

Top Ten List of... Sound Oral Health Strategies to Keep Children Pain-Free and Problem-Free Throughout Childhood



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Abstract

Emerging information, technology and therapies make it possible for most children today to grow up with good oral health. The most powerful vehicle we have to achieve this goal is informed professionals and parents. All the tools exist to promote oral health and prevent problems in children if we apply what we know and have learned. The challenge is to increase dissemination of this information, and to remind everyone that good oral health contributes significantly to one's overall general well being¹².

I- INTRODUCTION

Dental problems during infancy and childhood are mostly avoidable. However, detailed information on how to achieve optimal oral health for children is not readily accessible to parents. Visits to the dentist, which should begin by age one^{1,2}, are rarely part of a young child's routine before age three, because pediatric health care professionals do not, for the most part, include oral health guidance as part of their general health counseling.

Parents, non-dental health professionals and dentists alike can benefit by becoming aware of the latest science and information concerning early oral health promotion and disease prevention strategies³. Increasingly, the pediatric dental community is looking toward OB-GYN and pediatric medical professionals to disseminate information to expectant

mothers and parents of newborns on how to maintain their infant's oral health, recognize common oral lesions, avoid early dental decay, and deal successfully with common problems of childhood such as teething and oral injuries. Additionally, age-specific information (anticipatory guidance)^{4,5} should be readily available on issues such as pacifier use, digit sucking, fluorides and effective oral hygiene practices.

Dental caries (cavities) is an oral disease that can begin to ravage the mouth of an infant or child as early as when the first tooth erupts. Mutans Streptococci (MS) have been identified as the group of microorganisms primarily responsible for dental caries⁶. The earlier MS establishes its presence in the mouth, the more extensive and rapid caries development can be expected. They colonize

by way of dental plaque, a complex biofilm that adheres to teeth^{7,9}.

Early Childhood Caries (ECC) occurs in susceptible children whose feeding patterns are such that these bacteria are constantly active, producing acid that attacks the enamel covering of teeth. This results in gradual demineralization and cavitation. Frequent ingestion of foods, particularly refined sugars and fermentable carbohydrates, fuel the bacteria and overload the saliva - the oral clearance and remineralization system. The saliva is unable to do its job of clearing the mouth of harmful carbohydrates and allowing the demineralized enamel to "heal"; that is, to remineralize using ions from the saliva to restructure itself after having been depleted by the acid attack¹⁰. Before long, resulting massive decay and dental infections can

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have devastating effects on the quality of life for the child. Pain, swelling and early tooth loss may result in eating and nutritional difficulties. These, in turn, can cause lethargy, impaired learning, poor behavior, moodiness, and a general failure to thrive.

Part of the difficulty in devising an effective strategy to prevent Early Childhood Caries is that only an estimated five percent of children who are exposed to the risk factors actually manifest clinical ECC. Past experience has shown that many parents, even when educated about the benefits of good oral health practices and the hazards of ECC, still practice risky behaviors such as putting the child to bed with a bottle and never cleaning the child's mouth and teeth. Apparently, they are willing to take the chance that their child will not be the 1 in 20 that exhibits the devastation, discomfort and disruption caused by ECC. Especially for this most vulnerable five percent, who are generally among the low-income, undereducated and/or immigrant population groups, oral health education must become an essential component of their general health counseling.

In pediatric dentistry, relevant issues are pervasive and dominant. The following TOP TEN LIST is presented to address some of the issues that have a serious impact on a child's oral health status. All are important and are not listed in order of importance. The goal is to make it easy for anyone to understand how to guide parents and their children toward promotion of oral health and prevention of oral disease. The list defines the "whys;" then offers practical strategies to enable anyone to perform the "hows."

Strategy N° 10

Mother must take care of her own oral health during pregnancy

Children are not born with MS, but acquire it as teeth erupt into their mouths between 6 months and 2 1/2 years of age⁽¹¹⁾. By age 5, more than half of all children are infected⁽¹²⁾. It has been suspected for a long time that the oral health of the mother impacts the oral



Figure 1. Most children get their first tooth by age six months. It is usually one of the lower central incisors, although variations are commonplace. It is at this time that parents should begin twice daily cleaning of the teeth and gums.

health of her children¹³⁻¹⁵. It has been proven that the organism is nearly always the same genotype as the mother's¹³, and is probably passed by shared eating utensils, putting fingers in mother's mouth, kissing, mothers licking pacifiers, etc. If present in high enough numbers, the MS infection puts the child at high risk for dental decay¹⁶.

