

Oral Health Disparities in Older Adults



Oral Bacteria, Inflammation, and Aspiration Pneumonia

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KEYWORDS

- Oral hygiene • Oral bacteria • Aspiration pneumonia • Elderly • Vulnerable population

KEY POINTS

- The oral microflora—and the role of oral care in limiting it—has become recently appreciated; the bacteria that often contribute to initiation of pneumonia have been shown to colonize the oral cavity.
- Methods to improve oral hygiene, particularly rinses such as chlorhexidine, can reduce the risk for pneumonia in vulnerable populations.
- There is a need to educate both patients and care providers about the importance of oral hygiene to prevent pneumonia.

INTRODUCTION

Pneumonia is an inflammatory condition of the lung parenchyma, usually initiated by the introduction of bacteria or viruses into the lower airway. The initiation of pneumonia depends on the aspiration of infectious agents from proximal sites, including the oral and nasal cavities.¹ This disease is particularly prevalent in the elderly, especially those in institutions such as nursing homes, and those with several important risk factors. The role of the oral microflora in this process—and the role of oral care in limiting it—has become much more appreciated over the past decade; the bacteria that often contribute to disease initiation have been shown to colonize the oral cavity.

Pneumonia can be classified according to the location of the origin of the etiologic infectious agents (ie, from the community vs from within the institution—so-called nosocomial pneumonia). One specific form of pneumonia, aspiration pneumonia

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(AP), is an infectious process caused by the aspiration of oropharyngeal secretions colonized by pathogenic bacteria.² This is differentiated from aspiration pneumonitis, which is typically caused by chemical injury after inhalation of sterile gastric contents. AP can also be community acquired or acquired from the health care delivery environment, and it is common in the nursing home setting. AP is almost always caused by a mixed infection, including anaerobic bacteria derived from the oral cavity (gingival crevice), and often develops in patients with elevated risk of aspiration of oral contents into the lung, such as those with dysphagia or depressed consciousness.^{1,3}

This article reviews aspects of the epidemiology, pathogenesis, and prevention of AP. In particular, the role of oral health status in the pathogenesis and prevention of the disease is highlighted.

EPIDEMIOLOGY

Pneumonia is a common disease. Together with influenza, pneumonia was the eighth most common cause of death in the United States in 2011.⁴ Classification of pneumonia is based on the residence of the victim at the time of the initiation of the infection. Thus, community-acquired pneumonias are those where the infection is contracted within the community. A recent report found the crude and age-adjusted incidences of pneumonia were 6.71 and 9.43 cases per 1000 person-years (10-year risk was 6.15%).⁵ The 30-day and 1-year mortality were found to be 16.5% and 31.5%, respectively. Interestingly, 62% of pneumonia cases occurred in adults older than 65. It is clear that pneumonia is a common disease with severe consequences, especially for the elderly.

Pneumonia occurring in an individual longer than 48 hours after admission to a hospital or other residential health care facility (such as a nursing home) is defined as nosocomial pneumonia.

Pneumonia is the second most common nosocomial infection in the United States (after urinary tract infection), representing 10% to 15% of these infections and is associated with substantial morbidity and mortality,⁶ and cost.⁷ Most patients who contract nosocomial pneumonia are infants, young children, and persons older than 65; persons who have severe underlying disease, immunosuppression, neurologic deficit, and/or cardiovascular disease; and patients undergoing abdominal surgery.

Over the past decade, as the delivery of medical care has shifted from the hospital to outpatient facilities (for delivery of services such as antibiotic therapy, cancer chemotherapy, wound management, outpatient dialysis centers, etc), the classification scheme for pneumonia has changed. Pneumonia often occurs within such health care delivery settings, but may not be so recognized. For this reason, a new term, health care-associated pneumonia,⁸ has entered the literature to describe the range of patients that could be affected.

An important type of health care-associated pneumonia is nursing home-associated pneumonia (NHAP), the most common infection affecting nursing home residents.⁹ NHAP is the leading cause of death in the nursing home population.¹⁰ Its incidence among long-term care residents has been variously estimated as 0.7 to 1 episodes per 1000 patient days.¹¹ Mortality has been estimated to be 8% to 54%.¹¹ Pneumonia is the most common reason for transfer of nursing home residents to the hospital.¹⁰ However, hospital-based treatment of NHAP is costly, which has driven practitioners to provide treatment in the nursing home rather than after transfer of the patient to the hospital. There is evidence to show that there are no differences in outcomes when comparing NHAP treated by use of oral antibiotics in the nursing home versus parenteral treatment after hospitalization.¹²

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