

# Nursing Staff Perspectives on Oral Care for Neuroscience Patients

Jennifer L. Cohn, Janet S. Fulton



**Abstract:** Neuroscience patients frequently experience poor oral health and related complications because of motor and cognitive dysfunction and the side effects of treatments. Inadequate oral care increases plaque deposits, which can lead to inflammation, pain, and infection. These patients often depend on nurses for oral hygiene. In practice, nurses frequently delegate the delivery of oral care to unlicensed personnel, including nursing assistants, technicians, and student nurses. Few studies have addressed oral care interventions for neuroscience patients. This article identifies oral care interventions practiced by nurses and unlicensed personnel caring for neuroscience patients with self-care deficits. An investigator-designed survey instrument was used to obtain data from nurses and unlicensed personnel working with neuroscience patients in a large hospital. Participants responded to questions about products and agents used in care, frequency of care, documentation of care, patient risk factors, and system support issues such as availability of supplies. Data were analyzed using frequency distributions. Findings demonstrated that selection of products and agents used for oral care is not always evidence based, that provider preference leads to variations in type and frequency of care, and that system issues affect care. These findings suggest the need for increased attention to oral care for neuroscience patients. Research is needed to further examine the relationship between oral care interventions and patient outcomes.

Hospitalized patients who cannot provide their own oral care may not be receiving appropriate oral care and may receive treatments that cause or exacerbate xerostomia (dry mouth; Andersson, Westergren, Karlsson, Hallberg, & Renvert, 2002; Clarke, 1993; Stiefel, Damron, Sowers, & Velez, 2000). As a consequence, local tissue inflammation can occur because of increased plaque deposition, decreased saliva production, and decreased clearance of debris. Inflammation of tissues weakens the mucosal lining. A break in the mucosal lining allows for the entry of bacteria into surrounding tissues and possible local or systemic infection (Rakel, 1997; Kite & Pearson, 1995).

The neuroscience patient population is often unable, for physical reasons, cognitive reasons or both to

perform adequate oral care and therefore may be at higher risk for oral mucosa breakdown and subsequent local and systemic problems. Routine oral care has been shown to reduce these risks (Milne, Brady, & Hunter, 2002; Roberts, 2000; Yoneyama, Yoshida, Ohru, Mukaiyama, Okamoto et al., 2002). Neurological conditions that may lead to decreased ability to perform oral care include stroke, Alzheimer's disease, Parkinson's disease, spinal cord injury, traumatic brain injury, and neuromuscular disorders such as multiple sclerosis, amyotrophic lateral sclerosis, and Duchenne's muscular dystrophy. Such conditions predispose the patient to decreased motor coordination, cognitive impairment, dysphagia, and other problems that contribute to a decreased ability to perform oral care. In addition, medications with xerostomic side effects, such as anti-hypertensive and antiepileptic agents, are commonly prescribed for treating neurologic conditions, thus increasing the risk for oral mucosal breakdown and subsequently increasing the need for frequent oral care. Among patients dependent on caregivers for personal care, an estimated 44%–65% receive inadequate oral care. Of this percentage, it has been suggested that more than 25% have a neuroscience diagnosis (Coleman, 2002; Andersson et al., 2002). This article reports the results of a study that identified oral care interventions practiced by nurses and unlicensed personnel caring for neuroscience patients with self-care deficits and suggests interventions for improving oral care for neuroscience patients at risk of oral complications.

## Risk Factors and Current Oral Care Procedures

Four common etiologies contribute to oral mucosa breakdown in the neuroscience patient population: motor or cognitive deficits, oropharyngeal musculature or swallowing dysfunction, specific medications, and oxygen or suctioning therapies (Andersson et al., 2002; McNeill, 2000; Milne et al., 2002; Turner, 1996). Motor and cognitive deficits contribute to an inability to provide hygienic self-care. For example, a patient who does not have fine and gross motor skills may not be able to place toothpaste on a toothbrush, raise the toothbrush to the mouth, and thoroughly brush all surfaces inside the mouth. Patients who have suffered cognitive impairment may not be able to appreciate the importance of good oral hygiene or remember to perform oral care on a regular basis. Ensuring that such patients receive appropriate oral care is a nursing responsibility (Andersson et al., 2002).

Questions or comments about this article may be directed to Janet S. Fulton, PhD RN, by telephone at 317/274-2421 or at [jasfulto@iupui.edu](mailto:jasfulto@iupui.edu).

Jennifer L. Cohn, MSN RN, is a clinical nurse specialist at Clarian Health in Indianapolis. Janet Fulton is an associate professor at Indiana University School of Nursing in Indianapolis.

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Motor dysfunction in the neuroscience patient often involves desynchronization of the oropharyngeal musculature and impairment in swallowing. The existence of this problem makes it unsafe for patients to take medications or nutrition by mouth and necessitates that patients receive medications and nutrition by nasogastric or orogastric tube. The absence of mastication associated with reduced oral intake decreases the stimulation of salivary and enzymatic production, which ordinarily helps in the removal of debris and protects the oral cavity from infectious oral flora (Kostler, Hejna, Wenzel, & Zielinski, 2001; Squier & Kremer, 2001).

