

Abstracts

1. Kathryn Atchison, DDS, MPH, Dara Rosenberg, DDS, MPH, Sylvia Lin, Rita Englehardt, UCLA, Los Angeles, CA, and St. Barnabas Hospital, NY EVALUATION OF POSTGRADUATE TRAINING IN GENERAL DENTISTRY

Objective: In 1999, HRSA commissioned an evaluation of the impact of general dentistry (AEGD and GPR) training programs on treatment of underserved patients and provision of advanced services. **Methods:** The evaluation included a stratified random survey of dental school graduates of 1989, 1993, and 1997, and asked about participation in postgraduate training, types of patient populations served, community service activities, and types of services provided. Data reduction using factor analysis was performed on types of patients served, services provided, and sources of payment for the three nonspecialty groups to assess differences between general dentists with advanced training and those with none. **Results:** 2,018 dentists responded (30%), including 986 general dentists with no advanced training, 137 AEGDs, 419 GPRs, and 476 specialists. Specialists (24%) and AEGDs were more likely to have FT faculty appointments, while GPRs were more likely to be employed in salaried positions ($P < .01$). Specialists reported the most leadership activities ($P < .01$). Nine patient types were reduced to three factors, medically compromised, children, and healthy adults/geriatrics. AEGD reported less treatment of children than general dentists; GPR were more likely to treat medically compromised. Eight items describing payment groups were reduced to three factors, no pay (pro bono and sliding fee), help pay (Medicaid, Medicare, welfare, and no insurance), and self pay (full fee and HMO). AEGD and GPR were less likely to report treatment of no pay patients than general. **Conclusion:** Although HRSA supported the training of general dentists to help provide additional professional resources for underserved people, evidence suggests that recipients of general dental training report less likelihood of serving needy groups. This project was supported by HRSA HP00003.

2. Linda M. Kaste, DDS, PhD*, Surrey M. Walton, PhD, Gayle R. Byck, PhD, Judith A. Cooksey, MD, MPH, University of Illinois at Chicago, IL DIFFERENCES BETWEEN MALE AND FEMALE DENTISTS IN WORKFORCE PATTERNS, 1979-98

Objective: To use the nationally representative dataset of the Current Population Survey's (CPS) Outgoing Rotation Group (ORG) to compare male and female dentist workforce differences from 1979 to 1998. **Methods:** The CPS is a national sample survey by the Bureau of Labor Statistics given monthly to ~50,000 households. The ORG data are from a subset of CPS respondents given a more detailed questionnaire and are commonly used in workforce studies. For the 20 years, 4,209 male and 354 female self-reported dentists were analyzed. Descriptive statistics and regression analyses of hours worked were conducted using STATA. **Results:** Overall the women were younger (38 vs 45 years, t -test, $P < .0001$), less likely to be married (67% vs 84%, chi-square, $P < .0001$), and worked fewer hours per week (36 vs 40, t -test, $P < .0001$) than the men. A linear regression model of total hours worked found being male was associated with 5 more hours of work per week ($P < .001$) while controlling for marriage, residing in metro area, being white, age group, survey time period, and region of country. **Conclusions:** This study confirms findings reported by others on the different work patterns of male and female dentists where generally women work fewer hours than men. Further studies are needed to track dental cohorts and relate these to dental workforce planning.

3. Kneka P. Hayward, RDH, BS*, Arizona Department of Health Services; Donald S. Altman, DDS, MPH

DENTAL PUBLIC HEALTH TRAINING NEEDS: A SURVEY OF STATE AND TERRITORIAL DENTAL DIRECTORS

Objective: To determine the training needs of dental hygienists and other professionals working in state and territorial dental public health

programs. **Methods:** A survey was distributed to all state and territorial dental directors or contacts in December 1999. Follow-up surveys were mailed to nonrespondents two months later and a third distribution occurred one month later. The 1999 Association of State and Territorial Dental Directors' Membership Directory was used for the mailing. A response rate of 82 percent (47/57) was obtained with 42 responses from states and 5 from territories. **Results:** Of the 47 respondents, 37 (79%) employed and/or contracted at least one dental hygienist and of those states, 29 (78%) had positions requiring dental public health knowledge and skills. Of those 29 states/territories, nearly all (97%) had hygienists (100) with a need for training in dental public health. In addition, 26 respondents identified 134 other professionals in need of some aspect of dental public health training. At the time of the survey, 20 (71%) respondents with hygienists needing dental public health training were able to provide some financial support for 33 (33%) hygienists to receive such training. Funding could not be identified for the remaining 67 (67%) hygienists. **Conclusions:** The survey reveals a total of 234 professionals working with state and territorial dental public health programs who have unmet dental public health training needs. The state and territorial dental directors identified a clear need for this training, yet limited funds were identified within their programs.

4. Maria T. Canto, DDS, MPH*, Alice M. Horowitz, PhD, DPHPS, NIDCR/NIH, Bethesda, MD; Harold S. Goodman, DMD, MPH, Division of Oral Health, MDHMH, Baltimore, MD

ORAL CANCER TRAINING FOR MARYLAND HEALTH PROFESSIONALS

An assessment on oral cancer knowledge, opinions, and practices took place in Maryland from 1995 to 1999. This assessment included surveys and focus groups of dentists, dental hygienists, nurses, and primary care physicians. Based on these findings, hands-on training sessions have been planned and conducted. **Objective:** To determine how best to train health care professionals on oral cancer early detection. **Methods:** County health departments were identified; health care professionals were recruited by mail or posted flyers. Patients were recruited from posted flyers, newspaper, and radio advertisements. Training sessions included a didactic portion followed by screenings for the public. After the oral cancer examination, patients met with a health educator. Referrals were made for follow-ups when required. The format of sessions was tested and reevaluated based on forms completed by providers and patients. A team of oral surgeons/physicians from the University of Maryland Medical System provided the training. Continuing education credits were offered. **Results:** Five training sessions were conducted. A total of 46 health care providers participated (dentists, dental hygienists, physicians, and nurses). **Conclusions:** The format of a didactic portion, followed by hands-on demonstration and actual screenings of patients was well received by providers. It was difficult to recruit patients; most patients participated as a result of the ad.

5. Ellen Beaulieu, MPH, EdD*, College of Health Professions, University of New England, Portland, ME

AN INTERDISCIPLINARY HEALTH PROFESSIONS' CURRICULUM: THE IMPACT ON ORAL HEALTH

Objective: To investigate changes in oral health outcomes in selected community-based settings that may be the result of a new interdisciplinary, integrated health professions' curriculum at the University of New England. **Program Design:** Graduate and undergraduate health professions students are learning together in a model curriculum that is in the pilot stage. Dental hygiene is one of the disciplines involved. Through this interdisciplinary educational approach, dental hygiene students are gaining an understanding of the complex dimensions of the social environment, which contribute to oral and systemic disease. At the same time, other health professions students are learning about

the connections between oral health and systemic conditions. Students are learning from faculty, each other, and community members in a collaborative process. *Results:* Early indications are that health professions students want and need knowledge of the oral cavity to provide optimum interdisciplinary patient care. Initial findings indicate that students are incorporating enhanced capability to understand and apply the knowledge and skill gained in the interdisciplinary setting for improved oral health. *Conclusions:* Integrated, interdisciplinary education in the health professions positively affects oral health outcomes.

6. Jayanth V. Kumar, DDS, MPH*, Elmer L. Green, DDS, MPH, Bureau of Dental Health, New York State Department of Health, Albany, NY
A METHOD FOR OBTAINING COUNTY-SPECIFIC DATA ON DENTAL CARIES

Objective: This study examined the synthetic estimation methodology to produce county-specific estimates of dental caries prevalence in New York State. The characteristic of interest was the proportion of 2nd grade children free of caries in 57 upstate NY counties. *Methods:* This methodology brought together data from a statewide survey, fluoridation census, state education department profiles of schools, and the US Bureau of Census. Data from a survey of 2,474 2nd grade children were used to develop a regression equation for predicting the proportion of children free of dental caries. For this analysis, PROC CATMOD procedure in SAS was used. *Results:* The variables significantly associated with dental caries at $P < .05$ were free/reduced lunch program (p_1), some college level education of parents (p_2), fluoridation (p_3) and regular use of F tablet (p_4). To produce county-level estimates, differential effects in the following regression equation were substituted with county characteristics: $\text{pcaries-free} = 0.51 + (p_1 \cdot .06) + (p_2 \cdot .06) + (p_3 \cdot -.05) + (p_4 \cdot -.07)$. *Conclusion:* These estimates showed that the percent of children caries free in these 57 counties varied from a low of 40 percent to a high of 55 percent. However, it was difficult to verify the validity of these estimates. Efforts are underway to collect data from all counties for determining the appropriateness of this method.

7. Kristine Perkins, RDH, BS*, Maine Oral Health Program, Augusta, ME; Courtney B. Jackson, MA, University of Southern Maine, IPSI, Augusta, ME
EVALUATION OF A SCHOOL-BASED ORAL HEALTH PROGRAM

Objective: To assess the organizational and programmatic effectiveness of the existing Maine School Oral Health Program (SOHP). *Methods:* 73 school oral health program (SOHP) directors representing 91 percent of the total were surveyed. A total of 49 questions evaluated all components of the school program: coordination and administration, oral health education, fluoride supplementation, screenings, and sealants. The survey was administered at annual SOHP directors' training sessions held regionally through out the state. Responses were anonymous. *Results:* Time for directors to support SOHP activities was a concern of 64 percent of respondents. Respondents perceive that school administrators value the program slightly more than teachers. 60 percent believe that school administrators always or almost always value the SOHP. Nurses and administrators were the groups most likely to be 100 percent supportive of the fluoride mouthrinse component. 75 percent of respondents reported that screenings provide evidence that oral health should be an integral part of a comprehensive school oral health education curriculum. 86 percent felt that a sealant component was an important part of the SOHP. *Conclusions:* Survey results reveal important perceptions of SOHP directors and identified noteworthy patterns of the program. Results will be used to develop the agenda and focus group that will explore survey topics in greater depth. The focus group will be conducted in spring 2002. Evaluation results will provide valuable data to guide future initiatives of the SOHP.

8. Sharon J. Perlman, DDS, MPH*, Dental Health Services, Cook County Department of Public Health, Bureau of Health Services, Oak Park, IL
APPOINTMENT FAILURES: HOW CAN WE SUCCEED?

Objective: To reduce the number of appointment failures through patient scheduling at a county health department dental clinic. *Methods:* Dental appointments were scheduled no more than 4 weeks in advance, eliminating the previous practice of scheduling the next-available ap-

pointment regardless of time. Staff emphasized the importance of keeping appointments through written and oral communication. The number of initial, urgent, and return appointment failures was assessed over a two-year period. *Results:* ≥ 2 appointments per day were missed on 83 percent of the days scheduled for patient care. Of the failed appointments, 11 percent of the failures were for return appointments. *Conclusions:* The principle of supply and demand was demonstrated. Patients kept their appointments when the availability of appointments decreased, especially those returning for follow-up care. This improved clinic efficiency, increased the number of patients completing treatment, and enhanced provider and patient satisfaction. Further study to determine efficient methods of managing patient care and clinic efficiency to maximize limited resources is indicated.