With lower levels in the mother, the child becomes infected with lower levels of MS, and is likely to be at lower risk for dental decay¹⁵.

One good way to minimize risk for the child is for the mother to keep her own MS count low¹⁷, i.e., to practice good oral hygiene during pregnancy and the post-partum period. For most people, brushing teeth twice daily with a fluoride toothpaste, flossing, and using an over-the-counter fluoride mouth rinse will maintain good oral health and keep MS at a low level.

An expectant mother, experiencing dental problems during pregnancy, such as inflamed, swollen gums (pregnancy gingivitis) or increased dental decay, should seek professional care. A simple in-office test could determine if her MS count is high. In such cases, chlorhexidine rinses may be prescribed to help resolve the soft tissue and decay problems by lowering the bacterial count. Consensus suggests that the second trimester is the best time for non-emergency treatment, as it provides a balance between safety of the fetus and comfort of the mother-to-be.

Strategy N° 9

Visit a dentist when the baby's first tooth erupts or by age 1 to increase the likelihood of a caries-free childhood

One of the barriers to preventing early onset of dental decay is that parents are not informed of the necessary available interventions to prevent the disease. Pediatricians generally do not encourage early "well care" visits to the dentist, so most children do not see a dentist until age three or four unless a problem arises. The American Academy of Pediatric Dentistry advises that baby's first visit to a dentist should occur upon eruption of the first tooth (at about age 6 months) or no later than age one⁽¹¹⁾, to ensure that parents are well informed about oral health issues and needs of their children from infancy.

Prenatal counselors and pediatric health care providers (obstetricians, pediatricians, nurses, midwives, etc.) are well positioned to offer education and guidance to pregnant women and new parents on the basics of infant and toddler oral health. Unfortunately, medical education practically ignores oral health issues. Few practicing medical clinicians recognize and acknowledge the impact of oral health on one's general health. With the recent release of the Surgeon General's Report on Oral Health⁽¹²⁾, there will hopefully be an increased number of dental referrals for infants, toddlers and preschool children.

The first visit to the dentist of a mother with her infant should be viewed as a "well-baby visit." Visiting the office of a pediatric dentist or a dentist who treats young children is an opportunity for parents to learn the ABC's of oral health care specifically tailored to the needs of their child. An informed parent can deal effectively with behavioral and nutritional concerns that are at the root of early dental decay. They will also be prepared to make intelligent choices when it comes to other oral health issues such as proper hygiene practices, good nutrition, feeding frequency, pacifiers and injury prevention. Their child can grow up cavity-free¹⁸.

Strategy N° 8

Breast and bottle-feeding must be accompanied by sound oral hygiene interventions

Breastfeeding is preferable to bottle-feeding because it provides both developmental and immunological advantages for the child. However, breast-feeding on demand throughout the night can trigger the onset of early dental decay in the same manner as bottle-feeding.

Ideally, feeding patterns should be planned and be on some sort of schedule. In particular, nocturnal feeding increases the risk of dental decay, as little saliva is produced during sleep¹⁹. The oral bacteria can be extremely active during this time. Nutrients remain in the mouth longer and demineralization of enamel continues uninterrupted. Even during the day, continuous long-term exposure of dental enamel to acid, resulting from frequent snacking and eating results in demineralization, cavi-

tation and eventual destruction of the teeth²⁰. Fewer exposures to foods throughout the day and night reduce bacterial activity and lower acid levels, encouraging more efficient oral clearance by the saliva and a shift of the oral equilibrium to remineralization of the tooth enamel¹⁶. If a child is using a nursing bottle, s/he should be weaned from the bottle by age one²¹.

