

NOHC 2005 Abstracts

1. Kalyani Baldota, BDS, Faculty of Dentistry, University of Toronto; James Leake, MSc Faculty of Dentistry, University of Toronto; Patricia Main, MSc, Faculty of Dentistry, University of Toronto; James Anderson, MScD, Faculty of Dentistry, University of Toronto; Fred Goettler, MSc, Biostatistician Toronto Public Health

THE UTILITY OF THE TORONTO SYSTEM OF DENTAL DIAGNOSTIC CODES (TSDDC) TO DETERMINE PREVALENCE OF CONDITIONS AND TO DOCUMENT CHANGES IN DIAGNOSES

Objectives: To examine the electronic dental records of Toronto Public Health (TPH) to assess utility of the Toronto System of Dental Diagnostic Codes (TSDDC) to document morbidity, comorbidity, and changes in diagnoses. **Methods:** We obtained a copy of five years of the TPH database containing patient diagnoses, according to the TSDDC, and service records. Using SPSS (12.0), the data were restructured to a comprehensive patient-level database with more specific diagnoses aggregated into larger groups (e.g. dental caries, pulpal conditions). We derived frequencies of conditions and comorbidities and the numbers of patients with changed diagnoses. **Results:** The cleaned database contained information on 25,860 clients. Subjects had between one and four diagnoses. In any one year, the diagnosis of dental caries was most common, varying between 78%-81% of all patients. Deposits on teeth (30%-40%), and disturbances of tooth development (14%-23%) were next most common. The top three comorbidities with caries were deposits (19%-21%), disturbances of tooth development (10%-12%), and defective restorations (5%-7%). Between 66%-70% of all individuals demonstrated changes in subsequent diagnoses. **Conclusions:** The TSDDC can be used to report the burden of illness, the range of conditions and comorbidities, and to document changes in health status.

2. Miguel H. Torres-Urquidy, DDS, MSc, PhD, Fellow Center for Biomedical Informatics, University of Pittsburgh

EFFICIENCY OF A SOFTWARE PROGRAM IN DETECTING ORAL TERMS IN EMERGENCY DEPARTMENT REPORTS

Objectives: To determine the effectiveness of a software program in detecting oral manifestations related to the presence of signs that may occur in the event of a bioterrorist event. **Methods:** A software program was developed for analyzing the contents of emergency department reports. The program looked for terms that would describe the oral manifestations of a disease related to smallpox. Once the application ascertains that the ED report contains the term, it extracts the report's date and assigns a counter to that date. The accumulation of this data creates a surveillance signal. To determine the effectiveness of the application we measured its precision and recall (after negation). The gold standard was obtained by reviewing each of the records selected by the applica-

tion. **Results:** The program found a total 183 ED reports as possible positive candidates from 61,808 reports available. Of those, 151 were identified as true positives and 19 as true negatives. The system incorrectly identified 11 reports as false positives and discarded 2 as false negatives. From this subset recall (sensitivity) for the system was 0.986928. Precision (positive predictive value) was 0.932099. **Conclusions:** The software application appears to be effective in identifying ED reports that contain signs that a dentist or a physician would log during a regular appointment.

3. Georgia G. dela Cruz, DMD, MPH, US Army Center for Health Promotion and Preventive Medicine; Justin C. Curry, US Army Center for Health Promotion and Preventive Medicine; BethAnn Cameron, MS, US Army Center for Health Promotion and Preventive Medicine

DEVELOPMENT OF AN INTERNET-BASED CARIES RISK SELF-ASSESSMENT TOOL

Objectives: Dental caries is a prevalent oral disease among Army Soldiers and can significantly affect readiness to deploy. The USACHPPM Oral Fitness program developed a Web-based instrument to educate soldiers about their risk of developing dental caries. **Methods:** 447 Soldiers from two installations completed an anonymous survey. The survey consisted of 10 risk questions about hygiene habits, dietary habits, tobacco use, and health conditions. A dentist assessed each soldier's caries experience during the past three years. Discriminant analysis was used to create a prediction model to estimate soldiers' susceptibility to dental caries as low or increased using the data collected from one installation and validated using the data from the second installation. Tailored educational messages were developed for each of three possible responses to each risk question. The internet application was pilot tested with a group of soldiers to determine effectiveness at increasing oral health knowledge and attitudes. **Results:** The discriminant analysis yielded a model that correctly predicted soldiers' caries experience at least 72% of the time and minimized the incidence of underprediction (false negatives) to less than 7%. The model included consumption of sugar sweetened drinks, diet drinks, sugary foods, and calcium. Habits that were important in the risk prediction model included tobacco use and frequency of brushing. Soldiers in the pilot test unanimously approved of the format and content of the tool, and demonstrated improvements in personal responsibility, self-efficacy, and the importance of having dental disease treated. **Conclusions:** The Internet-based caries risk self-assessment tool is informative and appealing to soldiers and improves their attitude toward the importance of their oral health.

4. *Paul Glassman, DDS, MA, MBA; Christine Miller RDH, MHS, MA, University of the Pacific School of Dentistry*
USING DISTANCE EDUCATION TECHNOLOGY TO INCREASE ACCESS TO CARE FOR UNDERSERVED AND VULNERABLE POPULATIONS

Objectives: This presentation describes the development and presentation of a distance education program at the University of the Pacific School of Dentistry which satisfies the California educational requirement to obtain a license as a Registered Dental Hygienist in Alternative Practice. This license allows dental hygienists to practice without dentist supervision in numerous settings with underserved populations. **Methods:** A 150-hour curriculum was developed which included 20 hours of in-person instructions and 130 hours of distance education instruction. 38 dental hygienists enrolled in the program in the Fall of 2004. The distance education portion of the program involved educational modules, on-line quizzes, learning group exercises, case presentations and on-line discussion groups. These on-line experiences were supplemented with field experiences, in-person hands on instruction, and an in-person final examination. **Results:** All of the program enrollees completed the program. The post-program evaluations were highly complementary of the program style and content. Students valued the ability to complete this program while engaged in full-time work at scattered locations throughout California. They felt that the learning groups and on-line discussions enabled them to develop a sense of community. The content presentation style was felt to be very personal and simulated live instruction. **Conclusions:** This on-line education program was very successful at providing dental hygienists with the skills to serve complicated underserved populations. On-line education has the potential to be used to a much greater degree in dental education to expand care for these populations.

5. *Tracy E. Garland, President and CEO, Washington Dental Service Foundation*

ENGAGING PROVIDERS OF PRIMARY MEDICAL SERVICES IN PREVENTING CHILDREN'S ORAL DISEASE

Objectives: To spread the practice of delivering preventive oral health services in routine well child care visits, including screening for early signs of infection that could lead to tooth decay, risk assessment, family education, fluoride varnish and referrals to dentists as needed. **Methods:** Provider adoption needs to be addressed from many angles—professional education in university settings and in continuing education offerings, reimbursement policies that support adoption, practice management systems that make it easy to incorporate protocols, simple risk assessment tools, and family educational materials. **Results:** The Washington Dental Service Foundation has funded proof of concept pilot projects that have yielded results that can form the foundation for widespread adoption. Marketing efforts have included conference presentations, dissemination through physician professional organizations, paid and earned media, and engaging champions in this work. **Conclusions:** As primary medical providers see young children routinely and are familiar with referring clients to specialty providers, like den-

tists, they are in a natural role for early intervention and making referrals as needed. Engaging medical providers in prevention has the potential for significantly reducing early childhood caries and increasing the number of children who will experience good oral health throughout their life.

6. *Kathy M. Lituri, RDH, MPH; Michelle Henshaw, DDS, MPH; Corinna Culler, RDH, MPH, DrPH Cand; Harpreet Singh, RDH, MS; Brenda Heaton, BS, MPH Cand., Boston Univ. School of Dental Medicine, Rosie Muñoz-López, MPH, Director; Heavenly Mitchell, MHA, LSW, Assoc. Director, Healthy Baby/Healthy Child Program*

HEALTHY BABY/HEALTHY CHILD (HB/HC): INCORPORATING ORAL HEALTH INTO A HOME-VISITING, PUBLIC HEALTH NURSING PROGRAM

Objectives: To describe an oral health program that trains public health nurses to assess the oral health status and reduce early childhood caries (ECC) risk factors among clients enrolled as high-risk pregnant women in HB/HC and followed by home visiting public health nurses 3 years postpartum. **Methods:** Dental hygienists provided ECC specific oral health training to 20 HB/HC nurses, supervisors and staff, including the administration of a 16-item pre and post knowledge test. Subsequently, hygienists accompanied each nurse on multiple home visits and trained the nurses to effectively conduct basic dental screenings and provide oral health education specific to the client's self-reported oral health behaviors and nutritional and child-feeding practices. **Results:** 15 nurses completed the pre and post test and scored significantly higher on the post (paired t-test mean pre-test score 9.0/post-test score 13.2, $p < .05$). During 82 home visits, the RDH/RN team provided oral health education to all families and screened 22 mothers and 47 children age 0-3. Debriefing revealed the nurses' perceived need for more training; thus, a Q&A forum was held and more home visits scheduled. **Conclusions:** This program allowed the nurses to build capacity and successfully incorporate an enhanced oral health component with the potential to decrease ECC prevalence into the HB/HC protocol. This program may serve as a model for non-dental health professionals in oral health promotion and disease prevention. **Support:** CDC U48/CCU415803; NIH U54 DE14264, K23 DE00454

7. *Lesla Byrum, BS, RDH; Suzanne W. Hubbard, DDS, Tennessee Department of Health, Oral Health Services*

CAVITY FREE IN TENNESSEE- A FLUORIDE VARNISH PROGRAM FOR PUBLIC HEALTH NURSES

Objectives: To develop a statewide, early childhood caries prevention program by creating an opportunity for a medical/dental partnership. **Methods:** A bill introduced into the 103rd General Assembly by the Tennessee Dept of Health amended the Dental Practice Act to allow the application of fluoride varnish to the teeth of at-risk, underserved persons in public health clinics by public health nurses or nurse practitioners. It was part of Governor Bredeson's administrative package and was signed into law on May 17, 2004. **Results:** The law went into effect July 1, 2004, and since that time all 7 rural regions and 3 of the 6 metro regions have received training by the

Department of Oral Health Services. Both regional nursing and dental staff were present at the training sessions. Through December 2004, more than 1,000 children 0-5 years have received fluoride varnish applications by public health nursing staff in Tennessee. Each health department medical clinic has received a fluoride varnish training manual which includes technique for applying fluoride varnish as well as information concerning normal dental development in children. *Conclusions:* This partnership of medical/dental professionals has proven to be a viable option for delivering preventive dental services to children in public health settings. It also has fostered a more positive relationship between medical and dental staff in participating regions.

8. Marita R. Inglehart, Dr. phil. habil, University of Michigan School of Dentistry; Daniel Briskie, DDS, Mott Children's Health Center, Flint, Michigan

ORAL HEALTH AND QUALITY OF LIFE IN ELEMENTARY SCHOOL CHILDREN – THE TEACHERS' POINT OF VIEW

Objectives: to explore how teachers in public elementary schools with more than 75% of children on free school lunches view the role of oral health in their students' lives. *Methods:* Data were collected from 247 elementary school teachers in the greater Flint, MI, area. The respondents were mostly female (91.5%) and white (85%), and ranged in age from 24 to 68 years (mean = 43.77 years). They responded to a mailed survey. *Results:* 63.8% of the teachers reported that at least one child in their class was undernourished, 99.3% that at least one student had a learning disability, and 58.3% that at least one child had a medical problem (most commonly: asthma). Only 60 teachers (24.29%) reported that at least one student in their class had an oral health problem (most commonly cavities). School-wide screenings in these schools provided evidence that the percentage of children with oral health problems is significantly higher than assessed by the teachers. However, 75% of the teachers realized that poor oral health can affect a child's general health and 70% knew that it can affect their ability to pay attention in school. *Conclusions:* Elementary school teachers are becoming increasingly more aware that good oral health plays an important role for their students' general health and quality of life. However, they significantly underestimated children's oral health care needs.

9. Michael Helgeson, DDS, Apple Tree Dental; Thomas Fields, MUP, Minnesota Department of Human Services; Patricia Glasrud, MPH, Minnesota Dental Association

MINNESOTA ORAL HEALTH CARE SOLUTIONS PROJECT

Objectives: To design a new oral health care system to meet the needs of Minnesota's Medicaid population and prepare a business plan for a Pilot Project that will provide greater access to oral health services and better value for state expenditures.

Methods: Apple Tree Dental led an 11-month collaborative process in which diverse stakeholders worked in design teams to identify key system goals, design a delivery system framework, and prepare a pilot project business plan. Key system features include a single point of

contact for patients and providers, new incentives and roles for private dentists, earliest possible education, prevention and diagnosis by linking oral health care centers and community oral health care sites, and a stakeholder governing board using evidence-based decision-making processes to continually improve outcomes. *Results:* Broad stakeholder support for the plan was expressed to the MN Department of Human Services (DHS). Interest in participating in the pilot project in 3 regions was obtained from private dentists and safety net clinics who provided 150,000 dental visits to an estimated 60,000 patients in 2003, and who expressed willingness to increase their services by nearly 30% if DHS pilots the project. *Conclusions:* The unprecedented opportunity to redesign the delivery system stimulated diverse stakeholders to work through historic differences of opinion to collaboratively design an innovative new system of care capable of providing greater long-term value to the state by improving oral health and decreasing overall health care expenditures.

10. Aaron C. Blackwelder, Dental Student, Baylor College of Dentistry

TEXAS DENTISTS' ATTITUDES TOWARDS THE DENTAL MEDICAID PROGRAM

Objectives: This study reports the attitudes of Texas dentists toward the dental Medicaid program. *Methods:* A self-administered survey was mailed to all pediatric dentists and a random sample of general dentists. *Results:* Surveys were returned from 347 of 500 dentists (69%); 171 of 295 general dentists (58%) and 169 of 205 pediatric dentists (82%). 57% of pediatric dentists and 29% of general dentists ($p < .0001$) treated at least one Medicaid patient in the past year. The major areas of dissatisfaction were 1) broken appointments, 2) low reimbursement levels, and 3) patient non-compliance. This mirrors results from studies in Iowa, Louisiana, Ohio, Washington, and California. Both pediatric and general practitioners identified the following barriers to care for the Medicaid population: 1) low dental IQ, 2) few providers, and 3) no transportation. *Conclusions:* The major areas of dissatisfaction included both programmatic and patient-related factors. Attributes of the system (e.g., lower reimbursement levels) are more modifiable than attributes of the patient population (e.g., patient non-compliance and low dental IQ). Underfunding of dental Medicaid is endemic to all states studied. Providers, legislators, and government programs should target the programmatic problems with future efforts and funding.

11. Frank Catalanotto, DMD, College of Dentistry, University of Florida; Allison Hall, PhD, Department of Health Services Research, Management and Policy, University of Florida College of Public Health and Health Professions; Jianyi Zhang, PhD, Florida Center for Medicaid and the Uninsured, University of Florida College of Public Health and Health Professions

DENTAL AND HEALTH CARE UTILIZATION AMONG FLORIDA PEDIATRIC MEDIPASS BENEFICIARIES

Objectives: This project analyses Florida MediPass administrative claims data for the years 2000-2003 to de-

scribe dental and health care utilization among pediatric beneficiaries.