Neuroscience patients frequently have one or more comorbidities, with or without sequelae, that require treatment with xerostomia-causing medications. Antihypertensive, antiepileptic, antihistamine, antidepressant, steroid, and diuretic medications typically are prescribed (McNeill, 2000; Turner, 1996). Medication-induced xerostomia supports mucosal breakdown. Finally, oxygen therapy and suctioning devices contribute to oral mucosal injury. The drying effect of oxygen and the trauma associated with the removal of secretions and debris create a desiccated environment in which microorganisms flourish and previously healthy tissue degrades (McNeill; Turner).

Not only do the above etiologies work independently, but they also compound xerostomia and increase the amount of debris, the deposition of plaque, and growth

of infectious microorganisms. The resulting inflammation allows microorganisms to enter gum tissues, leading to gingivitis, colonization of the oropharyngeal cavity with infectious microorganisms, and an increased incidence of local or systemic infections (Kite & Pearson, 1995; Miller & Kearney, 2001; Stiefel et al., 2000). Factors that contribute to impaired oral health are outlined in Fig 1.

Impaired self-care and increased plaque deposits are both problems that are amenable to nursing interventions. Nursing interventions should first target etiologies that interfere with self-care. If targeting etiologies that interfere with self-care is not possible because of severity or stage of disease, nurses should employ interventions that impair plaque formation by providing the oral care that the patients cannot (temporarily or permanently) provide for themselves. Both approaches can modify the risk factors (Milne et al., 2002; Roberts, 2000; Yoneyama et al., 2002).

Typically, nursing oral care practices comprise the swabbing out a patient's mouth with a foam swab that has been soaked in water, a mouthwash preparation, a hydrogen-peroxide mixture, normal saline, or chlorhexidine. Foam swabs are convenient, require little set-up and clean-up time, and facilitate quick completion of the task (Kite & Pearson, 1995; Roberts, 2000). Although use of foam swabs is an accepted practice, research has demonstrated that foam swabs are ineffective at removing plaque and debris from the oral cavity and tooth surfaces

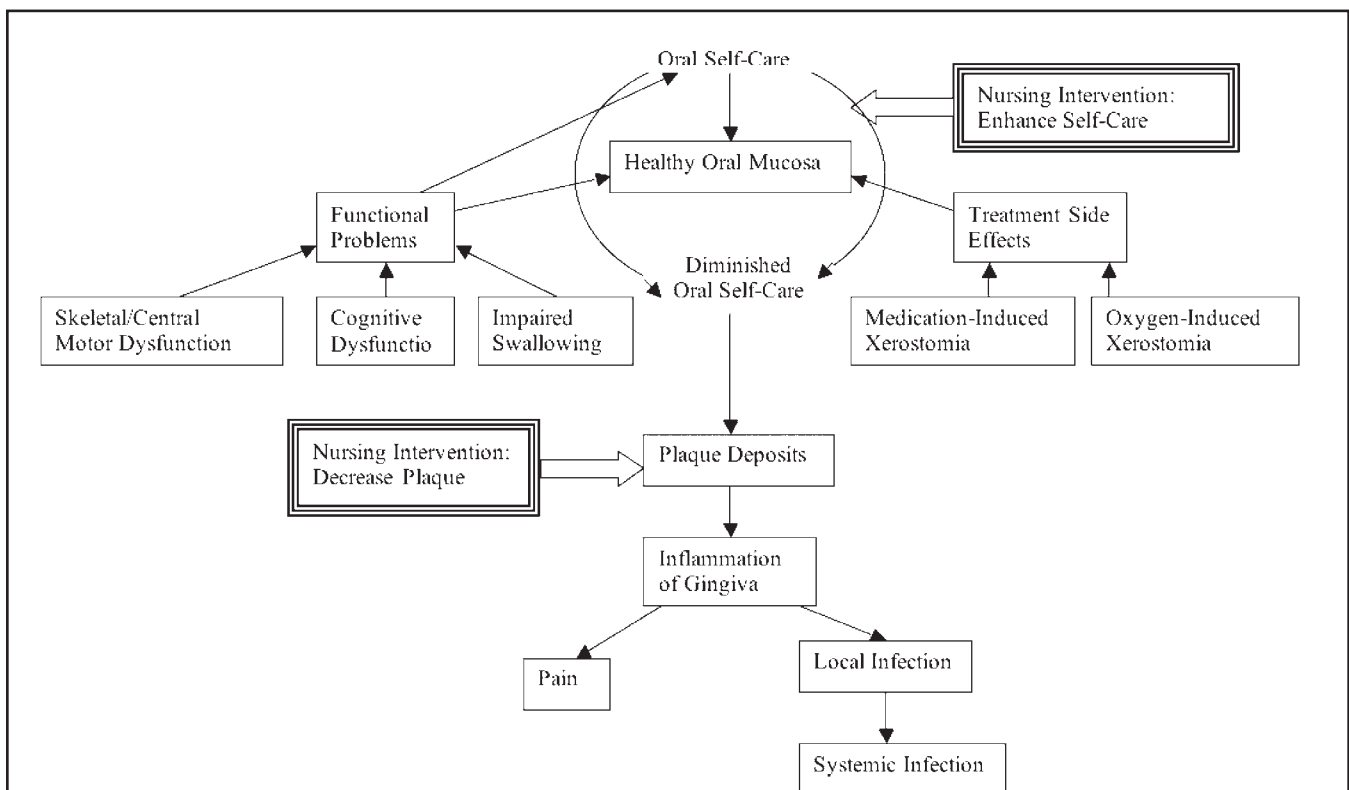


Fig 1. Functional problems and treatment side effects as threats to self-care and oral mucosal integrity