9. E. Joseph Alderman, DDS, MPH*, Oral Health Section, Family Health Branch, Division of Public Health, Department of Human Resources, Atlanta, GA

IMPROVING ACCESS TO ORAL HEALTH SERVICES FOR MEDICAID/PEACHCARE CHILDREN

Objective: To assess the effect of Medicaid dental fees increases on dental access. *Methods:* In 1997, Healthy Mothers, Healthy Babies Coalition of Georgia found that only 259 (7%) of 3,800 practicing Georgia dentists indicated they would accept new Medicaid patients. In 1999, after a 2.5 percent increase in Medicaid fees, 496 (13%) of 3,900 dentists would accept new Medicaid patients. PeachCare for Kids, Georgia's Child Health Insurance Program, is administered by the Department of Community Health (DCH), and essentially offers the same fees/services as Medicaid. July 2000 DCH doubled the amount of money for dental services for Medicaid/PeachCare eligibles. This increase for the 56 most-used dental procedures for Medicaid, brought their reimbursement to 75–80 percent of the customary fees charged by Georgia dentists. In addition, major positive administrative changes were made. Georgia attended the National Governors' Association Policy Academy, and adopted two legislative items: continuing the expansion of the Georgia School-based Oral Health Prevention Program and increasing the Medicaid dental fees to reflect the dental component of the Consumer Price Index (CPI). Using national data and Georgia's fees, James J. Crall, DDS, ScD, projected a 4.5 percent increase in fees to obtain 50 percent participation. The DCH Board recommended this increase in its 2003 budget. The Georgia Dental Association had a statewide campaign to increase dentists' participation. *Results:* As of October 2001, the number of private dentists who accept Medicaid patients increased to more than 1,355 (34%) of 4,000 dentists. The number of eligible recipients seen increased from 13 percent (prior July 2000) to 25 percent. Children in dental treatment increased to 240,000 (215% increase). *Conclusions:* Due to a significant downturn in the economy, the proposed increase will not occur. However, no decrease in dental fees should occur, and indexing dental Medicaid fees to the CPI will be considered in the next budget cycle.

10. Kathy R. Phipps, DrPH, Morro Bay, CA
IMPACT OF POSITIVE CONSENT ON ESTIMATES OF ORAL HEALTH STATUS

Objective: To determine if positive consent impacts estimates of oral health status obtained through school-based needs assessments. *Methods:* Four elementary schools agreed to take part in an oral health needs assessment using passive consent. Parents of children in kindergarten and 3rd grade were sent a letter describing the needs assessment and were asked to return a consent and questionnaire. Children who returned a positive consent, along with those who did not return consent (passive) were screened. Children who returned a negative consent were not screened. The ASTDD Basic Screening Survey protocol was used. *Results:* A total of 544 students returned a consent or were screened: 36 percent had positive, 50 percent passive, and 14 percent negative consent. For children screened, the prevalence of caries history, untreated decay, and sealants were 62.9 percent, 31.6 percent, and 28.7 percent, respectively. For children with positive consent these estimates were 61.9 percent, 28.4 percent, and 27.4 percent. Compared to children with positive consent, children with negative consent were less likely to be eligible for the free/reduced lunch program (19% vs 41%). In addition, parents of white non-Hispanic children were more

likely to provide negative consent than their Hispanic or Asian counterparts (30%, 17%, 25%, respectively). *Conclusions:* In this population, positive consent did not significantly alter estimates of oral health obtained through a school-based survey. It appears, however, that higher income parents are more likely to provide negative consent.

11. Robert Weyant, DMD, DrPH, Mike Manz*, DMD, Patricia Corby, DMD, University of Pittsburgh, PA

ORAL HEALTH STATUS OF PENNSYLVANIA CHILDREN IN GRADES 1, 3, 9, AND 11

Objective: To conduct a survey that provides baseline data for program planning and to satisfy federal reporting requirements. *Methods:* Between September 1, 1998, until May 30, 2000, a representative sample of children in public schools in grades 1, 3, 9, and 11 were examined to assess oral health status. Additionally, a questionnaire was administered to students in grades 9 and 11 to assess oral health behavior. A subset of the examined children's parents were also administered a questionnaire to assess family health behavior, access to dental care, and attitudes related to oral health. *Results:* A total of 6,040 children were examined statewide. Additionally, 1,275 parents completed questionnaires. Selected findings include: dental caries (treated and untreated) remains a significant problem among Pennsylvania's children. The poorest families had three times more dental caries and two times more untreated dental caries than children from the wealthiest families. Water fluoridation was associated with a 20 percent reduction in caries rates. Dental sealants were present in 25 percent of 8- and 14-year-olds. *Conclusion:* Pennsylvania children fall short of many Healthy People 2000 oral health goals.

12. J. David Hardison, DMD*, J. A. White, RDH, MPH, J. C. Cecil, DMD, MPH, M. R. Mullins, DMD, MPH, University of Kentucky College of Dentistry, Lexington, KY

THE 2001 KENTUCKY ORAL HEALTH SURVEY OF 2-4-YEAR-OLDS

Objective: Provide a point-in-time benchmark of oral health status of children aged 2-4 years in Kentucky. *Methods:* A convenience sample of 2-4-year-olds was examined in health departments and the practices of pediatricians, family practice physicians, and pediatric dentists. Dental and nondental screeners were provided standardized training materials. After a parent/guardian completed a questionnaire and consent form, a modified Basic Screening Survey (BSS) was completed on 2- (n=182), 3- (n=202), and 4-year-olds (n=188). Statistical analysis on the sample using SAS continues. *Results:* 47.3 percent of the children screened had caries experience, 42.7 percent had untreated caries, 45.3 percent needed "early" or "urgent" dental care, 50.4 percent of the sample was male, and 49.7 percent were female. The racial distribution was 85.5 percent white, 9.1 percent black, 2.1 percent multiracial, 0.9 percent other, and 2.5 percent said "unknown" or did not respond. *Conclusion:* Untreated decay and caries experience in Kentucky's 2-4-year-old children is substantially higher than national and state Healthy People 2010 objectives. Supported by the Kentucky Department for Public Health.

13. D. S. Ma*, DDS, PhD, Kangnung National University; B. H. Jin, DDS, PhD, Shingu College; H. S. Moon, DDS, PhD, D. I. Paik, DDS, PhD, S. H. Han, DDS, PhD, Seoul National University, South Korea

EARLY CHILDHOOD CARIES: PREVALENCE AND RISK FACTORS IN SEOUL, KOREA

Objective: The purpose of this study was to determine the prevalence of early childhood caries (ECC) including noncavitated lesions (d1d2) in children 6-59 months in relation to socioeconomic factors, and oral health behaviors. *Methods:* This cross-sectional study examined 470 children in Seoul, Korea. Two dentists conducted the oral examinations. Parents of all subjects were interviewed by phone regarding oral health behaviors. *Results:* 383 children were examined; 29.3 percent were caries free. Analyses of the social class structure of the subjects showed that 81 percent of fathers and 70 percent of mothers were educated at a university level; 45 percent of mothers were employed. The mother's educational level was statistically associated with d1d2mft and caries-free proportion of the child ($P<.05$). Children whose mothers were employed had significantly lower d1d2mft ($P<.05$). Children who were

allowed to fall asleep with the bottle had significantly higher d1d2mft ($P<.05$). Children who visited a dental clinic for periodic check ups and whose mother or caregiver was responsible for their oral hygiene had significantly lower d1d2mft scores and higher caries-free percentage ($P<.01$). *Conclusion:* This study suggests that prevalence of ECC was high in Seoul and risk factors related to ECC were mother's level of education, mother's employment status, bedtime practices, dental visit, and primary caregiver.

14. Steven M. Levy, DDS, MPH*, Barbara Broffitt, MS, John J. Warren, DDS, MS, Rebecca L. Slayton, DDS, PhD, Michael J. Kanellis, DDS, MS, College of Dentistry, University of Iowa, Iowa City, IA

DENTAL VISITS AND OFFICE FLUORIDE TREATMENTS: THE IOWA FLUORIDE STUDY

Objective: Relatively few studies have reported on the patterns of dental visits and office fluoride treatments among young children. We report the frequency of dental visits and fluoride treatments from 36-72 months among participants in the longitudinal Iowa Fluoride Study. *Methods:* Parents of newborns were recruited from 8 Iowa hospitals in 1992-95. Questionnaires sent at 4-6-month intervals asked about dental visits and office fluoride treatments during the previous period. *Results:* Percentages reporting visits were: 33 percent (36-40 months), 32 percent (40-44 months), 45 percent (44-48 months), 64 percent (48-54 months), 70 percent (54-60 months), 73 percent (60-66 months), and 73 percent (66-72 months). Percentages of all subjects reporting F treatments were: 12 percent (36-40 months), 14 percent (40-44 months), 22 percent (44-48 months), 33 percent (48-54 months), 39 percent (54-60 months), 43 percent (60-66 months), and 51 percent (66-72 months). When considered cumulatively by year among those with complete data, 65 percent reported a visit and 28 percent fluoride treatment from 36-48 months, 81 percent reported a visit and 45 percent fluoride treatment from 48-60 months, and 87 percent a visit and 58 percent a fluoride treatment from 60-72 months. *Conclusions:* It appears that, in this sample, most children had a dental visit prior to school age and about half received an office topical fluoride treatment. (Supported in part by NIH grants RO1-DE09551 and RO1-DE12101.)

15. Susan G. Reed, DDS, DrPH*, Stacy A. Nash, MPH, CHES, Frances W. Lee, DBA, Division of Dental Public Health and Oral Epidemiology, Department of Stomatology, and Department of Health Administration and Policy, Medical University of South Carolina, Charleston, SC

EVALUATION OF DENTAL OUTREACH ACTIVITIES BY PRE-DOCTORAL DENTAL STUDENTS

Objective: To assess the subjective contributions of educational dental outreach activities by dental students. *Methods:* Participating first and second year dental students evaluated dental outreach activities over three academic semesters. A self-administered questionnaire with nominal, Likert scale, and open-ended questions was completed by each student following the activity, and this information was entered into the College of Dental Medicine (CDM) Dental Outreach Database. Data were summarized to describe the perceived impacts of the outreach activity. A ranking of preferences of types of dental outreach activity sites was calculated. *Results:* The responders (94%; 238/252) indicated overwhelming positive benefit to themselves and to the community by the dental outreach activities. *Conclusions:* This database can generate general and specific participant subjective evidence for the CDM to use in planning future partnerships for dental outreach activities.

