AAPHD 60th Annual Session Abstracts

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EPIDEMIOLOGY OF DENTAL CARIES ALONG THE TEXAS-MEXICO BORDER

The purpose of the study was to investigate the epidemiology of dental caries among a Texas-Mexico border population. The study population consisted of 171 adults, aged 20 and older, with more than 90 percent being Hispanics. Data were collected utilizing the WHO oral health status form. While the prevalence of dental caries was 87.1 percent, the severity/intensity of dental caries ranged from 6.0 DMFT to 13.2 DMFS. Nearly 44 percent of the DMFS score was made up of the F component, averaging 5.8 filled surfaces per person. While the mean number of decayed surfaces was 3.6, the mean number of sound teeth was 20.3. Mean numbers of teeth needing one and two or more surface fillings were 0.9 and 0.4, respectively. More then 0.6 teeth needed caries arresting/sealant care. No statistically significant difference was observed in the dental caries experience between males and females. The study provides some invaluable data on the dental caries experience among a population along the Texas-Mexico border. This study was supported by Oral Health America.

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OROFACIAL INJURIES IN YOUTH SOCCER

The objective of this study was to estimate the incidence of orofacial injuries in children 4 to 12 years of age during two seasons of youth soccer league play. Survey forms requesting orofacial injury, game, and practice information for the fall 1995 and spring 1996 seasons were sent to a census of coaches' teams in eight YMCA clubs in the Dallas metropolitan area. A determination of exposure to risk of orofacial injury during soccer play was made by calculating total time of game play and practice play from the coaches' recollections. The incidence of orofacial injuries was low. In 47,772 hours of games and practice, only 17 orofacial injuries were reported by the 122 coaches. All injuries were to soft tissue and none required professional attention. The reported low incidence of orofacial injury suggests that at the age and skill levels represented by these YMCA teams, soccer appears to be relatively safe to the maxillofacial complex and that mouthguards are a matter of parental and coach preference and not a public health imperative.

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PERIODONTAL DISEASE IN CONTROLLED AND NONCONTROLLED NONINSULIN-DEPENDENT DIABETIC MEXICAN AND EUROPEAN AMERICANS

The Hispanic Health and Nutrition Survey (HHANES) found a higher prevalence of periodontal disease in people with diabetes. Results from studies on the relationship between poor glycemic control and periodontitis are controversial. We examined the relationship between diabetes and destructive periodontal disease in controlled and noncontrolled noninsulin-dependent diabetics from a community-based stratified random sample of 382 Mexican-Americans (MAs) and European Americans (EAs) from San Antonio, TX. Glycosylated hemoglobin levels higher than 8 percent identified the noncontrolled diabetics. The unadjusted odds ratio for severe loss of attachment (LOA≥5mm) in noncontrolled diabetics was 4.0 (95% CI=1.6, 10.0) and in controlled diabetics was 2.6 (95% CI=1.3, 5.4). After adjusting for age, ethnic status, gingival bleeding, subgingival calculus, dental plaque, and DMFT, the odds ratio for LOA in noncontrolled diabetics was 2.5 (95% CI=0.9, 6.7) and in controlled diabetics was 1.5 (95% CI=0.7, 3.6). The decline in ORs after adjusting for other factors was consistent for another measure of periodontitis (Gingivitis Severity Index). Age, sex, and ethnic group showed significant associations with LOA, as did subgingival calculus and percent of teeth with dental plaque. MAs, for example, were 2.2 (95% CI=1.3, 3.5) times more likely than EAs to have destructive periodontitis. These findings suggest that sociodemographic (age, sex, and ethnic group) and oral hygiene indices (subgingival calculus and dental plaque) are more important factors in predicting risk for periodontitis, as opposed to glycemic control, in noninsulin-dependent diabetics.

