

June 28, 2004

Kimberly Dempster-Gonzalez, MAOM
Director of Development
American Academy of Nurse Practitioners Foundation
P.O. Box 10729
Glendale, AZ 85138

Dear Ms. Dempster-Gonzalez:

I am submitting my final report as per the AANP Foundations Community Project Grant instructions. Included is an abstract, summary, references and budget summary on Implementation of an Infant Oral Health Clinic in a Rural Primary Care Setting.

I want to take this opportunity to thank the AANP Foundation for the grant monies. I was able to accomplish implementation of an Infant Oral Health Program in my rural clinic. The funding allowed me to put this primary prevention project into the clinic routine and has set the stage for a five year longitudinal outcome study aimed at decreasing the incidence of Early Childhood Caries and its sequelae.

Please let me know if I have been remiss in my submission of this final paperwork. I had the opportunity to present the project at the most recent AANP conference in New Orleans. Although attendance was small I have already received requests from other nurse practitioners who see the vision this type of service provides and we have begun collaborating. Contact me at: drmelpafnp@frontiernet.net if you have any comments or questions.

Sincerely,

Melody A. French, Ph.D., FNP

Abstract

The incidence of Early Childhood Caries (ECC) is five times more common than asthma and seven times more common than hayfever in children. Children with ECC suffer from chronic pain, difficulty eating, sleeping and playing as well as an increased number of missed school days. Early Childhood Caries is a bacterial infection with the infant/child's mouth mirroring that of the mother of primary caregiver. The incidence of ECC nationwide is 46%, in California 52% and in the project service area 75%.

Oral health care to date has focused primarily on restoration of teeth by dentists. Primary care providers such as nurse practitioners (NPs) incorporate oral health as part of an overall well child exam. However, oral health care **prevention** has not been the main thrust of service provided by either dentists or primary care providers.

This community-based project provided for implementation of an Infant Oral Health Program (IOHP) in a rural area of northeastern California where the closest dental services are 45 miles away. The objective of this one year project was **primary prevention** of ECC, thus leading to a decrease in the incidence of caries and its sequelae.

In four separate IOHP clinics spaced three months apart there were a total of 120 patient encounters. Each encounter provided a group education experience, risk assessment, an examination, dental washing and fluoride varnish application. The services were provided initially by a registered dental hygienist (RDH) volunteer who served as a mentor for the nurse practitioner (NP) in the clinic. The intent being for the RDH to teach the NP about common changes in children's teeth that are normal versus those requiring intervention. At the conclusion of each visit children were provided a new toothbrush and a reward. The primary caregiver (usually mom) was provided a new toothbrush, a tube of fluoride toothpaste, and if their child was age 6-24 months, a supply of Xylitol gum to be used four times a day to decrease oral bacterial counts.

Saliva bacterial counts were obtained at the first and fourth visits. Bacterial counts declined over the course of a year and no **new** caries were identified. Five children age 20-48 months were referred for restorative care.

Ten patient encounters were paid through grant funding whereas all other encounters were reimbursed by third party payors, including the state-funded program demonstrating sustainability of the program. Further funding has been obtained with the intent of providing on-going **primary prevention** services. The goal: a kindergarten class with no caries in the next four to five years.

Purpose: The purpose of the community-based project was to implement an Infant Oral Health Program (IOHP) in a rural clinic with no dental services easily accessible. The goal of the program was to decrease the incidence of Early Childhood Caries (ECC) and the accompanying sequelae.

Background/Significance: Early Childhood Caries is a silent epidemic from which children in America are suffering. Dental caries has become the most common chronic disease in children (Featherstone & Roth, 2003), five times more common than childhood asthma and seven times more common than hayfever (U.S. Department of Health & Human Services, 2000). The incidence of ECC in the United States is reported to be approximately 46% and 52% incidence in California. In five different schools in Lassen County examination of kindergarten students revealed a 57-87% incidence of ECC (personal communication April 5, 2003, Jeannie Huber). Children living in poverty are at greatest risk. Crall (2003) states that “disparities were particularly pronounced for young (preschool and elementary school) children regardless of race or ethnicity...”(p. 127). The cost of treating a child with ECC can be as much as \$4,700 or more (DenBesten & Berkowitz, 2003).

The cause of ECC is bacterial infection. Two organisms are responsible for the development of caries: *mutans streptococci* and *lactobacilli*. Berkowitz (2003) discusses both vertical (mother/caregiver to child) transmission of bacteria as well as horizontal (daycare and family members) transmission as factors to consider when developing a prevention plan. The University of California, Los Angeles School of Dentistry Department of Microbiology provided saliva testing which was done at the first and

fourth visits. Xylitol gum chewed four times a day has been shown to significantly decrease these bacterial colonies.

Two issues put the target population in this rural community at increased risk for ECC: lack of access to dental services and lack of fluoridation in the water. In south Lassen County there are no dental services with the closest being 45 miles in any direction. There is one dentist in the county who takes MediCal (state-funded program) and his practice is currently closed. Since the inception of the IOHP access to major restorative services has improved. The local community hospital (45 miles away) has furnished an operatory and secured services of a pediatric oral surgeon who is training the one dentist who accepts MediCal. Some children still have to travel 150 miles for restorative services however.

Most of the population that was served by this project are on well water which is not fluoridated. Although parents can obtain oral fluoride preparations it has been shown that these have little impact on ECC. Topical application of fluoride is actually absorbed by the tooth itself and in cases of early demineralization can reverse that process and strengthen the teeth.

The short-term goal of the IOHP was to increase awareness of ECC and in the long-term decrease the overall incidence of this infectious disease.