16. P. Blahut*, DDS, MPH, Division Oral Health, Indian Health Service; D. Starr, RDH, Public Health Service Hospital, Pine Ridge, SD; J. McGowan, RDH, PhD, Dental Hygiene Program, University of Michigan School Dentistry; J. Zimmer, DDS, Public Health Service Indian Hospital, Pine Ridge, SD

INDIAN HEALTH SERVICE/UNIVERSITY OF MICHIGAN COLLABORATIVE DENTAL SEALANT PROGRAM UTILIZING DENTAL HYGIENE STUDENTS

Objectives: (1) Provide screenings, sealants, and preventive care for American Indian (AI) children at 4 IHS programs. (2) Assess effectiveness of using DH students to deliver services to AI children. (3) Assist IHS recruitment efforts by providing on-site orientation to a rural

environment and a clinic-based introduction to provision of care in the IHS. *Methods:* 11 DH students each spent 3 weeks during the summers of 2000 and 2001 providing care to AI children at school-based sealant programs. DDS + RDH supervised procedures and checked sealant retention. *Results:* 644 patients received 2,125 preventive procedures, including 944 sealants, in 2000. 390 patients received 1,606 procedures, including 565 sealants, in 2001. 24-hour retention rate >99 percent. One-year retention rate will be available June 2002. Cost analysis was performed. *Conclusions:* Alternate ways to deliver this care are all significantly more expensive. 24-hour retention rates compare favorably to rates of IHS providers. Assessment of student journals indicates satisfaction with the program. Most important, care rendered through this initiative would not have occurred otherwise.

17. Nuala B. Porteous, BDS, MPH*, Martha Baez, RDH, MPH, Department of Community Dentistry, University of Texas Health Science Center at San Antonio, TX

FOLLOW-UP OF LOW CARIES RISK PATIENTS IN A SEALANT PROGRAM

Between 1996 and 2000, participants in a school-based sealant program who were categorized as low caries risk did not receive sealants. Priority was given to high and moderate caries risk children. *Objectives:* To assess the caries status of first permanent molars in low-risk patients at reexamination, and to determine if all second graders in this lower socioeconomic school district, irrespective of assessed risk, should have sealants placed. *Methods:* Second grade schoolchildren, whose parents had consented to participate in the school-based sealant program from 1996-2000, who had been categorized as low caries risk according to a decision tree, and who had been excluded from this treatment, were reexamined during spring 2001. *Results:* Eighteen (4.7%) children out of a total of 381 had been categorized as low caries risk on initial examination. In May 2001, 12 (67%) of low caries risk patients were available for reexamination. The other six had withdrawn from the school. Of those 12 children, one child had two amalgam restorations and one sealant placed, and a second child had two sealants placed since the initial examination. Neither of these two children had any untreated caries of first molars. Ten children (56%) were still caries-free in their permanent teeth with no prior treatment. *Conclusion:* In this school-based sealant program, an individual risk assessment approach used to screen children for sealant placement in first permanent molars is efficient.

18. Jin-Bom Kim, DDS, PhD*, In-Soon Park, DDS, Ji-Young Kim, RDH, College of Dentistry, Pusan National University, and Research Institute for Oral Biotechnology, Pusan, Korea

EVALUATION OF A SEALANT PROGRAM IN HABCHON, KOREA

Objective: To evaluate the effectiveness of a clinic-based sealant program in Habchon, Korea. *Methods:* A clinic-based sealant program was initiated by the community health center in Habchon, Korea, in 1996. Sealants were applied to first molars of all 6-year-olds in grade one of elementary schools in 1996. The program was expanded to more children annually by one grade. In 2000 all 6-10-year-olds in grades one through five were included. The application of sealants was expanded to include premolars. Children visited the dental clinic by themselves for sealants. Dental examinations were conducted on 1,957 6-14-year-old children of elementary and middle schools in Habchon; the control group included 1,277 children in 2000. *Results:* DMFT scores were 0.11, 1.33, and 4.07 at age 6, 10, and 14 years in Habchon and were 0.25, 1.91, 3.37 at age 6, 10, and 14 years in control group. The reduction rates of DMFT scores in Habchon compared to control group were 56.0 percent and 30.4 percent at age 6 and 10 years, respectively. *Conclusions:* These results substantiate that a significant reduction in dental caries can be achieved by the sealant program.

19. Thomas E. Duval, DDS, MPH, DHR Public Health, Macon, GA
EFFECTIVENESS OF THE PALM PILOT TO COLLECT ORAL HEALTH DATA

Objective: To assess the effectiveness of using the Palm Pilot or Personal Data Assistant (PDA) as a tool to collect oral health surveillance data. The PDA is a handheld computer capable of storing and

manipulating data. *Method:* A dental hygienist was sent to the school to provide required oral screening data. The PDA was programmed to collect screening data by school, grade, county, and treatment needed. Treatment needed was divided into three categories: green="go"=no apparent treatment needed; yellow="caution"=routine treatment needed; and red="stop"=urgent treatment needed (within 48 hours). The dental hygienist completed a questionnaire comparing oral screening. Recording manually on hard copy and with the PDA were scored on a scale of 1 (very easy) to 10 (extremely difficult). Ease of data entry and ease of producing the state-required Monthly Dental Activity Report were scored. *Results:* The results and comparison of the oral screening methods will be provided. The PDA was shown to be a useful tool for collecting screening data. *Conclusion:* The PDA is an extremely helpful device for collecting oral health screening data. PDA data is easily loaded onto laptops, desktops, or file server computers. Demographic data collected from various sites can be analyzed statewide for planning and determining oral health resource allocation policy.

20. Sangeeta Gajendra, BDS, MPH*, Jayanth V. Kumar, DDS, MPH, Bureau of Dental Health, New York State Department of Health, Albany, NY

TARGETING SEALANTS IN NEW YORK STATE: EFFECT OF FEEDBACK

Objective: A previous study in New York State showed wide variation in the implementation of guidelines for the appropriate use of sealants in school-based programs. This study analyzed data to determine if feedback improved the ability of the programs to target sealants. *Methods:* A comparative analysis was performed on data collected before and after the intervention designed to promote the appropriate use of sealants. The intervention involved the analysis and reporting of data from each site showing the risk status of children and whether sealants were targeted appropriately. Data collected on 3,530 schoolchildren between the ages of 7 and 9 years from 7 dental sealant program sites were analyzed using SAS to determine whether the sites had targeted sealants to high-risk children. A chi-square test was performed to determine if there was significant difference between percent of children who received sealants and their caries risk status. *Results:* The proportion of children who received sealants ranged from 46.9 percent to 85.6 percent. Three programs had limited the application of sealants to approximately 50 percent of the children. As a result of the intervention, two more sites had a significantly higher proportion of sealants placed in high-risk children as compared to those at lower risk for caries ($P<.05$). *Conclusion:* This analysis shows that regular feedback will help programs to assess their performance and thus enhance the appropriate use of sealants.

21. Deborah Kennedy*, Jayanth V. Kumar, DDS, MPH, Sangeeta Gajendra, BDS, MPH, Bureau of Dental Health, New York State Department of Health, Albany, NY

TOWARD DEVELOPING A COUNTY-SPECIFIC SURVEILLANCE SYSTEM

Objective: A surveillance system has been developed in New York State for monitoring oral health status, risk factors, utilization of dental services and workforce. *Methods:* This system is modeled after the National Oral Health Surveillance System; however, data will be gathered at the county-level. The state will partner with regional offices, local health units, and provider and professional organizations to develop and implement the surveillance system. An advisory committee has selected the following indicators: oral health status in 3rd grade children, monthly fluoride level in water systems, behavioral risk factors in adults, congenital malformations, incidence and mortality related to cancers of the oral cavity and pharynx, utilization of dental services under publicly financed programs and workforce. *Results:* A workshop of 21 key individuals revealed that 95 percent thought the surveillance program was clearly described. Seventy percent indicated that focusing on 3rd grade children was adequate to assess oral health needs. While a majority preferred regular chair and a headlight for data collection, 85 percent wanted to use explorers and 67 percent preferred recording surface-specific caries scores. *Conclusions:* While the program is clearly defined, a majority of workshop participants wanted a more comprehensive data collection system. (Supported by a grant from the Centers for Disease Control and Prevention.)

22. Susan Cote, RDH, MS*, Michelle Henshaw, DDS, MPH, Kathy Lituri, RDH, BS, Boston University School of Dental Medicine; Paul Geltman, MD, MPH, Boston University School of Medicine; Elizabeth Barnett, MD, Boston Medical Center

PROGRAM FOR REFUGEE ORAL HEALTH

Objective: To integrate oral health into the Refugee Health Assessment Program, establish a referral network, and conduct educational seminars for the community outreach educators and medical providers on oral health issues. Data regarding oral health status on the newly arrived refugees were collected for program planning. **Methods:** Oral health assessments were incorporated into the Refugee Health Assessment Program at the Boston Medical Center International Clinic. 492 newly arrived refugees representing 22 countries and 18 languages were screened. Descriptive data was collected including last dental visit, toothbrush use in country of origin, treatment urgency, untreated decay, and gingival index. The indexes were based on the Association of State and Territorial Dental Director's Basic Screening Survey. **Results:** 57 percent of the newly arrived refugees had never been to the dentist, with 12 percent arriving with urgent treatment needed within 24 hours, 67 percent needing early care, and only 21 percent with no obvious problems. 45 percent presented with untreated decay. Gingival index ranged from 9 percent with severe, 47 percent with moderate, 32 percent with mild, and 12 percent with absence of inflammation. 30 percent indicated they did not use a toothbrush in their country of origin. **Conclusion:** Oral health needs assessment provides valuable information for program planning. The Program for Refugee Oral Health is an initiative to integrate oral health into the Massachusetts Department of Public Health Refugee Health Assessment Program through collaboration and serves as a model for other refugee and medical programs to incorporate oral health.

23. Richard A. Abrams, DDS, MPH, MEd*, Curt S. Ayers, DDS, MPH, Division of Public Health, Marquette University School of Dentistry, Milwaukee, WI

DENTAL CARE FOR PRISON INMATES

Objective: To compare prison dental staff's perceptions of the level of dental care that should be provided to inmates. **Methods:** A questionnaire was used to solicit views of all Wisconsin state prison staff dentists ($n=19$), dental hygienists ($n=13$), dental assistants ($n=22$), and nurse managers ($n=14$). Level of dental care was divided into six categories: Emergency Care (Level I), Primary Care (Level II), Secondary Care (Level III), Limited Rehabilitation (Level IV), Rehabilitation (Level V), and Complex Rehabilitation (Level VI). **Results:** The data demonstrated that dentists', hygienists', assistants', and nurses' views differed on the level of dental care to be provided to inmates. 61.1 percent of dentists thought inmates should receive Levels I–III care, while 38.9 percent felt care should be provided at Level IV or higher; 85.7 percent of assistants thought inmates should receive Levels I–III care, and 14.3 percent thought care should be at Level IV or higher. 35.7 percent of hygienists and 50 percent of nurses thought inmates should receive Level I–III care; 64.3 percent of hygienists and 50 percent of nurses felt care should be at Level IV or higher. Analysis by Kruskal-Wallis one-way ANOVA revealed these differences to be significant ($\chi^2=8.6833$; $DF=3$; $P=.0338$). **Conclusions:** Dentists and assistants thought inmates should receive less comprehensive care than did hygienists and nurse managers. The Wisconsin Department of Corrections partially supported this study.