Methods: Beneficiaries, aged birth to 10 years, with a dental claim were included in analysis. They were grouped into two categories, (1) children with no record of general anesthesia (GA) for a dental procedure, and (2) children who had a record of GA for a hospital-based dental procedure. For each group, we determined utilization rates for dental and medical procedures. **Results:** There were 181,623 beneficiaries with at least one dental claim and 1,533 beneficiaries who required GA. Beneficiaries who required GA during a dental procedure received, on average, approximately three times as many diagnostic, preventive, restorative and other dental procedures as those without GA. In addition, the GA group had more medical contacts than those without GA, including six times as many physician visits, twice as many emergency room visit, four times as many in-patient admissions, and four times as long a stay in the hospital. **Conclusions:** Results suggest that Medicaid beneficiaries who required GA for dental care utilized more medical services than those who did not require GA. Possible explanations for the difference could be the overall poorer health status of the beneficiaries with GA and the lack of timely primary medical and dental care. Further analysis will seek to understand reasons for the differences in utilization between the two groups. Supported in part by a grant from the Florida ACHA to the UF Center for Medicaid and the Uninsured.

12. Kelly C. Haupt, BSDH, MHA, North Carolina Academy of Family Physicians and North Carolina Pediatric Society; R. Gary Rozier, DDS, MPH, Department of Health Policy and Administration, School of Public Health, University of North Carolina at Chapel Hill; Leslie P. Zeldin, MPH, MSUP, Department of Dental Ecology, School of Dentistry, University of North Carolina at Chapel Hill

BARRIERS TO IMPLEMENTING PREVENTIVE DENTAL SERVICES IN PRIMARY CARE MEDICAL PRACTICES

Objectives: To determine barriers to adopting oral preventive procedures in medical primary care settings. **Methods:** North Carolina medical providers participating in a 5-year Medicaid demonstration completed questionnaires reporting their experiences providing preventive dentistry services. The demonstration included CME courses and other methods to encourage providers to incorporate oral screening, risk assessment, referral, counseling, and fluoride varnish into their practices for Medicaid children 0-3 years of age. Providers in 109 pediatric and family medicine practices completed questionnaires before and 12 months after training. Respondents reported at follow-up if any one of 11 factors had ever been an obstacle to adoption, and if so, whether it was overcome or remained an obstacle during the 12 months under study. Obstacles were analyzed for adopters (A) and non-adopters (NA). **Results:** Difficulty integrating dental procedures into their practice routines was the primary obstacle reported by A (35%) and NA (67%), with most A overcoming this difficulty (67%). Difficulty in applying fluoride varnish (A=29%; NA=29%) and resistance from colleagues and staff (A=21%; NA=43%) were

the second and third most common obstacles. **Conclusions:** Training in preventive dentistry should identify barriers and target them with CE that includes office-based process systems to improve chances of adoption. Failed attempts at providing services may erode confidence and discourage successful adoption.

13. Homa Amini, DDS, MS, MPH; Paul Casamassimo, DDS, MS; Beth Noel, RDH; John Hayes, PhD, Columbus Children's Hospital

ORAL HEALTH OF LOW-INCOME PREGNANT WOMEN

Objectives: To describe oral health and treatment needs of pregnant women at Columbus Children's Hospital during 2004. **Methods:** Retrospective chart review was done on 303 consecutive pregnant women in 2004 referred by local prenatal clinics to obtain percentages of untreated caries, existing restorations, missing teeth, extractions needed, gingivitis, calculus, and treatment urgency. **Results:** Age was 14 to 35 years, (mean 20, SD+3.7) with 18% Caucasian, 63% African-American, 18% Hispanic, 0.4% Asian. 73% were Medicaid, 2% were private-pay, and 25% uninsured; 43% had at least 1 restoration and 25% had at least 1 missing tooth (excluding 3rd molars); 82% had at least 1 untreated decayed tooth, and 24% needed at least 1 extraction; 56% had gingivitis and 67% calculus. 50% had oral complaints. Cavities ($p=.003$) and need for extraction ($p=.02$) significantly predicted toothache complaints in logistic regression. Of those not needing extraction, 50% who had 1 or more cavities complained of toothache/pain (50% of those with cavities did not complain) and 31% of those without cavities and no need for extraction complained of toothache/pain ($p=.064$). Age ($p=.62$), gingivitis ($p=.32$), calculus ($p=.62$) did not predict oral complaints. **Conclusions:** Untreated decay in this population is consistent with the U.S. Surgeon's General 2000 Oral Health Report. The high level of periodontal problems supports need for preventive care during pregnancy.

14. Shelly Atherly-Trim, MPH, Johns Hopkins Bloomberg School of Public Health; Donna Strobino, PhD, Johns Hopkins Bloomberg School of Public Health; Dawn Misra, PhD, University of Michigan School of Public Health

DENTAL HEALTH HABITS DURING PREGNANCY AMONG URBAN AFRICAN AMERICAN WOMEN

Objectives: Periodontal disease, a chronic oral infection, has been found to adversely affect women during pregnancy and has been hypothesized to have a biologic relation to preterm birth. However, little is known about the oral health practices of women during pregnancy. The objective of this study is to describe the oral hygiene habits among low-income African American pregnant women. **Methods:** This cross-sectional study of 820 African-American pregnant women was conducted as part of in a larger study of the influence of social factors on preterm delivery between June 2000 and July 2004 in 3 Baltimore city antenatal clinics and Johns Hopkins Hospital. Data on dental health care use and practices were collected from postpartum interviews conducted with the study women. **Results:** The study sample included largely low-income women with limited resources. While

66% of women follow the ADA recommendations for brushing twice a day, less than half (42%) reported following recommendations for flossing. Toothpick use was also reported (36%). Almost half reported seeing a dentist in the past year for both acute dental problems and preventive care. Only 40% reported preventative care, as indicated by at least one dental cleaning in the past year. **Conclusions:** Results from this sample of women show that pregnant African American women underutilize preventative dental care services and many have less than optimal dental hygiene practices. Understanding the issues associated with oral health care practices and dental care utilization during pregnancy is important in supporting national efforts to reduce oral health disparities among vulnerable populations.

15. Jessamyn Ressler-Maerlender, MPH; Valerie Robison, DDS, PhD, MPH, Division of Oral Health, Centers for Disease Control and Prevention

ORAL HEALTH, DENTAL UTILIZATION DURING PREGNANCY: A QUALITATIVE ANALYSIS OF PRAMS DATA

Objectives: Oral health services may be underutilized by pregnant women, yet little is known about qualitative factors that may influence use of dental care during pregnancy. CDC's Pregnancy Risk Assessment Monitoring System (PRAMS) is an ongoing state- and population-based surveillance survey of maternal behaviors. This study will analyze comments made by PRAMS respondents related to oral health to better understand their attitudes, knowledge, and behaviors regarding oral health, dental visits, and pregnancy. **Methods:** Currently, 12 states ask oral health questions in their PRAMS. This study is reviewing comments written voluntarily by respondents on the survey's back pages and side margins. Comments were searched for relevance using the terms: tooth, teeth, mouth, gums, and dentist. The search yielded 152 comments from approximately 3,600 surveys. Comments will be analyzed to assess themes regarding oral health and pregnancy, classified into variables developed by no fewer than three coders, and analyzed using EasyText™ software.

Results: An example of an oral health-related comment is: "Each pregnancy I lost a tooth because I could not afford to see a dentist for dental work." **Conclusions:** To improve oral health in pregnancy, increasing access may not be as effective as understanding women's views about this unique time, particularly if those views are predicated on poor oral health as a normal consequence of pregnancy. This qualitative analysis is an important first step toward understanding women's opinions and beliefs about their care seeking behavior.

16. Michelle M. Henshaw, DDS, MPH; Kathy M. Lituri, RDH, MPH; Corinna Culler, RDH, MPH, DrPH Cand.; Harpreet Singh, RDH, MS; Brenda Heaton, BS, MPH Cand., Boston University School of Dental Medicine, Rosie Muñoz-López, MPH, Director; Heavenly Mitchell, MHA, LSW, Associate Director, Healthy Baby/Healthy Child Program

ORAL HEALTH STATUS AND EARLY CHILDHOOD CARIES (ECC) RISK FACTORS OF CHILDREN AND MOTHERS ENROLLED IN A PRE AND POST NATAL HOME VISITING PROGRAM

Objectives: To describe the oral health status and ECC risk factors of Healthy Baby/Healthy Child (HB/HC) clients. **Methods:** HB/HC provides prenatal care for pregnant women who are at high risk for preterm birth and continues to provide home visits to the families for 3 years after birth. Dental hygienists accompanied HB/HC nurses on home visits and administered a questionnaire to the mothers. Screenings of mothers and children were also conducted. Data collected included clinical oral health status, and self-reported use of dental services, behaviors, and nutritional/child-feeding practices. **Results:** During 82 visits, 49 mothers completed the questionnaire, 22 mothers and 47 children age 0-3 were screened. 42% of children used a bottle in bed that contained a liquid other than water every day, 68% regularly used a sippy cup filled with juice or other sugary liquid apart from mealtimes, 9% had their pacifier "cleaned" in their mother's mouth, and 3% shared a toothbrush. Of the dentate children (n=36) 19% had white spot lesions and 14% had cavitated lesions. Of the children over 1 year old, only 10% had been to the dentist. 73% of mothers screened had untreated decay. **Conclusions:** The results of this pilot project indicate that the children served by HB/HC, have higher levels of ECC than national averages and have ECC risk factors that could be modified through an intensive prevention program. **Support:** CDC U48/CCU415803; NIH U54 DE14264; K23 DE00454

17. Ayanna C. Bradshaw-Sydnor, BS, William Bailey, DDS, MPH, Division of Oral Health, Centers for Disease Control and Prevention; Jay Bernhardt, PhD, MPH, Rollins School of Public Health, Emory University; Susan O. Griffin, PhD, Division of Oral Health, Centers for Disease Control and Prevention

WHAT DO MOM AND DAD KNOW? AN ASSESSMENT OF PARENTAL AWARENESS OF PEDIATRIC ORAL HEALTH ISSUES AND SOURCES USED TO OBTAIN HEALTH INFORMATION.

Objectives: The objectives of this study are to (1) assess parental awareness regarding pediatric oral health issues, (2) identify the communication channels parents utilize to obtain health information, and (3) suggest implications for public health practice. **Methods:** Responses from the 2003 ConsumerStyles and HealthStyles national surveys of parents with children age 5 or younger were used to ascertain parental awareness of oral health issues and the communication channels they used to obtain health information. SAS version 8.2 was used to conduct descriptive and bivariate analyses of parental demographic information, pediatric oral health knowledge and behaviors, and communication media. **Results:** A total of 547 respondents were parents of a child 5 years

or younger and answered selected questions on both surveys. Slightly more than 50% knew the correct amount of toothpaste to use; 2 out of 3 parents knew the purpose of dental sealants. Only 11% of children experienced their first dental visit by the time they turned two years old. Family was the most utilized communication medium while church or other religious groups were the least used sources of health information. *Conclusions:* Many parents do not have an acceptable level of oral health knowledge and demonstrate behaviors that may negatively affect the oral health of young children. Targeted health education interventions using specific communication channels may improve awareness.

18. Barbara L. Van Horn, MEd, Goodling Institute for Research in Family Literacy, College of Education, The Pennsylvania State University; Margaret Grumm, BS Education, Goodling Institute for Research in Family Literacy, College of Education, The Pennsylvania State University

DEVELOPING ORAL HEALTH LITERACY THROUGH STORIES AND FACILITATED DISCUSSION

Objectives: To determine short-term and longer-term effects of a health literacy intervention on low-income, limited literacy parents' skills and knowledge regarding oral health, and communication and language development and, ultimately, on related behaviors. *Methods:* Rosalie's Neighborhood is a health literacy intervention for caregivers of young children using narrative and a facilitator's guide to communicate health messages and build content-specific vocabulary and concepts. *Let's Smile* focuses on oral health and *Let's Talk* on communication and language development. Health information is presented in conversations among friends. The guide is used to direct discussion and activities related to the story, using strategies to build vocabulary, comprehension, and problem-solving skills. The Goodling Institute is working with NIDCR and NIDCD to ensure that the stories and activities reflect research-based health information. Staff is developing instruments to measure changes in knowledge and will pilot the intervention with parents enrolled in family literacy programs in six Pennsylvania communities. Sites represent urban and rural communities and include Caucasian, Hispanic and African-American parents, native English speakers, and English language learners. *Results:* Staff began data collection in January 2005 and will have preliminary data analyzed by April. We will share findings and challenges and benefits of working with the target populations and with health and family literacy partners. Project staff will contact a sample of participants 10 months after participation to determine longer-term effects. *Conclusions:* If pilot data analyses indicate short-term learning gains, the research team will submit a proposal to study the effectiveness of Rosalie's Neighborhood as a health literacy intervention.

19. Janis E. Johnson, BA, Boston University School of Dental Medicine; Nancy Kressin, PhD, Boston University School of Public Health; Michelle M. Henshaw, DDS, MPH, Boston University School of Dental Medicine

THE NORTHEAST CENTER FOR RESEARCH TO EVALUATE AND ELIMINATE DENTAL DISPARITIES

Objectives: The Northeast Center for Research to Evaluate and Eliminate Dental Disparities (CREEDD) aims to do research whose results can inform health policy and lead to elimination of oral health (OH) disparities. *Methods:* CREEDD's Clinical & Community Liaison Core does subject recruitment, dissemination of health information, and is also charged with translating research findings into action. Of the Center's 4 major research projects, 2 have already resulted in such findings: Oral Health-Related Quality of Life (QoL) in Children (how oral problems affect QoL of children and families); Decreasing Rates of ECC Through a Health Care Provider Intervention (training MDs on OH promotion as part of well-child visits). *Results:* Research findings are being implemented in community-based programs. Starting in 2005, age-appropriate QoL instruments, developed for use for parent reports on their child and for child self-reports, are to be used in 2 school-based OH programs in the Boston area. OH training of 35 pediatricians at Boston Medical Center and 19 nurses showed quantitative improvement in medical provider knowledge of ECC and its prevention. Similar training is to be implemented in community health center practices, with eventual expansion to private practice settings statewide. *Conclusions:* CREEDD, now in its 4th year, has begun both epidemiologic and intervention studies to understand and eliminate OH disparities. It has also begun to translate research findings into community-based programs of OH promotion in underserved populations. Support: NIDCR U54 DE14264

20. Hillary L. Broder, PhD, MEd; Michael Conte, DMD, MPH; Debra Goldsmith, MSHS; Steven Singer, DDS; Rebecca Reed, DMD, MPA, UMDNJ-New Jersey Dental School

HELPING WOMEN HELP THEMSELVES: AN ORAL HEALTH PROMOTION PROGRAM

Objectives: To evaluate the oral health needs, assess oral health-related quality of life (OHRQoL), and estimate the costs of remediating existing dental needs in abused women attending an established program to help improve women's quality of life and secure employment. *Methods:* The Dept. of Community Health of NJDS, the Am. Assoc. of Women Dentists, and the WISE Women's Center (WWC) of Essex County CC (Newark, NJ) developed a pilot oral health program that consisted of a baseline oral exam, oral diagnosis and treatment plan, OHIP-14 assessment of OHRQoL and related health behaviors, estimation of the cost of full dental remediation, provision of priority treatment (<3 visits), and program evaluation. *Results:* 27 women from the WWC were enrolled, and 24 (91% Black, mean age= 42. yr) received care. All of the women had unmet dental needs; 21 (87.5%) reported dissatisfaction with their dental appearance; 12 (50%) reported bleeding gums; and 17 (71%) had facial pain during the last year. On average, their last dental appointment occurred 3.2 yrs ago. Eighteen reported barriers to

care, primarily due to cost (14) and/or dental fear (14). On the OHIP-14, an average of 3.4 items (SD= 3.6) were reported to occur 'fairly often', indicating a high level of negative impact due to oral health needs. Among the 60 scheduled treatment visits, 55 (92%) were completed. Dental care included 19 extractions, 25 restorations, 12 cleanings and 12 scaling and root planing. Based on the school's fee schedule, total treatment costs for 'dental makeovers' ranged from \$22,000 - \$27,000. Participants were well-satisfied with the program, where ratings averaged 4.8 on a 5-pt scale. *Conclusions:* This project confirmed participants' high levels of unmet dental needs, greatly reduced OHRQoL, as well as high adherence and satisfaction with the pilot evening dental program.