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THE RISK OF TOOTH LOSS DOES NOT INCREASE WITH AGE

Tooth loss is often perceived by patients to be an inevitable consequence of aging. Rates of tooth loss were examined over an 18-year period among 546 men in the VA Dental Longitudinal Study. The men were medically healthy at baseline 1968-72. Subjects are not VA patients. Oral examinations were performed every 3 years and included number of teeth and measures of oral health (plaque, calculus, tooth mobility, bleeding on probing, decayed and filled teeth) and behavior (alcohol and caffeine intakes, frequency of professional care and toothbrushing, and smoking status). Consecutive 6-year tooth loss rates were computed (number of teeth lost/person-years) for four cohorts of men, those aged 25-39 at baseline (n=98), age 40-49 (n=253), age 50-54 (n=114) or age 55 and older (n=81), and adjusted for oral health and behavioral variables. Adjusted rates for tooth loss did not differ significantly among cohorts. Within each cohort, rates were fairly constant over each 6-year time interval. Variability in the rate of tooth loss was explained by education, smoking status, and the percentages of teeth with: bleeding on probing, mobility greater than 0.5 mm, and 3 or more decayed teeth or filled surfaces. These findings indicate that given similar levels of oral health status, education, and smoking status, an individual over age 55 should experience the same risk of tooth loss as a young adult.

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SURVEY OF SMOKELESS TOBACCO USERS IN BANGALORE, INDIA

Use of smokeless tobacco (ST) is reaching epidemic proportions in India. Few studies have been conducted to determine the behaviors and attitudes of ST users in India. The aim of this study was to learn more about the factors influencing the use of ST. 196 ST users in Bangalore, India, 100 females and 96 males, with a mean age of 39 years (SD=14), were individually interviewed. Preliminary results show that 61 percent had 5th grade or less education, 43 percent were unskilled workers, and they spent a mean of 6.6 percent (SD=4.4) of their monthly income on ST. None of the women smoked or consumed alcohol, though all women used ST. 70 percent of the women interviewed continued to use ST during pregnancy. Among men, 68 percent consumed alcohol, and 31 percent also smoked, while 17 percent of the men had quit smoking. For both men and women, friends (88%) and family (52%) influenced the use of ST. The ST use was attributed to taste (89%), soothing effect (97%), and addiction (40%). Most subjects were quite confident of being able to quit the ST habit, but only 21 percent had tried at least once. Most subjects used ST within 30 minutes after waking (68%), swallowed the juice (83%), and did not quit using ST when ill (64%). They chewed a mean of 22.5 grams (SD=11.2) per day. Awareness of health effects was generally modest. Although 75 percent of the subjects said ST could cause cancer, only 12 percent thought it could lead to death. These results suggest that lack of education could be a cause for high rates of ST use in India. The study was supported in part by Global Health Studies Program, University of Iowa.

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SUBJECT RETENTION IN LONGITUDINAL STUDIES OF THE ELDERLY

The predicted increases in the size of the US elderly population are well known. Increased numbers of elderly, combined with decreases in tooth loss and edentulism, will alter the patterns of disease and treatment need among this population. Longitudinal studies that include elderly populations are necessary to identify potential oral disease risk factors and to estimate future treatment needs. This paper identifies recruitment and retention challenges we have encountered in the implementation of the Iowa Oral Lesion Detection Study, which follows a cohort of elderly participants in the Iowa 65+ Rural Health Study begun in 1981. Mortality is a substantial barrier to follow-up studies among the elderly. 2,220 (60%) of the original cohort (n=3,673) had died prior to the initiation of the current study. So far, we have attempted to contact 519 subjects thought to be alive in 1994; of these, 66 (13%) had died, 95 (18%) had either moved from the area or to an unknown address, 8 percent were in a nursing home, and 16 percent could not be reached by phone. Of the 235 (45%) contacted to date, 56 percent agreed to the in-home examination. Reasons for refusal included: lack of interest or need (28%), too ill (11%), have own DDS (5%). Loss to follow-up and refusals are sources of bias that are difficult to estimate or manage. Supported by NIDR grant DE10758.

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ORAL LEUKOPLAKIA ASSOCIATED WITH THE USE OF SMOKELESS TOBACCO IN AIR FORCE BASIC MILITARY TRAINEES

The prevalence of oral leukoplakia associated with use of smokeless tobacco (ST), a risk factor for oral cancer, and the response of these lesions after six weeks of involuntary tobacco cessation were investigated. Of the 3,051 male trainees examined (median age=19), 302 (9.8%) were identified as current users of ST upon entering basic training. 39.6 percent (119) of the current users had leukoplakia compared to 1.5 percent (42/2749) of the nonusers (OR=41.9, 95% CI=28.1, 62.6). At the end of 6 weeks of involuntary tobacco cessation, 109 of the 119 individuals with leukoplakia were reexamined; 10 individuals who were discharged from basic training were not available for reexamination. Results of the reexamination were that 97.5 percent (106 of 109) of the leukoplakic lesions had complete clinical resolution. The three individuals whose leukoplakia did not resolve had these lesions biopsied and examined microscopically; all lesions were benign. The type of ST used (snuff vs chewing tobacco), amount used (cans per day), length of use (months), days since last use, and brand of snuff were significantly associated with the risk for leukoplakic lesions among ST users. In a healthy young population of males, the lesions associated with use of ST resolve if the individual ceases to use tobacco products. This information should be used by health care professionals for patients who use ST to assist in motivating them to quit this addictive behavior.