24. Ji-Young Kim, RDH*, In-Soon Park, DDS, Jin-Bom Kim, DDS, MDS, PhD, College of Dentistry, Pusan National University, and Research Institute for Oral Biotechnology, Pusan, Korea

USE OF FLUORIDE-CONTAINING TOOTHPASTE

Objective: The purpose of this study was to survey the using rate fluoride-containing toothpaste. **Methods:** Questionnaires about the use of fluoride-containing toothpaste were distributed to the children of elementary and middle schools and adults in Northern District of Ulsan, Korea. Collected questionnaires from 374 elementary schoolchildren, 505 middle schoolchildren, and 161 adults were analyzed. **Results:** Total number of brands of using toothpastes were 36 and 28 brands of toothpastes contained fluoride. 97.4 percent of subjects used fluoride-

containing toothpastes. The use rate of fluoride-containing toothpaste was 97.9 percent among elementary schoolchildren, 97.2 percent among middle schoolchildren, and 96.9 percent among adults. Among subjects using fluoride-containing toothpaste, SMFP-containing toothpastes were used by 90.0 percent of subjects; NaF, 9.9 percent; combination of SMFP and NaF, 0.1 percent. **Conclusions:** The use rate of fluoride-containing toothpaste is assessed to be considerably high and we expect the high use of fluoride-containing toothpastes will contribute to the prevention of dental caries.

25. Woosung Sohn, DDS, DrPH*, Amid I. Ismail, BDS, DrPH, Robert F. Belli, PhD, University of Michigan, Ann Arbor, MI

FLUORIDE SUPPLEMENTS PRESCRIPTION OF FAMILY PHYSICIANS AND PEDIATRICIANS IN THE UNITED STATES

Objectives: To assess family physicians' (FPs) and pediatricians' (PDs) fluoride supplement prescription practices to infants and toddlers, barriers, and the information considered before prescribing. **Methods:** A questionnaire that includes questions on practice behavior, attitude, information, barriers related to F supplement prescription, and demographic and practice characteristics was developed and pretested. Simple random samples of 1,500 FPs and 1,000 PDs were selected from the AMA Physician Masterfile. The questionnaires were mailed 4 times along with 2 reminders. **Results:** Of 1,439 eligible FPs, 622 answered (43.2%). Of 957 eligible PDs, 493 answered (51.5%). Over 95 percent of physicians answered that they should screen children for dental problems. About 78 percent of FPs and 84 percent of PDs prescribed F supplements. Over 95 percent of the physicians answered that they consider the F concentration in the drinking water before prescribing supplements, and 70 percent perceived finding the F concentration is a barrier. Before prescribing, around 35 percent of the physicians don't consider F toothpaste use and over 50 percent don't assess dental caries risk. **Conclusions:** F supplements are prescribed by a large majority of responding physicians, but not necessarily properly considering risk of dental caries or dental fluorosis. Information on F concentration in the drinking water (e.g., tap and bottled) should be readily available. Targeted education regarding F supplements with proper checking of various F sources and oral screening should be provided to the physicians.

26. Kishore Shetty, DDS*, Janet Leigh, DMD, Section of Infectious Diseases/Department of General Dentistry, Louisiana State University Health Sciences Center, New Orleans, LA

EFFECTIVENESS OF ANTIFUNGAL DRUGS FOR THE PREVENTION AND TREATMENT OF OROPHARYNGEAL CANDIDIASIS IN HIV-POSITIVE PATIENTS

Objective: Oropharyngeal candidiasis (OPC) is the most common oral opportunistic infection in HIV disease. Over 90 percent of patients with AIDS develop OPC during the course of their illness. Despite the overall decrease in the prevalence of OPC since the advent of multi-antiretroviral drug therapy, the longer life expectancy might be associated with increasing number of episodes in susceptible individuals. A systematic review was designed to evaluate the effectiveness of antifungal drugs (flucanazole, clotrimazole, itraconazole, amphotericin B, ketoconazole, nystatin) for the prevention and treatment of oropharyngeal candidiasis in HIV-positive patients. **Methods:** A protocol was developed outlining methods for reviewing all prospective and retrospective studies published between 1966 and 2001. A detailed automated search of two databases—MEDLINE and EMBASE—was conducted. Contents of the Cochrane Collaboration Library were also manually reviewed. **Results:** Fluconazole and itraconazole are more effective in managing oropharyngeal candidiasis than are nystatin or clotrimazole, particularly when mycological response rates and relapse rates are taken into account. Routine primary prophylaxis is not recommended, however, because of the effectiveness of therapy for acute disease, the low mortality associated with mucosal candidiasis, the possibility of drug interactions, and the cost. **Conclusions:** Future studies are warranted to assess the cost effectiveness of various antifungal drugs for the treatment of OPC.

27. LT Samira Meymand*, DDS, MPH, US Naval Hospital Camp Pendleton, CA; Becky DeSpain Eden, BSDH, MEd, Baylor College of Dentistry, Texas

A&M System Health Science Center, Dallas, TX

ORAL CANCER KNOWLEDGE, ATTITUDES, AND PRACTICES OF STUDENTS IN AN OSTEOPATHIC MEDICINE PROGRAM

Objective: The purpose of this study was to assess osteopathic medical students' knowledge, attitudes, and clinical practices related to oral cancer and oral cancer prevention. **Methods:** Following a pilot test, a 31-item questionnaire was administered to volunteers during class sessions or group meetings. The 176 returned surveys represented a response rate of approximately 53 percent. We tabulated the data and computed descriptive statistics for the group. **Results:** Although 90 percent of the respondents agreed that oral cancer screening is important and that patients appreciate the service, only 34 percent agreed that they had sufficient skill to perform an oral cancer examination. Of those participating in clinical rotations, 63 percent reported routine examination of the mouth during patient assessment. Nearly all (97%) ask patients about tobacco and alcohol use, but only 20 percent asked about dental visits. For knowledge variables, the majority did not identify the most common site of oral cancer, the site with the poorest survival rate or age, and racial groups at highest risk. While 76 percent agreed that oral cancer is among the most common cancers in the US, 66 percent did not know that the survival rate is one of the poorest. **Conclusions:** These findings indicate the need to evaluate and supplement oral cancer information and risk assessment in this undergraduate medical curriculum.

28. Joanne B. Clovis, PhD*, Dalhousie University, Nova Scotia, Canada; Alice M. Horowitz, PhD, NIDCR/NIH, Bethesda, MD; Dale H. Poel, PhD, Dalhousie University, Nova Scotia, Canada

CANADIAN DENTISTS' AND DENTAL HYGIENISTS' KNOWLEDGE AND PRACTICES: ORAL CANCERS

Objective: The purpose of this study was to determine dentists' (D) and dental hygienists' (DH) knowledge, opinions, and practices about oral cancer (OC) in British Columbia (BC) and Nova Scotia (NS). **Methods:** In February 1998, a pretested, 41-item survey was mailed to random samples of D and DH in BC and the populations of both in NS. A reminder postcard and one additional mailing were sent to nonrespondents. SPSS software was used to analyze 1,276 usable responses (RR=61% overall, 55% D, 77% DH). **Results:** 57 percent of D and 39 percent of DH agreed that their knowledge was current. Most correctly identified tobacco use (99.1%) and alcohol use (91.2%) as real risk factors, but only 35.4 percent identified both erythroplakia and leukoplakia as the conditions most likely associated with OC. Differences between D and DH mean knowledge scores on 16 risk items and 14 diagnostic items were significant ($P<.001$). Although there were significant differences between D and DH on 7 risk and 10 diagnostic items ($P<.01$), only 6 items showed a moderately strong association between type of respondent and item of knowledge (Cramer's $V \geq 2$ and ≤ 3). Oral cancer examination (OCE) was performed by 69 percent of D and 42 percent of DH at 100 percent of initial appointments for patients >40 years of age. One-fifth of D and one-third of DH felt they were not trained to provide OCE. Most D (77%) and DH (92%) were interested in taking C.E. courses. **Conclusions:** Although their OCE practices were different, patterns of DH knowledge regarding oral cancer were notably similar to D knowledge. Educational interventions are indicated to increase both D and DH knowledge of oral cancer risk and diagnostic factors and early detection practices.

29. Alice M. Horowitz, PhD*, Thomas F. Drury, PhD, Maria T. Canto, DDS, MPH, Division of Population and Health Promotion Sciences, NIDCR, NIH, Bethesda, MD

RACE, RACE-ETHNICITY, SES, AND ORAL CANCER EXAMINATIONS

Having an oral cancer examination in the past 12 months (OCE₁₂) is positively associated with levels of educational attainment, annual family income, and overall socioeconomic status (SES). **Objective:** The purpose of this study was to clarify the extent to which race and race-ethnicity might modify these associations. **Methods:** Weighted data from the 1998 National Health Interview Survey for 18,600+ persons 40+ years of age on OCE₁₂ was analyzed using SUDAAN by education, income, and overall SES according to race and race-ethnicity. Tabular analysis techniques were used and evaluated statistically through mul-

tiple comparisons at an alpha level of 0.01. **Results:** Education, income, and overall SES were positively associated overall with OCE₁₂ among whites and white non-Hispanics, as well as among blacks, black non-Hispanics, and Hispanics (P -values $<.01$). But whereas there were clear gradients in OCE₁₂ among whites and white non-Hispanics by these variables, there were no clear gradients among blacks, black non-Hispanics, or Hispanics. **Conclusions:** The reasons for these conditional racial and racial-ethnic relations are unclear and raise issues that need to be researched if public health interventions based on socioeconomic strategies are to be effectively used among adult Hispanic and black populations.

30. Monica A. Fisher, DDS, MS, MPH, PhD*, Jerry E. Bouquot, DDS, MSD, Department of Community Medicine, West Virginia University, Morgantown, WV

ASSESSMENT OF RISK FACTORS FOR ORAL LEUKOPLAKIA

Recently, oral pathologists noted an increase in oral leukoplakia in patients with none of the traditional risk factors (smoking and alcohol). **Objective:** To evaluate the risk factors associated with oral leukoplakia in West Virginians. **Methods:** A case control study was conducted in West Virginia. The association between oral leukoplakia and use of smokeless tobacco, cigarettes, alcohol, oral prosthesis, and Viadent was evaluated. Cases ($n=165$) diagnosed with oral leukoplakia and controls ($n=160$) diagnosed with periapical cysts were identified through the Maxillofacial Center for Diagnostics & Research, Morgantown, WV, Biopsy Service. Cases and controls completed a self-administered questionnaire about demographic and risk factors for oral leukoplakia. **Results:** Thus far, 71 cases and 53 controls completed questionnaires, with 52.8 percent of the cases and 21.1 percent of the controls using smokeless tobacco. Individuals using smokeless tobacco were 4.18 (95% CI=1.63, 10.74) times more likely to have oral leukoplakia than those not using smokeless tobacco. After controlling simultaneously for age, sex, use of cigarettes, alcohol, oral prosthesis, and Viadent, individuals using smokeless tobacco were 4.46 (95% CI=1.24, 16.00) times more likely to have oral leukoplakia than those not using smokeless tobacco. **Conclusions:** Smokeless tobacco use was a risk factor for oral leukoplakia in this study.