An important intervention in very young children is to simply keep their teeth clean to counteract acid attack and eventual cavity formation. Without the plaque matrix to which to adhere, the harmful bacteria do not colonize and will not harm the teeth. Caretakers should use a piece of moistened gauze or a soft washcloth as often as possible, preferably after each exposure to food, to wipe off plaque and debris from the teeth. A tiny amount of fluoridated toothpaste may be introduced after 6 months of age, but applied no more than once a day. Older children, age 2 and up, should use a soft toothbrush and a pea-size portion of fluoridated toothpaste at least twice a day (supervised, of course).

Strategy N° 7

Use cold/pressure for teething; avoid commercial preparations

Teething can be difficult even for the heartiest of babies. All indications are that the pain and discomfort associated with initial tooth eruption can be quite severe. Teething symptoms usually manifest as irritability, loss of appetite, fretful/intermittent sleep, drooling, finger/fist biting or sucking, and spontaneous episodes of crying²². Fever and diarrhea, commonly associated with teething, are more likely attributable to an opportunistic infection due to lowered resistance during periods of active eruption of teeth. The stress and strain on the entire family from an infant experiencing severe teething should not be underestimated.

The topical application of cold to the affected area is the most effective remedy for teething²². Accompanied by biting on a hard object, this is the best way to help the infant through difficult spells. Commercial teething rings, filled with sterile water, offer an effective and safe way to bring cold to the area causing discomfort. Just as effective, and less expensive, are refrigerated washcloths. They are large and coarse in texture, both desirable characteristics that get the job done safely and well. In both cases, a few spares should be kept ready, cold and clean, so that applications continue uninterrupted by rotating them.

Most commercial preparations are ineffective, as they are short-acting topical anesthetics. They also tend to mix with saliva and spread over the entire mouth, decreasing their effectiveness and tolerance by the child. Definitely avoid "traditional" or "folk" remedies such as rubbing whiskey or paregoric on the gums; no doubt we'd all agree that alcohol and narcotics are not appropriate by today's standards.



Figure 2. Young children and parents should visit a dentist by age one to learn age-appropriate oral health information and behaviors that will enhance the likelihood of optimal oral health in the developmental years.

Strategy N° 6

When frequency of eating decreases, oral clearance increases, discouraging MS activity

It used to be that oral health guidance from your dentist consisted of "don't eat sweets and brush twice a day," but it is somewhat more complicated on the "sweets issue." While sugar and carbohydrates are metabolized by MS, the thinking these days is that it is not so much what you eat that matters regarding the formation of cavities, but rather how often you eat¹⁶.

Reduction in the frequency of eating, in the form of regular meals and a few snacks per day, provides the healthiest nutrition and a reduced likelihood of enamel demineralization. Lowering the nutrient supply for MS and a subsequent acid reduction is achieved by minimizing the number of food exposures each day. Saliva can then clear residual food-stuffs from the mouth efficiently, increasing the likelihood that cavities will not develop.

Brushing (or gauzing) a child's teeth at least twice a day is still the ideal. This interrupts plaque formation and minimizes sites where MS can colonize. Use of a fluoride toothpaste helps maintain a "constant low level" of fluoride in the saliva necessary to keep the mineral equilibrium in favor of remineralization of the tooth surface²³.

Strategy N° 5

To ensure a cavity-free childhood, it is essential to receive the proper amount of fluoride

Without a doubt, adequate fluoride ingestion is the single most important factor in the striking 65% reduction of dental decay that has occurred in the U.S. over the past 50 years. The widespread availability of fluoride through drinking water and fluoridated toothpaste has greatly enhanced the opportunity for most children to remain cavity-free during their childhood years⁽²⁴⁾.



Figure 3. The knee-to-knee position for examining and cleaning the teeth of children. Notice that one adult mildly restrains arm and leg movement of the child, while the other has good access to the mouth, a direct view into the oral cavity and control of head movements.

Strategy N° 4

Thumbsucking and pacifiers should not be discouraged for young children

Many parents are fearful that oral habits are harmful to their children. In fact, during infancy, children learn much about the taste, texture and shape of objects by putting things in their mouths. Little or no harm is done by sucking on fingers or pacifiers²⁵. As with most habits, extreme cases may result in problems such as a malocclusion, open bite, palatal constriction or protruding front teeth. However, experts agree that important emotional needs are satisfied by these habits; sucking helps children feel safe and secure.