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ORAL AND PHARYNEAL CANCER TRENDS IN VA HOSPITAL DISCHARGES: 1983-93

The purpose of this study is to describe trends in oral and pharyngeal cancer diagnoses in Department of Veterans Affairs (VA) hospitals based on unduplicated discharges from 1983 to 1993 and compare those trends to laryngeal and lung cancers. VA patient treatment files were used to identify hospital discharges from 1983 to 1993 having ICD-9-CM codes for oral cavity and pharynx, larynx, and lung cancers. Descriptive statistics of the variation of oral cavity and pharyngeal cancers were tabulated to determine prevalence and distribution. Percent rate of oral and pharyngeal, laryngeal, and lung cancers were calculated based on the total raw count of cancer cases and total unduplicated discharges from 1983 to 1993. Trends of change over time were analyzed using regression analyses of the percent rate on year. The overall number of oral cavity and pharyngeal cancer cases discharged from VA hospitals decreased from 1983 to 1993. Oral and pharyngeal cancer discharge diagnoses significantly increased in the under age 45 group and significantly decreased in groups aged 45-54, 65-74, 75-84, and all ages combined. Despite these decreases, site-specific oral and pharyngeal cancer data show that cancers of the pharynx, tongue, and salivary glands increased between 1983 and 1993. For all ages combined, laryngeal cancers significantly increased while no significant change was found with lung cancer. VA hospital discharge data indicate decreasing overall oral and pharyngeal cancer trends with increases in certain site-specific oral and pharyngeal cancer diagnoses. Additional study is needed to assess the impact of these trends. Supported in part by VA HSR&D Service.

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COMPARISON OF THREE DENTAL FLUOROSIS INDEXES IN PERMANENT DENTITION, OBSERVED IN SCHOOLCHILDREN FROM BRAZIL

The objective of this paper was to compare the DEAN, T-F, and TSIF dental fluorosis indexes in relation to prevalences for surfaces, teeth, and locality, and to verify the statistical correlation between them. The sample consisted of 461 Brazilian schoolchildren 12 to 14 years of age who were born and reared in the respective cities since 2 years of age. Of these, 153 were from Cesario Lange with a fluoride concentration in the water supply of 1.4 parts/106 F, 142 from Piracicaba (0.7 parts/106 F), and 166 from Iracem polis (<0.3 parts/106 F). The clinical examination was done after toothbrushing, and was carried out with the use of a plane mirror, artificial light, and air drying of teeth for 1 minute. The results showed that the more severely affected teeth were the premolars and second molars, while occlusal surfaces were the most affected. The comparison of the three indexes showed similar prevalences of fluorosis in the population. The percentages of children affected in the three towns were 32.7 percent, 16.9 percent, and 4.2 percent, respectively, for the DEAN index; the prevalences were 33.3 percent, 17.6 percent, and 4.2 percent for the T-F index; and 32.7 percent, 16.9 percent, and 4.2 percent for the TSIF. No difficulties in using the three indexes in the field trials were encountered, so the use of any one of them is recommended in regions with fluoride concentrations similar to those in this research.

