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Interprofessional Education and Collaboration

Oral Health Care for Nurse Educators, Part 1: Birth to 6 Years Old

Jan Mitchell, DDS, MEd [a,*], Andrew Shoemaker, DMD [b]

[a] Department of Restorative Sciences Dental College of Georgia at Augusta University, Augusta, GA 30912 USA
[b] Turner Pediatric Dentistry, Acworth, GA 30101 USA

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Introduction

As integrated health care teams become the norm in the US health care system, leaving the mouth to episodic dental care may not be the best strategy. Nurses often are ideally placed to observe, offer important preventive information, and make timely referrals because of their position as trusted care providers with frequent patient contact.

This article is the first in a series based on stage of life intended to provide vetted content and information appropriate for integration into current associate degree nursing curricula regarding the mouth and oral cavity. Future articles will cover childhood and adolescence, adulthood, and geriatric patient groups. For each age group, the focus will be on the most common disease processes and the practical preventive counseling a nurse can offer.

The Pregnant Patient and the Newborn: Supporting Two Smiles

The Oral Biome and the First Kiss

In the First Hours of Life: the Transmission of Oral Biome Flora

While the infant's oral cavity is nearly sterile at birth, a complex, dynamic biome of oral flora begins to form as a result of environmental factors and interactions with those who care for the baby (Lapirattanakul & Nakano, 2014). The development of the oral biome continues to be modified as various flora and bacterial colonies give way to a complex ecology over the first years of life when transmission from peers can also occur (Domejean et al., 2010).

Many of these bacteria received in the early months of life will stay with the individual for life and will affect that individual's susceptibility to oral diseases, including caries. Caused by *Streptococcus mutans* and *Lactobacillus* bacteria, these organisms may be abundantly present in the mouth of the new mother. Therefore, by attending to the oral health of the expectant mother with appropriate referral and counseling, a nurse may be able to positively impact the oral health of the newborn as well.

Assessing Which Expectant Mother May Benefit From Dental Referral and Caries Prevention Counseling

A nurse should take the time to look for visibly decayed teeth in the expectant mother and ask about recent dental treatment and/or pain because the best indications of oral health status are (a) a filling, (b) lost teeth, or (c) history of toothache over the past 3 years. Women with special needs are at higher risk for caries, whereas diabetic patients are at greater risk for periodontal disease, and a dental referral is appropriate. In addition, women receiving government assistance (Medicaid, for example) are statistically at higher risk and could benefit from support in this area.

Caries Prevention Counseling

A nurse should encourage the expectant mother to develop an oral hygiene routine by suggesting brushing and flossing to remove dental plaque and the following:

- Brushing twice daily with a fluoride-containing toothpaste, with the additional advice to “Spit, don't rinse” because rinsing toothpaste out with water also removes the beneficial fluoride. Instruct them to leave the residual toothpaste foam in the mouth (Sjogren, Birkhed, & Rangmar, 1995).
- Chewing sugar-free gum, particularly after meals, to stimulate saliva flow. Those sweetened with the sugar substitute xylitol have been found to reduce transmission of *S. mutans* from

* Corresponding author.
E-mail address: JANMITCHELL@augusta.edu (J. Mitchell).

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mother to child (Soderling, Isokangas, Pienihakkinen, Tenovuo, & Alanen, 2001; Yates & Duane, 2015).
- Limit the frequency of snacks that include carbohydrates, particularly sugar-containing beverages including fruit juice, energy drinks, and soda (Rugg-Gunn, 2013).

Caries: Nature or Nurture?

Because it is clear that infants receive their population of oral bacteria from early caregivers and that new mothers/caregivers can be expected to exchange saliva through affection and normal interactions with the infant, the bacteria of the mother/caregiver is transmitted to the infant. Therefore, although caries may be prevalent in a family, it is probably not because of genetics but rather to contamination by a caregiver or playmate.

With this perspective, when counseling a new parent or family in the importance of oral health (and developing daily oral health routines), a nurse treats both the family unit and the infant who has just entered it. When there is a high proportion of cavity-causing *S. mutans* or *Lactobacillus* bacteria in the saliva or a caregiver or another child, usually because of an active cavity, they can be passed on to the infant by direct contact through sharing food, drink, or salivary exchange (Li et al., 2005).

How Do Bacteria Cause Caries?

Caries, an oral disease with lifelong impact, is caused by the acid produced by two groups of cariogenic bacteria during their intake and digestive processes. Notably, *S. mutans* (along with benign oral flora) adhere to tooth surface by converting sugars found in saliva to sticky coating material—and powerful acids (pH 1). This white coating of bacteria is known as *plaque*.