and therefore may not protect the oral mucosa from degradation (Ransier, Epstein, Lunn, & Spinelli, 1995).

Clinical research about oral care for many different patient populations, including neuroscience patients, is lacking. Frequently, oral care receives low administrative and clinical priority. McGuire (2003) identified eight different barriers to implementing oral care standards for cancer patients. These are similar to findings of other inquiries regarding hospitalized patients in general (Adams, 1996; Kite & Pearson, 1995; Lee et al., 2001; Turner, 1996). Barriers include gaps in staff knowledge; reliance on tradition; inconsistent or absent oral assessment; diverse oral care regimens and practices; insufficient or conflicting evidence base; lack of an accepted, universal standard of oral care or best practice; administrative and clinical issues; and lack of interdisciplinary collaboration. *Gaps in knowledge* refers to lack of knowledge among healthcare providers about good oral care practice. *Reliance on tradition* means that oral care interventions are based on established routines and customs instead of scientific principles and existing evidence; the result is subjective practices that reinforce traditional methods of oral care (McGuire; McNeil, 2000; Stiefel et al., 2000). Lack of consensus about oral assessment instruments contributes to failure to consistently use assessment guides in clinical practice. In addition, staff members often lack sufficient knowledge about instrument scoring, and the available instruments lack validity and reliability data for use in differing patient groups. Without comprehensive and timely assessment, the ability to monitor outcomes of care is limited. Lack of outcome data contributes to the invisibility of oral care and associated problems in the practice setting (McNeil; Roberts, 2000). In hospital settings, surveys conducted among healthcare providers revealed great variability in choosing oral care products, and findings suggest that lack of protocols to guide oral care and the availability of a large variety of oral care agents led to traditional and routine interventions being valued over evidence-based interventions (Lee et al., 2001; McGuire; Steifel et al., 2000). An insufficient and sometimes conflicting evidence base regarding oral care interventions contributes to the wide range of accepted oral care routines. To date, there have been few studies directed at the efficacy of oral care agents, particularly when used for neuroscience patients. Nurses and other providers also may lack skills or resources to obtain and review existing evidence; the consequences are confusion and frustration in choosing a best practice for oral care (Holmes, 1996; Roberts).

A central theme across all of the identified barriers is the lack of an accepted standard for specific patient populations. A standard would include an assessment instrument, guidelines for intervention (timing, technique, equipment, and therapeutic agents), expected outcomes, and a system for monitoring outcomes. There has been

much debate among providers about the appropriate standard for oral care. Legitimate concerns about varying etiologies of oral breakdown among differing patient populations have slowed overall progress, however. Focusing on developing a standard may not be clinically helpful, because each population may have unique needs (McGuire, 2003). Implementing oral care standards is sometimes hindered by administrative and clinical issues associated with low staffing levels and excessive workloads and is compounded by the delegation of oral care to unlicensed staff members (Wardh, Hallberg, Berggren, Andersson, & Sorenson, 2000; Peate, 1993). Administrators may not fully appreciate the consequences of poor oral hygiene in an at-risk population and may compromise on providing resources to ensure adequate oral care (McGuire; Paulsson, Nederfors, & Fridlund, 1999). A lack of collaboration in hospital settings may contribute to gaps in oral care as dentists and oral hygienists are infrequently asked to be a part of the multidisciplinary team regarding oral care policies and procedures, and, conversely, dentists and hygienists often overlook the role of the nurse in providing oral care (Fulton, Middleton, & McPhail, 2002; McGuire).

Nursing interventions are able to interrupt the process of plaque formation and its consequences. Failure to provide adequate oral care can result in harm to the patient and therefore might be considered negligence in some situations (Adams, 1996). In practice, registered nurses (RNs) frequently delegate the actual delivery of oral care to unlicensed personnel, including nursing assistants, technicians, and student nurses (Peate, 1993). Therefore, care provided by nurses and unlicensed personnel collectively represents the totality of nursing care directed at minimizing oral complications in this at-risk group.

