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## **FINDING A COLLABORATIVE LINK**

TREATING PERIODONTAL AND RESPIRATORY DISEASES

**PLUS**

**THE LINK BETWEEN COPD AND PERIODONTITIS**  
Does It Affect Dental Hygiene Treatment?

**BISPHENOL A**

In Our Environment, Food &  
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**FIRST PHASE NONSURGICAL  
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Respiratory conditions associated with periodontal health status range from nosocomial pneumonia to other conditions such as chronic obstructive pulmonary disease (COPD) and emphysema. Research suggests an association among dental plaque, poor oral health and respiratory disease. Regular dental hygiene treatment can improve patients' overall health, particularly those who face serious chronic disease. Susan Elliott-Smith reports.



*On the cover: Cindy Kleiman, CDA, RDH, BS has more than 25 years of experience providing dental hygiene for medically compromised patients in hospital settings. She joins other experts in sharing her insights on treating periodontal and respiratory disease for this issue's lead story.*

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## Developing



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History has shown that once dental hygienists begin participating in volunteer activities at some level within ADHA, they tend to continue. The reasons are many, including the social networks and sense of purpose that volunteering provides, as well as the fact that volunteer service can **develop your leadership, communication, interpersonal, motivational and problem-solving skills** and make you an even better dental hygienist.

By CAROL A. JAHN, RDH, MS

# Finding a Collaborative Link

## Treating Periodontal and Respiratory Diseases

By **Susan Elliott-Smith**

"What is a dental hygienist doing here?"

With more than 25 years of experience providing dental hygiene for medically compromised patients in hospital settings, Cindy Kleiman, CDA, RDH, BS, is well prepared to answer this question from patients' families and caregivers. She often explains that the ventilator breathing tube that passes through the patient's oral cavity and pharynx and into the lungs may carry with it oral bacteria associated with respiratory infections such as ventilator-associated pneumonia (VAP). Some research has shown that meticulous oral care in the ICU may lower a patient's risk for VAP,<sup>1</sup> which is a nosocomial infection, or one that develops during a patient's hospital stay that is secondary to his or her original condition.

Kleiman noted that risk for VAP increases the longer patients are intubated. "It has been documented in patients who are on ventilators that the oral flora changes to more pathogenic bacteria within 48 hours of intubation," she continued, adding that VAP has a 20 percent to 40 percent mortality rate.

The bacteria that grow in the oral cavity can be aspirated into the lungs, causing respiratory diseases, especially in people with periodontal disease.<sup>2</sup> Respiratory conditions associated with periodontal health status range from nosocomial pneumonia to other conditions such as chronic obstructive pulmonary disease (COPD) and emphysema. Many studies have suggested an association among dental plaque, poor oral health and respiratory disease.<sup>3</sup> Oral bacteria also can worsen existing lung conditions such as COPD.<sup>2</sup>

While research has yet to reveal all of the intricate connections, the oral health community continues its campaign of prevention: Regular dental hygiene treatment can improve patients' overall health, particularly those who face serious chronic disease. The work that remains is to educate the medical community about the value of dental hygiene – in and outside the health care environment – and to encourage dental hygienists to move into alternative practice settings.

### Dental and Medical Implications

Some hospitals and nursing homes have noticed the research regarding periodontal and respiratory disease connections and are beginning to implement more rigorous oral care protocols, noted Frank Scannapieco, DMD, PhD, chair of the department of oral biology at the School of Dental Medicine, State University of New York, Buffalo, N.Y.

"I think they need to get input from dentists and hygienists, but I'm not sure they do at this point," Scannapieco continued. He added that several randomized trials have examined selected oral decontamination or improved oral hygiene to reduce the risk for pneumonia.

"From the clinical point of view, there does seem to be some evidence that improving hygiene is worthwhile.

Several trials have shown that using antimicrobials in the mouths of these patients does seem to reduce the risk for pneumonia," Scannapieco stated. "There is an appeal to this. If you did a relatively simple intervention that would reduce the incidence of disease, that would be good for seeing to the well-being of these patients and reduce some of the costs in providing care."

Scannapieco observed that most of the research surrounding periodontal and respiratory disease has been centered on institutionalized subjects because of the higher incidence of pneumonia. "It's much easier to make the connections," he stated.