21. Aida A Chohayeb, DDS, MSD, Oral Health Consultant; Rafi K Saatciyan DDS, Private Practice, New York; C Joseph Baxter, Jr, BS, Statistician

IS SOCIOECONOMIC STATUS A CONTRIBUTING FACTOR TO TOOTH LOSS?

Objectives: To compare effects of socioeconomics on tooth loss. *Methods:* A random sample of dentate adult women; 30 from each group residing in New York City consented to participate in the study. The socioeconomic status, oral hygiene practices & frequency of dental visits were recorded. Data was analyzed using Microsoft Excel, General Linear Model, odds ratios, relative risks & appropriate Chi-Square tests. *Results:* Latinos with annual income less than \$20,000 had an average of 6.9 missing teeth, brushed 2.4 times daily, flossed 1.1 times daily & visited the dentist once yearly. Those earning more than \$20,000 had an average of 3 missing teeth, visited their dentist 0.6 times yearly, brushed 1.9 times daily & flossed 0.3 times daily. Caucasians with less than \$20,000 income had an average of 8.0 missing teeth, brushed 1.6 times daily, flossed 0.7 times daily & visited the dentist 0.8 times yearly. Those earning more than \$20,000 had an average of 8.14 missing teeth, visited the dentist 1.1 times yearly, brushed 2.3 times daily & flossed 0.6 times daily. *Conclusions:* 1. Education, not income, was the main contributing factor in the amount of dental visits for both groups. 2. Oral hygiene was influenced by income more than education. 3. Higher income Latinos had less missing teeth, while income was not a factor for Caucasians.

22. Linda M Kaste, DDS, PhD; Anne Koerber, DDS, PhD; Esther Lopez BS, Izadora Torres MPH; Khatija Noorullah MPH, University of Illinois at Chicago College of Dentistry (UIL COD); John M Crawford, BDS, PhD, UIC COD Dept of Periodontics; and Karen Peters, DrPH, UI COM Dept of Family and Community Health

LATINO COMMUNITY CHALLENGES TO DISSEMINATING INFORMATION ABOUT THE ORAL HEALTH-DIABETES LINK

Objectives: To propose best methods to inform a Chicago Latino community of the bidirectional link between oral health and diabetes, with areas and challenges for further research.

Methods: Focus groups, varied by age, diabetic status, language and gender, were held with 70 participants. Structured interviews were held with 14 Health Care Pro-

viders (HCPs) and community leaders. Analysis was qualitative. *Results:* Adults preferred obtaining information in a non-governmental, non-threatening, small-group setting, and through word-of-mouth, with challenges noted of literacy, language, denial, ignorance, dietary changes, limited resources, other priorities, and an ambivalent approach to problems. High school students preferred the Internet, television, or other advertising media and suggested they be the health message-carrier for the family. Challenges identified by HCPs and community leaders included other priorities and time; they were supportive of messages on bidirectionality. *Conclusions:* A multi-pronged approach is needed to disseminate information about oral health and diabetes, dependent on the target audience, via schools, community settings, and HCPs. Outcomes of interventions should include increasing community and HCP knowledge of oral health, diabetes, the link between them, and measuring whether HCPs include the link when giving information to patients. Precisely what information should be given to the community is still undetermined. Funded under CDC Cooperative Agreement No. U48/CCU415803-05 SIP 2-01.

23. Daniel W. McNeil, PhD; Richard J. Crout, DMD, PhD; Rebecca K. Widoe; Renata K. Martins, MS, West Virginia University; Robert J. Weyant, DMD, DrPH; Mary L. Marazita, PhD, University of Pittsburgh

TOWARD AN UNDERSTANDING OF THE RELATION BETWEEN ORAL HEALTH AND APPALACHIAN IDENTITY

Objectives: To relate oral health values and identification as a West Virginian with oral health status. *Methods:* There were 236 adults from two rural West Virginia counties who participated as household groups. As part of a battery of dental and psychosocial assessments, including the Dental Neglect Scale, a West Virginia Identity Scale was utilized to assess identification with Appalachian culture. *Results:* Greater identification with a traditional West Virginia identity was related to less positive oral health values. Moreover, such identification was associated with poorer self-perceived oral health status. *Conclusions:* Oral health values and identification with traditional Appalachian values may be associated with poorer oral health status among rural West Virginians.

24. Harpreet K. Singh, RDH, MS; Michelle Henshaw, DDS, MPH; Thayer Scott, MPH, Boston University School of Dental Medicine; Lin Piwowarczyk, MD, MPH, Boston University School of Medicine; Michael Grodin, MD, Boston University School of Public Health; Sondra Crosby, MD, Boston University School of Medicine

DENTAL HEALTH STATUS OF ASYLUM SEEKERS AT THE BOSTON CENTER FOR REFUGEE HEALTH AND HUMAN RIGHTS

Objectives: To assess the dental health status of survivors of torture and refugee trauma. *Methods:* Since Oct 2000, BCRHHR has provided comprehensive medical, mental health, and dental care coordinated with legal and social services to 750 clients. Between Feb '02 and Dec '04, 147 clients were referred for dental evaluations which were conducted by a dental hygienist in a social workers' of-

fice using disposable mirror and penlight. Referral options were discussed and an appointment was made with dentists trained in providing care to trauma victims. Clients received oral health education, toothbrush, toothpaste and floss. *Results:* The 147 clients were born in 38 different countries: 80% from Africa, 5% each from Eastern Europe or Indian Subcontinent and 3% each from Caribbean or Middle East. Although 24% reported having never been to the dentist, 92% felt they needed dental care at time of intake. 33% reported having pain in either their teeth or gums on the day of screening. 63% were found to have mild to severe gingival inflammation and 11% were referred for immediate treatment. Overall, 73% of clients had untreated decay including 81% of West Africans, 75% of Central Africans and 64% of East Africans. 16% of clients experienced orofacial trauma from torture they had endured. *Conclusions:* Refugees have high levels of dental disease. Given that 16% experienced trauma, it is important to ask about past trauma when treating this population since others have shown that dental care setting may evoke memories of the torture. Supported by NIDCR U54 DE14264, 1K23 DE00454 0

25. Kenneth A. Bolin, DDS, MPH, Texas A & M University Health Science Center, Baylor College of Dentistry

ORAL HEALTH NEEDS ASSESSMENT OF DETAINEES IN A JUVENILE DETENTION FACILITY

Objectives: This study investigates the dental caries prevalence and other oral health indicators in a large county juvenile detention facility. *Methods:* A retrospective chart review was done using the Association of State and Territorial Dental Directors' manual of assessing oral health needs. DMFT data, as well as other oral health indicators, were abstracted from randomly selected charts to obtain information that could be used in program planning, program advocacy, and education of the public. *Results:* Of 419 records, 24.6% were female and 75.4% male, with an ethnic distribution of 45.1% African-American, 35.3% Mexican-American or Hispanic, 15.8% Caucasian, and 3.8% Asian or "other." The median age of the subjects was 15.43 years with a mean age of 15.35 years (SD 1.17; SE 0.06). Prevalence of decay was 49.6% with 50.4% (N=211) having no untreated decay. The mean overall DMFT was 3.58 (SE 0.17; SD 3.39) with a median of 3.0. Five percent of the patients (N=21) had permanent teeth missing due to decay, and 19.3% (N=81) exhibited a medium or high urgency of need for restorative or surgical care. A majority of 85.2% (357/419) had no sealants present. A large majority of the patients needed an oral prophylaxis (97.6%, N=409) and 42.2% (N=177) had visible calculus which needed to be removed. *Conclusions:* Juvenile detainees in this study had unmet dental treatment needs. Information obtained with this needs assessment survey presents challenges for program planning in this community.

26. Hyun-duck Kim, DDS, PhD; Dae-ho Koh, DDS, MSD; Bo-hyung Jin, DDS, PhD; Dai-il Paik, DDS, PhD, Social Dentistry, College of Dentistry, Seoul National University

OCCUPATIONAL EXPOSURE TO ACIDS AND DENTAL EROSION: TYPE OF ACIDS AND LENGTH OF EXPOSURE

Objectives: This study aims to evaluate the influence of occupational exposure to acids related to length of exposure and type of acids on dental erosion. *Methods:* Of 1,088 workers from the cohort of the Korean national panel survey for workers exposed to acids (under the TWA-TLV) in 2003, 951 (87.4%) workers (431 non-exposed workers and 519 exposed workers) were surveyed. Three sets of modified case-control analyses were performed: normal (G0=453) vs. overall dental erosion (G1-5=498); normal (G0=453) vs. severe erosion (G3-5=83) and normal (G0=453) vs. ordinal erosion (G1-2=415; G3-5=83). The main explanatory variables were history of acid exposure, length of exposure and types of acids exposed. The confounders were socio-demo-behavioral factors and lifestyle-systemic factor. Mask wearing habit was considered as an effect modifier. Bivariate and multivariate general/ordinal logistic regression analyses were conducted. *Results:* Past exposure to acids was associated with overall dental erosion (Adjusted Odds Ratio (AOR)=1.81, 95% Confidence Interval (CI)=1.32,2.49). Length of exposure showed the linear association with ordinal erosion ($P<.001$). Mask wearing negatively modified the effect of acid exposure on severe erosion (AOR=.24, 95% CI=.06, .92). Multiple exposures to sulfuric acid, hydrochloric acid and nitric acid showed the highest impact on severe erosion (Etiologic Fraction=.95). *Conclusions:* The present study showed the evident association between occupational exposure to acids and dental erosion. The evidence of occurrence of dental erosion under the guideline of TWA-TLV suggests a practical step on the new guideline that considers the safety of oral health, which needs investigation.

27. David J. Reynen, MPH, MPPA, Chronic Disease Epidemiology and Control Section, California Department of Health Services; David Nelson, DDS, MS, Office of Oral Health, California Department of Health Services

HOSPITALIZATIONS FOR DISEASES OF THE ORAL CAVITY, SALIVARY GLANDS, AND JAWS, CALIFORNIA, 1998-2002

Objectives: Diseases of the oral cavity (OC), salivary glands (SG) and jaws (J) are not insignificant. To reduce morbidity and costs (\$3.4 Mil/yr, US), developing an understanding of their descriptive epidemiology is crucial. This study begins to do that for California (CA). *Methods:* Cases were drawn from a pool of all inpatients discharged from licensed acute care hospitals in CA, 1998-2002 (n=19,098,473 with valid data). A case was defined as any discharge with 1+ mention of 1 of the following ICD9 codes, among the 25 on the discharge abstract: 520-9. Stratified discharge rates were calculated. *Results:* Cases totaled 90,277, with 26% having a condition of interest as the primary diagnosis. Across all years, the proportion of cases with a diagnosis of 1 of the diseases of the OC (ICD 520-5) was 48%, with the rest having diagnoses of diseases of the SG and J (ICD 526-9). During 1998, there were

17,217 cases; the next year, 17,068. Over the next 3 years, a 16% increase meant there were 19,707 (2002). The corresponding age-adjusted rates/10,000 are 5.2 (1999) and 5.7 (2002; $\beta=0.16$, $p=0.03$). As to gender, there were no differences. As to race, African Americans and whites had elevated rates. Geographically over the years, rates ranged from 0.0 (Alpine, Sierra Counties) to 7.6 (Tuolumne County); rates overall increased from 1998-2002. *Conclusions:* Morbidity associated with these conditions is increasing, especially within some population groups. Being aware of the disparities may allow clinicians not only to better diagnose and prescribe treatment but also to enhance prevention.

28. Dr. Jebun Nessa, BDS, DDS (Dhaka), Pg. Dip in Primary Health Care, MPH (Australia)

GINGIVITIS: A COMMON PREVENTABLE ORAL HEALTH PROBLEM

Objectives: The objective of the present study is to investigate the effect of habitual factor(s) as well as demographic influence on gingival health status. *Methods:* A hospital-based cross-sectional descriptive study was carried out at the Faculty of Dentistry, BSMMU, Dhaka, Bangladesh from April-June of 2004. A total of 117 cases were interviewed and examined. Data were collected from all patients who attended the dental outpatient department during that particular period. All patients were interviewed (face-to face) using a semi-structured questionnaire. Clinical examination was performed to measure the gingival health status using standard gingival index. *Results:* Among all participants 37.6% were female and 62.4% were male. The age range of the participants was 10-65 years. Most of the participants were students (22.2%). The study showed high rate of gingivitis (89%). The peak prevalent age group is over 40 years. The worst condition was detected among tobacco users (64.3%) and betel nut chewers (61.5%). The majority of the study population showed a tendency to brush their teeth in the morning (86.3%) rather than at night (10.03%). It was found that the prevalence of gingivitis significantly increased with decreasing social class irrespective of sex. The study also found other interesting associated factors related to the gingivitis. *Conclusions:* Since little information is currently available in Bangladesh, a small-scale hospital-based survey offers little support regarding the concept of gingivitis and its associated factors. Further study is needed with a bigger sample size preferably using a qualitative approach.

29. Scott L. Tomar, DMD, DrPH; Henrietta L. Logan, PhD; Albert O. Adegbenbo BDS, DDPH, MSc, FRCD(C), Division Public Health Services and Research, University of Florida College of Dentistry

DO AFRICAN-AMERICANS AND WHITES PERCEIVE CANCER SCREENING DIFFERENTLY?

Objectives: To explore cancer screening perceptions of African-Americans (AA) and non-Hispanic Whites (W). *Methods:* We conducted a telephone survey of low-income adults in 2 Florida counties (AA: $n = 550$; W: $n = 374$). Participants rated how likely AAs compared to Ws were: carefully screened for cancer; kept waiting for MD/DDS; and have as good result from cancer treatment.

