

Dental home: Patient centered dentistry

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Abstract

Early childhood dental caries occurs in all racial and socioeconomic groups; however, it tends to be more prevalent in children in families belonging to the low-income group, where it is seen in epidemic proportions. Dental caries results from an overgrowth of specific organisms that are a part of normally occurring human flora. Human dental flora is site specific, and an infant is not colonized until the eruption of the primary dentition at approximately 6 to 30 months of age. The most likely source of inoculation of an infant's dental flora is the mother, or another intimate care provider, shared utensils, etc. Decreasing the level of cariogenic organisms in the mother's dental flora at the time of colonization can significantly impact the child's predisposition to caries. To prevent caries in children, high-risk individuals must be identified at an early age (preferably high-risk mothers during prenatal care), and aggressive strategies should be adopted, including anticipatory guidance, behavior modifications (oral hygiene and feeding practices), and establishment of a dental home by 1 year of age for children deemed at risk.

Key words: *Anticipatory guidance, diet, early childhood caries, oral hygiene, patient centered dental home*

INTRODUCTION

In 2004, the American Academy of Pediatrics (AAP), in association with the American Academy of Family Physicians (AAFP), the American College of Physicians (ACP) and the American Osteopathic Association (AOA), defined comprehensive guidelines for the Patient-Centered Medical Home (PCMH) as the central approach to improve health care in the United States.^[1] In the same year, the American Academy of Pediatric Dentistry (AAPD) formally adopted a policy endorsing the Dental Home (DH).^[2] The Patient-Centered Medical-Dental Home (PCM-DH) represents an enhanced health care model. In this model, each patient has a personal physician or a dentist who leads a team of clinical care providers and

staff who take collective responsibility for delivering comprehensive, coordinated care that addresses all of a patient's health care needs. The PCM-DH focuses on the patient instead of a single organ system. It requires a well-trained, and a large primary care workforce with expertise in providing broad-based, collaborative health care.^[3] The team-based, coordinated, comprehensive care structure of the PCMDH offers a great promise to improve the delivery of both the disease prevention and chronic disease care. The PCM-DH features a personal physician or a dentist who leads a multidisciplinary team to deliver culturally competent and evidence-based care. National and international studies have found that the primary care improves health more than the specialist care.^[4] Countries with a strong primary care system also have better early childhood health outcomes.^[5]

The American Academy of Pediatric Dentistry (AAPD) developed a policy on dental homes that was first adopted in 2001 and revised in 2004.^[2] The definition states:

“The dental home is the ongoing relationship between the dentist and the patient, inclusive of all aspects of oral

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health care delivered in a comprehensive, continuously accessible, coordinated, and family-centered way. Establishment of a dental home begins no later than 12 months of age and includes referral to dental specialists when appropriate.”

Similar to the medical home, the dental home offers the patients comprehensive, continuous, prevention-based care that is accessible, family-centered, compassionate, and culturally competent. Citing strong clinical evidence that early preventive dental care promotes oral health, the AAPD declared that “the establishment of a dental home may follow the medical home model as a cost-effective and higher quality health care alternative to emergency care situations”.^[2] At the center of the PCM-DH is a trusting relationship between the patient and his/her personal provider who leads a team to address the patient’s needs. Generally, this provider is a primary care physician; however, for dental care, it could be a dentist.^[3]

Need for establishing the dental home

Dental caries results from an overgrowth of specific organisms that are part of normally occurring human dental flora.^[6] *Streptococcus mutans* and *Lactobacillus* species are considered to be principal indicator organisms of aciduric bacteria responsible for caries. Human dental flora is site specific, and an infant is not colonized with normal dental flora until the eruption of the primary dentition at approximately 6 to 30 months of age.^[7,8] The vertical colonization of *Streptococcus mutans* from mother to infant is well documented.^[9,10] In fact, genotypes of *Streptococcus mutans* in infants appear identical to those present in mothers in approximately 71% of mother-infant pairs.^[11] Furthermore, evidence suggests that specific organisms exhibit discrete windows of inoculation; and, the acquisition of *Streptococcus mutans* occurs at an average age of approximately 2 years.^[12] The significance of this information becomes focused when considering 2 points. First, high caries rates run in families,^[13] and are passed from mother to child from generation to generation. The children of mothers with high caries rates are at a higher risk of decay.^[14] Secondly, the modification of the mother’s dental flora at the time of the infant’s colonization can significantly impact the child’s caries rate.^[15-17] Therefore, an oral health risk assessment before 1 year of age affords the opportunity to identify high-risk patients and to provide timely referral and intervention for the child, thus allowing an invaluable opportunity to decrease the level of cariogenic organisms in the mother with a significant

caries risk before and during colonization of the infant.

