

## ORAL CARE IN THE ICU AS AN EFFICIENT HEALTH PROMOTION STRATEGY FOR GERIATRIC PATIENTS: A CRITICAL ANALYSIS

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**Abstract:** The geriatric population constitutes a significant fraction of patients in intensive care units (ICUs) across various healthcare infrastructures. The complexity of prevalent medical conditions requires oral health professionals to possess competencies in geriatric dentistry and hospital dentistry to effectively meet the needs of these elderly patients. Rigorous oral hygiene protocols are essential to promote health in hospital settings, reducing complications associated with prolonged hospitalization. The absence of these protocols can lead to the proliferation of dental biofilm on prostheses and the dorsum of the tongue, increasing hospitalization time, healthcare costs, and mortality. The inclusion of a specialized dental team is crucial for maintaining the oral health of the elderly, integrating educational, preventive, and interventional methods. Interventions such as the prophylactic use of chlorhexidine and photodynamic therapy (laser therapy) are effective in oral disinfection. The implementation of multidisciplinary strategies to manage specific problems, such as dental infection foci, inflammatory processes, pain, oral lesions, xerostomia, and sialorrhea, is fundamental to improving the health outcomes of these frail patients.

**Keywords:** Frail Elderly; Geriatric dentistry; Dental Staff, Hospital; Intensive Care Units; Hospitalization; Gerontology

## INTRODUCTION

The geriatric demographic represents a substantial fraction of the patient populace in intensive care units (ICUs) spanning diverse healthcare infrastructures, encompassing public, private, and military facilities. The intricacy of medical conditions prevalent within these sectors necessitates that oral health professionals exhibit profound proficiency in geriatric and gerontological dentistry to efficaciously cater to the distinctive oral health requisites of this population.<sup>1-3</sup>

Oral hygiene regimens are recognized as quintessential elements in health promotion strategies within hospital settings, particularly salient for the frail geriatric contingent in ICUs. Proactive oral healthcare interventions are instrumental in diminishing the complications attendant with extended hospitalization and associated comorbidities.<sup>2</sup>



**Figure 1** – Tongue dorsum coating – microbial reservoir of microorganisms associated with hospital infections – elderly woman hospitalized for 5 days in the ICU.



**Figure 2** – Oral health promotion after cleaning the entire oral cavity and tongue – use of 0.12% chlorhexidine every 12 hours for 7 days. Ethical and professional responsibility of Prof. Dr. Alexandre Franco Miranda.

Lack of stringent oral care protocols can culminate in the proliferation of biofilms within the oral cavity, encompassing dental prostheses and the endotracheal tubes of patients under mechanical ventilation. This

deficiency in oral hygiene correlates with protracted hospitalization periods, inflated healthcare expenditures, and an elevation in mortality rates.<sup>2</sup>

The incorporation of a specialized dental contingent within the multidisciplinary medical regimen in ICUs is indispensable for the oral health maintenance of the geriatric population. This integrative model is essential for the enactment of educational, preventative, and interventional paradigms, specifically tailored to ameliorate and conserve the oral milieu of geriatric inpatients. The principal aim is to attenuate infectious loci, inflammatory episodes, and oral pathologies that may detrimentally affect systemic health and overall life quality.<sup>3</sup>

There is an advocacy for a pronounced focus on educational and preventative modalities, necessitating an intimate collaboration between dental surgeons and the nursing and technical cadre. Tailored clinical methodologies are imperative, encompassing accommodations for the patient's condition, assiduous clinical management, and consistent support, meticulously calibrated to the nuances of each case.<sup>1-4</sup>

Administering 0.12% chlorhexidine gluconate prophylactically sets a standard for bactericidal and bacteriostatic interventions within geriatric cohorts in clinical settings. Instituting this oral care protocol at the initial point of hospitalization is imperative. This measure is crucial in curtailing the frequency of hospital-acquired infections, notably ventilator-associated pneumonia, thereby elevating patient care results.<sup>1,3</sup>

A noteworthy relationship has been observed between the duration of hospitalization and changes in the oral microbiota composition. Specifically, there is a notable rise in the presence of gram-negative bacteria and fungal organisms within a 48 to 72-hour period following admission,

which has significant repercussions for the management of oral health in the hospitalized geriatric.<sup>2-4</sup>

Particular attention must be directed towards intubated and tracheostomized patients, who are susceptible to xerostomia as result of extended hospitalization, culminating in significant discomfort. To alleviate such symptoms, the implementation of meticulous oral hygiene regimens, the application of artificial saliva, and the use of lip protectors enriched with vitamin E are recommended.<sup>3,4</sup>

Photodynamic therapy (PDT), which combines low-intensity laser with methylene blue, presents a potent clinical modality for oral decontamination against a spectrum of bacterial, fungal, and viral pathogens. Such therapeutic interventions have demonstrated efficacy in ameliorating signs and symptoms amongst the geriatric patient population.<sup>5</sup>

Ozonized oil is gaining recognition for its dual role in microbial decontamination and promotion of oral lesion healing, presenting a promising adjunctive treatment.<sup>6</sup>

Involuntary oral movements or neurocognitive deficits in geriatric ICU patients may precipitate soft tissue trauma, complicating the provision of care by dental, medical, and multidisciplinary teams. In response to these challenges, the fabrication and use of oral protectors represent a viable strategy to mitigate the incidence of bite-induced trauma and associated injuries.<sup>7</sup>

Sialorrhea presents additional complexities in this patient group, increasing the risk of bronchoaspiration and secondary systemic infections. Interventional strategies range from pharmacological methods to attenuate salivary secretion to targeted botulinum toxin applications within the salivary glands. These interventions necessitate a holistic, interdisciplinary methodology, coupled with the informed consent, and should be administered by clinicians with expertise.<sup>8,9</sup>

The optimization of oral health within critical care settings mandates a comprehensive array of clinical interventions to uphold dental integrity and mitigate potential infection foci. These interventions encompass a variety of procedures ranging from the extraction of nonviable teeth to supragingival scaling, as well as the application of restorative materials and the precise adjustment of dental prostheses. Collectively, these procedures are integral to the prevention of odontogenic systemic infections, which can detrimentally influence patient outcomes in intensive care units.<sup>10</sup>

Furthermore, the prescription of antimicrobial agents to manage odontogenic infections falls within the purview of the dental surgeon. This necessitates an integrative, multidisciplinary strategy in conjunction with the attending medical team, to preclude polypharmacy and adverse drug interactions, particularly in the vulnerable geriatric cohort within the ICU.<sup>3,4</sup>

The recognition of dental care as a crucial element of ICU management has increased over time. However, the integration of dedicated dental teams into the multidisciplinary care of critically ill patients continues to encounter logistical challenges in some healthcare services.<sup>3</sup>



**Figure 3** - Traumatic injury on the lower lip of a geriatric patient admitted to the ICU.



**Figure 4** - Photobiomodulation (Low-level laser therapy) applied to a traumatic injury – anti-inflammatory, analgesic effect, and healing process. Ethical and professional responsibility of Prof. Dr. Alexandre Franco Miranda.

## FINAL CONSIDERATIONS

In intensive care units, the establishment of standardized protocols for oral hygiene and prosthesis care is an intervention to enhance clinical outcomes in hospitalized geriatric patients.

This collaborative framework ensures that dental interventions are harmoniously integrated into the comprehensive treatment plan, customized to meet the unique needs of each geriatric care patient.

## CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

## AUTHORS CONTRIBUTION

AFM, MFSS and GLCEH contributed to the critical analysis of the literature reviewed, writing, and structuring of the manuscript.

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