Less well-studied are links between oral health and respiratory diseases that extend beyond the institutional environment. One research paper, according to Scannapieco, did show an association between periodontal health and community-acquired pneumonias and that there were microbiological differences between community- and institutional-acquired pneumonias.

Diseases such as COPD also have a connection to periodontal health but have not been researched as much as pneumonia. Scannapieco stated that dental and medical communities would benefit from research that could firmly establish those connections and reveal that intervention could reduce the risk for and the progression of the disease.

Because so many completed studies of the associations between COPD and periodontal health examined elderly, immunocompromised, hospitalized individuals, graduate student and affiliate clinical instructor Brooke Agado, RDH, BS, felt compelled to begin a study of individuals with respiratory disease who are outside the institutional environment. The purpose of her study is to determine if patients with COPD receiving nonsurgical periodontal therapy have a change in health-related quality of life or experience illness after treatment.

"There is a lot of literature about people with respiratory disease who are also institutionalized, but not much about people [outside of health care institutions] who have COPD and their dental care," said Agado, a clinical instructor and MSDH student at the Department of Dental Hygiene at Idaho State University, Pocatello, Idaho. The subjects in her study, who have been diagnosed with COPD, are divided into three groups by the type of dental hygiene treatment they will receive: those who will receive ultrasonic care, those who will receive only hand instrumentation with hand instruments, and those who will get no treatment during the study. Agado noted that the patients who receive no dental hygiene care during the study will be offered it at the study's conclusion.

During hours of literature review in preparation for the study, Agado learned that periodontitis and COPD in their chronic stages destroy local tissue – the lungs in the case of COPD and the periodontium in the case of periodontitis. A blood draw from a patient suffering with either disease would reveal systemic inflammatory markers.

Smoking is among the top contributing factors to the onset and progression of both diseases. "We don't know yet how much periodontitis and COPD affect each other so much as smoking has affected both of them," Agado stated, adding that studies also reveal that plaque accumulation through poor home care parallels the increase in respiratory pathogens and complications like pneumonia. Typically, she continued, the more serious the periodontal status, the more severe the COPD. Agado also noted that she learned that almost everyone with COPD has or has had severe periodontal disease; however, not everyone who has severe periodontal disease has respiratory disease.

In addition to that, Agado concluded, "A 2008 study found that patients who have 10 or more teeth and periodontal pocketing or periodontitis are more likely to die from respiratory complications compared to those without teeth or who have less periodontal pocketing."

### Dental-Medical Collaboration

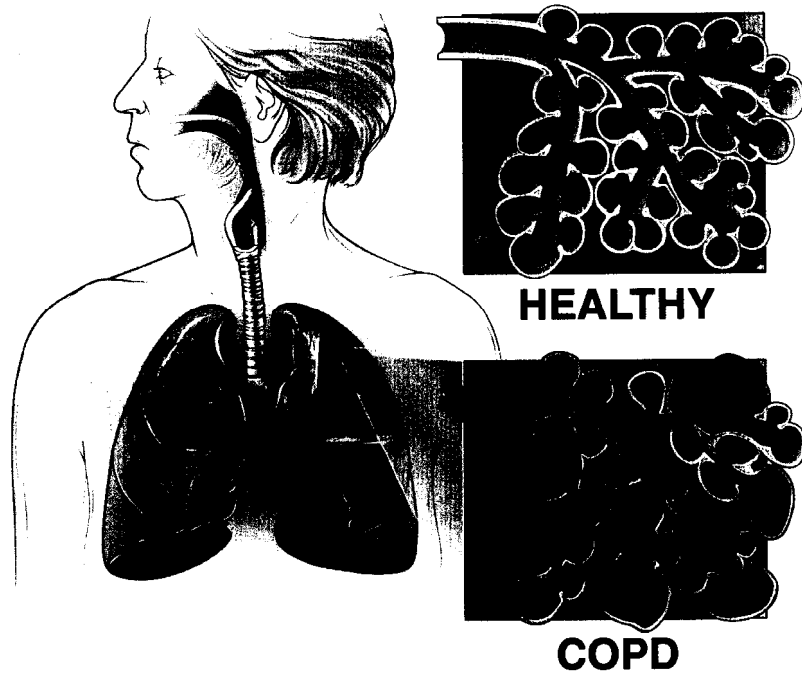
No one refutes that good oral health practices benefit patients with respiratory issues. The decisions to be made are when to deliver treatment, how much and who should deliver it? For patients outside of medical and long-term care institutions, the obvious answer is to deliver treatment in the dental operator. For a detailed account of treating such patients in the operator, see the clinical feature on page 19.