31. John J. Warren, DDS, MS*, Barbara Broffitt, MS, Steven M. Levy, DDS, MPH, Michael J. Kanellis, DDS, MS, Rebecca L. Slayton, DDS, PhD, University of Iowa, Iowa City, IA

ORAL HEALTH BEHAVIORS IN HIGH AND LOW SES FAMILIES

Objective: Numerous studies have documented higher dental caries prevalence and severity among children from lower socioeconomic (SES) groups. However, relatively few studies have attempted to identify differences in oral health behaviors between lower SES families and others. This paper compares patterns of oral health behaviors between low and high SES families participating in the Iowa Fluoride Study. **Methods:** Oral health behaviors included toothbrushing frequency, use of fluoride toothpaste, and juice and soft drink consumption collected longitudinally at periodic intervals from 6 weeks to 54 months of age. Classification of low SES ($n=103$) and high SES ($n=150$) children were based on baseline family income and maternal education levels. **Results:** At age 4-5 years, low SES children had 2.3 surfaces of decay experience compared to 0.9 for the high SES group ($P<.001$). There were virtually no differences between groups in toothbrushing frequency, or in mean amount of fluoride dentifrice used at any time point. However, low SES children consistently had significantly greater soft drink consumption, particularly powdered beverage consumption (e.g., Kool-Aid), with often dramatic differences between groups. **Conclusions:** Results suggest that dietary beverage consumption patterns may in part explain differences in caries experience between lower SES children and others. (Supported by NIH grants RO1-DE09551, RO1-DE12101, P30-DE10126, and CRC-RR00059.)

32. Olusegun K. Alonge, BDS, MS, MPH*, Martin Hobdell, BDS, PhD, Sena Narendran, BDS, DDPH, MSc, University of Texas Health Science Center at Houston, Dental Branch, Houston, TX

DENTAL CARIES EXPERIENCE AMONG NIGERIAN IMMIGRANTS TO THE US—PRELIMINARY FINDINGS

The purpose of the study was to investigate the dental caries status

among recent immigrants from Nigeria. A cross-sectional study assessed the dental caries experience among 93 adult volunteers from Nigeria, recruited from African churches in Houston, Texas. The sample consisted of 47 males and 46 females, aged 17 to 70 years old, with a mean age of 37 years. Two trained examiners using World Health Organization's criteria examined the subjects utilizing portable dental chair, light, mouth mirror, and explorer. Caries experience was measured using DMFT and DMFS indices. More than 40 percent were caries free, while 59 percent had one or more DMFT. While the DMFT ranged from 0–25, DMFS ranged from 0–90. The mean DMFT and DMFS scores were 3.13 ± 4.4 and 8.16 ± 14.9 , respectively. While the mean DMFT score was significantly higher among females compared to males (4.11 vs 2.17 , $P=.035$), the DMFS scores were not. The major component of the DMFT score was decay (76%), indicating a high level of untreated dental caries among those with caries in this population. Only 3 percent needed sealants, 35 percent needed at least one surface restoration, and 23 percent needed at least one two-surface restoration. Some 14 percent needed at least one bridge to replace missing teeth. The findings from this study confirm that dental caries is only concentrated in a relatively small proportion of respondents, with the decayed component contributing most of the DMFT and DMFS scores. Results are comparable to the national sample of African-American adults (18–64 years) whose prevalence of untreated caries was 48 percent.

33. Gustavo D. Cruz, DMD, MPH*, Diana L. Galvis-Mercado, RDH MS, Farhanah D. Khan, BS, Mary Tavares, DMD, MPH, Racquel Z. LeGeros, PhD, NYU College of Dentistry, New York, and Forsyth Dental Center, Boston, MA

PREDICTORS OF DFS AND UNMET NEED OF HISPANIC IMMIGRANTS IN NEW YORK CITY

Objectives: The aim of this study was to compare the predictors of dental caries experience and unmet needs of three subgroups of Hispanic immigrants residing in New York City. **Methods:** A purposive sample of 592 adults [225 Dominicans (D); 249 Mexican and Central Americans (CA); 118 South Americans (SA)] was obtained through community outreach activities during 1998–2000. Clinical examinations were performed by calibrated examiners, according to NIDCR criteria. A comprehensive survey was also administered to the participants in both English and Spanish. **Results:** The mean DMFS per group was as follows: D=28.78, CA=29.12, and SA=43.47. The mean DFS was D=13.23, CA=12.18, SA=20.86. The mean %D/DFS was as follows: D=10 percent, CA=19 percent, SA=6 percent. Twenty-four percent of Dominicans, 38 percent of Mexicans and Central Americans, and 31 percent of South Americans had at least one decayed tooth. The mean number of missing teeth was D=2.95, CA=3.21, and SA=4.10. When age, sex, education, income, place of birth, regular source of dental care, and presence of dental insurance were entered into a multivariate model, there was no difference in the predictors of DFS, with age being the common predictor of DFS. Differences in predictors of %D/DFS were observed between the subgroups. **Conclusions:** Results indicate the need for further research on the dental caries experience and access to care oral health care among subgroups of Hispanics in the USA. Supported by NIDCR grant no DE10593-S1 (NYUCD/Forsyth).

34. Robert Weyant, DMD, DrPH*, Mike Manz, DMD, Patricia Corby, DMD, University of Pittsburgh, PA

AREA EFFECTS ON ORAL HEALTH STATUS: APPALACHIAN RESIDENCE AND FAMILY INCOME

Background: This study examines social (ecological) or area effects on oral health. **Methods:** Data were used from the Pennsylvania oral health needs assessment of public schoolchildren in grades 1, 3, 9, and 11. Variations in residence (Appalachia vs non-Appalachia) and family income were assessed to determine their role in children's oral health and health-related behaviors. **Results:** Data from 828 Appalachian children and 423 non-Appalachian children were compared with respect to oral health status. Appalachian children had significantly higher decay rates and more missing teeth than their non-Appalachian counterparts when controlling for age, race, income, and rurality. In both groups family income (independent of race) was the strongest predictor of untreated dental decay. Moreover, children in the poorest families were 3.8 times more likely to rate their oral health as "poor" than were

children in more affluent families. **Conclusion:** These findings suggest that there is an "area" effect to Appalachian residence that places children at higher risk for oral disease. Additionally, within areas, family-level income is the strongest predictor of oral health status.

35. Warren LeMay, DDS, MPH*, Division of Public Health, Wisconsin; César González, DDS, MS, Marquette University School of Dentistry, Milwaukee, WI

CARIES PREVALENCE TRENDS AMONG CHILDREN IN THE REPUBLIC OF GEORGIA

Objectives: To determine and compare the prevalence and severity of dental caries in rural and urban schoolchildren in the Republic of Georgia, and to design an appropriate preventive program to address oral health needs. **Methods:** Two hundred schoolchildren in rural Dusheti and Mtskheta were examined in October 2000 and 199 schoolchildren in urban Tbilisi were examined in May 2001. The children were aged 7–8 and 12–13 years. One calibrated dentist conducted visual-tactile examinations following WHO protocol using natural light and dental explorers. Caries were diagnosed at the cavitation level. **Results:** Ninety-one rural children (91%) aged 7–8 years were diagnosed with caries in their primary teeth with a mean dmft of 6.76 ± 4.07 (mean dt= 5.98 ± 3.87). Eighty-five urban children (86%) aged 7–8 years were diagnosed with caries in their primary teeth with a mean dmft of 5.54 ± 3.50 (mean dt= 4.19 ± 2.88). Ninety-five rural children (94%) aged 12–13 years were diagnosed with caries in their permanent teeth with a mean DMFT of 4.37 ± 2.89 (mean DT= 4.08 ± 2.72). Sixty urban children (68%) aged 12–13 years were diagnosed with caries in their permanent teeth with a mean DMFT of 3.57 ± 2.62 (mean DT= 2.44 ± 1.97). **Conclusions:** Rural children exhibited a higher prevalence of caries than urban children. Few teeth had been restored in both rural and urban areas. Appropriate interventions should include both prevention of new carious lesions and treatment of teeth already affected.

36. Ohnmar Tut, BDS*, Department of Primary Health Care, Majuro, Republic of the Marshall Islands; Peter Milgrom, DDS, Department of Dental Public Health Sciences, University of Washington, Seattle, WA

PREVALENCE OF EARLY CHILDHOOD CARIES IN MAJURO, REPUBLIC OF THE MARSHALL ISLANDS

Objective: The purpose of this study was to establish the prevalence of early childhood caries in children at 18 to 30 months and 60 months old to establish a baseline for assessing future public health prevention efforts. Majuro is the capital of RMI, with a population of about 26,000. 61 percent of the population is under age 20. **Methods:** 100 children were selected from the first age group from 10 districts; 180 children were selected from the second age group from Head Start Centers in 4 districts for examination in order to characterize children living on the atoll. The children were examined visually using a mirror and ambient light using WHO criteria. A single examiner was trained using photos depicting the WHO system. **Results:** The proportions of children at 18–30 months and 60 months with ECC were 50 percent and 91.66 percent, respectively. The average def teeth were 1.46 and 6.39, with a range from 0 to 10 and 0 to 20. Most children had had no dental treatment. The average ratios of d/def were 1 and 0.96. **Conclusion:** Majuro children have an unacceptably high level of ECC and efforts are needed to address this major public health problem.

37. Britt C. Reid, DDS, PhD*, Department of Oral Health Care Delivery, University of Maryland School of Dentistry, Baltimore, MD; Jeffrey Hyman, DDS, PhD, National Institute for Dental and Craniofacial Research, Bethesda, MD

DETERMINANTS OF PERCEIVED NEED FOR PERIODONTAL TREATMENT

Objective: To assess the perceived need for treatment among persons with clinically assessed periodontal disease. **Methods:** Data were drawn from the National Health and Nutrition Examination Survey 1988–94 (NHANES III), a nationally representative cross-sectional survey of the noninstitutionalized US population. The study was limited to persons aged 20 years or older who answered the questionnaire and had a periodontal examination ($n=12,713$). STATA version 7.0 statistical software, which accounts for the complex sample design of NHANES III, was used for all analyses. Analyses were stratified by age due to

interaction. **Results:** Individuals were more likely to perceive a need for some type of treatment (gum treatment, extractions, or both) as the severity of their attachment loss increased. However, at least half of all persons with mean attachment loss of 3 mm or more perceived no need for any treatment. Persons aged 20–49 years were more likely to perceive a need for treatment compared to those aged 50 or more years. **Conclusion:** Younger adults were more likely than older adults to perceive a need for periodontal treatment, yet a large majority of all adults perceived no need for any treatment despite clinical evidence of attachment loss.