When plaque contains a high proportion of *S. mutans* and is exposed to a frequent source of simple carbohydrates, including sugars both raw and refined, the production of acid is high enough to dissolve calcium and phosphate from the enamel surface of the tooth, leaving a hole, which is caries or a carious lesion—but which is also commonly called a *cavity* or *tooth decay*.

At the First Well-Baby Visit

Pacifier Versus Thumb Sucking

Because a normal baby uses sucking behaviors to fill the psychological need for self-soothing (Dean et al., 2016), "Is a pacifier OK?" and "Should I stop my child from sucking their thumb?" are common first questions from new parents about infant oral health. Of more importance than the choice is the duration of the habit, with an increase in occlusion (bite) problems if it persists for more than 15 months. Of the two, a pacifier is generally preferred by dentists because it can more easily be removed from the child when ready to stop the habit, preferably by 24–36 months of age (Duncan, McNamara, Ireland, & Sandy, 2008). However, advise the parents/caregivers not to coat the pacifier with any sugary substance, like honey, syrup, or soda because this sets up an environment for bacterial overgrowth, especially *S. mutans* (Dean et al., 2016).

Feeding Frequency and Advice

Limiting food source to recommended regular feeding times is preferable to more frequent exposures to limit the overgrowth of harmful *S. mutans* by limiting their food source. Motivational interviewing techniques have been shown to be effective with maternal education on the reducing childhood caries (Weinstein, Harrison, & Benton, 2006).

Cleaning the Infant Mouth

Even before teeth erupt, the gums can be cleaned with a soft cloth daily and ideally after feedings, either breast or bottle. This removes excess residual food for bacterial overgrowth.

At the 6 Month Well-Baby Visit: The First Tooth

Teething

The eruption of the first tooth in a child's mouth is often accompanied with pain. The child may announce this with irritability, drooling, sleep interruption, and increased chewing on seemingly anything available (Berkowitz, 2006; Douglass et al., 2008). Treatments for infant's oral discomfort associated with teething are a cold teething ring or cloth on the gums. Acetaminophen or ibuprofen at infant level dosage, if necessary, can be recommended (McIntyre & McIntyre, 2002). However, over-the-counter lidocaine-containing products marketed to new parents are not recommended by the US Food and Drug Administration, and nurses should discourage their use (Balicer & Kitai, 2004). A new parent may be concerned to the sight of a small hematoma that may be present on the gum just before a tooth erupts (Nowak et al., 2007), and although this is dramatic in appearance, no treatment is needed.

A nurse can also assure parents/caregivers that teething does not cause fever, upper respiratory or ear infections, diarrhea, rash, or seizures. If these symptoms appear when an infant is teething, appropriate medical interventions should be recommended (Barlow et al., 2002; McIntyre & McIntyre, 2002; Wake et al., 2000).

First Brushing Instructions

Once the first tooth or few teeth present themselves, nurses can instruct the parent/caregiver to use a soft toothbrush and a smear (Photo 1, Left) of fluoride-containing toothpaste to clean the infant's mouth twice a day (American Academy of Pediatric Dentistry Clinical Affairs Committee and Infant Oral Health Subcommittee, 2012). Tooth brushing can be a pleasant, attention-filled bonding time for both parent/caregiver and child. The first toothpaste chosen should contain fluoride. However, young children often find mint-flavored pastes, which were created to appeal to adults, not to their liking and may refuse to permit brushing. If the child protests at tooth brushing, recommend a mild children's flavor such as a fruit or vanilla.

Fluoride and Recommending Fluoride to New Parents/Caregivers

Fluoride and its use can elicit strong opinions across the United States. Once they understand the position of the parent/caregiver, nurses are in a unique position to advise new parents on the benefits and perceived risks for a child and then to continue to support the position the parent takes.

A few facts about fluoride may be helpful. It is a mineral found naturally in ground water around the world but at vastly varying levels. Even low levels of fluoride in drinking water can have a positive impact on lower the risk of caries in children.

Fluoride, when introduced to the saliva through drinking water or toothpaste, acts as a catalyst to the natural process of enamel remineralization. The tooth enamel surface, thereby, remains hard and healthy. It is helpful to know if the drinking water is fluoridated because fluoride containing water (tap or bottled if fluoridated) has been shown to reduce cavities by approximately 55%. However, additional fluoride tablets or drops are not usually recommended because fluoride acts in the saliva (solution) and is not effective when taken systemically (Fejerskov & Kidd, 2008).

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