Additionally, they rated how likely MDs/DDSs: practiced good cleanliness; considered reported symptoms as important; and provided information during cancer treatment to AAs compared to Ws. Dependent variable was a composite based on the 6 items (Cronbach's $\alpha = 0.75$). Analyses used Wilcoxon-rank, chi-square, and ANOVA tests. *Results:* AAs' cancer screening perception was consistently more negative than Ws' ($p < 0.0001$). Overall, race, being employed and how often participants liked the way they were treated by MDs/DDSs significantly ($p < 0.009$) influenced perception, but sex, age, and education level did not. In stratified analyses none of these factors influenced Ws' perception but liking the way they were treated and being employed influenced AAs' perception ($p < 0.003$). *Conclusions:* The cancer screening perception and the factors that affect it differ by race. Support: American Cancer Society ROG-02-230-01-ROG, Office of Minority Health 01T07190101D, CDC PRC U48/CCU409679-07-2

30. Cindy B. Nichols, BS; Gabrielle F. Cannick, BS, Dept of Stomatology, College of Dental Medicine; Department of Biometry, Bioinformatics and Epidemiology, College of Graduate Studies, MUSC; Terry A. Day, MD, Dept of Otolaryngology, College of Medicine James S. Zoller, PhD, Dept of Health Admin, College of Health Professions; Susan G. Reed, DDS, DrPH, Dept of Stomatology, College of Dental Medicine; Department of Biometry, Bioinformatics and Epidemiology, College of Graduate Studies, Medical University of South Carolina

VALIDATION STUDY OF THE ORAL CANCER SCREENING QUESTION

Objectives: To validate the oral cancer screening questions and identify potential confounding factors. South Carolina (SC) has oral/pharynx cancer (OC) incidence and mortality rates higher than the national averages. Fifty-four percent of the SC OC cases are diagnosed at later stage (i.e., with regional or distant disease). Visual and tactile detection is the current OC screening technique. To estimate the proportion of adults who have had an OC screening, self-report is used. Approximately 20% of US adults and 22% of SC adults aged 40 years or older reported ever having had an OC screening (NHIS 1998, SC BRFSS 2002). Validation of the OC screening questions is important to interpret the survey results. *Methods:* Study design was experimental with two intervention groups and a control group. Geographically specific, randomly generated telephone numbers were used to compile a stratified random sample of SC adults by age group, race, and gender. Random assignment was used to determine the study group. Intervention groups were the OC screening with informing the participant, and the OC screening without informing the participant. All three groups received a screening for urgency of dental treatment needs. Two weeks after the study visit, participants were telephoned and asked the OC screening questions. *Results:* were 88% sensitivity and 93% specificity for the informed OC screening, and 46% sensitivity and 93% specificity for the uninformed OC screening. The three study groups did not differ by age, race and gender; as well as third variables including tobacco & alcohol use, dental & medical utilization, number of teeth, medica-

tions, and examiner. *Conclusions:* Findings from this study support informing the patient when performing an oral cancer screening.

31. Britt C. Reid, DDS, PhD, Dental School, University of Maryland, Baltimore; Wayne M. Koch, MD, Department of Otolaryngology, School of Medicine, Johns Hopkins University

PREDICTORS OF DIAGNOSTIC DELAY AMONG HEAD AND NECK CANCER PATIENTS: PILOT STUDY

Objectives: Delays in receiving a head and neck cancer diagnosis have been reported to affect stage at diagnosis. The purpose of this study was to pilot test a survey instrument for assessing predictors of diagnostic delays as a necessary first step in designing interventions to reduce delays. *Methods:* A convenience sample of 41 patients presenting for diagnostic work-up at the Johns Hopkins Otolaryngology service have completed a 20-minute self-administered survey instrument. Data describing participant demographics, cancer knowledge, attitudes and beliefs, and details of the events leading up to their presentation for a diagnosis were collected. *Results:* The median time between awareness of a possible tumor and seeing a health care provider was 10 days. The median time between awareness of a possible tumor and receiving a definitive diagnosis (total diagnostic delay) was 70 days. Among persons with poorly or undifferentiated tumors total delays of 30 or more days increased the odds of an advanced stage at diagnosis 19-fold (p-value 0.09) after adjusting for age. No association was observed among persons with well or moderately differentiated tumors. The strongest predictors of total delays >30 days among persons with poorly or undifferentiated tumors, were scoring 6 or better out of 10 on the symptoms and causes of cancer knowledge test (OR= 0.12, p-value 0.14) and self-reporting excellent overall general health (OR= 0.29, p-value 0.36). No similar associations were found among persons with lower grade tumors. *Conclusions:* Preliminary results suggest that delays in receiving a diagnosis may be associated with advanced stage at diagnosis, and that good cancer knowledge and excellent self-assessed general health may be associated with less delay in receipt of a diagnosis for head and neck cancers, but only among persons with higher grade tumors.

33. Rufus L. Caine, Jr., DDS, MPH; Elise Kumar, MSc, MS; Samuel Quek, DMD, UMDNJ School of Public Health, Department of Dental Public Health

STRATEGIC PLANNING IN THE DEVELOPMENT OF A HEALTH-CARE CURRICULA FOR ORAL CANCER IN NEW JERSEY

Objectives: The first objective was to develop a health-care curricula that require competency in risk assessment, diagnosis, prevention and management. The second objective was to sponsor and promote continuing education for health-care professionals of multidisciplinary management of oral cancer and its sequelae. *Methods:* The Oral Cancer Formative Group agreed to develop a strategic plan for the early diagnosis, prevention and control of oral cancer in New Jersey. The strategic model

was comprised of (1) the magnitude of cancer of the oral cavity and pharynx, (2) New Jersey state dental educational resources, (4) dental knowledge, opinions and practices, and (5) a framework for strategic development. The health-care curricula included the epidemiology of oral cancer; qualitative systematic review of the scientific literature; instructional methods and materials; and recommended formative and process evaluation methods. *Results:* The health-care curricula are valid and reliable. The clinical competency and proficiency of health-care professionals will be increased in terms of an early diagnosis, prevention and control of oral cancer. Public awareness of oral cancer will be enhanced. Health-care costs for oral cancer will be reduced. Analytical skills in the critical review of the literature will be increased. The quality of healthcare for multidisciplinary approaches will be improved. *Conclusions:* This is a strategic planning protocol for educational interventions for health-care professionals to detect, prevent and control oral

34. Robert F. Nelson, RDH, MPA; Donald D. Scheidel, DDS, University of South Dakota Dental Hygiene

EVALUATION OF A NEW DECAY PREVENTION PROGRAM IMPLEMENTED AT THE MARTY INDIAN SCHOOL, MARTY, SOUTH DAKOTA

Objectives: Determine the effectiveness of a joint tooth decay prevention program between the University of South Dakota Dental Hygiene program and the Wagner South Dakota Indian Health Service Dental clinic. *Methods:* The partnership began in 2002 with USD Dental Hygiene establishing a dental hygiene clinic within the Marty Indian School, a rural Native American boarding school. Initial visual examinations revealed 62% of the 199 students aged K-9 had active decay. 13% of the sample needed extractions as a result of gross decay. Of those students needing extractions, 51% needed multiple extractions. During the next three years, each student received biannual prophylaxis including a professional fluoride treatment, individual oral hygiene instruction, paint on fluoride varnish in the classroom, and sealants on permanent teeth as appropriate. In the fall of 2004, 252 students aged K-12 were screened. Findings revealed an active decay rate of 39% with 11% of the sample needing extractions. *Results:* Decay rates went from 62% to 39% and extraction rate went from 13% to 11%. Of the children needing extractions, the percentage needing multiple extractions dropped from 51% to 40%. *Conclusions:* The program is a success considering the reduction in decay rates, the decreased percentage of children needing extractions and the decreased percentage of children needing multiple extractions.

35. Richard W. Rubin DDS, MPH, University of Pittsburgh, School of Dental Medicine

DEVELOPING CULTURAL COMPETENCE AND SOCIAL RESPONSIBILITY IN PRECLINICAL DENTAL STUDENTS

Objectives: To develop a pre-clinical training program that enables and enhances dental student growth in cultural competency and social responsibility. *Methods:* Sixty-one freshmen (Class 2005) participated in 40 hours of non-dental community service, and reflective journals

were completed by the end of the second year. Competency outcomes were measured by selecting key words and phrases found in the individual journals. Key phrases were grouped into four selected categories (Confucian Virtues): compassion, righteousness, propriety and wisdom. Also, phrases had to be accompanied by written indications of direct program causation. *Results:* Analysis of grouped key words and phrases indicate that individual student experiences were rarely limited to less than three of the four Virtue categories mentioned, showing the broad nature of the learning. Sample student quotations best reflect outcomes: "The volunteer experiences have been an intricate part of my life, which have helped me to develop compassion, understanding and humility- three qualities that are essential to the development of a great dentist." "Talking to people who attended the event gave me a different perspective on AIDS. It was something that I was not familiar with outside of textbooks and the classroom." *Conclusions:* This project demonstrates a strategy to engage pre-clinical dental students in broad-based community health service that helps develop important competencies necessary for the development of culturally competent, community-minded and reflective dental health professionals.

36. Jennifer Holtzman, DDS; Hazem Seirawan, DDS, MPH; Roseann Mulligan, DDS, MS, University of Southern California

COLLABORATIVE EFFORT TO ADDRESS ORAL HEALTH DISPARITIES IN SOUTH LOS ANGELES

Objectives: To evaluate a service-learning outreach program directed toward children at risk for caries living in designated high-risk areas, and aimed to eliminate oral health disparities. SES and linguistic barriers are the most significant factors contributing to oral health disparities. Approximately 31% of the families in South Los Angeles public elementary schools live at or below the federal poverty level, and 75% of those parents speak a language other than English at home. *Methods:* In a public-private partnership the USC School of Dentistry provided an on-school-site program where dental students provided screenings, sealants, fluoride, and OHI for children attending elementary schools in South Los Angeles. The program outcomes and operational methods were evaluated. *Results:* Two thousand forty eight students were examined from 8 elementary schools. The sample was 78% Hispanic and 16% black. Seventeen percent of the students were in need of immediate and urgent care; 22% of them were classified as in need for care within 3 months. The program provided 75% of those students with at least one sealant and with an average of 2.47 sealed teeth per child; and provided 91% of the children with fluoride, prophylaxis and/or OHI. The program was expanded in the second year to 115% of its capacity in the first year, and subsequent operational costs dropped. Time conflicts, and language were the most significant obstacles. However, many families hesitated to seek or receive dental services due to immigration related fears. *Conclusions:* Service learning programs that involve partnerships between an academic institution and community partners are effective in reducing oral health disparity, lowering the cost of dental services and increasing awareness of dental public health problems.

37. Dee Devlin, RDH, BS, Boston University School of Dental Medicine, Michelle Henshaw, DDS, MPH, Corinna Culler, RDH, MPH, Sarah Freilich, BS, Boston University School of Dental Medicine, Health Policy and Health Services Research
CITYWIDE SCHOOL-BASED DENTAL SEALANT PROGRAMS DECREASE DISPARITIES IN SEALANT PREVALENCE

Objectives: To assess the impact of citywide sealant programs in 3 cities with disparate SES. *Methods:* BU School of Dental Medicine manages citywide school-based sealant programs for 2nd graders in 3 cities with disparate SES. School year 2003-2004 data from Natick (high SES), Framingham (middle SES), and Chelsea (low SES) was compared to sealant prevalence prior to program implementation. *Results:* Screening of 3rd grade children indicated that the percentage of children with at least 1 sealant was 63% in Natick, 36% in Framingham, and 15% in Chelsea prior to program implementation. As part of the 03-04 program, 107 second graders received dental exams in Natick, 286 in Framingham, and 265 in Chelsea. The percentage of children with untreated decay was 32% in Natick, 29% in Framingham, and 55% in Chelsea. 53% of children in Chelsea, 29% in Framingham, and 21% in Natick received sealants from the programs. Data from clinical exams and parent self report indicated that private dentists placed sealants on 40% of children in Natick and 28% in Framingham, bringing the total sealant prevalence to 61% and 64%, respectively. Chelsea sealant treatment from the private sector was estimated at 15%, resulting in 68% of Chelsea children having sealants. *Conclusions:* Each city exceeded the HP2010 goal of 50% of 8-year-olds having sealants. All 3 cities now have similar sealant prevalence, so school-based sealant programs are an effective way to reduce this disparity in low and middle SES communities, and for all to reach the HP2010 goal. Support by U54 DE14264 and K23 DE00454

38. Neal A Demby, DMD, MPH; Susan L Dietrich, DMD, Lutheran Medical Center

STRATEGIES TO ASSURE ACCESS AND EQUITY: SERVICE LEARNING, POSTDOCTORAL RESIDENCY TRAINING AND SAFETY NET PARTNERSHIPS AS A WORKFORCE INITIATIVE

Objectives: Recruitment and retention of oral health providers remains a critical and chronic problem in assuring access to care. The Lutheran Medical Center and its Family Health Center Network sponsors four CDA-accredited postdoctoral dental residency training programs. Through the establishment of creative, collaborative partnerships with community health centers a major workforce initiative has been put in place to ameliorate access issues for the most vulnerable. This paper describes the critical areas for success of the workforce initiative. *Methods:* Critical areas for success as well as supporting data are presented to include health policy issues; basis of the workforce initiative; the partnership conundrum; accreditation/service learning/competencies; implications, use and cost of distance learning; evaluation and outcomes assessment applications; productivity data, faculty development; 30 years of residents; current employment; and financial implications. *Results:* Effective management over the past several decades has allowed this program to prosper and expand. The inte-

gration of a service learning approach within the educational competencies of the postdoctoral residencies has allowed the incorporation of many unique characteristics. *Conclusions:* The pivotal elements describe how vision, health policy, and innovative ideas can be translated to a major workforce program that increases access to services (over 100,000 visits in 2004) for the underserved, while maintaining an educational commitment to equity and service learning in postdoctoral education.

39. Sharlee M. Shirley, RDH, MPH, University of Kentucky College of Dentistry

KENTUCKY'S ORAL HEALTH WELLNESS AND DISEASE PREVENTION PROGRAM: AN INNOVATIVE PARTNERSHIP

Objectives: To develop a statewide 4H camp program focusing on oral health wellness, disease prevention, tobacco education, and promotion of dental professions among pre-teen and teenage campers. *Methods:* The University of Kentucky College of Dentistry Division of Dental Public Health agreed to collaborate with the 4H Program at the College of Agriculture Extension Service by providing a research title faculty member to develop and implement the pilot 4H camp program for four camps in the summer of 2003. *Results:* The overwhelming success of the pilot 4H camp initiative in 2003 led to the program expanding to 9 camps in 2004. More notably, however, it precipitated a unique partnership between the UK Colleges of Dentistry and Agriculture. The partnership utilizes a joint appointment of a research faculty member who focuses on developing oral health resources, projects and community outreach activities for Extension Service Agents.

Conclusions: Networking conducted between non-traditional partners can produce original, sustainable, long term programs that benefit all counties of the Commonwealth and each family within while leading the country in innovative approaches to oral health wellness, education, and disease prevention.

40. Piyumika M. Kularatne, MPH; Tanya Darlington, DDS, Columbia University School of Dental & Oral Surgery; Marcia Irving-Ray, DDS, Harlem United Community AIDS Center; Burton L. Edelstein, DDS, MPH, Columbia University School of Dental & Oral Surgery

A COMMUNITY-ACADEMIC PARTNERSHIP APPROACH TO IMPROVING DENTAL CARE FOR ADULTS WITH HIV/AIDS

Objectives: To address unmet needs for dental care among exclusively HIV+ adults at Harlem United Community AIDS Center in NY City (HU) through a community-academic partnership. *Methods:* Through a HRSA grant, the academic partner, Columbia University School of Dental & Oral Surgery co-funded a dental facility at HU, a community-based adult day care center for individuals living with HIV/AIDS and social, psychological and other co-morbidities. A multi-disciplinary management team comprised of staff from both partners was established to coordinate facility development, service delivery, and resident training. *Results:* Consistent with the literature, we estimated that 20%-40% of HU clients perceived an unmet need for dental care. By establishing an on-site dental

clinic staffed partially with dental residents, dental care was ramped after one year to an operational average of 355 visits for 59 patients monthly. On average, patients required 6 visits for treatment completion, and dental needs were met that 55% of visits were available to new patients. Operational efficiency was promoted by layering dental care onto an existing continuum of medical, social, behavioral, and other therapeutic services delivered on site through coordinated teams. *Conclusions:* Success providing dental care for HU clients is attributed to a truly integrated community-academic partnership that addresses both partners' goals through shared resources. Care must be taken to engage partners with the experience, commitment, and community credibility needed to promote and support new projects.