## Purpose and Research Questions

A review of the literature found few accounts of oral assessment parameters and nursing interventions for the neuroscience patient. This article identifies oral care interventions practiced by nurses and unlicensed personnel caring for a neuroscience patient population with self-care deficits. Empiric evidence and clinical observation suggested that oral care varies by provider and may reflect differences in knowledge, education, experience, and skill among RNs as well as nursing assistants, technicians, and student nurses (unlicensed personnel), or it may reflect systemic issues such as lack of equipment or products. Thus, the following questions were posed:

1. What oral care interventions are reported by RNs and unlicensed personnel caring for neuroscience patients with self-care deficits?
2. What are the most frequently reported oral conditions encountered by RNs and unlicensed personnel in the neuroscience population with self-care deficits?

3. What is the frequency with which RNs perceive the neuroscience patient to be at risk for oral complications?
4. What are the reported barriers and facilitators to the delivery of oral care by RNs and unlicensed personnel for the neuroscience patient with self-care deficits?

## Methods

The study used a descriptive survey design. The survey technique was selected because it focuses on gathering information by direct questioning regarding activities, beliefs, preferences, and attitudes of participants (Polit and Hungler, 1997). An investigator-designed questionnaire was used to obtain information from the participants regarding the routine procedures and associated products used to deliver oral care to a neuroscience patient population.

### Sample and Setting

The study was conducted in a 700-bed tertiary hospital in a Midwestern metropolitan area. The hospital is a Level 1 trauma center and is the leading referral center in the state for patients with stroke, cerebral aneurysm, and central nervous system congenital malformations. It also has a large neuroscience service with a designated 25-bed neuroscience acute care unit and a 36-bed neuroscience nonacute unit. Forty nurses and 25 unlicensed personnel composed the regular staff assigned to the two units. This sample pool was selected because they work with the neuroscience population, are responsible for directing and providing oral care, and have varying amounts of experience with neuroscience patients.

### Instrument

Two questionnaires were used—one for RNs and a second one for unlicensed personnel. Although similar, the two questionnaires reflected the different practice responsibilities of each provider. Both questionnaires were composed of 25 questions. The content of the questionnaires was similar.

The first category of questions asked participants to identify the products used to deliver oral care—items such as toothbrushes, mouthwash, and lip and mouth moisturizer—and to rank the frequency with which the item was used, on a 4-point scale from *never* to *always*. Specific oral care products were selected for inclusion in the questionnaire based on a review of the literature and clinical observation of current practice. The second category of questions inquired about frequency and timing of care and documentation of care. The choices offered for frequency of oral care were *am and pm care, before meals, after meals, and when the patient requests*. Frequency of documentation was ranked on a 4-point scale from *never* to *always*. Category 3 asked participants to rank

frequency of complications and problems encountered by the neuroscience population on a 4-point scale from *never* to *always*. The complications selected for inclusion were determined from the literature. For RNs, this group of questions asked directly about complications; for unlicensed personnel, the questions were worded as problems that should be reported to an RN. Category 4 asked about specific system issues frequently cited in the literature as contributing to problems with the delivery of routine oral care. Participants were asked to rank their level of agreement on a 4-point scale from *disagree* to *strongly agree* with statements about the system support, including availability of resources—supplies and time, the priority placed on oral care, and resources to deal with complications. The last section of both versions of the questionnaire included demographic questions.

The instrument was piloted by several RNs and unlicensed personnel for readability and usability. Content validity was established by expert nurses familiar with research and literature in the area of oral care. Data were summarized and reported as frequency data by question and category.

### Procedures

Nurse managers agreed to distribute the questionnaire to the staff using a unit-based mail system. A cover letter explaining the purpose of the project was attached to the questionnaire. Staff members were assured that participation was voluntary and anonymous—no names appeared on materials and the researcher was not given the names of the participants. One U.S. dollar bill was attached to the invitation letter thanking individuals for participating and telling them to keep the money even if not participating. After 1 week, a reminder letter with a questionnaire was placed in the mailbox. Marked, secure collection boxes were placed near staff mailboxes, and questionnaires were retrieved by the researcher. Questionnaires were destroyed upon study completion. The institutional review board for human subjects approved this study.

### Findings

Data were entered into the Statistical Package for Social Sciences (SPSS) Version 12.0, and frequency distributions were created. The response categories *frequently* and *always* were collapsed. Histograms were created to display the data by type of provider (RN or unlicensed personnel) for each question and to demonstrate trends in similarities and differences between the groups. Demographic data were also summarized in frequency tables. Of the eligible RN participants, 38% ( $n = 15$ ) participated and, of eligible unlicensed personnel, 60% ( $n = 15$ ) participated. Nurses reported having more years of experience ( $M = 13$  years) than unlicensed personnel ( $M = 9$  years), and having more years of experience in neuroscience nursing ( $M$

= 9.5 years) than unlicensed personnel ( $M = 4.5$  years; Table 1). The majority of respondents (73% of nurses and 72% of unlicensed personnel) reported working the day shift (7 am–7 pm), the time oral care would most likely occur.

Data were further analyzed to answer the four research questions. Using SPSS, results were reported as a valid percentage. Valid percentage is the most widely used percentage column of frequency tables, because it reflects the percentage of those who actually responded to the question. All results were rounded up once the following number reached five. Results are presented by research question.