38. T. F. Drury, PhD*, NIDCR/NIH, MD; P. Siriphand, DDS, PhD, Thammasat University, Thailand

GINGIVITIS, ATTACHMENT LOSS, AND ORAL HEALTH-RELATED QUALITY OF LIFE

Objective: The purposes of this study were to describe the associations between disparities in gingivitis (G) and LOA and oral health-related QOL, and to assess the extent that any of these associations might be explained by age, sex, race-ethnicity, and SES. **Methods:** Weighted NHANES III data for 13,500+ dentate adults 18+ years were analyzed using SUDAAN. Gingivitis was indicated by the presence of 1+ bleeding gum sites; LOA, by the presence of 1+ periodontal probing sites ≥ 4 mm in a random half-mouth sample; and by the presence of advanced LOA (at least two sites of LOA ≥ 4 mm or at least one site of LOA ≥ 6 mm); OH-RQOL, by the perception of one's natural teeth as either excellent or very good; and SES, by a summated score based on annual family income and level of education. Tabular and logistic regression analysis techniques were used. **Results:** Persons with G were 1.6 times less likely than persons without G to assess the condition of their natural teeth as excellent or very good (25.3 vs 35.8%). Persons with LOA ≥ 4 mm were 2.8 times less likely than those without LOA ≥ 4 mm to have an excellent or very good perception of their natural teeth (16.3% vs 34.9%). Persons with advanced LOA were 2.9 times less likely than those without advanced LOA to have such a favorable perception (14.6% vs 33.3%). When the analysis for each of these three disease indicators was adjusted for age, sex, race-ethnicity, and SES, adults with G still were 1.6 times less likely, and those with either LOA ≥ 4 mm or advanced LOA still were 2.1 times less likely, to perceive the condition of their natural teeth as excellent or very good compared to the reference population (all pairwise comparisons= $P<.0001$). **Conclusion:** Among US dentate adults, disparities in G and attachment loss were inversely associated with OH-RQOL, even with age, sex, race-ethnicity, and SES taken into account.

39. George W. Taylor, DMD, DrPH*, Marilyn Woolfolk, DDS, MPH, Luisa N. Borrell, DDS, PhD, Wenche S. Borgnakke, DDS, PhD, Linda V. Nyquist, PhD, University of Michigan School of Dentistry, Ann Arbor, MI, and Mailman School of Public Health, Columbia University, New York, NY

OBSERVED RACIAL DIFFERENCES IN DENTAL TREATMENT PATTERNS

Objective: The purpose of this study is to describe racial differentials in the pattern of restorative and prosthetic dental treatment observed in a representative sample of adults in the Detroit tricounty area. **Methods:** Subjects were from a disproportionate probability sample of community-dwelling adults, aged 18–93 years, in the Detroit tricounty area. Data collection included a face-to-face interview and in-home dental examinations using modified NIDCR criteria. Subjects were dentate and reported themselves as non-Hispanic whites ($n=198$) or African Americans ($n=232$). **Results:** A greater proportion of African Americans had 1+ decayed teeth than whites (56% vs 25%; $P<.01$) and 1+ missing anterior teeth (28% vs 16%; $P=.04$). A greater proportion of whites had 1+ teeth restored (93% vs 80%; $P<.01$) and 1+ amalgams, composite, and cast restorations placed, but not temporary restorations. There was little difference in the proportion of African Americans and whites with 1+ missing teeth replaced (29% vs 25%); however, 1+ fixed prostheses were more prevalent in whites (18% vs 10%; $P=.13$) and 1+ removable prostheses were more prevalent in African Americans (21% vs 9%; $P=.02$). **Conclusion:** These results identify racial differences in types of restorative and prosthetic dental treatment received within the context of greater treatment needs for AA. (Supported by NIDR grant #DE10145 and the University of Michigan Rackham Spring/Summer

Research Partnership Grant.)

40. Donald Sadowsky, DDS, MPH, PhD*, Kavita P. Ahluwalia, DDS, MPH, David A. Albert, DDS, MPH, Division of Community Health, Columbia University, School of Dental and Oral Surgery, NY

ADDRESSING TOBACCO IN MANAGED CARE

Objective: To assess the tobacco cessation knowledge, attitudes, and behaviors of dentists participating in a large managed care dental plan (DMO). **Methods:** Data were obtained via mail survey of a sample of dentists with 300 or more DMO patients. Potential respondents received a 29-item questionnaire and a stamped self-addressed envelope. Seventy-five of 355 eligible offices responded. Proportions of dentists reporting behaviors related to advice, prescription of NRT, and discussion of setting specific quit dates were calculated, as were correlations between key variables. **Results:** Only 3 percent of offices utilized a dental hygienist for tobacco cessation counseling. Fewer than one-fifth of dentists asked most of their adult patients about tobacco use. Fewer than 10 percent advised smokers about nicotine replacement therapy. Five percent of dentists reported that helping smokers set a quit date was part of their regular activities. Average time spent counseling patients about tobacco cessation had the highest correlation (.635) with dentists' perceived success in helping patients to quit using tobacco. **Conclusions:** Barriers to acceptance of the dentists' role in tobacco cessation are substantial—dentists' knowledge about cessation interventions is low and from dental school onward is lacking. (The RWJ Grant #036025.)

41. Richard J. Hastreiter, DDS, MPH*, Peilei Jiang, MS, MS, PhD, Delta Dental Plan of Minnesota, Eagan, MN

TRENDS IN THE USE OF RESTORATIVE SERVICES OVER A FIVE-YEAR PERIOD

Objective: To determine utilization trends in restorative services over a five-year period. **Methods:** Standard descriptive statistical methods were used to retrospectively analyze and compare basic and major restorative services use among commercially insured patients. **Results:** A major finding of "Oral Health in America: A Report of the Surgeon General" is a lack of oral health services research. This study assists in addressing this deficiency. From January 1996 to October 2001, 2.7 million restorative services were provided to .7 million persons: 54 percent female, 46 percent male. 53 percent of these services were provided to females, 47 percent to males. Mean patient age was 37 years. Total provider reimbursement was \$381.4 million, \$545/patient. 40 percent (1.1 million) of restorative services were amalgams; 21 percent (.6 million) anterior composites; 23 percent (.6 million) posterior composites; 2 percent (58,000) anterior crowns; and 15 percent (404,000) posterior crowns. Age was a significant variable in the differential utilization of various restorative services. In general, utilization of amalgams decreased significantly, posterior composites increased significantly, and anterior composites and anterior and posterior crowns were unchanged. **Conclusion:** Significant changes in utilization patterns of restorative services among commercially insured individuals have occurred. Differences and similarities among service trends will be discussed.

42. Mark D. Macek, DDS, DrPH*, Department of Oral Health Care Delivery, University of Maryland Dental School, Baltimore, MD; Eugenio D. Beltrán-Aguilar, DMD, DrPH, Division of Oral Health, CDC, Atlanta, GA; Dolores M. Malvitz, DrPH, Division of Oral Health, CDC, Atlanta, GA

LACK OF PRIVATE DENTAL INSURANCE AMONG US ADULTS, 1999

Objective: Lack of private dental insurance is associated with poor access to oral health care services and lower utilization. This study used the most current national data to describe lack of private dental insurance (PDI) among US adults. **Methods:** The data source ($n=29,844$) was the 1999 National Health Interview Survey. Covariates included age, sex, race/ethnicity, region, and poverty status. We used full sample weights and SUDAAN to derive descriptive estimates and standard errors. **Results:** Approximately 123.8 million (64.1 percent) adults aged 18 years or older lacked PDI. According to multivariate analysis, older adults were significantly more likely to lack PDI than were younger adults, Hispanics were significantly more likely to lack PDI than were

both non-Hispanic whites and non-Hispanic blacks, poor adults were significantly more likely to lack PDI than were nonpoor and near-poor adults, and persons residing in the West were significantly more likely to lack PDI than were those residing in the Midwest. *Conclusions:* Lack of PDI is associated with a number of demographic and socioeconomic status factors. Programs to address the oral health care needs of adults should take these factors into consideration.

43. A. Mira, BDS, MSC, DScD*, M. Doherty, DMD, G. Shostak, MPH, M. Henshaw, DDS, MPH, Boston University School of Dental Medicine, Boston University, Boston, MA

EFFECT OF ORAL HYGIENE EDUCATION ON ADOLESCENTS SERVED BY CAMOHS

Objective: To evaluate the effect of personal oral hygiene instructions on adolescents in the Commonwealth's Department of Youth Services who are served by the Commonwealth Adolescents Mobile Oral Health Services (CAMOHS) program. *Methods:* An oral hygiene education program was incorporated into an existing mobile dental treatment program. The education program consisted of oral hygiene education, an oral exam, and a self-administered pre- and postquestionnaire assessing oral health knowledge, behavior, and quality of life. The treating dentists in the CAMOHS program were utilized to record both DMFT and OHI-S indices, as well as give personal oral hygiene instructions. A three-week follow-up was conducted that included administration of the postquestionnaire and performing an oral exam to record OHI-S. All charts of patients who participated in the oral hygiene program were reviewed ($n=341$). Only individuals who had a minimum of two visits, between December 2000 and March 2001, were included in the sample. *Results:* Of the total sample ($n=198$), 78.8 percent were males with a mean age of 15.9, and 21.2 percent were females with a mean age of 15.4. One-third of the adolescents had oral health problems that affected their quality of life. Analysis of the pre- and post-questionnaires showed a change in oral health knowledge of 20–50 percent. Although there was no change in behavior or attitude, there was a significant reduction in plaque scores, which might reflect a change in the method of brushing. *Conclusion:* The Mobile Dental Program was an effective mechanism to deliver oral health education to the adolescents of the Commonwealth Department of Youth Services.

44. Maria C. P. Saraiva, DDS, PhD*, Department of Epidemiology, University of Michigan

LEAD EXPOSURE AND PERIODONTITIS—A CROSS-SECTIONAL EVALUATION

Objective: To test the hypothesis of an association between lead blood levels (PbB) and periodontitis. *Methods:* The associations between PbB and extent and severity of periodontitis was investigated using logistic regression in individuals from 20 to 55 years old ($n=8,801$) from the Third Health and Nutrition Examination Survey (1988–94). *Results:* After adjusting for several confounders, the ORs for extent of periodontitis comparing individuals with high (>7 mg/dL) and moderate levels of PbB (3–7 mg/dL) with those with low levels of PbB (<3 mg/dL) were, respectively, 1.72 (95% CI=1.02, 2.91) and 2.57 (95% CI=1.32, 5.01). For severity of periodontitis the ORs were, respectively, 1.63 (95% CI=0.93, 1.78) and 2.56 (95% CI=1.35, 2.48). These findings should be interpreted with caution because this is a cross-sectional study in which causality cannot be inferred; PbB is strongly associated with socioeconomic factors (SES); the constant decline of lead exposure in the United States might be turning PbB into a marker of individuals who live in a compromised environment; and we cannot conclude that periodontitis was associated with low levels of PbB because in 1976, 82 percent of the US population had >10 mg/dL of PbB. *Conclusion:* this study showed a positive statistical association between PbB and periodontitis. However, further studies are necessary to confirm the results and to elucidate the role of SES factors and living in a poor neighborhood in this association.