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COMMUNITY WATER FLUORIDATION, FRACTURES AND BONE MINERAL DENSITY

The purpose of this study was to determine if water fluoridation influences bone mineral density (BMD) and fractures in older women (>65 years). The study population consisted of women enrolled in the Study of Osteoporotic Fractures. BMD was measured at the distal and proximal radius using single photon absorptiometry and at the lumbar spine and hip using dual energy x-ray absorptiometry. Prevalent and incident vertebral fractures were determined by morphometry. Incident nonspine fractures were ascertained every four months (1988-95) and confirmed by radiographic report. Variables known to influence BMD and fracture rates were measured using an interviewer-administered questionnaire and exposure to fluoridated water was determined using a residence history questionnaire. Detailed residence histories were obtained for 7,129 women. Using water system maps and the Fluoridation Census, women were classified as exposed, not exposed, or unknown exposure to fluoride for each year between 1950-94. The data were stratified by fluoride exposure status: continuous exposure to fluoridated water systems for the last 20 years (n=3,218) versus no exposure during the last 20 years (n=2,563). After adjusting for potential confounders, women with continuous exposure for the last 20 years had BMD values 3 percent higher at the lumbar spine (P<.001), 3 percent higher at the femoral neck (P<.001), 1 percent lower at the distal and

proximal radius (P=.022, P=.002), and 1 percent lower at the proximal radius (P=.002). After adjusting for potential confounders, women with continuous exposure had a 25 percent reduction in vertebral fracture risk (Relative Risk=0.75, 95% CI=0.57, 0.99), a 28 percent reduction in hip fracture risk (RR=0.72, 95% CI=0.53, 0.99), and a 32 percent increase in wrist fracture risk (RR=1.32, 95% CI=1.02, 1.70). In conclusion, long-term exposure to fluoridated water systems appears to have a clinically significant positive impact on the spine and hip while having a negative impact on the forearm. Fluoride association with fracture risk needs to be carefully assessed and considered when making public policy decisions regarding community water fluoridation.

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SOCIODEMOGRAPHIC DIVERSITY IN THE CURRENT ORAL HEALTH PROFILE OF THE WORLD WAR II ERA (1936-45) BIRTH COHORT: A LONG-TERM FOLLOW-UP

As AAPHD celebrates its 60th anniversary, it is fitting to ask: what is the current status of the WW II era cohort (individuals born during AAPHD's early years) with respect to the sociodemographic diversity of its oral health profile? To answer this question, approximately 900 persons born between 1936 and 1945 who participated in the oral examination of NHANES III-Phase 1 were studied. Logistic regression (as implemented in SUDAAN, release 7.00) was used to assess the effects of age, gender, race or race-ethnicity, education, family income, and marital status on selected indicators of dentate status, coronal and root caries, gingivitis, periodontitis, restorations and tooth conditions, self-assessed dentate status, and recent dental care. Only educational attainment showed a consistent pattern of diversity in oral health outcomes. Persons with <12 years of education were 7 times more likely than persons with 13+ years of education to be edentulous. Among the dentate, compared to those with some college education, individuals with less than 12 years of education were about 2.5-3.0 times more likely to have untreated coronal and root decay, about 5 times more likely to have advanced periodontitis, and about 5 times less likely to have an intact dentition or to have received recent care (P-values <.01). The educational diversity of the current oral health profile of the WW II era cohort directs attention to higher education as a structure supportive of oral health maintenance. It also raises questions about the impacts that increases in the percentage of college-educated in the population may have on improved oral health in successive birth cohorts.

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AN ASSESSMENT OF NONRESPONSE IN A DENTAL SURVEY

Several reports indicate that a proliferation in recent years in the number of surveys has contributed to a decline in the response rate for surveys. Dental surveys conducted in Newburgh and Kingston showed that the response rate among elementary schoolchildren declined from 72 percent in 1986 to 45 percent in 1995. In 1995, 59 percent of the parents who refused to participate (353/601) stated that the primary reason for nonparticipation was that they already had a family dentist. Analyses were conducted from data gathered on 1,304 7-14-year-old, life-long residents to compare the characteristics of those children who reported having a family dentist and those not having a family dentist. Sixty-three percent of the children who participated in the survey had reported having a family dentist. Children without a family dentist were more likely to be in the free-lunch program (78% vs 41%), had a lower level of parental education (33% of the parents reported some college education vs 62%), and less likely to have received sealants (5% vs 18%). The prevalence of very mild to severe fluorosis was 15.3 and 14.5 percent among those with and without a family dentist, respectively. The age adjusted mean DMFS for children with a family dentist was 1.1 compared to that of 1.6 for children without a family dentist (P<.03). The mean number of decayed surfaces was also higher for children without a family dentist (1.1 vs 0.4). Although having a family dentist was not a significant variable in the multivariate analyses that included other important variables, future surveys should consider specific strategies to reach those parents who do not see the need to participate in oral health surveys. This study was supported by a grant from NIDR (1R01DE1088801).