41. Tanya D. Darlington, DDS; Piyumika M. Kularatne, MPH, Columbia University School of Dental & Oral Surgery; Marcia Irving-Ray, DDS Harlem United Community AIDS Center

HAVING OUR SAY: PATIENT SATISFACTION WITH DENTAL SERVICES

Objectives: To assess client satisfaction with dental services received at a dental clinic established through a community-academic partnership. *Methods:* By partnering with Harlem United (HU), a community-based organization providing medical, mental, social, and dietary services for people living with HIV/AIDS, Columbia University School of Dental & Oral Surgery (CU) assisted in establishing a dental clinic to increase access to dental care for clients who collectively identified dental services as their primary unmet need during intake interviews. Data was collected of clients' dental experiences and was obtained using a 26-item patient satisfaction survey that was given in the first two weeks of October 2004. *Results:* Of the 60 eligible participants, 50% completed the survey. The dentist and staff received an 'excellent' rating from 80% of the clients for being friendly and courteous. The thoroughness of treatment received rated 'very good' or 'excellent' by 77% of the clients and nearly 100% indicated they would choose to return to the facility for their dental care needs in the future.

Conclusions: Clients at the HU-CU program are satisfied with dental services that are co-located with other services they access everyday. Although preliminary feedback is positive, care must be taken to provide ongoing improvements. Additional findings will be presented.

42. Pegah Pourrahimi, BS; Maria Gonzalez, BA, Post-baccalaureate Program; Jane A. Weintraub, DDS, MPH, University of California, San Francisco School of Dentistry

CHANGES IN THE JOURNAL OF PUBLIC HEALTH DENTISTRY

Objectives: Prior to recommending changes for future directions for the *Journal of Public Health Dentistry (JPHD)*, an assessment was conducted to determine what changes in authorship and scientific content have occurred without any planned intervention. *Methods:* Data were obtained from the titles, abstracts and Medline MESH headings from the scientific articles published during 2 time periods, 1980-1982 and 2002-2004, excluding special issues. Data were entered into Excel spreadsheets and included authors, degrees, institutions and their location, study design, and topic. Statistical analyses included t-

tests and chi-square tests. *Results:* There were 47 scientific articles with 111 authors and 84 articles with 361 authors published during the 1980's and recent time period, respectively. The mean (SD) number of authors per article increased from 2.4 (1.3) to 4.3 (1.7), $p=0.001$. The proportion of articles from authors from international institutions increased from 9% to 34% ($p < 0.001$). The proportion of first authors with a PhD or equivalent, with or without a dental degree, increased from 32% to 58% and those with dental + masters degrees only declined from 45% to 20%. Both time periods include a wide range of topics and study designs. Recent studies are more likely to focus on specific age groups.

Conclusions: During this 24-year span, changes to the JPHD have occurred with regard to authorship and content. These changes need to be considered before future goals are established. Supported by Robert Wood Johnson #046808 and NIH/NIDCR U54DE142501.

43. Burton L. Edelstein DDS MPH, Columbia University School of Dental & Oral Surgery and Children's Dental Health Project

POLICYALCHEMY: ADAPTING AVAILABLE DATA TO POLICYMAKING NEEDS

Objectives: To describe and demonstrate a technique for adapting available data to state legislative policymaking needs. *Methods:* Three datasets – a convenience study of caries among urban poor preschoolers in central Connecticut; a national survey reporting new dental school graduates' self-perceived competencies to treat various underserved populations; and the 1996 national Medical Expenditure Panel Survey (MEPS) were each adapted to answer policy makers' and advocates' requests for state-specific information by creating estimations using state-level US Census data. *Results:* Findings from the preschooler study were shown to be generally consistent with national reference datasets (e.g. NHANES III) and therefore assessed as representative of similarly situated children across the state. Findings from the dental student survey were applied to the state-reported proportion of each underserved population by assuming that recent graduates who elect to practice in that state are representative of all peer graduates. State-specific estimations were similarly generated for each state from MEPS by applying a multistage population weighting scheme derived from state-level Census data. *Conclusions:* In each case, policy makers and advocates were provided with estimations of findings related to the policy issue at hand (e.g. utilization, insurance coverage, expenditures) that were sufficient to characterize the issue. As legislators typically seek information and data that need only approximate underlying phenomena, these approaches meet their needs and facilitate action. While pragmatic for legislators, this extrapolation technique is unsuited for purposes of program management or evaluation.

44. Midge Pfeffer, RDH, BS, CDHC, Children's Health Alliance of Wisconsin; Nancy McKenney, RDH, MS, Wisconsin Department of Health and Family Services, Division of Public Health; Warren R. LeMay, DDS, MPH, Wisconsin Department of Health and Family Services, Division of Public Health
USING EVALUATION SOFTWARE TO ASSESS SEALANT PROGRAM EFFICIENCY AND INFLUENCE POLICY

Objectives: To describe the usefulness of the "Sealant Efficiency Assessment for Locals and States" (SEALS) software in 1) assessing efficiency and effectiveness of school sealant programs and 2) affecting policy through SEALS-generated reports. *Methods:* Fourteen school-based/-linked sealant programs were awarded Seal-A-Smile (SAS) funding in 2003-04. Each program was required to use SEALS to collect and transfer data to the program administrator, Children's Health Alliance of Wisconsin. Data collected on each child includes Medicaid/BadgerCare enrollment, special health care needs, indicators of oral health status, and services delivered. Data collected at each sealant event includes site type, grade levels targeted, teeth targeted, % of children on free and reduced lunch, and quantity and cost of resources used. From this data SEALS calculates numerical summary and performance measures of: effectiveness in targeting interventions, quantity and quality of services delivered, and cost and efficiency of delivery. These measures were generated for individual sealant events and funded programs, as well as the statewide SAS campaign. *Results:* In 2003-04, SAS sealed 2,898 children, saving an estimated 2.5 molars per child from decay. 1,049 children were referred for treatment, and 1,459 received fluoride treatments. Average per-child program costs were \$21. *Conclusions:* SEALS software standardized data collection for statewide program evaluation, providing data to support Wisconsin Governor's proposal to expand the Seal a Smile program.

45. Lisa R. Levy, MPH; René Lavinghouze, MA, Division of Oral Health, Centers for Disease Control and Prevention

ORAL HEALTH AND OPPORTUNITIES TO COLLABORATE WITH CHRONIC DISEASE PROGRAMS

Objectives: To highlight collaboration opportunities between oral health and other chronic disease programs in assessment, policy development, and assurance activities. *Methods:* Collaboration projects between oral health and other chronic disease areas were explored at the National Center for Chronic Disease and Health Promotion of the Centers for Disease Control and Prevention (CDC). Program managers at CDC shared information regarding collaboration. Program managers worked in the following areas: adolescent and school health, adult and community health, cancer prevention and control, smoking and health, diabetes translation, nutrition and physical activity, and reproductive health. *Results:* A matrix of CDC funding for state health agencies in various chronic disease programs identified potential opportunities for collaboration at the state level. Key examples of potential and actual collaboration involved leadership capacity, state policy, statewide coalitions, surveillance, and evaluation. Among the reported collaboration efforts, notable examples included (1) surveillance between

oral health and nutrition programs (2) coalition development strategies between oral health and cancer programs (3) evaluation and surveillance techniques between oral health and smoking prevention (4) resource development between oral health and older adult health programs. *Conclusions:* Collaboration among state oral health and other chronic disease programs may be beneficial on the state level. Through greater stakeholder involvement, collaboration may lead to more sustainable programs. Collaboration, whether for assessment, policy, or assurance activities, can help synergize expertise, experience, and outreach opportunities that aid in health promotion and disease prevention.

46. Paul W. Mattessich, PhD, ECB Services and Wilder Research Center; Patricia P. Rieker, PhD, ECB Services and Boston University

EVALUATION OF STATE ORAL HEALTH PLANS

Objectives: To increase understanding and benefits of approaches to evaluation of state oral health initiatives; to provide examples of state oral health plan evaluation, that states can consider for their own use. *Methods:* This presentation will: A. Offer an overview of an evaluation-capacity-building initiative in 12 states and one territory intended to increase state oral health program capacity to evaluate oral health initiatives. B. Summarize the key features of evaluation designs for state oral health plans. C. Discuss benefits and use. *Results:* The 12 states and one territory participated in a first year assessment of their evaluation needs and their capacity to do evaluation of state-level initiatives. This resulted in the design of frameworks for evaluation of state plans. These demonstration sites are developing and will implement an evaluation tailored to the social context and specifics of their locality. *Conclusions:* State oral health directors, coalitions, and other oral public health professionals can customize the state oral health plan evaluation approach being developed in the demonstration sites for their use in the evaluation of state oral health plans. The presentation will include practical suggestions of how this can occur, along with examples based on states' experiences.

47. S. Rene Lavinghouze, MA, Division of Oral Health, Centers for Disease Control and Prevention

PROGRAMS AND THEIR LARGER CONTEXT: MEASURING PROGRAM ENVIRONMENT AND HARNESSING IT FOR PUBLIC HEALTH CHANGE

Objectives: Often, we regard "environment" and "context" as the backdrop for our programs—the set of unmovable givens that constrain or facilitate our efforts. But, in fact, that larger context comprises components that differ widely in how much we can change them to support our public health outcomes. Harnessing the environment effectively means being intentional about "unpacking" its key components, measuring where we stand, and then deploying those data to create a more favorable environment. *Methods:* The Division of Oral Health at the Centers for Disease Control and Prevention (DOH) collaborated with 13 funded public health oral health programs to develop an environmental analysis tool to assess supporting and inhibiting factors that could be targeted for change and to direct technical assistance.

Results: The tool is used by the individual sites to develop strategies designed to capitalize on the most effective leverage points in their logic model. Armed with this valuable information, sites are able to strategize and capitalize on salient leverage points from their logic model to manipulate the environment to their advantage instead of being a pawn in the game. *Conclusions:* This presentation will focus on information about the indicators, how progress is measured, and how data are employed to create a more favorable environment. The emphasis will be on illustrating how the environment plays a pivotal role in the implementation of programs designed to address public health issues. This role can either be supporting or inhibiting. Leverage points found in the logic model are used to determine appropriate strategies and direct technical assistance. Environmental components then become actionable activities as opposed to unpredictable forces of nature.

48. John J. Warren, DDS, MS, Dept. of Prev. & Community Dentistry; The University of Iowa College of Dentistry; Samir E. Bishara, BDS, D.Ortho, DDS, MS, Dept. of Orthodontics; Steven M. Levy, DDS, MPH, Dept. of Prev. & Community Dentistry; Michael J. Kanellis, DDS, MS, Dept. of Ped. Dentistry, University of Iowa; Takuro Yonezu, DDS, PhD, Tokyo Dental College; Rebecca Slayton DDS, PhD, Dept. of Pediatric Dentistry, University of Washington

ORAL HABITS AND MALOCCLUSION IN THE MIXED DENTITION

Objectives: Many orthodontic problems are the result of habits, and therefore, can be prevented or treated early, saving considerable time and expense. However, little is known about the extent non-nutritive sucking habits contribute to the prevalence of malocclusion. This paper reports on the prevalence of certain occlusal traits in the mixed dentition and their relationship to longitudinal sucking behaviors. *Methods:* Dental examinations were conducted on 630 children in the mixed dentition who are part of the Iowa Fluoride Study. 580 consented to impressions, and 524 adequate study models were obtained. Of these, 448 also had adequate longitudinal non-nutritive sucking data obtained via mailed questionnaires to parents at regular intervals from birth to 8 years. Sucking behaviors were grouped by predominant type and duration. The occlusion was evaluated from articulated study models for the presence of open bite, crossbite, molar relationship and overjet. *Results:* Over half the children (50.5%) were categorized with digit habits, while 42% had pacifier habits and 7% were categorized with both. Over half the children had malocclusions (anterior open bite, posterior crossbite, bilateral Class II molar relationship or overjet >4mm). Class II molar relationship was most common (30.4%). Sustained pacifier habits, including those of 36-48 months, were associated with anterior open bite and posterior crossbite, while digit habits were associated with anterior open bite but only when habits were sustained to 60 months of age or older. There were no differences in the prevalence of Class II molar relationship or excessive overjet among sucking groups. *Conclusions:* Malocclusions are quite prevalent in the mixed dentition, and anterior open bite and posterior crossbite may be preventable by modifying non-nutritive sucking

behaviors.

49. *Stuart A. Gansky, MS, DrPH; Sara G. Shain, DrPH; Francisco Ramos-Gomez, DDS, MPH; Jane A. Weintraub, DDS, MPH, University of California, San Francisco Center to Address Disparities in Children's Oral Health*

FITTING STATISTICAL MODELS FOR EARLY CHILDHOOD CARIES

Objectives: To assess the fit of statistical models for measuring early childhood caries (ECC) using the dfs index (number of decayed or filled surfaces). **Methods:** Data from a three-arm parallel groups randomized clinical trial to prevent ECC incidence in 280 preschool children with up to 2 years of follow-up were assessed. The dfs index was used as the response variable. Predictors were two indicators for treatment group assignment and logarithm of number of teeth erupted at baseline. Commonly used discrete count regression models, as well as recently suggested models (Bohning et al. 1999) were used. Linear, logarithm of dfs+1, Poisson, over-dispersed Poisson, negative binomial (NB) and zero-inflated Poisson (ZIP) regression models were assessed for goodness of fit with the Akaike Information Criterion (AIC) which balances fit with model complexity (e.g. observed versus expected accounting for number of model parameters). **Results:** The distribution of dfs was highly skewed with 72% of the children having dfs=0. Linear, Poisson and over-dispersed Poisson models fit poorly, even with log of number of teeth as a covariate as an offset. Log (dfs+1), NB and ZIP models had the best (lowest) AIC. **Conclusions:** Linear, Poisson and overdispersed Poisson regression models fit ECC data poorly due to the highly skewed distribution; logarithmic transformation, NB, and ZIP models should be compared for fit when modeling dfs. If models have similar fit, those with easier interpretation should be preferred. **Support:** US DHHS NIH / NIDCR & NCMHD U54 DE14251.

50. *Catherine Hayes, DMD, DMSc, Harvard School of Dental Medicine and Center for Research to Evaluate and Eliminate Dental Disparities (CREDD); Jalaima Graham MPH, Children's National Medical Center (CNMC) and CREDD; Marilyn Haynes MS, Columbus Children's Hospital and CREDD; Amy Cha BA, CNMC and CREDD; Paul Casamassimo DDS, MS, Columbus Children's Hospital, Ohio State University College of Dentistry, and CREDD; Anupama Tate, DMD, CNMC and CREDD; Raul Garcia, DMD, MMedSc, Boston University School of Dental Medicine and CREDD*

THE EFFECT OF SEVERE EARLY CHILDHOOD CARIES AND COMPREHENSIVE ON GROWTH OF CHILDREN

Objectives: This study aims to examine the impact of severe early childhood caries (S-ECC) on growth in young children.

