

## **Integrating Oral Health into Overall Health: Training in Infant/Toddler Oral Health Care for Non-Dental Health Professionals**

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Many oral health problems that arise in infants and toddlers are preventable. Because dental disease can begin very early in childhood, caretakers need to know about simple interventions that can prevent the onset of disease. The key to oral health promotion and disease prevention lies in anticipatory guidance and education of the parent, early detection and timely referral for appropriate intervention. This is accomplished best by the non-dental health professionals to whom many women entrust their own health during pregnancy, and their newborn's health during infancy and early childhood. By the time a dentist becomes aware that a problem exists in a youngster, the situation may warrant invasive intervention – the time for secondary or tertiary, not primary prevention. Recent research establishes clear and strong linkages between oral health in pregnancy and premature and low birthweight infants. This hour-long presentation is geared toward primary care providers, e.g. obstetricians, pediatricians, residents, physician assistants, nurse practitioners, nurses, medical students, health educators, et al. Its theme is to position oral health as an integral component of overall health. The goal is to motivate them to transmit accurate infant oral health information to the focus population – pregnant women and new mothers. The anticipated outcomes are that participants will have a higher level of knowledge about oral health issues of pregnancy and early childhood; will be able to transmit these concepts effectively to their patients as part of their healthcare education programs; will see earlier attainment of year 2010 national oral health objectives.

## **Success Outcomes of Restorative Procedures Following Comprehensive Dental Rehabilitation Under General Anesthesia**

A. Tate, MW Ng, H. Needleman and G. Acs

**Objective:** To assess the success rates of restorative procedures performed for children who have undergone dental rehabilitation under general anesthesia.

**Methods:** Dental records of children who had dental rehabilitation at the Children's Hospitals in Boston and Washington, DC were retrospectively reviewed in separate and independent studies. The Boston records were of children who had dental rehabilitation between 1990 to 1992. The DC records were of children who had dental rehabilitation between 1994 to 1998. In both studies, only records of children who returned were followed for at least six months were evaluated.

**Results:** Only 45% of Boston children and 50% of DC children who had dental rehabilitation returned and were followed for at least six months. 104 Boston dental records and 141 DC dental records were available for analysis. Mean time of follow-up was 29 months for the Boston group and 22 months for the DC group.

At the end of the review periods, stainless steel crowns were found to be the most successful restorative procedure for both the Boston and DC groups of children (89.2% for the Boston group; 94.2% for the DC group). Multiple surfaces and on surface amalgam restorations were less successful (70.7 to 87.5% successful) for both groups. For both groups, the least successful restorations were found to be the composite restorations (35.7 to 69.5%).

**Discussion:** Children who require dental rehabilitation under general anesthesia are typically young children or children who have medical or developmental disabilities. These children have extensive dental needs and are at high risk for new and recurrent caries. Our findings are consistent with previous studies demonstrating that full coverage restorations such as SSC's are the most durable, reliable restorations while composite restorations are the least durable. The next step would be to evaluate the difference in survival rates of restorative procedures performed under general anesthesia in order to predict the long-term success rates of the various procedures.

**Conclusions:** Full coverage stainless steel crowns were more successful than amalgam or composite restorations placed in children who had undergone dental rehabilitation under general anesthesia at two Children's Hospitals.

# **The Effect of Patient Medical History on the Success Outcomes of Restorative Procedures Following Comprehensive Rehabilitation Under General Anesthesia**

A. Tate, MW Ng, H. Needleman and G. Acs

**Objective:** To assess whether the patient medical history affects the success rates of restorative procedures on primary teeth performed for children who have undergone dental rehabilitation under general anesthesia.

**Methods:** Dental records of children who had dental rehabilitation at the Children's Hospitals in Boston and Washington, DC were retrospectively reviewed in separate and independent studies. The Boston records were of children who had dental rehabilitation between 1990 to 1992. The DC records were of children who had dental rehabilitation between 1994 to 1998. In both studies, only records of children who returned were followed for at least six months were evaluated.

**Results:** A combined total of 207 children (N=98 for Boston; N=109 for DC) who were younger than 5.5 years of age at the time of their dental rehabilitation were available for analysis. Of these cases, 28% of Boston children and 29% of DC children were diagnosed with either significant medical history or developmental disability.