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MOBILIZING COMMUNITY PARTNERSHIPS TO SAVE A STATE ORAL HEALTH PROGRAM

The present economic situation and downsizing of government has adversely affected many dental programs. After an earlier meeting helped set public health priorities, the department and the governor's 1998 budget proposed to cut the state $1.2 million dental public health (DPH) program completely. The future appeared bleak. Fortunately, an opposite recommendation was concluded after a statewide evaluation (11/96). The Department of Audits stated that the state dental program should not only be maintained, but should be expanded and staff increased with a more centralized direction. Community partnerships were mobilized. Advocates for children led by the Georgia Dental Association strongly supported the state dental program. They actively educated the Georgia legislature and local leaders about the adverse impact of eliminating state funding. Computerized lists of dental resources and services by county provided detailed, accurate, and consistent information. In April 1997 full funding was restored for the state dental program, with a future possibility for statewide expansion. Plans and strategies were developed through a collaborative process to ensure essential public health activities that address oral health. The revised Guidelines for State Dental Programs helped in the development of the assessment, planning, implementation, and evaluation processes. The Division of Oral Health, CDC, assigned the deputy director to help develop the infrastructure for Georgia DPH. A major coalition, the Georgia Oral Health Coalition, was expanded by nontraditional public health partners and restructured with subcommittees to help educate advocates and develop strategies to save the state dental program, and address several other projects: (1) National Spit Tobacco Education Program, (2) Special Athletes, Special Smiles (Georgia Special Olympics), (3) Prevent Abuse and Neglect through Dental Awareness, and (4) school-based/linked oral health programs (dental sealants). Information on educating decision makers and coalition building will be shared with participants.

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STRATEGIC PLANNING FOR CHILDREN'S ORAL HEALTH—A NEW START FOR A NEW GENERATION IN KUWAIT

The events of 1990-91 in Kuwait resulted in massive damage to the country's infrastructure, and very noticeably in the area of health. The oral health sector lost 60 percent of its human resources and clinics. As part of the reconstruction a philosophical change placed emphasis on disease prevention and early treatment interventions in place of routine on-demand emergency and restorative services. A postwar situation analysis was conducted: new national targets were established, a national action-based plan emphasized the young as a target population, and disease prevention. The Ministry of Finance has cooperated in the implementation of this approach because of international evidence of its cost effectiveness and its cost benefits. Currently, 30 percent of dentists are dedicated to disease prevention, with a dentist to population ratio of 1:2,800, and a school health program with some 150,000 Kuwaiti children in a WHO systematic type 3 program.

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FEASIBILITY OF TARGETING ORAL HEALTH PROMOTION IN A MINORITY COMMUNITY

The Fayetteville, NC, MSA is the site of a project to design, implement, and evaluate a community-based oral health promotion interven-

tion targeting a minority group. The focus of the project is a well-defined geographic area in which 70 percent of the residents are African-American. Following the precede-proceed model, the planning phase has involved documenting the differential behaviors, attitudes, and clinical needs of the target group. This has been done through an assessment of community resources and infrastructure, a review of existing epidemiologic data, and by obtaining "input" from segments of the target group and community stake holders. Focus groups with segments of the target population and telephone discussions with stake holders were used to collect the community input. We sought to obtain: (1) what the "community" understood by oral health, (2) the relative importance of oral health in the community, (3) major oral health problems experienced by the community, (4) thoughts on what should be done to improve the community's oral health, and (5) ideas for how to do it. This research reports on the integration and analysis of these data. This project is funded by contract N01-DE-62610 from NIDR.

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RESTRUCTURING A DENTAL PROGRAM USING A GATEKEEPER APPROACH AND EVIDENCE-BASED GUIDELINES

As a result of budget reductions, the city of North York Community Dental Services Programs had to be restructured. Our goal was to maintain access to needed dental care, treatment, and prevention for the target population of elementary schoolchildren (65,000) within the new budget (approximately 25% less). Using current program data as well as trend population data, we offer the new program only to those students identified with unmet dental needs, or some 30 percent of the students, through expanding the screening program to all elementary students; using hygienists as "gatekeepers" for access to programs. We developed and used evidence-based criteria for assessing and referring the students for treatment and prevention. We expected that this would impact on the number of active treatment cases who would attend our clinics. Previously, we saw 26,000 for examination and treatment. This number has been reduced to 7,000 for confirmed treatment. By excluding the 70 percent who were caries free, annually, we are able to offer treatment and prevention to all children that "needed" these services (met the criteria in the guidelines).