Empiric evidence of the value of the dental home

- Children in a dental home are more likely to receive appropriate preventive and routine oral health care, thereby reducing the risk of preventable dental/oral disease.^[2]
- Children with special health care needs who had a personal physician or nurse in the context of a PCM-DH are significantly less likely to have unmet dental needs than those without this care.^[18]
- Parents of special needs children report significantly fewer unmet health care and family support service needs if they belonged to a PCM-DH .^[19]

Creating awareness of dental home

In order establish a dental home; it is important to meet the parents/ prospective parents early. Gynecologists, pediatricians, family physicians are the people who come in contact with them much before a dentist. He must establish communication with them such that effective and timely referrals are made to dentist. Also, schools and pre-school day care centers can be informed about the dental home.

- A notice such as – “Do you know you can benefit your child’s teeth and oral health by starting preventive dental care *before* child-birth?”- can attract the attention of prospective parents if put in a gynecologist’s office. Similarly, the following messages^[20] can be displayed in hospitals and clinics of a pediatricians, gynecologist and all other pediatric health care professionals:
- First visit by the first birthday. A child should visit the dentist within six months of the eruption of the first tooth or by age one. Early examination and preventive care will protect your child’s smile now and in the future.
- Dental problems can begin early. A big concern is the Early Childhood Caries (also known as baby bottle tooth decay or nursing caries). Children risk severe decay from using a bottle during naps or at night or when they nurse continuously from the breast.
- The earlier the dental visit, the better is the chance of preventing dental problems. Children with healthy teeth chew food easily, are better able to learn to speak clearly, and smile with confidence. Start children now on a lifetime of good dental habits.
- Encourage children to drink from a cup as they approach their first birthday. Children should not fall asleep with a bottle. At-will, night time breast-

feeding should be avoided after the first primary teeth begin to erupt. Drinking juice from a bottle should be avoided. When juice is offered, it should be in a cup.

- Children should be weaned from the bottle at 12-14 months of age.
- Thumb sucking is perfectly normal for infants; most stop by age of 2 and it should be discouraged after age 4. Prolonged thumb sucking can create crowded, crooked teeth or bite problems. Dentists can suggest ways to address a prolonged thumb sucking habit.
- Never dip a pacifier into honey or anything sweet before giving it to a baby.
- Limit the frequency of snacking, which can increase a child's risk of developing cavities.
- Parents should ensure that young children use an appropriate size toothbrush with a small brushing surface and only a pea-sized amount of fluoride toothpaste at each brushing. Young children should always be supervised while brushing and taught to spit out rather than swallow the toothpaste. Unless advised to do so by a dentist or other health professionals, parents should not use fluoride toothpaste for children less than two years of age.
- Children who drink primarily bottled water may not be getting the fluoride they need.
- From six months to age 3, children may have sore gums when teeth erupt. Many children like a clean teething ring, cool spoon, or cold wet washcloth. Some parents prefer a chilled ring; others simply rub the baby's gums with a clean finger.
- Parents and caregivers need to take care of their own teeth so that cavity-causing bacteria are not as easily transmitted to children. Don't clean pacifiers and eating utensils with your own mouth before giving them to children. That can also transmit adults' bacteria to children.

Environmental Factors in Implementing the Dental Home for All Young Children²¹

Benefits of the dental home are substantial and intuitive, although not yet substantiated by research, and include an increasing emphasis on prevention and disease management, advancements in tailoring care to meet individual needs, and better health outcomes at lower costs.

Forces explored are:

- The advent of "social medicine"
- Expanding knowledge of early childhood caries risk and disease management

- Trends in oral health and dental care disparities and the forces that propel them
- Perceived needs for dental services and other barriers to dental home utilization
- Dentistry as an independent health profession
- Dental system capacity for all children, including those with special needs.