Methods: Study subjects are children presenting for care at the pediatric dental clinics at the Children's National Medical Center, Washington, D.C., (N=106) and Columbus Children's Hospital, Columbus, Ohio (N=112). These results represent baseline data of a longitudinal observational study of a group of children with S-ECC and a comparison group of caries-free children comparing

height, weight and dietary intake between a group of children with S-ECC and a group of healthy caries free children. **Results:** The mean age of all study participants was 3 yrs., 8 mos. (+1 yr 4 mos) with no significant difference in age between children with S-ECC and caries free children or between sites. The majority of participants were female (56%). The racial distribution differed significantly by site ($p<.001$) with the majority of subjects at the Washington site categorized as African American (87%), whereas at the Ohio site the racial distribution was 51% Caucasian, 29% African American, and 17% biracial, with the remainder categorized as other. There was no significant difference in weight or caloric intake between S-ECC children and their caries-free counterparts children, however those with S-ECC were on average 2.52 cm shorter than their caries free counterparts ($p=0.03$). **Conclusions:** These preliminary findings suggest that children with S-ECC may be growing at a slower rate than their caries free counterparts. Supported by NIDCR.

51. *Tracy Finlayson, BS, University of Michigan School of Public Health; Kristine Siefert, PhD, MPH, MSW, University of Michigan School of Social Work; Amid Ismail, BDS, MPH, DrPH, University of Michigan School of Dentistry*
SOCIAL COGNITIVE, BEHAVIORAL, AND PSYCHOSOCIAL PREDICTORS OF YOUNG AFRICAN AMERICAN CHILDREN'S ORAL HEALTH IN DETROIT

Objectives: To advance knowledge of the social determinants of low-income African American children's oral health by examining how specific maternal beliefs, behaviors, and psychosocial factors relate to their children's dental outcomes and practices. **Methods:** A population-based sample of 719 African American children aged 1-5 and their mothers who participated in the Detroit Dental Health Project (DDHP) in 2002-3 were studied. Descriptive and multivariable regression analyses of survey and dental exam data were conducted in SUDAAN. Health belief scales (efficacy, fatalism, attitudes about dental disease, and bottle knowledge) were constructed with exploratory factor analysis. Mothers' beliefs, behaviors, background, and psychosocial characteristics (depression, stress, social support) were examined as predictors of children's brushing frequency, early childhood caries (ECC) status, and subjective oral health ratings. **Results:** Modifiable social cognitive and psychosocial characteristics were significantly associated with children's brushing and dental health in earliest childhood. Notably, mothers' efficacy, attitudes, fatalism, and brushing behavior predicted children's brushing. Higher parenting stress was inversely related to ECC. **Conclusions:** Maternal behaviors and cognitions are potentially modifiable. Findings can inform the design of a tailored intervention which enhances efficacy and educates mothers about ECC, to boost her motivation and ability to positively affect young children's oral health.

52. *Corinna Culler, RDH, MPH; Michelle Henshaw, DDS, MPH, Boston University School of Dental Medicine*
CHANGES IN NUMBER OF DECAYED TEETH AFTER A SCHOOL-BASED DENTAL PROGRAM: CHARACTERISTICS OF STUDENTS WHOSE DENTAL HEALTH IMPROVES VS. THOSE WITHOUT IMPROVEMENT

Objectives: To evaluate change in number of decayed teeth in students who received dental education, screening, and referral during two consecutive years of a school-based program in Chelsea, MA. *Methods:* Dental screening was conducted for 2,045 students in grades Pre-K through 5 during the 2002-03 school year, and 2,324 during 2003-04. 1,091 students were screened both years. Students were categorized as those with no decayed teeth at either screening (586), and those with decay during one or both years (505). Students with decay were classified as having fewer, the same, or more decayed teeth at the second screening. *Results:* 46% of students had untreated decay. There was a significant difference in decay by race and native language. 27% of Black students, 46% White, 47% Hispanic, and 58% of Asian students had decay. 11% of Portuguese speakers, 41% English, 47% Spanish, 54% Vietnamese, and 80% of Bosnian speakers had decay. Students with decay were slightly more likely to be enrolled in the free/reduced lunch program. Of students with decay, 43% had fewer, 15% had the same, and 42% had more decayed teeth after the second screening. There was no significant difference by race, native language, gender, or age between children whose oral health improved versus those who did not improve. *Conclusions:* Groups most at risk for decay can be identified to target prevention efforts. However, no group is more or less likely to obtain treatment once screened. Thus, efforts to increase referrals cannot be focused upon any one specific group. Supported by U54 DE14264 and 1K23DE0045401

53. *Michael D. McCunniff, DDS, MS, University of Missouri-Kansas City School of Dentistry; Kris Kummerfeld, MHA, Missouri Department of Health and Human Services*
SERVING COUNTRY AND COMMUNITY: A PILOT PROJECT INVOLVING ORAL HEALTH AND VISTA

Objectives: To establish a collaborative pilot program between the Missouri Department of Health, the Corporation for National and Community Service-VISTA (Volunteers in Service to America) and individual community/oral health coalitions. The desired long-term outcome of the VISTA Oral Health Project is to reduce oral health disease in low-income children in targeted communities. *Methods:* A request for proposals was distributed to Missouri communities to establish an Oral Health VISTA Project. Four rural communities were chosen to participate in the program. Each program appointed a full-time VISTA volunteer from their community to facilitate addressing the un-met oral health needs for low income rural children. *Results:* VISTA volunteer participation has resulted in a significant positive impact on members' connection to their community; knowledge about oral health problems facing their community and participation in community based activities. These have included Basic Screening Survey (BSS) data collection, development of

educational programs, specialized training in social marketing and communication and best practice review, both locally and nationally. *Conclusions:* This collaborative effort is a model that addresses the need identified in the "National Call To Action To Promote Oral Health." The project has developed and strengthened the oral health infrastructure in Missouri's communities, with a particular focus on low-income children, especially in rural areas of the state.

54. *Julianna E. Gelinas, Bethlehem Partnership for a Healthy Community, St. Luke's Hospital, Bethlehem, Pennsylvania*
"MY MARVELOUS MOUTH," AN ORAL HEALTH LITERACY PROGRAM

Objectives: As part of a community initiative to promote oral health, an oral health literacy program was developed and integrated into the curriculum of the Bethlehem School District, focusing on primary prevention by teaching preventive behaviors and encouraging a value for oral health. *Methods:* The Dental Initiative of the Bethlehem Partnership for a Healthy Community wrote a curriculum that delivers age relevant oral health information in four grade levels (K, 3, 7 and 10) and introduced it into the school district. Children receive a classroom presentation and take home literature for family members. Teachers receive fact sheets and lesson plans for extended learning activities. Each eligible child is offered access to no cost preventive and restorative dental treatment in the school-linked mobile clinic. *Results:* 4,500 children are scheduled to receive the curriculum this year with plans to continue the program in subsequent years. To date, teacher evaluation of classroom presentations has been positive, and increased value for oral health is indicated in individual student testimony. Pre- and post-testing data for the first year of the program will be available at the time of presentation. *Conclusions:* The collaboration of a community health partnership and the school district has initiated an oral health literacy program that reaches children four times during their school career. Building a value for oral health, reinforced by teachers and family, will positively affect the long-term health of our community and the success of the individual.

55. *William F. Smith, DMD, MSc, MBA, First Nations Inuit Health Branch, Health Canada, Alberta Region; Steven K. Patterson, BSc, DDS, MPH, Faculty of Medicine and Dentistry, University of Alberta*

5-YEAR RESULTS OF THE CARE FOR A SMILE PREVENTIVE DENTAL PROGRAM FOR ABORIGINAL CHILDREN IN ALBERTA

Objectives: To determine the effectiveness after 5 years of the Care For A Smile (CFAS) program in reducing a demonstrated high caries experience of 12-year old aboriginal children with previous outcomes (1996-97) of only 9% decay-free in the permanent dentition and a DMF of 4.4 teeth. *Methods:* In 42 reserve communities/schools in Alberta, preschool and schoolaged aboriginal children participating in the CFAS program annually received oral screenings, needed fluoride varnish applications, sealants, and glass ionomer restorations provided by dental therapists utilizing portable equipment. *Results:* 6,565 children with consent were screened in the CFAS pro-

gram. During the 2003-04 school year, a total of 13,710 fluoride applications, 10,363 sealants, and 1,307 glass ionomer restorations were completed. After five years of providing the CFAS program, 32% of grade 6 children now have no permanent tooth decay and the average DMFT is 2.38. Dental disease levels for the primary dentition in younger children who have not participated in the preventive program for as many years continue to exceed desired targets. *Conclusions:* Increased provision of fluoride varnish applications, sealants and restorations provided on reserves and in schools by dental therapists has decreased the number of permanent teeth affected by caries in aboriginal 12-year-old children to levels that meet WHO goals.

56. *Hon K. Yuen, PhD, OTR; Larissa Morgan, College of Health Professions; Carlos F. Salinas, DDS, DMD; Susan G. Reed, DDS, MPH, DrPH; Steven D. London, DDS, PhD, Medical University of South Carolina College of Dental Medicine*
ORAL HEALTH BEHAVIORS AMONG AFRICAN AMERICAN ADOLESCENTS LIVING IN RURAL AREAS

Objectives: To assess the oral hygiene practices and utilization of dental health care services as well as the barriers related to oral health behaviors among African American (AA) adolescents living in rural areas. *Methods:* A self-administered questionnaire focusing on oral health behaviors was completed by 138 AA adolescents ages 11 to 18 years. The questionnaire was distributed to the adolescents during health education classes. *Results:* The majority of respondents (89%) brush their teeth every day; 87% brush their tongue and use mouthwash; and about 40% perform inter-dental cleaning by flossing. Main reasons for not flossing include forgetting to floss, not having any floss, and not knowing how to floss. About 63% reported they have visited the dentist in the past year. The main reasons for not visiting the dentist during the last year are forgetting to, or the inability to make an appointment; prohibitive costs of dental visits; and/or insufficient transportation. *Conclusions:* Results indicate that the majority of the AA adolescents living in rural areas do perform basic oral hygiene practices on a daily basis. However, due to the relatively low number of AA adolescents who performed inter-dental cleaning, oral health education should focus more on the importance of inter-dental cleaning and instruction on how to perform it. In regard to dental visits, further exploration of the reasons why AA adolescents cannot make dental appointments is needed.

57. *Sherri M. Lukes, RDH, MS, Southern Illinois University Carbondale; Sangeeta Wadhawan, BDS, MPH; Julie Janssen, RDH, MA; Lewis N. Lampiris, DDS, MPH, Illinois Department of Public Health, Division of Oral Health*

HEALTHY SMILES HEALTHY GROWTH 2004 – BASIC SCREENING SURVEY OF MIGRANT AND SEASONAL FARMWORKER CHILDREN IN ILLINOIS

Objectives: To obtain baseline data for caries prevalence, use of dental sealants and services, and to obtain a baseline for Body Mass Index (BMI) among children of migrant and seasonal farmworkers (MSFWs) enrolled in Illinois' summer 2004 migrant education program. *Methods:*

A spin-off of Illinois Department of Public Health's (IDPH) assessment of third graders in IL, Healthy Smiles Healthy Growth 2003-04, this assessment adapted the methodology for MSFW children. Collaboration between IDPH, Community Health Partnership of Illinois (CHP, dental services provider), and Southern Illinois University led to oral screenings and ht/wt measurements at participating schools. Eligible were all children K-12 who had returned positive consent forms for dental services from CHP. Screenings were conducted at eight of 10 migrant education program sites in IL. *Results:* Of the 840 eligible children, 490 (58%) participated in the assessment. Caries experience was 64%. Untreated decay (unmet need) was observed in 42% and of those, 8% urgently needed care. Sealant prevalence was 51%. BMI analysis is in process. *Conclusions:* Although results show significant unmet need, sealant use is higher than the national average, indicating success of annual dental services for migrant children by CHP since the program began in 1992. Results from this assessment provide support that funding of such programs is instrumental in providing basic dental care for underserved populations such as MSFW children. The population's mobility suggests the need for more frequent surveillance for effective programmatic planning.

58. *Sangeeta Wadhawan, BDS, MPH, University of Illinois at Chicago; Lewis N. Lampiris, DDS, MPH, Illinois Department of Public Health; Julie Janssen, RDH, MA, Illinois Department of Public Health; Mike Manz, DDS, MPH, University of Michigan.*

HEALTHY SMILES HEALTHY GROWTH 2003-2004 – BASIC SCREENING SURVEY OF ILLINOIS THIRD GRADE CHILDREN

Objectives: To assess the oral health status and Body Mass Index (BMI) on a stratified random statewide sample of Illinois third grade children. *Methods:* The Illinois Department of Public Health, Divisions of Oral Health and Chronic Disease Prevention and Control, collaborated to conduct an open mouth survey utilizing the Association of State and Territorial Dental Director's "Basic Screening Survey." Height and weight data were also collected. A probability proportional to size sampling of schools was performed with implicit stratification on region, urban/rural status, and free/reduced lunch eligibility. Twenty-six local agencies were trained to conduct the assessment. *Results:* A total of 6,625 third grade children were screened in 101 sampled schools. Fifty-six percent of the children had caries experience. Thirty percent had untreated caries (unmet need), with 4% percent having urgent treatment needs. Twenty-six percent of the children had at least one molar sealed. Of those with sealants, 20% had cavitated lesions and of those without sealants 33% had cavitated lesions. BMI analyses is in process. *Conclusions:* This data provides valid and current state and regional estimates on oral health status and baseline BMI scores and will be utilized for program planning, as well as provide county specific estimates for larger counties such as Cook, Chicago and Dupage. The training program developed along with the project will enable the participating communities to conduct similar future assessments with the potential for establishing

an ongoing surveillance system. Partial support was provided by the Centers for Disease Control and Prevention.

58.1 Moncy Mathew, BDS, MPH; Michael D. McCunniff, DDS, MPH, University of Missouri-Kansas City School of Dentistry, Dean M. Perkins, DDS, MPH, Executive Director, ASTDD

MISSOURI ELK'S MOBILE DENTAL PROGRAM

OBJECTIVE: To assess and explore strategies to increase program efficiency of the Elk's Mobile Dental Program, which exists to provide primary dental services to children with special health care needs and developmental disabilities. **METHODS:** Data for this assessment were obtained from the annual program reports for 2002 and 2003 from the Missouri Department of Health and Senior Services, Oral Health Program, and from the Program Administrators at Truman Medical Center. **RESULTS:** Primary dental care through this program is availed by a greater percentage of children with mental retardation and developmental disabilities, than by children with special health care needs. A total of 2,044 children received primary dental care over 2,641 patient visits in 2003 and 1,456 children received primary dental care over 1,824 patient visits in 2004. The cost per patient in 2003 was \$236 and in 2004 was \$270. Staff recruitment, especially dentists, was identified as a significant issue. Competing health needs for the eligible population frequently takes priority over oral health needs, leading to underutilization of services and reducing program efficiency. **Conclusions:** Program efficiency could be improved by using GIS mapping to identify concentrations of eligible patients to reduce travel distance between the patients and the dental vans raising staff salary, improving client communications, and by increasing efforts to encourage eligible populations to utilize services available through these vans.