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BERMUDA CHILDREN'S PREVENTIVE ORAL HEALTH PROGRAM—20 YEARS' EXPERIENCE

Bermuda relies mainly for its domestic water supply on the collection of rainwater in individual residential storage tanks. In 1975, the Ministry of Health, concerned by the level of dental caries in children, and the inability to fluoridate a reticulate water system, embarked on a preventive program. A baseline survey conducted on a random cross-sectional sample of primary schoolchildren identified a DMF of 2.4 in the age group 5-12 years. A preventive program for dental caries was initiated involving multiple fluoride therapy (drops, lozenges) from infancy to 12 years of age. These activities were combined with health education and information to schools and the community. Evaluations were made in 1983 and 1989, and DMF scores were recorded. In 1989 the percent of 9-year-old children without decay or fillings in permanent teeth had increased from 16 percent in 1978 to 88 percent in girls, and from 27 percent to 83 percent in boys. 94 percent of first permanent molars were free of decay or fillings in the 5-12-year-old age group. In 1991 a review indicated no objectionable fluorosis. A review will be conducted following 20 years of continuous operation and a report made of the results of the assessment.

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PRIVATE LINKAGES TO PROVIDE DENTAL CARE: A MODEL

Provision of dental care to people with developmental disabilities continues to remain at the top of most needs lists. Traditionally, this care has been provided by hospital or dental school-based entities that provide both excellent treatment and training opportunities. Because these facilities usually are located in or near urban localities, the means of providing care in suburban or rural areas is often left to the private practitioner. For the most part, these individuals provide dental services to the best of their abilities at Medicaid fees that may place an economic cap on the numbers of patients served and the range of services offered. In some communities, van care may not provide the continuity, frequency, timeliness, and scope of care needed to meet the needs of this population. An alternative suggested to meet the needs of this population is the active collaboration between a private practitioner and sponsoring community-based Article 28 charter agency. This strategy has been used successfully to establish three regional dental facilities serving approximately 2,000 people in upstate suburban and rural New York.

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CHARACTERIZATION OF DENTAL PROGRAMS ADMINISTERED BY US CITY/COUNTY HEALTH DEPARTMENTS, 1995

In the fall of 1995, the American Association of Community Dental Programs, assisted by the Division of Oral Health, CDC, updated its database on dental programs administered by city/county health departments. Programs' administrative and programmatic functions and data issues were assessed. 241 of approximately 300 surveys mailed were returned: 51 percent county, 24 percent city-county, 11 percent city, 13 percent other types. These agencies are responsible for 80 million persons from 35 states; mean size of jurisdiction was 343,000 (median=134,000). Directors (62% DDS, 22% RDH) had been in their positions a mean of 10 years. Mean budget reported was $367,000 (median=$155,000); from 1994 to 1995 budget years, 38 percent reported increases, 17 percent decreases, and 45 percent no change. Dollars budgeted per person per jurisdiction averaged $2.42 (median=$0.88). 50 percent of jurisdictions met the HP 2000 objective for water fluoridation, while only 12 jurisdictions had no fluoridation. 62 percent reported collection of oral health data (clinical screening, patient records, clinical survey); 54 percent used data for specific purpose(s). 63 percent reported having a computer. Services reportedly provided were clinical treatment (49%), preventive services (32%), and school-based preventive services (24%). 34 percent of programs reported inclusion of groups whose dental services were covered by managed care. Local dental programs' capacities to collect oral health data provide excellent opportunities to assess oral health status and evaluate oral health programs.

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DELIVERING DENTAL EDUCATION MESSAGES TO TARGET AUDIENCES

North York is an urban, multicultural city with a population of 600,000. A multistrategy approach to oral health is utilized to meet the diverse dental health education needs of North York populations. Dental education messages are delivered to a range of target populations from adults attending English as a Second Language (ESL) classes, care providers of preschoolers and seniors, targeted at-risk students, as well as the general student population. Education strategies to reach the various target audiences include ESL learning principles, self-directed learning, and computer-assisted learning. Quality assurance of programs is monitored through consumer satisfaction surveys, peer review, performance appraisals, and staff productivity reviews.