Children with medical and developmental disability were found to have higher failure rates of amalgam restorations and stainless steel crowns than children without disabilities ( $p < 0.05$ ,  $\text{ChiSq} = 4.16$  for SSC's and developmental disability).

**Discussion:** Children who require dental rehabilitation under general anesthesia are typically young children or children who have medical or developmental disabilities. These children are at high risk for new and recurrent caries development. Our findings suggest that young children with medical and developmental disabilities are more likely to have failures of amalgam restorations and stainless steel crowns. Dental professionals and caregivers need to be aware of the increased risk of failures. Children with special needs should be given individualized preventive protocols including more frequent recalls. Research to develop dental materials that would be more durable for children with medical and developmental disabilities should be encouraged.

**Conclusions:** After dental rehabilitation, children younger than 5.5 years who have medical or developmental disabilities were found to have a higher risk of amalgam restoration and stainless steel crown failures than children without these disabilities.

# **Parental Satisfaction and Patient Outcomes Following Comprehensive Dental Rehabilitation in the Management of Early Childhood Caries**

A. Tate, MW Ng, H. Needleman and G. Acs

**Objective:** To assess quality of life indicators following comprehensive restoration of rampant carious lesions in children undergoing treatment with general anesthesia and parental satisfaction with outcomes.

**Methods:** A simple survey tool was completed by parents of children that had undergone comprehensive dental rehabilitation under general anesthesia for the management of severe early childhood caries. Data was collected at either routine follow-up examination, re-care visits or via mail, regarding such outcome criteria as ability to eat, sleep and presence of dental pain. Internal coding mechanisms identified the presence or absence of medical or developmental compromises among the children treated in such a manner.

**Results:** Surveys were returned by 115 parents (N=400). Overall, 63.5% and 38.2% reported improved abilities to eat and sleep, respectively, while 82.6% of patients reported an improvement in pain experience. Only a single patient reported worsening experiences. 71.3% of the parents believed that the overall health of their child had improved following dental treatment. Additionally, 98.2% of the parents reported that their experience was positive, while 94.7% reported that expectations had been met.

Among parents of children with medical or developmental disabilities, 88.1% reported a perceived improvement in overall health, as compared to 61.1% of children with non-contributory medical histories ( $p < 0.01$ )

**Discussion:** In children with early childhood caries, the comprehensive restoration of dental health through the elimination of dental disease and chronic infection allows improved ability for children to eat and sleep and frees them of chronic pain. The impact on overall health, as perceived by parents, is even greater for children with medically or developmentally compromising conditions. These findings are consistent with a different parent cohort that reported on the presence of such indicators prior to dental intervention and their expectations for resolution following dental treatment.

**Conclusions:** The return of dental health in patients with severe early childhood caries, is perceived by parents as restoring components of overall health to their children by improving quality of life parameters, such as freedom from pain and the ability to eat and sleep without disruption.

# **Parental Expectations Regarding Patient Outcomes Prior to Comprehensive Dental Rehabilitation in the Management of Early Childhood Caries**

A. Tate, MW Ng, H. Needleman and G. Acs

**Objective:** To assess pre-existing quality of life indicators and parental expectations prior to comprehensive restoration of rampant carious lesions in children undergoing treatment with general anesthesia.

**Methods:** A survey was completed by parents of children prior to comprehensive dental rehabilitation under general anesthesia for the management of severe early childhood caries. Data was collected regarding such criteria as ability to eat, sleep and presence of dental pain. Additional outcome expectations were surveyed. Children were also categorized on the basis of medically compromising conditions.

**Results:** Surveys were returned by 60 parents. No individuals declined to complete the survey. Overall, 56.7%, 41.7%, 83.3% and 50.0% reported worsened eating, sleeping, pain and overall health to be related to their child's decay. Following dental treatment, 70.0% and 58.3%, 93.3% and 73.3% of the parents believed that the abilities to eat and sleep would improve, respectively. Furthermore, 93.3% and 73.3% felt that their child's pain burden and overall health would improve following treatment.