*What oral care interventions are reported by nurses and unlicensed personnel for neuroscience patients with self-care deficits?* Eight different products were listed on the questionnaire. The products RNs most frequently reported using were toothbrush, toothpaste, and lip and mouth moisturizer. The products unlicensed personnel most frequently reported using were toothbrush, mouthwash, and lip and mouth moisturizer. Seventy-nine percent of RNs reported using foam swabs, whereas

85% of unlicensed personnel reported using foam swabs. Participants were asked to report the frequency and timing of oral care. Four different times were listed in relation to a normal care day—*am and pm care, before meals, after meals, and at patient request*; participants checked all that applied. The majority of RNs and unlicensed personnel reported providing am and pm oral care (88% each). Unlicensed personnel reported providing care before meals (27%) and after meals (53%), whereas fewer nurses reported care before meals (13%) and after meals (27%). Only 60% of RNs and 67% of unlicensed personnel reported providing care at the patient's request. Participants were asked to report on the frequency of documenting oral care. Unlicensed personnel reported documenting *frequently or always* 60% of the time, whereas RNs reported documenting oral care *frequently or always* 29% of the time. Table 2

presents the percentages of RNs and unlicensed personnel reporting by type of product, frequency and timing of care, type of product, frequency of care, and frequency of documentation by type of provider.

*What are the most frequently reported oral conditions encountered by nurses and unlicensed personnel in the neuroscience population with self-care deficits?* Nurse participants were asked to report oral conditions commonly encountered in the neuroscience population. Dry tongue was the most frequently encountered oral condition, as reported by RNs (93%). RNs also reported two additional common problems—thick, ropery secretions and debris on the tongue. RNs did not report bleeding gums as a problem for this population.

Unlicensed personnel were asked to identify problems that should be reported to an RN. They reported that pain associated with the provision of oral care would always (100%) need to be reported to an RN. Although unlicensed personnel noted that swollen gums, bleeding gums, dry and crusty tongue, and white patches in

**Table 1. Participant Demographics**

Variable	Registered Nurse		Unlicensed Personnel	
	Mean	Range	Mean	Range
Years of nursing experience	13	1–35	9	0.5–25
Years of neuroscience nursing experience	9.5	1–25	4.5	0.5–11

**Table 2. Oral Care by Type of Provider: Type of Product, Frequency, Timing, and Documentation**

Product or Agent	Registered Nurses Reporting <i>Frequently or Always</i> (%)	Unlicensed Personnel Reporting <i>Frequently or Always</i> (%)
	Foam swab	79
Water	92	71
Mouthwash	65	86
Mixture of hydrogen peroxide and water	31	23
Normal saline	7	14
Toothbrush	100	87
Toothpaste	100	78
Mouth or lip moisturizer	93	93
Timing and Documentation	Registered Nurses (%)	Unlicensed Personnel (%)
<b>Timing</b>		
am and pm care	88	88
Before meals	13	27
After meals	27	53
Per patient request	60	67
<b>Documentation</b>	29	60

mouth or on tongue were problems for the neuroscience patient, only 80%–87% indicated that these observations should be reported to a nurse.

*What is the frequency with which nurses perceive the neuroscience patient to be at risk for oral complications?* This question explored participants' perceptions of neuroscience patients' risk for developing oral complications. Both RNs and unlicensed personnel agreed that neuroscience patients were at risk of developing severe complications related to oral problems—73% of RNs and 67% of unlicensed personnel agreed. Complications for which the neuroscience patients were at risk were reported by RNs to be fungal infections (100%), aspiration pneumonia (93%), bacterial infections (80%), and airway obstruction (73%). Unlicensed personnel were not asked to identify specific at-risk conditions. Table 3 summarizes oral conditions in the neuroscience patient population reported by RNs and oral conditions identified by unlicensed personnel as needing to be reported to a nurse.

*What are the reported barriers and facilitators to the delivery of oral care by nurses and unlicensed personnel for the neuroscience patient with self-care deficits?* All of RNs and unlicensed personnel agreed that oral care supplies were available. Eighty percent of RNs and 93% of unlicensed personnel agreed that the supplies were appropriate. Sixty percent of RNs and 73% of unlicensed personnel agreed that time to provide oral care was adequate. When RNs were asked if they agreed that oral care was an important part of patient care, 93% of RNs and 100% of unlicensed personnel agreed. Sixty percent of RNs agreed that an expert consultant in the area of oral care problems was available. An *expert in oral care* was defined as a resource nurse (an RN with additional education and skills regarding oral care), dental hygienist, dentist, oral surgeon, or other professional with recognized expertise in managing oral health problems. Eighty-seven percent of unlicensed

personnel agreed that a staff nurse assigned to the unit was available to help them with oral care problems. These findings are summarized in Table 4.