58.2 Warren LeMay, DDS, MPH, Wisconsin Department of Health & Family Services; Christopher Okunseri, BDS, MSc; Cesar Gonzalez, DDS, MS, Orth Sisombath, School of Dentistry, Marquette University, Milwaukee, Wisconsin

PARENTAL PERCEPTIONS AND DENTAL CARIES EXPERIENCE OF HMONG CHILDREN IN MILWAUKEE, WI

Objectives: Estimate the prevalence of dental caries experience and associated risk factors of Hmong children living in Milwaukee. **Methods:** Participants were recruited at a Hmong Community Resource Fair in Milwaukee in May 2004. All parents with children attending the fair were approached to participate and 54 children aged 1-15 years old participated in the survey following parental consent. Parents completed a closed-ended questionnaire about their oral health parenting practices and basic sociodemographic information. The questionnaire was written in English and Hmong and administered with the supervision of trained Hmong interviewers. One dentist (CG) trained following NIDCR protocol examined all the children for caries experience in a dental clinic facility located at the fair venue. Data was entered into an Excel spreadsheet and exported to Statistical Package for Social Sciences (SPSS) and a descriptive statistical analysis was completed. **Results:** Out of 54 children, 43%

were males and 57% females. Approximately 61% had been to a dentist in the last 12 months and 86% claim they have a regular source of dental care. Overall, 41% of the children had zero dmfs (mean dmfs = 2.65, SD = 3.7) in the primary dentition and 33% had zero DMFS (mean DMFS = 2.65, SD = 5.1) in the permanent dentition. Of all erupted first molars, 87% (89% of children) did not have sealants. **Conclusions:** A substantial proportion of the Hmong children had dental caries experience and most did not have sealants.

59. J H Himes, PhD; N. Van Heel, MS; L. Harnack, DrPH, University of Minnesota; S M Levy, DDS, University of Iowa; J M Holden MS, Nutrition Data Laboratory, ARS/USDA; R Selwitz, DDS, National Institute of Dental and Craniofacial Research, National Institutes of Health

COMPUTER-BASED SOFTWARE FOR ASSESSMENT OF INDIVIDUAL FLUORIDE INTAKE FROM DIET AND OTHER SOURCES

Objectives: To develop a computer-based research methodology to estimate total fluoride intake of individuals. **Methods:** A national database of fluoride in foods and beverages was developed. The Nutrition Data System for Research (NDS-R) software was modified to assess fluoride intake, including: fluoride values for foods, beverages, dentifrice, mouthrinse, and supplements; and fluoride retention factors for foods prepared with water. A method of self-reported dentifrice use was validated and a meta-analytic curve was developed relating the proportion of dentifrice retained after brushing to age in children. **Results:** Participants take samples of all water and water-based beverages ingested for the day preceding the interview. All foods, beverages, dentifrice, mouth rinse, and supplements taken are reviewed using standardized recall questions. Samples are sent to a laboratory for fluoride assays. Using laboratory values, the software calculates and reports the day's fluoride intake separately by source, along with 136 other nutrients. **Conclusions:** The new NDS-R with Fluoride software provides quantitative estimates of total fluoride intake for the previous day for individuals. The method has been piloted on a sample of 100 individuals in Minnesota. This study was funded by NIDCR and NHLBI/NIH.

60. Keith E. Heller, DDS, DrPh; Steven M. Levy, DDS, MPH, University of Iowa College of Dentistry; Phyllis Stumbo, PhD, University of Iowa General Clinical Research Center; Catherine A. Chenard, MS, University of Iowa

SEASONAL VARIATION IN ESTIMATED DIETARY FLUID AND FLUORIDE INTAKE

Objectives: Few contemporary studies have assessed possible seasonal variation in fluoride intake, which could be important in planning future water fluoridation policy. The purpose of this project was to estimate and compare adults' water intake and estimated fluoride intake from foods and beverages in winter and summer. **Methods:** A convenience sample of 68 adults reported food and beverage intake for 3 days in winter and summer. Items were coded by trained dietitians and estimated fluoride levels linked with the intake results to calculate estimated fluoride intake by category and in total. Results were log-transformed and compared by season using a linear

mixed model for repeated measures controlling for gender. *Results:* Mean age was 36.4 years (range 20-60 years); most were white and relatively high SES. Geometric mean \pm SEM winter and summer intakes were 1047 \pm 99 g/1061 \pm 100 g (plain water), 728 \pm 62 g/739 \pm 77 g (beverages with added water), 175 \pm 21 g/191 \pm 22 g (other beverages), 610 \pm 31 g/592 \pm 30 g (food moisture), and 2881 \pm 110 g/2967 \pm 114 g (total moisture). Geometric mean \pm SEM estimated winter and summer fluoride intakes were 1621 \pm 105 mcg/1612 \pm 128 mcg (all beverages), 252 \pm 12 mcg/250 \pm 11 mcg (food), 1913 \pm 117 mcg/1926 \pm 118 mcg (total food and beverages). No significant differences between seasons for either water or fluoride intake were found. *Conclusions:* Results suggest that season is not an important factor in either total water or total fluoride intake. Supported by M01-RR00059 and the University of Iowa.

61. Joanne M. Holden, MS; Rena L. Cutrufelli, BS, Nutrient Data Laboratory, USDA; Pamela R. Pehrsson, PhD; Kristine Y. Patterson, PhD, Nutrient Data Laboratory, USDA; John H. Himes, PhD, University of Minnesota; Steven M. Levy, DDS, MPH, University of Iowa

DEVELOPMENT AND PUBLICATION OF A NATIONAL DATABASE FOR THE FLUORIDE CONTENT OF FOODS

Objectives: The National Fluoride Database and Intake Assessment Study has been a multi-center effort between USDA Nutrient Data Laboratory (NDL), the Univ. of Minnesota's Nutrition Coordinating Center (NCC), the Univ. of Iowa and Virginia Polytechnic Institute & State University. The goals of the study were to produce a database of the fluoride (F) content of foods and to develop methodology at NCC to permit assessment of fluoride intake. *Methods:* More than 2,000 food and beverage samples were collected from random locations within statistically determined locations around the country for F analysis. Retail beverages analyzed included bottled waters, ready-to-drink teas, juices, beer, wine, and carbonated sodas. Tap water samples were collected twice from 144 randomly selected homes. In addition, the tap water was composited and used to brew three kinds of tea. Some non-beverage foods were also analyzed for fluoride. *Results:* NDL has recently released to the public and the general scientific community the USDA National Fluoride Database, a compilation of the F content of more than 400 individual food and beverage items using study data as well as data taken from the literature and unpublished sources. *Conclusions:* The database will be a key factor in future research concerning the relationship of F intake to health status. The F values for foods and beverages analyzed in this study are nationally representative. Supported by NIH Agreement Y3-HV-8839 with the National Institute of Dental and Craniofacial Research and the National Heart, Lung, and Blood Institute.

62. David F. Nelson, DDS, MS, Fluoridation Consultant, California Department of Health Services; Rudy Blea, MS, Chief, Office of Oral Health, California Department of Health Services; Kathleen H. Acree, MD, MPH, Chief, Chronic Disease Control Branch, California Department of Health Services
COMMUNITY COALITIONS AND THEIR IMPACT ON PUBLIC POLICY: COMMUNITY WATER FLUORIDATION IN CALIFORNIA

Objectives: To show how the collaboration of public and private agencies can be used effectively to help organize local oral health coalitions and utilize their influence to produce positive votes on water fluoridation. *Methods:* Local oral health coalitions were organized from available resources in several California communities, namely local dental and medical societies, public health advocates, PTA leadership and school nurses. Multiple meetings were held to provide definition of roles and to script testimony. Scientific and technical information was also provided. *Results:* Community water fluoridation has been successfully implemented in the cities of Los Angeles, Sacramento, Mountain View, Daly City, and Escondido as a result of action by the local oral health coalitions. The Metropolitan Water District of Southern California (Met) is in the design phase and the cities of Santa Maria and the San Francisco Public Utility Commission are in the process of notification of customers of impending fluoridation. *Conclusions:* The use of local coalitions to provide information for political groups and policy-making bodies is an effective tool for producing a positive vote on important controversial public health interventions, in this case community water fluoridation in California. Our current fluoridation level of 30 percent will be 60-65 percent when the Met comes on-line in 2006.

63. Colleen A. Wulf, RDH, MPH, Ohio Department of Health, Bureau of Oral Health Services

ASSESSMENT OF A FLUORIDATION CAMPAIGN: LESSONS LEARNED

Objectives: This paper assesses the efforts of a coalition of health professionals to bring fluoridation to Lancaster, Ohio. This community-based effort was the third attempt in 35 years in a city of 35,335. Lancaster is one of 24 Ohio communities that are legally exempt from compliance with the state fluoridation law by virtue of a special referendum held in 1970 when the state mandate was passed. The coalition shepherded the issue from city council to the ballot box over a 22-month period. *Methods:* With technical assistance from public health advisors with previous fluoridation experience a campaign was carefully planned and executed. The Healthy Smiles For Lancaster Committee collected over \$20,000, utilized experienced political consultants, developed high-quality brochures and flyers, distributed targeted mail to likely voters, conducted two city-wide precinct walks, and provided community-based education on fluorides. The coalition obtained endorsements, worked with local media outlets, and countered antifluoridation arguments posed by a small, unsophisticated antifluoride group. Subsequent to the election, they analyzed the vote precinct by precinct using census data. *Results:* To the surprise and disappointment of the coalition, the measure failed at the

November 2, 2004 election by 521 votes (out of 15,647 cast). The 1970 vote had failed by more than 3,000 votes—close to a 2-to-1 margin. The coalition evaluated voting results and conducted interviews to determine strengths and weaknesses in the campaign. *Conclusions:* Fluoridation referenda are unpredictable. Even seemingly textbook attempts can fail. It is important to honestly evaluate the efforts after the fact and to revise subsequent efforts based on the lessons learned.

64. Julie Ann Janssen, RDH, MA; Lewis Lampiris, DDS, MPH; Rose Mutzbauer; Stacey Ballweg; Andrea Schroll, RDH, BS, CHES; Ann Roppel, RDH, BA; Kathleen Lutz, RDH, BS; Sangeeta Wadhawan, BDS, MPH; Illinois Department of Public Health, Division of Oral Health

FLUORIDATION FLOURISHES

Objectives: Growing a comprehensive state community water fluoridation program. *Methods:* Historical analysis of successes, and challenges faced by state programs as they assure optimal fluoridation for constituents. *Results:* The Illinois Department of Public Health, Division of Oral Health coordinates a complex system of organizational, financial, and delivery systems in order to assure fluoride levels within legal range provided by the state's 1,800 community water systems. Key components of the program include: (1) administration; (2) reporting; (3) training; (4) inspection; (5) technical assistance; and (6) monitoring and surveillance. Illinois meets and surpasses the *Healthy People 2010* oral health objective for water fluoridation guaranteeing improved oral health for every resident of the state. *Conclusions:* The Division of Oral Health continues to develop policies and interventions to assure optimal fluoridation benefits for Illinois communities.

65. Kip Duchon, PE, MS; Victoria Huntley, MHA, Division of Oral Health, Centers for Disease Control and Prevention
A RESOURCE TOOL FOR WATER FACILITY OPERATORS: STATE-SPECIFIC WATER FLUORIDATION POSTERS

Objectives: To provide water facility operators clear and accurate information for the operation and management of water fluoridation systems. *Methods:* Fluoridation program managers, drinking water program managers, and public health professionals in each state were contacted to provide information specific to their fluoridation program. This information was organized along with general fluoridation information to produce a fluoridation poster for each state. *Results:* The poster, customized for each state, provides information on safety issues, optimal fluoridation levels, operation and maintenance, community benefits, and key contacts at the state level as well as the Centers for Disease Control and Prevention, American Dental Association, and the American Water Works Association. Examples of these posters will be displayed at the conference. *Conclusions:* Each state fluoridation poster provides water plant operators with readily available and consistent summary information on fluoridation practices and resource contacts.

66. Lisa Syrop, DDS; Kip Duchon, PE, MS, Division of Oral Health, Centers for Disease Control and Prevention; Chris Adkins, Virginia Department of Health

USING GIS TO TARGET PUBLIC EDUCATIONAL MATERIALS ON HIGH NATURAL FLUORIDE IN GROUNDWATER

Objectives: To provide water fluoridation program managers with guidance on evaluating areas prone to high natural fluoride in groundwater and preparation of public educational materials to alert parents/homeowners of high fluoride content. *Methods:* The Virginia Department of Health used GIS to evaluate regional well water quality, location of schools, populations of school aged children, and socio-economic levels to identify areas of higher risk for enamel fluorosis. Results were applied to an educational pamphlet for parents/homeowners. *Results:* Data was initially compiled from the period 1999-2000. The fluoride concentration and geographic location was used to create a GIS map using 244 data points, of which 192 were community sources and 52 were private wells. 14% of the total community wells in the coastal plain area of Virginia had fluoride levels above 2 mg/L; 4% had fluoride levels above 4 mg/L. An updated analysis will be presented on samples through 2004, including a total of 1,376 active wells. The new map will display elementary schools, day care, and head start programs overlaid to target areas. The brochures are targeted to parents rather than homeowners, and are distributed through health departments, dental and WIC clinics, and in school-based educational programs. *Conclusions:* GIS can be utilized to identify and target areas of high natural fluoride for educational efforts.

67. Liang Hong, DDS, MS, PhD, Steven M. Levy, DDS, MPH; John J. Warren, DDS, MS, George R. Bergus, MD, MA; Deborah M. Dawson, PhD; James S. Wefel, PhD; Barbara A. Broffitt, MS, University of Iowa

ASSOCIATION OF DEVELOPMENTAL ENAMEL DEFECTS WITH AMOXICILLIN USE DURING EARLY CHILDHOOD

Objectives: : It has been speculated that amoxicillin use could be associated with developmental enamel defects. This study assessed the association between dental fluorosis and amoxicillin use during early childhood on both primary teeth and early-erupting permanent teeth. *Methods:* As part of the Iowa Fluoride Study, subjects were followed prospectively from birth to 32 months with questionnaires every 3-4 months to gather information on fluoride intake and amoxicillin use. Subjects (n=698) were assessed for primary tooth fluorosis at approximately age five by calibrated examiners using the Tooth Surface Index of Fluorosis (TSIF). Subjects (n=579) were assessed for dental fluorosis on early- erupting permanent teeth using the Fluorosis Risk Index (FRI) at approximately age nine. Relationships between fluorosis and amoxicillin use were assessed using relative risk (RR), Mantel-Haenszel stratified analyses, and multivariable logistic regression. *Results:* Amoxicillin use from 6 weeks to 6 months significantly increased the risk for fluorosis on primary second molars in bivariate analyses. After controlling for fluoride intake, the adjusted risks of fluorosis were not significant for amoxicillin use on primary

second molars. Amoxicillin use from 3 to 6 months significantly increased the risk of fluorosis on maxillary central incisors (RR=2.04, 95% CI 1.49-2.78, $p<0.0001$). After adjusting for fluoride intake and otitis media, the risk of fluorosis on maxillary central incisors from amoxicillin use during 3-6 months was still significant (MH RR=1.85, 95% CI 1.20-2.78, $P=0.005$). Multivariable logistic regression analyses confirmed the increased risk of fluorosis from amoxicillin use during 3 to 6 months (OR=2.50, 95% CI 1.21-5.15, $p=0.013$), and fluoride intake was also significant. **Conclusions:** Amoxicillin use during early infancy appears to be a factor in the etiology of dental fluorosis, but further research is needed.