45. Jonathan D. Shenkin, DDS, MPH*, Albert Kingman, PhD, Robert H. Selwitz, DDS, MPH, Richard Oldakowski, National Institute of Dental and Craniofacial Research, NIH, Bethesda, MD [*Present address: University of Iowa, Department of Pediatric Dentistry, Iowa City, IA]

DISPARITIES IN THE UTILIZATION OF DENTAL MEDICAID SERVICES BY CHILDREN WITH SPECIAL HEALTH CARE NEEDS IN ALASKA: A STATE MODEL

Objective: To develop a state model to analyze the utilization of dental Medicaid services by children with special health care needs. *Methods:* Medicaid databases (claims and eligibility files) from the state of Alaska were attained (August 1996 to May 2000). The files were linked and analyzed using SAS 6.12. Data on 40,579 Medicaid-only (Med) children and 637 children with Supplemental Security Income (SSI) benefits, along with 416,101 dental claims were analyzed. Children were divided into four groups based on race and eligibility (Med-Caucasian, Med-Native Alaskan, SSI-Caucasian, and SSI-Native Alaskan). Utilization rates were determined for four age groups (<5 , 5–8, 9–12, and 13+ years) in four treatment categories (diagnostic, preventive, restorative, surgical). *Results:* SSI-Native Alaskan children's overall utilization of dental services was significantly lower than the other groups (3.86 vs 4.80 procedures per year for SSI-Native Alaskan vs SSI-Caucasian 9–12-year-olds). SSI-Caucasian children always received less care than Med-Caucasian children, with the greatest disparity in the 5–8-year-old age group (3.34 vs 4.53 procedures per year of eligibility). *Conclusion:* Native Alaskan and SSI children received less dental care than Caucasian and non-SSI children.

46. Sangeeta Wadhawan, BDS, MPH, Bureau of Dental Health, New York State Department of Health, Albany, NY

EARLY CHILDHOOD CARIES RELATED VISITS TO HOSPITALS FOR AMBULATORY SURGERY IN NEW YORK STATE

Objectives: The objective of this study was to assess the utilization of ambulatory surgery at hospitals for the treatment of early childhood caries in New York State. *Methods:* Data for this study came from the Statewide Planning and Research Cooperative System in New York State. We analyzed 16,149 oral health-related ambulatory surgeries performed between 1996 and 1999 in children under 6 years of age. *Results:* Approximately two-thirds of the visits by children under 6 years old were due to dental caries. The most frequent type of procedure performed was placement of stainless steel crowns. Medicaid was the primary source of reimbursement. General anesthesia was administered by an anesthesiologist in approximately half of the ambulatory surgeries. *Conclusion:* These data illustrate that, although dental caries is preventable, it continues to be a significant problem in young children and results in a large number of ambulatory surgery visits.

47. Mahyar Mofidi, DMD, MPH*, Thomas R. Konrad, PhD, Deborah S. Porterfield, MD, MPH, Cecil G. Sheps Center for Health Services Research, University of North Carolina, Chapel Hill, NC; Barbara Wells, PhD, Richard W. Niska, MD, MPH, Bureau of Primary Health Care, Health Resources and Services Administration, Bethesda, MD

PROVISION OF DENTAL CARE TO THE UNDERSERVED BY NATIONAL HEALTH SERVICES CORPS ALUMNI DENTISTS

Objective: This study examined factors associated with dentists continuing to provide care to the underserved populations beyond their National Health Service Corps' (NHSC) obligation period. *Methods:* Self-administered questionnaires were mailed in 1998 to 404 dentists who had completed their service obligation between 1980 and 1997. The outcome variable was dentist self-report of continuing to work with the underserved population past NHSC obligation. Analyses employed multivariate models. *Results:* Among 249 respondents (62% response rate), 46 percent of alumni dentists continued to work with an underserved population. Multivariate analyses found that being an African American (OR=3.2), higher final salary during the NHSC assignment (OR=1.2), and higher altruistic motivation to work with the underserved populations prior to entering NHSC (OR=1.1) were significantly associated with continued service to the underserved populations. *Conclusions:* A small number of factors were associated with alumni NHSC dentists' decisions to continue to provide care for the underserved population. Targeting African-American students and students interested in caring for the underserved and attention to increased salary may improve the long-term commitment of dentists to provide care for the underserved.

48. Asim Al-Ansari, BDS, MScD*, Goldman School of Dental Medicine, Boston University; Myron Allukian, Jr., DDS, MPH, Oral Health, Boston Public Health Commission, Boston, MA

COMPARISON OF THREE QUALITY ASSESSMENT DENTAL RECORD AUDIT INSTRUMENTS IN BOSTON HEALTH CENTER DENTAL PROGRAMS AND THE RELATIONSHIP BETWEEN PATIENT'S AGE AND THE QUALITY OF RECORD KEEPING

Objectives: To evaluate and compare the strengths and weaknesses of three quality assessment dental record audit instruments, and to determine the relationship between the quality of record keeping and the age of the patients in community health center dental programs. **Methods:** Sixty patient records, 30 for adults and 30 for children, were randomly selected for record review from each of four representative health center dental programs in Boston. Adults were defined as patients 23 years of age or older and children were defined as patients 17 years old or younger. Regular dental patients who had at least four dental visits during 1998 and 1999 were included in the study. The records were sequentially audited using three different instruments: the Indian Health Service (IHS), the Dental Plan Performance Measures (DPPM), and the Preferred Provider Organization (PPO) instruments. The instruments were pretested in a program that was not included in the study. The primary investigator was responsible for auditing all records in all four programs to avoid any problems with interexaminer reliability. **Results:** In general, the three record review instruments were easy to use; however, the length of the instrument, time needed to review one record, length of the individual questions, and ease of calculating the scores of quality of record keeping varied. According to the IHS instrument, the scores of children were higher than adults' scores with $P<.05$ in two sections, health questionnaire, exam, and treatment plan, and preventive dentistry, while the score of adults were higher than the children's in the radiographic section, with $P<.05$. According to the PPO, the overall score of 63 percent for the children showed a statistically significant difference ($P=.03$) from the score of 58 percent for the adults. According to the DPPM instrument, disease assessment rate for children and adults varied across the dental programs; it was higher for children in program 2, while it was higher for adults in programs 1 and 4. Receipt of prophylaxis for children in all four programs was generally higher than for adults, ranging from 89 percent to 96 percent for children, compared to 60 percent to 93 percent for adults. **Conclusions:** The three instruments—IHS, PPO, and DPPM—were easy to use, regardless of the differences among them. Evaluating the quality of record keeping using the IHS or the PPO instruments can give fairly similar results. The DPPM instruments can give a general idea about the quality of record keeping, but are more appropriate for effectiveness of patient care and use of services. Children had better record keeping in health questionnaire, exam, and treatment plan, and preventive dentistry sections and adults had better record keeping in the radiographic section.

49. Christine Heng, DDS, MPH*, Federal Bureau of Prisons, Danbury, CT; Victor Badner, DMD, MPH, Department of Dentistry and Social Medicine and Epidemiology, Albert Einstein College of Medicine, Bronx, NY

RELATIONSHIP BETWEEN SMOKING AND DENTAL CARIES AMONG FEMALE INMATES

Background: Cigarette smoking has been linked to a number of oral diseases, particularly oral cancer and lesions, and periodontal diseases. However, its relationship specifically to dental caries has not been well established. **Objective:** The goal of this study is to determine the difference in caries experience between smokers and nonsmokers in the female inmate population at the Federal Correctional Institution in Danbury, Connecticut. **Methods:** Entering inmates into the institution between the period February 14 and April 25, 2001, were recruited into the study ($n=200$; age range=19–62 years). They were given an oral examination and a questionnaire was administered. The SAS software was used to run the bivariate and multivariate analyses. **Results:** There was a high rate of smoking among the inmates (64 percent). In the bivariate analyses, the cumulative consumption of cigarettes was significantly associated with both higher DMFT and DM/DMFT ($r=0.5$ and 0.2 ; $P<.0001$ and $.01$, respectively). Apart from tobacco use, the inmates' perception of the harmful effects of smoking on lung disease

and oral cancer, and importance of brushing and flossing, consumption of coffee or tea, and access to dental care were significantly associated with oral health. In the multivariate analyses, a number of the independent variables remained significant; increased tobacco use was significantly associated with a higher DMFT index. The portions of the variances in the DMFT and DM/DMFT explained were 41 and 20 percent, respectively, using age, country of birth, number of pack-years smoked, access to dental care, consumption of coffee or tea, and perception on oral cancer and flossing as the independent variables. **Conclusion:** While a causative relationship has not been established in this study, cigarette smoking is shown to be associated with poorer oral health. Apart from tobacco use, the other sociobehavioral risk factors for dental caries were access to dental care, consumption of coffee or tea, and perception on oral cancer and flossing.

50. Kari L. Steinbock, RDH, MS, University of Iowa, Iowa City, IA

DESCRIPTIVE EPIDEMIOLOGY OF ORAL AND LIP CANCER IN IOWA, 1973–97

Objectives: The objectives of this study were to determine the incidence and mortality of oral and lip cancer in Iowans during 1973–97. **Methods:** The primary data source for incidence data from 1973–97 was the SEER data system and NCHS for mortality data during the same time period. This study considered lip cancer separately from oral cancer, and all rates are per 100,000 population with the 1970 US standard population used for age-adjusted rates. **Results:** For both sexes and races combined, the overall crude incidence rate of oral cancer increased from 4.5 in 1973–77 to 5.5 from 1993–97. The crude incidence rates for both males and females saw an increase of 7.9 percent for males and 44.8 percent for females. Age-adjusted incidence rates for both sexes combined during the same two time periods remained relatively the same, although males saw a decrease in incidence and females an increase. The age-adjusted mortality rates for both sexes combined went from 2.6 in 1973–77 to 2.1 in 1993–97, male rates decreased from 4.2 to 3.2, and female rates decreased from 1.5 to 1.2. For lip cancer, males had higher incidence than females, although incidence rates among females increased over time, while they decreased among males. **Conclusion:** There was relatively little change in oral cancer incidence or mortality rates during the time of the study period, and were generally similar to those reported in previous studies. However, apparently due to a high number of agricultural workers, incidence rates for lip cancer in Iowa were much higher than has been reported in other states.

