **Workflow Integration:** Oral care practices were embedded into routine nursing workflows and EHR documentation, ensuring continuity beyond direct dental hygiene involvement.
- **Education Building:** Ongoing bedside education and competency reinforcement for nursing staff support sustained improvements in oral care delivery.
- **Interprofessional Culture Change:** Positioning oral health as a shared responsibility has helped shift unit culture toward prioritizing oral care as essential, not optional.
- **Student Rotation Model:** Continued integration of dental hygiene students provides a consistent presence, reinforces best practices, and expands care capacity without additional staffing costs.
- **Data-Driven Accountability:** Continuous monitoring through EPIC and Tableau dashboards allows for ongoing evaluation, feedback, and quality improvement.
- **Scalability:** This model can be expanded to additional units using the same low-cost, high-impact framework.

Long-term sustainability includes formalizing the role of dental hygienists within hospital staffing models, supported by demonstrated outcomes, such as reduced hospital-acquired infections, decreased length of stay, and cost avoidance. Additional statistical data and long-term outcome measures are needed to further support the establishment of a permanent dental hygienist role within the ICU. However, the ongoing partnership with dental hygiene students will continue to emphasize the value and importance of the dental hygienist's role in the critical care environment through education, collaboration, and direct patient care involvement. This positions the project not only as sustainable, but also as a value-generating component of patient-centered care.

Resources

- Hoerler, S. B., & Fritz, C. L. (2026). Fostering Interprofessional Belonging: Dental hygiene students' perceptions of a hospital rotation. Journal of Dental Hygiene, *100*(1), 60-68.
- Hoerler, S. B., & Hickox, B. C. (2024). Dental hygienist intervention to prevent ventilator-associated pneumonia in an intensive care unit. *Critical Care Nurse*, *44*(6), 76-78.
- *Hoerler, S. B., & Hickox, B. C. (2023)* Prioritizing Oral Hygiene to Prevent Hospital-Acquired Pneumonias. *Dimensions of Dental Hygiene*. 21(5), 26-29.
- *Hoerler, S. B., & Fritz, C. L.* Assessing Changes in Attitudes Toward Collaborative Practice Among Dental Hygiene Students: A Quasi-Experimental Study of Interprofessional Hospital Rotations (Under review with the Journal of Dental Hygiene)
- *Hoerler, S. B., Sarvas E. W., Chesney, K. M., Vu, J. A., Levy, E. R., Kawai, Y.* Evaluating Plaque Scores in Long-Term Pediatric Inpatients Following a Team-Based Oral Care Protocol with Dental Hygiene Intervention (Under review with Pediatric Nursing)

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