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68. Elizabeth Shick, DDS, University of North Carolina at Chapel Hill, School of Public Health

DETERMINANTS OF DENTAL REFERRAL PRACTICES AMONG WIC NUTRITIONISTS IN NORTH CAROLINA

Objectives: WIC nutritionists are frequently the first health care provider to screen the general and oral health status of many poor children under five years of age, therefore, they can play a critical role in timely and appropriate dental referrals. Theoretically, oral health knowledge and confidence can play a role in WIC nutritionists ability to perform oral health risk assessments and make dental referrals. The objective of this study is to examine the determinants of dental referral practices among WIC nutritionists. **Methods:** A cross-sectional survey was used to assess the oral health knowledge, confidence levels, oral health counseling, oral health risk assessments and referral practices of North Carolina WIC nutritionists, $n=355$. All analyses were completed using SAS statistical software package. A multivariate logistic regression model was used to characterize the relationships of oral health knowledge and oral health confidence with dental referral practices. Control variables were also included in the model.

Results: are based on 82 agencies and 324 nutritionists (Response Rates= 96% and 92% respectively). Results revealed that higher confidence in performing oral health risk assessments and higher confidence in expected outcomes resulted in increased dental referral practices ($P<0.05$). **Conclusions:** The more confidence WIC nutritionists have with oral health the more likely they are to make dental referrals and help children access dental care earlier.

69. Michelle R. McQuistan, DDS, MS, College of Dentistry, University of Iowa

GENERAL DENTISTS; REFERRAL OF CHILDREN LESS THAN THREE YEARS OLD TO PEDIATRIC DENTISTS

Objectives: The purpose of this study was to assess the percentage of Iowa general dentists who refer children < 3 years of age to pediatric dentists and to determine which variables were associated with referral. **Methods:** A survey was mailed to all Iowa general dentists ($N=1089$). Respondents were asked how likely (never, sometimes, often, always) they were to refer children < 3 years to pediatric dentists in the past 12 months. Associations

between referral patterns with practice, dentists', and patients' characteristics were determined. **Results:** The adjusted response rate was 65.4%. Nearly 50% of all dentists reported often or always referring children < 3 years. Males were more likely to refer than females as were dentists who graduated longer ago. Dentists who perceived that they had not received adequate training to children < 3 years in dental school were more likely to refer. For each 1 percent increase in the total percent of children within the practice, dentists were 2 percent less likely to refer. Dentists were most likely to often or always refer children who were uncooperative, had severe decay or had special needs. **Conclusions:** It is imperative that general dentists become more willing and able to treat very young children. Initiatives need to be undertaken to address dentists' reluctance to work with this population.

70. Anuradha Deshmukh, BDS, MSD, Division of Dental Public Health; Wanda Wright, RN, DDS, MS, Department of Health Policy and Health Services Research; Ana Karina Mascarenhas, BDS, DrPH, Department of Health Policy and Health Services Research, Boston University Goldman School of Dental Medicine

AWARENESS OF DOMESTIC VIOLENCE AMONG DENTAL PROFESSIONALS

Objectives: The aim was to describe awareness of domestic violence (DV) among dental professionals. The objectives are to describe domestic violence practices of dental professionals and barriers faced in identification and intervention of suspected domestic violence victims.

Methods: The study population consisted of a convenience sample of dentists and hygienists attending the Yankee Dental Conference in Boston, MA. The data were collected using a previously tested questionnaire. Epi-Info version 3.2 and PC SAS were used for analysis. **Results:** The total study population was 359 with 169 dentists and 190 hygienists. There were 67% male dentists; in contrast hygienists were 99% females. The mean years since graduation were 18.9 ± 12.1 years for dentists and 16.4 ± 11.4 years for hygienists. Dental professionals who received prior DV education were more likely to screen for DV. Dentists were 11% more likely to have suspected one of their patients to be a DV victim but were 0.65 times less likely to make a note in the chart. Dentists were 0.53 times less likely to report that lack of training was a major barrier. 76% of dentists and 86% of hygienists said that they needed more DV education; and about 95% of both the groups suggested that DV education should be added to training curricula. **Conclusions:** Having prior DV education did show a significant difference in screening practices and actions taken when a patient was suspected to be a victim of DV. Therefore, these results indicate the need for increased education regarding DV in oral health care providers.

71. Steven A. Matis, DDS, MPH; Robert H. Selwitz, DDS, MPH; A. Isabel Garcia, DDS, MPH, National Institute of Dental and Craniofacial Research

THE INFLUENCE OF POST DOCTORAL TRAINING PROGRAMS FOR GENERAL DENTISTS ON THE COMPLEXITY OF DENTAL CARE PROVIDED IN THE NAVY DENTAL CORPS

Objectives: To determine the effect that completion of dif-

ferent types of post-doctoral training programs (PDT) for general dentists has on the complexity of dental services these practitioners provide in the Navy Dental Corps (NDC). *Methods:* Twelve months of clinical data were gathered for 364 dental officers practicing general dentistry (GD) in the NDC. Providers were separated into six groups: no formal training beyond dental school, Advanced Education in General Dentistry (AEGD), General Practice Residency (GPR), Advanced Clinical Program (ACP), Comprehensive Program (CP), and a sixth group consisting of those who had completed either an AEGD or a GPR, plus either an ACP or a two-year CP. Statistical tests were used to compare the proportion of complex specialty procedures completed by each group, and to compare differences between groups in the mean percentage of completed complex procedures. *Results:* The junior officer group (JO) with no PDT completed the highest proportion of complex specialty procedures of all JOs (36%), and practitioners in this group demonstrated a higher mean percentage of complex procedures than did practitioners in the AEGD group ($P=.003$). Overall, senior officers (SO) having PDT in GD are more likely to provide complex specialty procedures to patients than do SO with no additional formal training. The SO group with advanced two-year CP training completed the highest proportion of complex specialty procedures of all SO groups (27%). *Conclusions:* Many general dentists in the NDC who have not completed PDT have acquired skills necessary for challenging complex specialty procedures through other paths. The availability of PDT in GE provides a number of benefits to both the officers trained and the scope of services delivered by practitioners in the NDC.

72. *Nathalie Morin, DDS, MPH, Canadian Forces Dental Services; Robert H. Selwitz, DDS, MPH; Isabel Garcia, DDS, MPH; Tianxia Wu, PhD, National Institute of Dental and Craniofacial Research*

ASSESSMENT OF ORAL HEALTH-RELATED QUALITY OF LIFE AND ITS RELATION TO PERSONAL OPERATIONAL FITNESS OF CANADIAN FORCES RECRUITS AND OFFICER CANDIDATES

Objectives: Since oral diseases are among the most prevalent conditions experienced by children/adults in many countries, Oral Health (OH) indicators are needed to understand the effect of oral problems on the general well-being of individuals. This study applied an OH Related to Quality of Life (OHRQoL) instrument to a sample of Canadian Forces (CF) recruits and officer candidates and examined whether the General Oral Health Assessment Index (GOHAI) is correlated with the CF clinical Dental Fitness Classification (DFC) and with various socio-demographic/behavioral variables. *Methods:* A pilot-tested questionnaire, including an adapted GOHAI in French/English, was used during the CF basic training from Jan-May 04. An oral exam was conducted to collect individuals' DFC scores. An additive method generated categories of GOHAI scores for the data analysis. *Results:* Logistic regression showed that individuals not having had dental insurance in the past 2 years were 2X more likely to report less favorable GOHAI scores (OR2.2, 95%CI 1.3-3.7) than did individuals with insurance. Persons who reported going to the dentist only for emergencies were

2X more likely to report negative impacts of OH on their QoL (OR2.4, 95%CI 1.1-5.2) than did persons who were regular attenders at the dental office; people with DFC 2 were 50% less likely to report an unfavorable score than did people with DFC 3 (OR0.51, 95%CI 0.3-0.8). *Conclusions:* The GOHAI instrument could be helpful in evaluating patients' oral health concerns and for the use of CF dentists in ensuring correct allocation of the DFC while improving treatment planning.

73. *Sumer M. Alaki, DDS, School of Dentistry, University of Michigan*

EAR INFECTIONS, SYSTEMIC ANTIBIOTICS AND THEIR RELATIONSHIP WITH EARLY CHILDHOOD CARIES

Objectives: To examine the relationship between ear infections, systemic antibiotics and early childhood caries (ECC) in children birth to 6 years of age. *Methods:* The study used data from the third National Health and Nutrition Examination Survey in the United States (NHANES III, 1988-1994). Children younger than 6 years of age were included in the analysis. Three sets of variables were obtained from the NHANES III database: one for details of children's ear infections, another for history of antibiotics use and the third one for caries experience. Two statistical models were used, a logistic regression model and a negative binomial regression model. *Results:* A total of 7,805 children (mean age= 3.3 years) were included in the analysis. There were 3,857 males (49.42%) and 3,948 females (50.58%). Comparing children with history of at least one ear infection to those who did not have a history gave an odds ratio (OR)=0.68 (95% CI=0.47, 0.97). Children with ear tubes had OR=1.643 (95% CI=0.96, 2.9) compared to those without tubes. Children with lesser frequency of ear infections were more likely to have ECC than those with greater frequency. For a single episode of ear infections the OR=0.82 (95% CI=0.51, 1.30), for 2 episodes the OR=0.95 (95% CI=0.58, 1.54), for 3-5 episodes the OR=0.49 (95% CI=0.31, 0.79), for six or more episodes the OR=0.59 (95% CI=0.36, 0.96). In the month preceding the survey, 13.8% of children in the sample were on some form of systemic antibiotics. The use of these antibiotics was significantly associated with age ($X^2=58.3$, $p<0.0001$) and race/ethnicity ($X^2=55.34$, $p<0.0001$), but not gender ($X^2=0.04$, $p<0.85$). Using antibiotics was also associated with lower dfs scores ($\chi^2=4.94$, $p<0.03$). *Conclusions:* Ear infections and systemic antibiotics use in early childhood seems to be associated with lower odds for having ECC.

74. *Michael R. Layton, BS; Christine A. Riedy, PhD, MPH, Dental Public Health Sciences, University of Washington*

ACCULTURATION AND ROMANIANS' ORAL HEALTH ATTITUDES AND PRACTICES

Objectives: Determine the effect of acculturation on U.S. and Canadian Romanians' oral health attitudes, beliefs and practices and compared their responses to non-immigrated Romanians. *Methods:* Key informant interviews were conducted with immigrated and non-immigrated Romanians. Two surveys were administered: a modified 25-item acculturation scale to determine the level of acculturation, and a 36-item survey on oral health attitudes and behaviors. Individuals completed surveys through a

posting on Romanian list serves, message boards, or personal contacts. Non-immigrated Romanians only completed the second survey. Descriptive data analysis of survey responses was performed. Contingency table analysis was used to compare oral health survey responses by acculturation level and by country of residence. *Results:* A total of 136 individuals participated in the study. Responses showed significant findings by country of residence and acculturation level ($p < .05$), in the following three categories: beliefs regarding oral health cost, professional dental visits, and individual oral health practices. The majority of the oral health beliefs were similar across acculturation levels and country of residence. *Conclusions:* Acculturation of Romanians impacts oral health beliefs regarding the affordability of oral care, perceptions of dental practitioners and personal oral practices in Romanians. However, this study found that immigrated Romanians have many similar oral health attitudes, beliefs and practices regardless of acculturation level or country of residence.

75. Jung S Park, BA; Umo Isong DDS, MPH, PhD; Jane A. Weintraub, DDS, MPH, University of California, San Francisco School of Dentistry

EVALUATION OF A NEW PROGRAM FOR PUBLIC FINANCING OF DENTAL CARE

Objectives: To improve access for children in low-income families ineligible for California's Denti-Cal (Medicaid) and SCHIP programs (e.g., no legal immigration status), San Francisco County created the Healthy Kids (HK) program in 2002, funded by the city and the Proposition 10 tobacco tax. We evaluated San Francisco's new HK dental program using structure, process, and outcome measures against the backdrop of the ongoing Denti-Cal program. *Methods:* HK and Denti-Cal claims data, aggregated quarterly (Q) for 2002-03 and Q1 for 2004 were analyzed for 26 selected, prevalent procedures representing different types of services. Analyses included Chi-square tests, t-tests and odds ratios. *Results:* HK reached 88.4% of the enrollment goal and 52% utilized dental services, higher than 34% average rate reported by the U. S. General Accounting Office for dental Medicaid programs. The language preference for HK enrollees was Spanish for 60% and Chinese for 22%. Their age distribution was 19%, 51% and 30% for ages 0-5, 6-12, and 13-17, respectively, with the age group 6-12 using the most dental services. Diagnostic dental services were utilized the most, followed by preventive, restorative, surgical, and emergency services. The mix of services provided differed from the Denti-Cal program, though reimbursement levels for the procedures studied were similar ($p = 0.83$). HK provider participation was low, 12%. *Conclusions:* Over 2,000 low-income children in San Francisco received dental care through the HK program, who may not have otherwise. NIH/NIDCR DE007103-25, U54DE142501

76. Jonelle S. Grant, BA, University of North Carolina at Chapel Hill School of Dentistry

UNC MEXICO DENTAL PROJECT

Objectives: To allow dental students to understand how health systems work and how developing nations cope with scarce medical and dental resources in Mexico, as-

sist the dentist of the Nuestros Pequeños Hermanos Orphanage by administering basic and preventive dental care, and provide friendship and companionship to the orphaned children of the Nuestros Pequeños Hermanos Orphanage. *Methods:* The Mexico Project visited various hospitals and the University of Mexico School of Dentistry in Mexico City, Mexico, and administered basic and preventive dental care in the form of a prophylaxis, application of fluoride, dental sealants, and performing restorative care at the Nuestros Pequeños Hermanos Orphanage. An educational program was also provided on prevention and nutrition and presentations about oral hygiene along with a tooth brush and floss to each child was provided. Finally, the procurement of donations and delivery of much needed dental supplies to the stock rooms was conducted not only for the dental clinic in Miacatlan, Mexico but also other seven dental clinics in the Nuestros Pequeños Hermanos (NPH) Orphanage system. *Results:* Each year the project results in hundreds of orphans receiving much needed dental services. Since there is limited dental coverage at the orphanage, this annual trip provides essential services to children who would otherwise not receive basic dental care. *Conclusions:* Due to the nature of this outreach service there is no formal quantitative measure of success. But for the last 15 years, the UNC Mexico Project has been a success in the lives of the 160 volunteers and thousands of children. Witnessing the innocence of youth and experiencing the unconditional love of children who at first are strangers, it is soon realized that success is measured by the lives impacted and not necessarily the teeth treated.

77. Fritz D. Joseph, student Université de Montréal; Marie-Christine Tremblay, student, Université de Montréal

INTRODUCTION OF PREVENTIVE ORAL CARE IN A PSYCHIATRIC ENVIRONMENT

Objectives: Psychiatric patients require specific needs in dental care, especially concerning preventive measures. At Louis-Hypolite-Lafontaine Hospital, 800 patients are institutionalized and approximately 50% of them are toothless. The following is to introduce oral care as a routine for psychiatric hospitalized patient to help reduce the incidence of oral diseases. *Methods:* To conduct this project, 18 schizophrenic patients from 4 different clinical units were recruited and volunteered to be part of the study. Each unit was supervised for oral hygiene by a team of 3 students for 3 months. A total of 12 students from the Faculty of Dentistry of the University of Montreal were involved. An evaluation of oral hygiene knowledge and skills was performed related to the study and repeated monthly after using the chart of B.M. Entwistle with a standardized procedure. The study was done with the collaboration of the nursing staff of these 4 units and the Oral Health department of the Faculty. *Results:* This study, although done to a small scale, indicates that supervision of oral hygiene increases the knowledge and ability of the patients. *Conclusions:* We conclude that the dental pathology in patients suffering from mental illness and hospitalized for medium and long term might be reduced with such supervision procedures done by dental students who worked as volunteers.

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