## Discussion

RNs reported providing oral care most often with toothbrushes and toothpaste. Foam swabs and mouthwash were reported as used less often, and hydrogen peroxide and normal saline were reported as *seldom* or *never* used. The reported use of toothbrushes as the first choice in care is not consistent with the literature that suggests the foam swab is the first choice (Kite and Pearson, 1995). In this particular practice setting, a new toothbrush product recently was introduced. The product has a foam swab on the back that can be connected to wall suction to protect the patient from aspirating during oral care. The product appears to have become a first choice among RNs. However, unlicensed personnel reported more often using foam swabs. Foam swabs have been demonstrated to be inadequate in removing plaque and debris (Lefkoff, Beck, & Horton, 1995; Ransier et al., 1995). Commercially available mouthwashes often contain alcohol, which is drying to mucous membranes (Rawlins et al., 2001). The discrepancies among product choices may reflect lack of availability, knowledge, or other issues that should be addressed.

RNs and unlicensed personnel both reported that dry tongue was a problem frequently encountered in the neuroscience patient. Medications used to control common comorbid conditions such as hypertension and seizures are xerostomic; therefore, it is clinically important to select oral care products such as mouthwashes that do not dry mucous membranes. Both groups reported using lip moisturizer. The questionnaire did not inquire about oral moisturizers. However, it appears from the survey that oral moisturizers are clearly indicated for the neuroscience population. For this patient population, clinical guide-

lines are indicated to assist all staff in selecting appropriate products. In addition, the use of care guidelines created for this patient population would facilitate interventions for specific risk factors such as dryness of mouth, lips, and tongue.

Oral care was reported by RNs and unlicensed personal as most often given twice a day, in the morning and evening. This twice-a-day approach is consistent with traditional care routines in the hospital (Barnason et al., 1998; Grap, Munro, Ashtianti,

**Table 3. Oral Conditions Reported by Registered Nurses or Identified by Unlicensed Personnel as Needing to Be Reported to a Nurse**

<b>Oral Conditions Reported by Nurses</b>	<b>Nurses Reporting Frequently or Always (%)</b>
Thick or ropery secretions	77
Dry tongue	93
Sores in mouth	14
Tongue covered with debris	71
Bleeding gums	0
<b>Oral Conditions Identified by Unlicensed Personnel as Needing to Be Reported to a Nurse</b>	<b>Unlicensed Personnel Reporting Frequently or Always (%)</b>
Swollen gums	80
Bleeding gums	80
Dry, crusty tongue	80
Patchy white spots in the mouth or on tongue	87
Pain	100

**Table 4. System-Level Factors in Providing Oral Care**

Factor	Nurses Reporting Strongly Agree or Agree (%)	Unlicensed Personnel Reporting Strongly Agree or Agree (%)
Oral care supplies are available.	100	100
Available supplies are appropriate for patients.	80	93
Adequate time is available to provide oral care.	60	73
Oral care is an important element of patient care.	93	100
Consultant is available for oral care.	60 <sup>a</sup>	87 <sup>b</sup>

<sup>a</sup>Consultant = expert in oral care  
<sup>b</sup>Consultant = unit-based staff nurse

& Bryant, 2003). Twice-a-day care is the minimal standard for an active person consuming a healthy diet (American Dental Association, n.d.). The neuroscience population often has difficulty in eating and swallowing as well as related compromised saliva production—a condition that contributes to plaque formation and inflammatory sequelae (Kite & Pearson, 1995). Guidelines for routine oral care should include more frequent oral care—perhaps four or more times a day. Both RNs and unlicensed personnel reported not always providing oral care at the patient's request. This finding may be related to confusion about the way the question was worded; it is likely that the respondents interpreted the question to be inquiring about how often patients request care. Clinical experience suggests that many neuroscience patients are not able to request mouth care because of disease or complications of disease. The presence of dry tongue and thick, ropery secretions probably interferes with verbal communications, and patients may not always request care when they wish to receive it. In addition, many neuroscience patients have cognitive problems that may interfere with communication. It cannot be assumed that because patients do not request care, that no care is needed. Because of increased risk and competing care priorities, the frequency of routine oral care should be increased and planned so as not to interfere with other treatments and scheduled therapy.

RNs and unlicensed personnel both agreed that neuroscience patients were at risk for complications. All nurse participants noted that fungal infections were possible complications, and 90% noted that airway obstruction, bacterial infections, and aspiration pneumonia were possible complications. A comprehensive outcome evaluation program is needed to demonstrate a link between actual oral health and the presence of complications in this high-risk population.

RNs and unlicensed personnel identified system barriers to providing oral care. Both RNs and unlicensed personnel reported that oral care supplies were available and that the supplies were appropriate. A review of the supplies actually stocked on the units where the survey respondents worked revealed, however, that stocked items were not

always recommended in the literature. For example, the mouthwash that was available contained relatively high levels of alcohol, an ingredient shown to cause discomfort in patients who have broken oral mucosa (Rawlins et al., 2001). It was noted that, although a saliva substitute was available, it was not routinely stocked on the unit. This finding suggests that staff may assume

that because a care item is available it is appropriate and therefore do not request care products. This finding also suggests that staff select from among available products based on personal preference and may not always be matching patient care needs to product features. This factor may contribute to variability in interventions, a precursor to poor oral care outcomes. System-level supply issues should be addressed in the process of developing oral care guidelines. Supplies should be considered from two perspectives—evidence of effectiveness and cost. Products that lack evidence of effectiveness should be eliminated, and effective products should be selected based on cost factors. Hospitals should create interdisciplinary committees to review and select products. Including purchasing and procurement personnel in the selection process can help in determining cost of care. Outcome data should track both clinical and fiscal outcomes.