Among parents of children with medical or developmental disabilities (n=21), there were no statistically significant differences in perception regarding the effect of dental caries on pain, eating or sleeping. However, when compared to other patients, parents of children with medically or developmentally compromising conditions were significantly less likely to believe that overall health was worsened due to dental caries. Outcome expectations did not differ on the basis of medical compromise

**Discussion:** In children with early childhood caries, parents commonly report the adverse effects of dental caries on their child's ability to eat, sleep or be free of pain, while also negatively impacting upon overall health. Parents expect improvement in all of these areas following comprehensive treatment through the elimination of dental disease and chronic infection. The perceived impact on overall health is greater for children that are free of significant disabling conditions. These findings are consistent with data from another cohort that reported post-operative quality of life outcomes.

**Conclusions:** Parents of children with early childhood caries report adverse impact in quality of life indicators, while anticipating beneficial impact on these factors and overall health, as a result of comprehensive oral health care.

## **Why Do Young Children from Low Socioeconomic Families in Flagstaff, Arizona Experience a Higher Burden of Decay than the Overall Population?**

This research project was designed to answer the question: Why do young children from low socioeconomic families in Flagstaff, Arizona experience a higher burden of decay than the overall population? Early childhood caries (ECC) is a health issue, which is subject to cultural, social, political, and economic influences. Information was gathered regarding social and cultural factors relating to dental disease in children ages one through five, residing in Flagstaff, Arizona, using applied ethnographic research techniques. Interview and focus group participants were low-income parents/caregivers. Questions regarding knowledge, attitudes, behavior, dental problems, and experiences accessing dental care were asked during sessions. The study found that an overwhelming concern was the difficulty that participants had accessing dental care. Participants were knowledgeable about the causes of dental decay and the behaviors and measures that prevent it. Participants talked about the reality of dealing with children's oral health in the context of their daily lives. The information collected from the interviews and focus groups can help dental health professionals gain greater understanding of parents' and caregivers' perception of dental health, dental disease and prevention. The information can also guide comprehensive, culturally sensitive, dental health promotion programs to benefit the dental health of young children in Flagstaff and throughout Arizona.

## **Caries in the primary and mixed dentition: a longitudinal study.**

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This study aimed to examine the development and relationship of primary and permanent dentition caries, and the level of treatment received. In 1991 168 Head Start children in Hartford, Connecticut were recruited. Of these children, 79 received clinical dental examinations at baseline (mean age  $3.9 \pm 0.4$ yr-s) and years two, four, six and seven. No radiographs were taken. The baseline mean dmfs was 2.9 with a caries prevalence of 47%. Primary dentition caries peaked in year two, with a mean dmfs of 4.7 and a prevalence of 63%. Permanent dentition caries presented soon after tooth eruption and mostly involved first molar fissures. In year seven the mean DMFS was 2.4 with a caries prevalence of 60%. Children who presented with baseline primary dentition caries had a mean DMFS of 4.2 in year seven compared to 2.0 in those who developed primary dentition caries after baseline and 0.39 in those who had no primary dentition caries ( $P < 0.01$ ). Further, children at baseline with maxillary anterior caries had a mean DMFS of 6.3 in year seven, compared to 2.4 in those with just posterior caries and 1.0 in caries free children ( $P < 0.01$ ). Only 57% of children with primary dentition caries and 41 % of children with permanent dentition caries ever received complete treatment. During the study 57% of first permanent molars received sealants. Of these 83% remained caries free compared to 47% of unsealed teeth. The age of onset and Daftem of primary dentition caries affected the caries risk of the permanent dentition. Sealants were effective, but like treatment, were underutilized. Supported in part by NIH/NIDR grant DE10592.

## **Severe ECC and Blood Lead Levels Among American Indian Head Start Children**

Bonnie Bruerd

Because elevated lead blood levels are common among low income inner city children, it has been suggested that lead is a contributing factor in the development of severe Early Childhood Caries. Retrospective data were gathered from a 1995 state-sponsored program to identify children with high blood lead levels. The data were used to assess the correlation of blood lead levels and dental caries among American Indian children.

In 1995, the Blackfeet Tribe in Browning, Montana participated in "The Montana Lead Program." Blood drawn from 193 Head Start students age 3-5 years old. Program criteria stated that <10 micrograms/deciliter was within normal limits and 15 or more micrograms/deciliter would require a home visit from the nutritionist. Of the 193 blood samples, 190 were <10mcg/dcl, one was 10mcg/dcl, and one was 12mcg/dcl. Only one child had a lead level well above normal limits (26mcg/dcl). This child's family received a home visit where it was discovered that the father was cleaning a car engine in the living room.