It is less clear, perhaps, regarding treatment for respiratory patients confined to hospitals and long-term care facilities. Should daily oral care be provided by dental hygienists employed by those institutions or nurses and aides already working there?

In 2003, the Centers for Disease Control and Prevention (CDC) published guidelines for preventing VAP. These guidelines include oral hygiene program recommendations, as well as specifications for hand washing; educating other health care workers about nosocomial, bacterial pneumonias and infection control procedures; when to wear gloves; when to provide subglottic suctioning; and other directives that include the stipulation that the patient's bed needs to be elevated.<sup>4</sup>

A cross-sectional survey of 1,200 nurses conducted in 2005 revealed the extent to which nurses comply with these guidelines. The survey showed that nurses in hospitals with an oral care protocol reported better compliance with the guidelines, including the provision of oral care, than did nurses working in hospitals without such protocols.<sup>5</sup> Only 56 percent of nurses responded that their hospital had a written oral care protocol. Respondents working in teaching hospitals were significantly more likely to have oral care protocols than were respondents working in nonteaching facilities.<sup>5</sup>

In her own work and while on lecture tours, Kleiman explains, "New findings about the oral-systemic connection make interdisciplinary cooperation between dental and medical professionals the key—we have to work together. Who is doing oral care in intensive care units? I am a dental hygienist who consults in critical care; there aren't many who do this," she



#### How Does COPD Affect Breathing?

*The "airways" are the tubes that carry air in and out of the lungs through the nose and mouth. Healthy airways and air sacs in the lungs are elastic—they try to bounce back to their original shape after being stretched or filled with air, just the way a new rubber band or balloon does. This elastic quality helps retain the normal structure of the lung and helps to move the air quickly in and out.*

*In people with COPD, the air sacs no longer bounce back to their original shape. The airways can also become swollen or thicker than normal, and mucus production might increase. The floppy airways are partially blocked, or obstructed, making it even harder to get air out of the lungs.*

Source: *Breathing Better with a COPD Diagnosis*, U.S. Department of Health and Human Services, National Institutes of Health, National Heart Lung and Blood Institute

stated. "But the opportunity is there for those who are interested in becoming involved."

It is important for nurses to understand the role of daily dental hygiene procedures so they will write it into the patient's care plan, stated JoAnn R. Gurenlian, RDH, PhD, internationally recognized speaker and owner of Gurenlian & Associates, which offers consulting and continuing education programs for health care providers. In turn, it is important for the nurse's aides to learn proper dental hygiene procedures to carry out the care plan orders. This system improves the patients' well-being on a long-term basis.

Kleiman continually seeks opportunities to educate medical professionals on the topic of dental hygiene and its association with respiratory disease. She is one of the few co-authors accepted into the *American Journal of Critical Care (AJCC)*, and credited her research collaborator and nurse mentor, Virginia Prendergast, RN, MSN, NP-C, president of The World Federation of Neuroscience Nurses, for opening the door. As part of Prendergast's research team, Kleiman assisted in the development of an innovative oral care protocol for patients on ventilators.

Positions such as Kleiman's close the collaborative gap between dental and medical practice, a move that helps educate both professions when it comes to systemic health issues such as pneumonia and other respiratory diseases.

"What can I offer the nurses? Oral care education from a den-

tal hygienist's perspective," said Kleiman, who recently returned from a trip to Japan to educate nurses about VAP, its oral health connection and how to improve patient care. "I hope to show how much medical costs can be lowered with the contributions that a dental hygienist can make to the medical team."

Scannapieco supported this position. "I think there needs to be more communication and cooperation between the medical and dental professions to maximize the outcomes that might be achieved." He added that patient and caregiver education is an essential part of the dental team's work.

"Folks who have loved ones in those circumstances should be educated to make certain that oral care is being given to these vulnerable people," Scannapieco continued. "Certainly the elderly oftentimes don't have an advocate for the best care. The dental team can provide that education."

## Dental Hygienists Open Doors

Because research is beginning to connect the importance of dental hygiene intervention with improved outcomes for respiratory disease patients, new opportunities may emerge for dental professionals willing to knock on a few doors in the medical environment.