Advent of "social medicine" in pediatric healthcare

The social medicine approach to pediatric health supervision clarifies that opportunities for children to obtain and maintain oral health are established by factors beyond the mouth and beyond the dental chair. This has direct implications for oral health supervision in the dental home as reported by Nowak and Casamassimo who call for a dental home (1) that "is characterized by [its] community;" (2) that recognizes that "newer models of caries initiation...extend into the family and community;" and (3) that a community-based dental home "should be able to provide focused prevention better than a haphazard or one-size-fits-all approach."

Expanding knowledge of early childhood caries risk and management

As the science of caries risk identification, primary prevention, and disease management continues to develop, the dental home will be ideally situated to develop and implement science-based/evidence-based medical approaches to caries prevention and control. There is strong potential for expanded roles for dental hygienists as well as nutritionists, health educators, and social workers in becoming effective disease managers.

Oral health and dental care disparities and their drivers

The medical home concept, first built around "children with special healthcare needs (CSHCN), emphasizes the complexity of care required by these children and the need for specialty-level care providers. Similarly, the dental home concept will be particularly germane and beneficial to these children and their families and will require the disproportionate engagement of dentists who specialize in pediatric dentistry as they have additional expertise in managing care for CSHCN. The dental home will need to be particularly accommodating and sensitive to opportunities and constraints for oral health among the disproportionately growing numbers of young children who live in poverty and single parent households. The sheer numbers of such children will test the capacity of dental systems to accommodate

them in traditional dental offices. Children who currently do not have a dental home are primarily those who are from poor and low-income families and are racial/ethnic minorities. These children will benefit most from early and ongoing care in a dental home.

Perceived needs for dental services and other barriers to dental home utilization

The dental home concept calls for outreach to children at greatest risk of disease and continuing active professional involvement in solving barriers to both oral health attainment and to dental care.

Dentistry as an independent health profession

This separation of the health professions helps explain why a child may require more than one “home.”

Dental and medical system adoption and capacity to accommodate all children in dental homes

Because the total numbers of dentists are inadequate to provide a dental home for the total numbers of children, priority should be given to children at greatest risk for dental disease, including those with earliest signs of ECC, children from high-risk subpopulations, and children with special healthcare needs.

Challenges to implementing the dental home

First, we simply do not have enough trained clinicians to staff this model of care. Retooling practices and re-educating clinicians to deliver team-based care will require substantial short- and long-term financial resources. Coordination of care underpinning the PCM-DH requires productive use of information technology. Current provider training programs do not educate young physicians and dentists in the fundamental precepts of the PCM-DH. They need to learn how to deliver team-based care, use health information technology to improve care, and adopt evidence-based principles in practice. Continuous quality improvement methodologies must also become part of the curriculum.

Changes needed in medical and dental education

To institute the PCM-DH in our country, a transformation must occur in which physicians and dentists who practice independently with minimal staff support or use of information technology will need to learn to adopt the Chronic Care Model. Medical and dental training programs need to develop innovative

training models that reflect evolving models of health care delivery, such as the PCM-DH. As noted by the Council on Graduate Medical Education, training programs must emphasize health care systems, health of populations, patient- and family-centered care, continuous care, prevention, and wellness, as well as the use of point-of-service, evidence-based clinical information.^[22,23]

CONCLUSIONS

The dental home, like the medical home, holds strong promise to improve the overall care of all children.

The dental home, like the medical home, will particularly benefit children in whom the risk for oral disease is exacerbated by social and/or medical vulnerabilities.

Implementation of the dental home concept will benefit from growing understanding of social medicine and scientific approaches to clinical caries prevention and control.

Effective dental home implementation will require close attention to epidemiologic, health services, and demographic trends in order to target those at the greatest risk for the disease.

Oral health promotion from an early age in a dental home will require extensive improvements in public awareness and professional engagement and systems-level improvements in care coordination between medicine and dentistry.

Current dental system capacity cannot support wholesale implementation of the dental home unless the dental home's functions are shared by other agencies that interact with children where they live, learn, and play.

The dental home concept extends to older children as well as infants and toddlers, but holds greatest promise for impact if focused on the youngest children.

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