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TRAINING NURSES AIDES TO BECOME ORAL HEALTH CARE SPECIALISTS

The neglect of oral health and high levels of unmet dental needs for patients in most nursing facilities (NF) have been well documented. Older adults will have more teeth and even greater treatment needs in

the future, increasing the need for preventive oral health care. Nurse aides are responsible for routine oral hygiene care of NF residents and indicate that lack of time, uncooperativeness, and lack of dental knowledge discourage them from giving oral care. Eight volunteer nurse aides from four NF were trained as Oral Health Care Specialists (OHCS). Three training sessions, each 6 hours, were spaced 3 weeks apart. Oral assessments were then completed by the OHCS on all residents of their respective NF and oral hygiene care plans developed. Implementation and continuation was left to the discretion of each NF. Four trained and calibrated examiners completed baseline oral assessments 1 month prior to completion of OHCS training for 140 residents, of which 83 completed 6-month and 1-year assessments. Gingival and debris indexes were relatively unchanged; but denture-related lesions decreased from 35 percent at baseline to 17 percent at 6 months and 16 percent after 1 year. Denture stomatitis associated with maxillary dentures also declined from 22 percent at baseline to 0 percent at 6 months and 8 percent at 1 year. Intensive training of nurse aides working in nursing facilities can have an effect on the oral health of NF residents; however, many problems still need to be addressed. Supported by NIDR/NIH grant P30NR03979.

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NORTH CAROLINA VOLUNTEER DENTAL PROGRAMS AND THEIR ROLE IN ACCESS TO CARE

This study describes the organizational structure, services, and major programmatic concerns of organized volunteer dental programs in North Carolina. A list of all programs using dentists who provide services without any financial remuneration was obtained from state and other sources. All programs (n=12) were surveyed by mail in 1995 and responded to a 29-item questionnaire soliciting information about facilities, financing, personnel, and services. Follow-up interviews with participating volunteers supplemented the self-completed questionnaire. The majority of the programs are based at a fixed site, have been in existence 5 years or less, and operate primarily in the afternoons and evenings 1-2 days each week. The median number of dentists per site who volunteered at least once in 1994 was 16 with a median number of 5.5 days of participation. Financing of clinics was dependent upon contributions from a variety of sources. A variety of patients were treated, but most sought services to relieve pain and infection. Because of excess demand, most volunteer programs perceive threats to their continued existence that include loss of volunteers from burnout, lack of support from the dental profession, and insufficient funding to continue providing free care. Volunteer dental programs in North Carolina provide a beneficial service for the relief of pain and infection for the poor. However, these programs will require increased support and greater efficiency if they are to be a feasible alternative source of care for the poor.

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DENTAL CARE STANDARDS IN US JAILS

The objective of this study was to determine the extent and variation of dental health care standards in US jails. Survey forms requesting information on dental care policies, staffing patterns, and administrative issues were mailed to a random sample of jails rated on size as medium (75-200 beds), large (201-500 beds), and mega (500 beds). The mega jails were all surveyed. The large and medium jail samples represented 20 percent and 35 percent, respectively, of all jails of this size. Cross-tabulations were made to correlate observed standards to these sample groups. All reporting mega jails had a dental facility while 57 percent of the large jails and 25 percent of the medium jails reported having a facility. Written policies and procedures for admission oral examinations, emergency and routine care, and overall scope of services were found in 63 percent of mega, 63 percent of large, and 37 percent of medium jails. While emergency care procedures were consistent across all samples, routine care eligibility ranged from no eligibility to 30 days of incarceration. All jail types reported adherence to a given dental standards protocol. Though the size of a facility strongly influenced dental care access and services, it can be inferred that dental care in US jails maintains a discretionary presence. Oral health services will seemingly be provided in response to risk management requirements and health care quality concerns.