Scannapieco, who gives periodic CE courses on oral health and respiratory disease, mentioned that there are frequently a lot of dental hygienists in the room. "I have a sense that the dental hygiene community is very knowledgeable about this topic," he commented. "But it is a rapidly changing subject. There is always new research coming out."

"My colleagues and I are looking at specific interventions for hospital or nursing home patients," Scannapieco continued. Nursing home residents, he commented, frequently have issues in providing daily dental hygiene for themselves.

He offered chlorhexadine rinse treatments as an example of an intervention that would be easy for nursing staff to perform. "The jury's still out as to whether or not chlorhexadine is effective. I have a feeling it is, but that has to be well documented," Scannapieco explained. Routine prophylaxis would be a more difficult route to follow, as it would require a dental hygienist to go in a couple of times a week.

"There are shrinking resources, especially in the chronic care area, and now we're asking for more intervention and services. It's a dilemma," Scannapieco concluded. "We're trying to find the simplest intervention that yields the best result."

For now, there are not enough educators and advocates in this unique area. "The states are giving dental hygienists additional opportunities to work in non-traditional settings such as hospital care. I encourage them to learn what the laws are and what opportunities exist," Kleiman stated. "I have to teach them, too, to knock on a few doors."

Gurenlian agreed. "I see opportunity here for dental hygienists in terms of systemic health issues, trying to prevent the worsening of conditions by reducing mouth infections," she said, suggesting that dental hygienists reach out to pulmonary specialists, rheumatologists and general practitioners who might become willing collaborators in patient care. Dental hygienists also may choose to enlist the help of the dentist with whom they are already in practice. The dental team could send letters to respiratory specialists within their community, advising them they could request referrals of their oral health services for respiratory patients.

If there are not specific clinical roles available for dental hygienists, professionals should not give up the search. Presenting a message about prevention does not require clinical

care. Community education is always something the dental hygienist can offer, even if the scope of practice or the setting limits patient treatment. A wise idea is to pursue grant or foundation funding to support a dental hygiene educator role in the community or in an institution, according to Gurenlian.

"Many dental hygienists have not had the exposure as part of their educational process. We're just beginning to get a comfort level in looking at evidence that shows an association between oral health and systemic health, and as the knowledge base increases, we're more likely to incorporate that as part of educational experiences for students," Gurenlian continued. When dental hygiene programs expose students to medical experiences, they increase the students' comfort level to pursue those opportunities after they graduate.

"It takes a special person who has the self-confidence to sell themselves in an environment where nobody else is practicing," Gurenlian concluded.

"Knock on doors and don't be discouraged the first time if the answer is 'no,'" said Kleiman. "Have the confidence to try again."

She said that she feels it is imperative for dental hygienists to conduct literature searches and learn about unique areas of care. She recommends to those interested in hospital care to seek opportunities to observe the nursing staff at work in ICUs.

To take an active role without leaving the operator, Agado advised dental hygienists to talk to patients with a health history of respiratory disease about the importance of good dental hygiene.

"I've been teaching at ISU for six years, and when we have a question about a patient's health status, we always complete a written consultation with the patient's physician to determine the status of their health and what the physician has to say about their disease status that would lead us to alter the patient's care," Agado said. Basically, the dental team is seeking to complete the patient's health picture with pieces only the physician can supply.

"It's eye opening," Agado said. "I don't think written consultation happens too frequently in private practice. It gets overlooked."

For her study, Agado works closely with a well-known cardio-thoracic surgeon, as well as physicians at a local pulmonary, sleep-disorder clinic. "It has been amazing to work with them and see what they find."

Agado also has collaborated with a general medical practitioner. She explained that he frequently asks patients with pneumonia if they have had recent dental care because one so frequently leads to another among the patients in his practice.

Where chronic or frequent bouts of acute disease exist, Agado suggested that the dental team have the medical team collect oral plaque cultures or lung cultures to determine what is causing the respiratory problem. She also advised a review of patients on long-term antibiotic treatments due to acute infections. As bacterial resistance continues to rise, dental professionals are going to need to gather more information before they start prescribing antibiotics.

Agado concluded, "Dental hygienists who treat patients with respiratory disease should definitely be questioning the patient and collaborating with the physician on the patient's oral health status."

## References

1. Fields LB. Oral care intervention to reduce incidence of ventilator-associated pneumonia in the neurologic intensive care unit. *J Neuroscience Nurs, Journal*

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