Community/Population: This community-based project was implemented at Doyle Family Practice (a program of Northeastern Rural Health Clinics), a comprehensive primary care clinic in south Lassen County. The clinic's catchment area is 610 square miles providing services for a diverse population with pharmacy, radiology and hospital service 45 miles in any direction. Children under the age of five make up approximately

one-fifth of the client base with over 70% of the population falling 101-200% below poverty level and speaking both English and Spanish. A Nurse Practitioner (80%), a Physician Assistant (20%) and a board-certified Family Medicine physician (2 days/month) staff this Federally Qualified Health Clinic (FQHC).

Support for this project included community volunteers, political backing and seed money, and partnerships with county RDHs who volunteered their time.

Project Implementation: This project was modeled after the infant oral care program developed and implemented, using anticipatory guidance theory, by Dr. Romos-Gomez and colleagues (2002) out of the University of California, San Francisco School of Dentistry in two low-income communities serving Hispanics and Asians in the San Francisco Bay area.

A clinic was held every three months beginning July 2003 in which infants and toddlers were recruited from the community. Parents were given a choice of the morning or afternoon clinic. Patients were scheduled in a block scheduling format. As the parents arrived with the children they signed in and the clinic started with a group educational experience. A community volunteer assisted parents with keeping the children entertained while another volunteer completed a risk assessment questionnaire with each parent-child dyad in a separate exam room. The dyad then proceeded to the treatment area where the child was examined, given a dental washing with Chlorhexidine and then had the fluoride varnish applied. The parents participated in this process allowing for one-on-one education. Once the treatment was completed the child was given a new toothbrush and a reward. The parents were given a new toothbrush, a tube of fluoride toothpaste and if the child was age 6-24 months, a supply of Xylitol gum to chew four

times a day. The children were scheduled for the next fluoride varnish as they left the clinic. Two weeks prior to each clinic a reminder card was sent and the parents were called as a reminder the day before the clinic was scheduled.

At three of the four clinics the volunteer RDHs were present. The NP was able to hold one clinic with the assistance of the clinic nurse. The goal of the program was for the NP to receive enough education regarding the dental assessment, treatment and referral process to be able to hold clinic without the RDH volunteers. This goal was accomplished.

Each encounter was billed to the patient's insurance. All third party payors reimbursed for the service. Those patients without a source of funding were seen and the visit was funded through grant monies. No child was turned away due to lack of a funding source. A total of 120 patient encounters were documented.

Summary: The IOHP has proven to be a sustainable **primary prevention** program. One-hundred and twenty patient encounters were provided. Bacterial counts were decreased over the course of one year. No new caries were identified. Five children age 20-48 months were referred for restorative care. This program has received on-going funding allowing for a longitudinal outcome study. The implementation of this program was originally presented by my Registered Dental Hygienist-Alternative Practice colleague and myself at the California State 0-5 Conference held in San Francisco, CA on May 23, 2004. This information was presented by me at the 19th Annual American Academy of Nurse Practitioners Conference in New Orleans, LA on June 13, 2004. Presentations to the Susanville City Council and the Lassen County Board of Supervisors are pending. A manuscript is in progress.

References

- Berkowitz, R.J. (2003). Acquisition and transmission of mutans streptococci. California Dental Association Journal, 31(2), 135-138.
- Crall, J.J. (2003). California children and oral health: Trends and challenges. California Dental Association Journal, 31(2), 125-128.
- DenBesten, P. & Berkowitz, R. (2003). Early childhood caries: An overview with reference to our experience in California. California Dental Association Journal, 31(2), 139-143.
- Featherstone, J.D.B. & Roth, J.F. (2003). Cariology in the new world order: Moving from restoration toward prevention. California Dental Association Journal, 31(2), 123-124.
- Ramos-Gomez, R., Jue, B. & Bonta, F.Y. (2002). Implementing an infant oral care program. California Dental Association Journal, 30(10), 752-761.
- U.S. Department of Health and Human Services. (2002). Oral health in America: A report of the surgeon general. National Institute of Dental and Craniofacial Research, Rockville, MD: National Institutes of Health.

Final Budgetary Accounting

TRANSACTION/DESCRIPTION	DATE	REVENUE	EXPENSIVES	VENDOR
CK FROM AANP	7/15/2003	\$2,000.00		AANP Foundation
TOOTHBRUSHES	9/24/2003		\$31.20	COLGATE
SPRY GUM	3/10/2004		\$740.50	THE XYLITOL STORE
DENTAL SUPPLIES	4/30/2004		\$163.36	
SUPPLIES	5/5/2004		\$93.78	HENRY SCHIEN
XYLITOL GUM	8/1/2003		\$265.68	JEANIE HUBERT
TOOTHPASTE	6/6/2004		\$31.21	FRENCH
CHILDRENS HANDOUTS	7/18/2003		\$40.11	
EDUCATIONAL SUPPLIES	7/28/2003		\$234.50	PARAGON
CHILDRENS HANDOUTS	10/17/2003		\$27.86	
CHILDRENS HANDOUTS	8/14/2004		\$67.25	
CARTRIDGE FOR MAIL REMINDERS	9/9/2003		\$73.99	ANITA LAUGHLIN
CHILDRENS HANDOUTS	10/17/2003		\$55.65	
CHILDRENS HANDOUTS	10/17/2003		\$27.86	SMILE MAKERS
CHILDRENS HANDOUTS	1/12/2004		\$68.93	SMILE MAKERS
TOOTHBRUSH TIMERS	6/24/2004		\$84.75	SMILE MAKERS
		\$2,000.00	\$2,006.63	
TOTAL LEFT			-\$6.63	TRF TO GRANT 63-60