In this study, both RNs and unlicensed personnel agreed that oral care was an important element of total patient care. A similar study involving personnel in nursing homes in Sweden found that unlicensed personnel rated oral care more bothersome and unpleasant than RNs did (Wardh et al., 2000). Unlicensed personnel may rate this unpleasant task as having a lesser importance. Additional evidence supports the idea that oral care is not viewed as an important intervention (Rawlins et al., 2001). This study relied on self-reported data. Although participants may have reported that oral care is important, no data are available to compare to actual practice. Both groups reported that the time allotted to provide oral care was not adequate, which may reflect that oral care has lower priority compared with other care demands. Unlicensed personnel reported documenting oral care more frequently than RNs. An outcomes-monitoring program would help link documentation of care to outcomes and increase the relevance of documentation to quality patient care.

Sixty percent of nurses reported not having an expert consultant available for assistance with oral care issues. This finding is supported by earlier work in which it was noted that dentists were not available and were not involved in developing protocols for oral care (Fulton

et al., 2002). Perhaps the most appropriate first-line consultant would be an oral hygienist. Oral hygienists are professionals educated to provide dental hygiene using scientific theories and standards of care. Both dentists and oral hygienists need to be more engaged in establishing oral care protocols and be available for consults. It is also interesting to note that not all unlicensed personnel viewed the unit-based RN as an available consultant for oral care problems, although the same group noted that they would report oral problems to an RN and would document oral problems. This finding suggests a disconnect between observing, reporting, and recording problems and actually following up with a plan of care.

An effective outcomes program requires a standardized oral assessment instrument. This study did not include questions about oral assessment because no standardized format or instrument was used in the setting. Standardized assessment parameters are critical to monitoring the effectiveness of oral care routines, including timing, frequency, and products. The literature suggests that the neuroscience patient is at high risk for oral complications and that such complications can be both local and systemic. It is imperative that guidelines developed for this population include outcomes monitoring for ongoing evaluation of patient care and determination for best practice.

## Limitations

The findings of this study are based on self-reported data. Responses were limited to the fixed choices on an investigator-designed instrument. It is likely that the data are incomplete; participants might have been able to provide more information if a more open-ended data collection method had been used alone or in combination with an observational method. Adding case examples would help identify nurses' judgment and critical decision making about oral care complications.

Although the instrument was reviewed by staff before being used for the study, results suggest that several questions were not clear. For example, staff report not providing mouth care when requested by patients, but this patient population may not request care for multiple reasons related to cognitive and physical deficits.

The study is limited to one setting. Respondents may have been reluctant to report findings that they thought might reflect poorly on themselves or their units. Including more and different types of settings would help identify issues from a broader perspective.

Additional studies are needed to determine nurses' knowledge about complications related to poor oral health and oral care. Nurses reported knowing about oral complications, but additional research is needed to determine the ability of nurses to apply knowledge in practice and the impact of knowledge on practice and

patient outcomes. Outcomes research is needed to document the link between oral health, oral care, and local and systemic complications. Cost factors should be evaluated, including the cost of routine preventative oral care and costs related to complications.

Oral care is frequently delegated to unlicensed personnel. Unlicensed personnel acquire knowledge and skill in oral care through a variety of options, including formal vocational education programs, hospital-based training programs, and on-the-job training. Additional research is needed to explore the most effective methods for training unlicensed personnel. Research is needed to address nurses' abilities to supervise and evaluate care provided by unlicensed personnel.

## Summary

This study investigated oral care interventions reported by nurses and unlicensed personnel caring for neuroscience patients with self-care deficits. The use of some reported interventions, such as mouthwash containing alcohol and foam swabs, is not supported by research. Thick and ropery secretions, dry tongue, and excessive debris on the tongue were frequently reported oral conditions encountered by nurses and unlicensed personnel. Nurses reported that neuroscience patients were at risk for fungal infections, airway obstruction, bacterial infections, and aspiration pneumonia. Limited time to provide care and access to an expert such as a dentist or dental hygienist were identified as barriers to providing care.

The neuroscience patient with limited self-care abilities is dependent upon nursing interventions for oral care to reduce plaque buildup and prevent complications. For this population, evidence-based guidelines are needed to address the specific risk factors that contribute to poor oral health. Outcome evaluation is necessary to monitor the effectiveness of care, reinforce the importance of care, identify gaps in knowledge, and justify system-level changes.