51. Jean Yang*, Jillwen Sung*, Michael Ferguson, DMD, Neda Shah-Hosseini, Harvard School of Dental Medicine, Boston, MA

PROJECT BRIDGE: A STUDENT VOLUNTEER INITIATIVE FOR PROVIDING DENTAL CARE TO BOSTON'S RUNAWAY YOUTH

Volunteer-supported community dental clinics are often short of supplies and staff, impeding their ability to run efficiently. Bridge Over Troubled Waters (BOTW), an established organization that provides outreach, counseling, and primary health and dental care services to runaway teens in Boston, has a dental clinic that similarly suffers from these insufficient resources. To aid in the need for dental care among Boston's runaway teens, a pilot student-run collaboration called Project Bridge was started one year ago between Harvard School of Dental Medicine and BOTW. Project Bridge began as a monthly program where fourth year dental students, assisted by dental students junior to them, volunteered in BOTW's dental clinic under faculty supervision. A year after the program's initiation, Project Bridge has become a vehicle for students to exercise their creative capacity in a broad range of fields, including submission of grant proposals and writing letters for commercial contributions and donations, creation of comprehensive education programs designed to teach both BOTW's staff members and teens comprehensive oral health care, and the collection of data on dental needs in a runaway youth population, as well as data on the effectiveness of these educational programs. Specifically, educational programs include preventive oral health care, general dental education, and anti-smoking information. In addition, these student efforts have resulted in outside financial support to fund this initiative into becoming a weekly, rather than monthly, program offering new endodontic and prosthodontic services. Overall, this student volunteer initiative

has not only helped to satisfy the dental needs of runaway teens in Boston, but also served to increase the students' ability to creatively think of solutions to help solve dental needs in the community.

52. Archana Mani, BS*, Tufts University, School of Dental Medicine, Boston; Myron Allukian, Jr., DDS, MPH, Oral Health, Boston Public Health Commission, MA; Kathy Dolan RDH, Med. Tufts Special Needs Community Program, MA

A STUDY OF ORAL HEALTH KNOWLEDGE, ATTITUDES, AND PRACTICES OF PARENTS DEVELOPMENTALLY DISABLED CHILDREN

Objective: To determine the influence of the oral health knowledge, attitudes, and practices (KAP) of parents on the oral health status of developmentally disabled children in Boston. **Methods:** The study consisted of a pretested 23-item KAP questionnaire of the parents of developmentally disabled children and a dental screening of these children to determine the oral health status. The questionnaires were distributed to the 243 children aged 3–17 years for completion by their parents at the three summer camp programs in Boston. Dental screenings were conducted by a dental hygienist using ADA Type 2 classification of 1 to 4, for extent of dental need. The collected data was then summarized and analyzed. **Results:** Of the 243 questionnaires, 97 (40%) were completed and returned. A majority of the children (52.6%) and their parents (54.7%) had last been to the dentist within the last year. However, 25 (26%) children had never been to the dentist and 5 (20%) of their parents had also never been to the dentist or last saw the dentist 5 years ago or more. A majority of the children (68%) and their parents (43.3%) had MassHealth (Medicaid). Of the 108 children screened, 84 (77.8%) were category 1 (no treatment indicated) and 3 (2.8%) were category 4 (emergency treatment needed). 35 (32.4%) of the 108 children screened also had questionnaires completed by their parents. For these children, 30 (85.7%) were in category 1 (no treatment indicated), and 1 (2.9%) was in category 4 (emergency treatment indicated). **Conclusion:** A significant percent (26%) of special needs children have never been to a dentist. Access to dental care for special needs children can be difficult. Parents with a positive attitude, knowledge, and behavior for oral health have children with better oral health status.

53. Arron J. Cleaver*, M. C. Skotowski, Arthur J. Nowak, College of Dentistry, University of Iowa, Iowa City, IA

DENTISTRY THROUGH THE EYES OF A CHILD: A HANDS-ON EXHIBIT AT THE IOWA CHILDREN'S MUSEUM

The Iowa Children's Museum, located at the Coral Ridge Mall in Coralville, Iowa, was opened November 16, 1999. The founders of the museum saw a need in the community for a quality informal educational facility. The goal was to provide parents and caregivers a rich and stimulating environment for the informal learning that takes place in a child's life, as well as to provide a fun, safe place for families to interact and learn together. Since Iowa Children's Museum opened, they have had 200,000 visitors. Many people had commented on the museum having no dental input. The ASDC (American Society of Dentistry for Children) group was looking for activities for dental students to get involved in the community. The two needs fit together as a challenging project for the ASDC group. A committee was formed consisting of Arron Cleaver (D-3) and department faculty members Ms. Cathy Skotowski and Dr. Art Nowak. The committee worked together with museum staff to develop an interactive dental gallery. Funding was provided by the University of Iowa's Department of Pediatric Dentistry and the Iowa Society of Pediatric Dentistry. With the help of volunteers, the dental gallery was constructed. Used chairs were recovered, books and supplies were ordered, the walls were painted, a puppet stage was constructed, and a large mural was painted on one wall. A puppet show was organized with 40 dental students helping with the performances. All of the pediatric dentistry residents assisted in the dental gallery by answering parents' and children's questions. They were also available on days that schools had class trips to the museum during the month of February. There were 5,433 visitors during the month of February. 57,000 visitors have toured the museum since the addition of the dental gallery. We plan to meet with museum administrators to evaluate the success of the gallery and explore possibilities for a larger dental display.

54. Andrew Nguyen, MS*, South Central Care, Los Angeles, CA

SOUTH CENTRAL CARE

Objective: South Central Care is a student-operated, faculty-supervised, pedodontic program dedicated to providing low-cost, comprehensive dental care and education to low-income families residing in underserved areas of Los Angeles. Its objective is to heighten the awareness and promote the importance of oral health to children of disadvantaged socioeconomic background in South Central Los Angeles. **Methods/Program Design:** South Central Care hosts two health fairs annually, in addition to visiting elementary schools in the Inglewood Unified School District to dispense oral hygiene instructions while raising the public's awareness of the importance of oral hygiene. In addition to educating and distributing information, SCC provides parents with the resources and access to seek high-quality, low-cost dental care. Information sheets are given to children who receive oral screenings. Fliers contain information as to the location, dates, and times of operation of the Venice Clinic. **Results:** Since its inception, SCC has provided over 130 oral screenings, and over 800 children were given a toothbrush, toothpaste, floss, and oral hygiene instructions. Twenty-four have received dental care. Of the twenty-four children, two have been referred to the more advanced pediatric facilities at UCLA School of Dentistry. **Conclusions:** Since its inception, SCC has been successful in educating disadvantaged low-income minority groups of the importance of oral hygiene. SCC has demonstrated its unique ability to provide easy access to affordable dental care, and can effectively monitor the success of the programs implemented, ensuring proper utilization of its resources. While in its infancy, SCC has managed to address three fundamental issues: low income, limited access, and lack of education, and is rapidly making strides toward being one of the most original, unique, and innovative health promotion programs.

55. Reza Vahdani, BA*, Nancy Reifel, DDS, MPH, John Yamamoto, DDS, MPH, UCLA School of Dentistry, Los Angeles, CA

GREAT SMILES: UCLA STUDENTS' COMMUNITY OUTREACH PROGRAM

Objective: We established a student organization dedicated to community involvement that will interact with local school representatives as well as community leaders to plan health-oriented events emphasizing preventive measures. **Methods:** Students researched university procedures for establishing a school-sanctioned organization, recruited faculty sponsors, wrote a mission statement, named the organization, and filed the papers. Student members were recruited through e-mail announcements and participation in student information days. Great Smiles meets quarterly to plan events. **Results:** Great Smiles was chartered as a student organization in July 2001. There are 6 elected officers, one from each of the four dental school classes and one from each of the UCLA-affiliated dental hygiene schools, 45 dental students, and 10 dental hygiene students. Great Smiles has organized two events since September 2001 and has three more events planned for the school year. **Conclusions:** We have had a great response from the students and they have been enthusiastic in participating, planning, and organizing the events. The Great Smiles brings students closer together with the community and establishes an environment to work together toward a similar goal: improving oral health in our community by getting involved in community activities.

56. R. Bautista*, E. Oliveira, M. H. Hobdell, N. W. Johnson, University of Texas, Health Science Center at Houston Dental Branch, TX, and GKT Dental Institute, King's College, London, UK

NATIONAL SOCIOECONOMIC STATISTICS AS PREDICTORS OF ORAL CANCER MORTALITY

Objective: To explore the associations between the incidence and mortality rates from oropharyngeal cancer and the national level of socioeconomic development in order to determine whether a country's Human Development Index (HDI) could act as a proxy measure for the prevalence of oral cancer at a level of accuracy suitable for the planning of oral health services. **Methods:** Existing databases were used to explore the associations between national socioeconomic status/development, as defined by seven independent variables, and age-standardized oral cancer incidence and mortality rates. **Results:** Median age standardized oral cancer mortality rates decrease with increasing HDI. Median age

standardized oral cancer incidence rates do not reveal as regular a decrease with increasing HDI as the median age standardized mortality rates. There were significant, but weak to moderate, associations between OCMR and the various socioeconomic status (SES) indicators for males and for females. There were significant, but weak to moderate, associations between oral cancer incidence rates (OCIR) and the various SES indicators for males and for females. Overall, the female data showed more significant associations with the other socioeconomic indicators than did the male data. *Conclusion:* Information obtained from existing vital statistics, including the HDI, appears to merit further investigation as a simple way of predicting incidence of and mortality from oral cancer in a manner suitable for further consideration in determining its position in national oral health policies.

57. Keith E. Heller, DDS, DrPH*, University of Iowa College of Dentistry; Stephen A. Eklund DDS, MHSA, DrPH, University of Michigan School of Public Health

TOOTH SURFACE CHARACTERISTICS OF PERMANENT FIRST MOLARS IN CHILDREN AGED 6-12 YEARS

Objective: To describe the characteristics of sealable surfaces of per-

manent first molars in children aged 6-12 years. Previous analyses showed that few unsealed sound surfaces failed during the study follow-up time (mean=801 days), and that sealant success was highest when placed on questionable or incipient surfaces. *Methods:* 987 children aged 6-12 years were initially examined as part of a sealant clinical trial in a fluoridated low SES area. Descriptive statistics of surfaces 3-L, 3-OM, 3-OD, 14-L, 14-OM, 14-OD, 19-O, 19-B, 30-O, and 30-B were calculated. *Results:* The proportions of sound, questionable, incipient, frank caries, filled, and sealed surfaces at age 6 years were 88.3, 8.4, 2.1, 1.1, 0, and 0.2 percent, respectively. Mean number of sound, questionable, incipient, decayed, filled, and sealed surfaces were 8.7, 0.8, 0.2, 0.1, 0, and 0.3 per child. At age 12 years, the proportions were 86.2, 3.1, 1.7, 2.1, 4.8, and 2.1 percent. The mean number of sound, questionable, incipient, decayed, filled, and sealed surfaces were 8.6, 0.3, 0.2, 0.4, and 0.2 per child. *Conclusions:* Most first molar surfaces in this population were rated as being sound, and therefore had a low likelihood of becoming decayed in the next several years. These findings suggest that a selective use of sealants may be warranted in this population. (Supported by NIDCR grant DE-010616.)