During the same period of time, the same 193 Head Start students received dental exams. The prevalence of ECC among these children was 48 percent. ECC was defined as two affected maxillary primary teeth. There appears to be no correlation among American Indian Head Start children in Browning, Montana.

# Crying for a Smile

T. Reagan

*Crying for a Smile* is a forty-minute, pediatric oral health grand rounds presentation for medical providers. The program's goal is to improve children's health by informing medical providers about their important role in the prevention of early childhood caries (ECC). This enables the providers to better educate and assist families in the prevention of the disease and in obtaining dental care.

Many medical practitioners are unaware of just how critical their role is in the detection of early childhood caries. *Crying for a Smile* encourages medical providers to "lift-the-lip" to check for ECC as part of all well-baby exams. *Crying for a Smile* explains the signs, symptoms and prevention of dental caries by explaining both the etiology and the consequences of ECC. The program also enlightens the practitioners as to the long-term costs of untreated ECC. Clinical slides of early, moderate, and severe ECC are reviewed so the medical provider knows the "who, what, why, and how" to include ECC screening ("lift-the-lip") as a part of every well-baby exam.

The *Crying for a Smile* program was developed through a collaborative effort involving representatives of private and public health dentistry, dental hygiene, pediatrics, and others. Significant research publications were reviewed and utilized in the design of the program. *Crying for a Smile* was pilot-tested in a community hospital outside of Milwaukee, Wisconsin and was very well-received. Future presentations are planned for 2000.

*Crying for a Smile* is a slide presentation. A companion resource directory (for Wisconsin only) is also provided.

## **The Role of the Pediatrician in the Oral Health of Children: A National Survey**

CW Lewis, DC Grossman, PK Domota, RA Deyo

- Background:** Dental caries are the most common chronic disease of childhood. Poor and minority children suffer disproportionately from dental decay and have limited access to dental care. Pediatricians may be able to play a role in enhancing preventive dental care, however their current level of involvement in oral health is unknown.
- Methods:** A national survey of 1400 randomly selected pediatricians to assess their knowledge, attitudes, and experience with oral health in pediatric practice.
- Results:** The response rate was 62% (N=862). More than 90% of the pediatrician agreed that they had an important role in identifying dental problems and counseling families on their prevention. Moreover, respondents were interested in increasing their involvement; 74% expressed a willingness to apply fluoride varnish in their practice. However, knowledge and previous training in dental health were limited. Respondents reported seeing dental problems on a regular basis. Those with more training in dental issues and those who cared for more the Medicaid patients were significantly more likely to report seeing dental problems frequently. Of the respondents, 55% reported difficulty achieving successful dental referrals for their uninsured patients and 38% reported difficulty referring their Medicaid patients.
- Conclusion:** Pediatricians are actively involved in the preventive oral health of their patients, but they have difficulty referring some groups of patients for dental care. Despite encountering dental problems relatively frequently, they have little formal training and do not have up-to-date knowledge. Efforts to train pediatricians in oral health may improve access to preventive dental care for underserved patients.

S. Sabatini

Primary care providers are much more likely than dental providers to consistently see children at high risk for early childhood caries (ECC). Those providers need to understand the importance of good oral health and how to evaluate dental health during their patient examinations. Prevention and early identification can result in avoidance or arrest of ECC. Once providers identify ECC, referral for treatment is necessary, but can be challenging in areas lacking oral health care providers that see children or Medicaid-accepting practitioners or clinics.

The Children's Dental Program of Mission+St. Joseph's Hospital in Asheville, North Carolina has developed a multifaceted program designed to improve the oral health of the region's children. The program consists of: a mobile, school-based outpatient practice, a hospital-based OR practice, and an education program targeting care providers, patients, and parents.

Our program educates physicians, hospital staff, health departments, and Department of Social Services offices about caries etiology, effects of diet, the role of fluoride, proper hygiene, early dental care, the importance of primary dentition, the consequences of ECC in western NC, and possible referral sources. We also emphasize the importance of educating parents on these same topics.

Feedback from presentations has helped us cater our programs to what providers want and need to know. Posters, mirror stickers, and oral health primer booklets have been created to help disseminate information about oral health to practitioners and their patients. We also use visual aids emphasizing the critical role care providers can play in disease prevention and identification.