## References

- Adams, R. (1996). Qualified nurses lack adequate knowledge related to oral health, resulting in inadequate oral care of patients on medical wards. *Journal of Advanced Nursing*, 24(3), 552-560.
- American Dental Association. (n.d.). *Recommended oral care guidelines*. Retrieved September 10, 2003, from www.ada.org.
- Andersson, P., Westergren, A., Karlsson, S., Hallberg, I. R., & Renvert, S. (2002). Oral health and nutritional status in a group of geriatric rehabilitation patients. *Scandinavia Journal of Caring Science*, 16, 311-318.
- Barnason, S., Graham, J., Wild, M. C., Jensen, L. B., Rasmussen, D., Schulz, P., et al. (1998). Comparison of two endotracheal tube securement techniques on unplanned extubation, oral mucosa, and facial skin integrity. *Heart & Lung: Journal of Critical Care*, 27(6), 409-417.
- Clarke, G. (1993). Mouth care and the hospitalized patient. *British Journal of Nursing*, 2(4), 225-227.
- Coleman, P. (2002). Improving oral health for the frail elderly: A review of widespread problems and best practice. *Geriatric Nursing*, 23(4), 189-199.
- Fulton, J. S., Middleton, G. J., & McPhail, J. T. (2002). Management of oral complications. *Seminars in Oncology Nursing*, 18(1), 28-35.

- Grap, M. J., Munro, C. L., Ashtiani, B., & Bryant, S. (2003). Oral care interventions in the critical care: Frequency and documentation. *American Journal of Critical Care, 12*(2), 113-118.
- Holmes S. (1996). Nursing management of oral care in older patients. *Nursing Times, 92*(9), 37-39.
- Kite, K., & Pearson, L. (1995). A rationale for mouth care: The integration of theory with practice. *Intensive and Critical Care Nursing, 11*(2), 71-76.
- Kostler, W. J., Hejna, M., Wenzel, C., & Zielinski, C. C. (2001). Oral mucositis complicating chemotherapy and/or radiotherapy options for prevention and treatment. *CA: A Cancer Journal for Clinicians, 51*, 290-315.
- Lee, L., White, V., Ball, J., Gill, K., Smart, L., McEwan, K., et al. (2001). An audit of oral care practice and staff knowledge in hospital palliative care. *International Journal of Palliative Care, 7*(8), 395-400.
- Lefkoff, M. H., Beck, F. M. & Horton, J. E. (1995). The effectiveness of a disposable tooth brush cleansing device on plaque. *Journal of Periodontology, 66*(3), 218-221.
- McGuire, D. R. (2003). Barriers and strategies in implementation of oral care standards for cancer patients. *Support Care Cancer, 11*, 435-441.
- McNeill, H. E. (2000). Biting back at poor oral hygiene. *Intensive and Critical Care Nursing, 16*, 367-372.
- Miaskowski, C. (2001). Biology of mucosal pain. *Journal of the National Cancer Institute Monographs, 29*, 37-40.
- Miller, M., & Kearney, N. (2001). Oral care for patients with cancer: A review of the literature. *Cancer Nursing, 24*(4), 241-254.
- Milne, V., Brady, M., & Hunter, R. (2002). Staff led interventions for improving oral hygiene in patients following stroke. *Cochrane Database of Systematic Reviews, 4*.
- Paulsson, G., Nederfors, T., & Fridlund, B. (1999). Conceptions of oral health among nurse managers: A qualitative analysis. *Journal of Nursing Management, 7*, 299-306.
- Polit, D. F., & Hungler, B. P. (1999). *Nursing research: Principles and methods* (6th ed). Philadelphia: Lippincott.
- Rakel, R. (Ed.). (1997). *Conn's current therapy*. Philadelphia: W.B. Saunders. Retrieved from www.chclibrary.org.
- Ransier, A., Epstein, J. B., Lunn, R., & Spinelli, J. (1995). A combined analysis of toothbrush, foam brush and a chlorhexidine-soaked foam brush in maintaining oral hygiene. *Cancer Nursing, 18*(5), 393-396.
- Rawlins, C.A., Ward, J., & Trueman, I. W. (2001). Effective mouth care for seriously ill patients. *Professional Nurse, 16*(4), 1025-1028.
- Roberts, J. (2000) Developing an oral assessment and intervention tool for older people. *British Journal of Nursing, 9*(17), 1124-1127.
- Squier, C.A., & Kremer, M. J. (2001). Biology of oral mucosa and esophagus. *Journal of the National Cancer Institute Monographs, 29*, 7-15.
- Stiefel, K.A., Damron, S., Sowers, N. J., & Velez, L. (2000). Improving oral hygiene for the seriously ill patient: Implementing research-based practice. *Medsurg Nursing, 9*(1), 40-46.
- Turner, G. (1996). Oral care. *Nursing Standard, 10*(28), 51-56.
- Wardh, I., Hallberg, L. R. M., Berggren, U., Andersson, L., & Sorensen, S. (2000). Oral health care: A low priority in nursing—In-depth interviews with nursing staff. *Scandinavian Journal of Caring Sciences, 14*(2), 137-142.
- Yoneyama, T., Yoshida, M., Ohrui, T., Mukaiyama, H., Okamoto, H., Hoshiba, K., et al. (2002). Oral care reduces pneumonia in older patients in nursing homes. *Journal of the American Geriatrics Society, 50*, 430-433.

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