Children are born with a need to suck, which diminishes at different rates with different children. If a child sucks his/her thumb or finger, or uses a pacifier, do not be overly concerned about lasting effects - most children give the habit up themselves by age 4²⁶. Intervention should not even be considered until the permanent teeth begin to erupt, generally about age 6²⁷.

Strategy N° 3

Use fluoridated tap water to prepare formula, juices or cereals for infants and toddlers

In an area where the water supply is fluoridated, take advantage of the benefits afforded by utilizing it whenever possible. Using local, fluoridated water to prepare foods and drinks is a great way to keep fluoride available in small doses over extended periods of time, and reduce the chances that teeth will decay. It is important to carefully consider all dietary and environmental sources of fluoride in determining how to achieve an optimum level for the child³⁰. Low, constant delivery of fluoride into the body is the most effective and safest way to keep tooth enamel resistant to demineralization and decay.

In a non-fluoridated area, or when bottled water is used, consider the use of supplemental fluoride for children. Taken systemically, ingested fluoride contributes to one's overall fluoride profile and adds to the topical effect²³. A dentist can assess how much fluoride your child is actually receiving, and can make recommendations to optimize the protective dose without risk of fluorosis - the result of excessive fluoride intake.

Strategy N° 2

Encourage the use of mouthguards when children are older and involved in physical activities and contact sports

Injury prevention awareness begins at birth and requires a safe environment and the use of protective gear. From the time that children begin to crawl and learn to walk, there is an increased risk that they will fall and injure their teeth. Serious oral and dental injuries include fracture, displacement and avulsion of teeth, as well as fractures and displacement of bones or joints of the head and neck. During infancy and toddlerhood, there is little protection to be offered other than the watchful eye of the care-

taker. For the parent, there is a delicate balance between protecting the young child from injury and providing enough freedom to venture away and explore their environment.

For older children, however, protective mouthguards offer a high level of injury prevention for children involved in active play, contact activities or organized sports. There is a remarkable reduction in the number and severity of injuries to children wearing protective mouthguards. Children have been reluctant in the past to utilize such devices, but as more and more professional athletes use and endorse mouthguards, acceptance has become more widespread. Children four years old and older can successfully wear them.

Protective mouthguards can be purchased in most sporting goods stores, but custom-fitted mouthguards are the most effective. A dentist must individually fabricate these. Although more costly, they offer the greatest degree of safety and compliance, and reduce the severity of injuries when they occur.

and the N° 1 Strategy

Strategy to keep children pain-free and problem-free - Cleaning of the mouth and teeth should begin at birth

Plaque does not form in the oral cavity until teeth are present^{28,29}, but experts suggest that cleaning the mouth should begin immediately after the baby is born. Some feel that teething difficulties can be either eliminated or reduced in severity by massaging the gumpads beginning at birth, before the eruption of teeth. Certainly, if for no other reason, it makes good sense to get the child into the routine of regular cleaning, and to get used to the fact that this is something essential to their well-being and for their entire life.

This is best accomplished with a newborn or toddler by using the knee-to-knee position (see inset). Two adults sit opposite each other, knees touching. The child is placed with the head in the lap of one, the feet in the lap of the other. While one gently holds the arms



Fig. 4. Early Childhood Caries (ECC)
a. Demineralization and loss of structure are early signs of a high-risk environment for dental decay.



b. Cavitation at the proximal and cervical areas are indicators of moderate ECC and of a progressive and virulent type of caries.



c. Advanced stages of ECC are characterized by substantial loss of hard tooth structure and the presence of acute and/or chronic infection.

and legs of the child to restrict movement, the other cradles the head, looks directly down into the mouth, and cleans the baby's oral cavity effortlessly and efficiently.

Once teeth are present, plaque can accumulate on the enamel surfaces. It can act as a matrix for colonization of MS, which is necessary for the development of cavities. By using a moist piece of gauze to clean either the gumpads or

the teeth, the plaque matrix is disrupted and colonization is hampered. Cavities will not develop without a platform for MS to colonize.

It is amazing that parents will tend to the toilet needs of their infants many times during the day, yet neglect to perform this simple measure to keep the mouth healthy. If parents did nothing else related to their infant's oral health, but swab with gauze at least twice a day, dental decay (ECC) and teething difficulties would be diminished significantly.

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