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THE ORAL HEALTH STATUS, KNOWLEDGE, ATTITUDES, AND BEHAVIORS OF KNOWN SUBSTANCE ABUSERS

A survey of known substance abusers was done to determine their oral health status, knowledge, attitudes, and behavior. A Medline search found no studies since 1972 about the substance abuse population and their dental needs and behaviors. Previous studies showed rates of dental disease, caries, and periodontal disease to be significantly higher in the substance abuse population. The combination of dental neglect along with high carbohydrate consumption, bruxing, and direct effects of drugs on the oral tissues were all found to contribute to higher incidence of dental disease. This study consisted of assessing 94 patients over a three-week period at the Central Intake Unit of Addiction Services, Boston Department of Public Health, Boston Public Health Commission. The Central Intake Unit is a triage center for addicts seeking detoxification centers. The Central Intake Unit sees approximately 200 patients a month, 75 percent male and 66 percent uninsured, with most of the patients in their mid-30s. As part of the admission process their oral health status, knowledge, and behavior were assessed by an interview and open-mouth inspection. The interview consisted of a 31-item pretested questionnaire on current need, dental history, dental knowledge, and behavior. The oral inspection included levels of caries, gingivitis, soft tissue lesions, oral hygiene, malocclusions, fractures, and missing teeth. Of those interviewed, 52 percent reported to have problems with their teeth, mouth, or gums. However, it was found that 80 percent of those examined were in need of dental treatment. For treatment, only 29 percent were reported to have any type of dental insurance and 29 percent were reported to go for free care at Boston Medical Center. The needs of substance abusers are significantly larger than those of the general population; however, they have not been documented in 20 years. Without documentation, the needs of substance abusers go unrecognized by the dental community, resulting in an underserved population.

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DALLAS COUNTY DENTAL SOCIETY MID-WINTER SEALANT INITIATIVE

The DCDS Sealant Initiative was a collaborative community service program to provide sealants to children in low-income schools in the Dallas Independent School District. The project was the result of a collaboration among a social service agency, Communities in Schools, Baylor College of Dentistry, and the Dallas County Dental Society. Communities in Schools identified the schools with the children most in need of sealants. Baylor College of Dentistry provided the clinical facilities for the sealant program and student volunteers (n=36) to provide the sealants. Dallas County Dental Society members served as volunteers and sought donations of the supplies and sealant material. 160 children were screened prior to the program. Of those, 111 were found to need sealants and were given consent forms for their parents to sign. Overall, 111 children received sealants on 458 teeth. In addition, 14 children with dental caries were referred to local dentists for further treatment. All the participants viewed the program as successful—the children, the Communities in Schools social workers, dentists, and dental students. Plans have been made to conduct the program next year.

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ASSESSMENT OF HEPATITIS B VACCINATION IN US CHILDREN <6 YEARS OLD, 1993 AND 1994

Hepatitis B (HB) is a significant issue of dental public health infection control and occupational risk. An assessment of HB vaccination is of

scientific and public health value because data on long-term benefits and risks of HB vaccine are sparse. Epidemiologic methods are appropriate to study the risks and benefits of HB vaccine because of the distinct patterns of HB prevalence, route of transmission, and age of exposure. Because the HB vaccine is excluded from postmarketing surveillance provided by the National Childhood Injury Act, this study provides much-needed data on the risks and benefits of HB vaccination. The purpose of this study is to evaluate the adverse reactions to, and the protection provided by, the HB vaccine. Data are taken from the 1993 and 1994 National Health Interview Survey (NHIS) on vaccination and health outcomes. Logistic regression modeling was used to adjust for potential confounding. Controlling for age, race, and sex in the 1994 NHIS, HB vaccine was found to be associated with liver problems (OR=1.77), arthritis (OR=5.91), incident acute ear infections (OR=1.60), and incident pharyngitis/nasopharyngitis (OR=1.41). These results suggest that national policy on universal infant HB vaccination should be reconsidered.

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OPERATION SMILE-TEAM MARYLAND

Operation Smile-Team Maryland is a student-led dental service and education collaboration between the Dental School University of Maryland at Baltimore, the Ministry of Health, Socialist Republic of Vietnam, and Operation Smile. After a fact-finding visit to Hanoi and two visits by Vietnamese dentists to the Maryland Dental School, a service/dental education mission was conducted in January 1997 by a 19-member Maryland faculty-student team. The results of this mission included dental care provided to over 350 Vietnamese, demonstration to Vietnamese health care providers of American oral health care delivery, and Maryland faculty-conducted seminars on a variety of oral health care topics. Under the leadership of dental students Magee and Taub, over $75,000 in cash and equipment donations were raised to support the program. An evaluation of student educational outcomes showed that student participants had a challenging clinical experience with participation in dental public health practice in a developing country.

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HOSPITAL EMERGENCY DEPARTMENT VISITS FOR CRANIOFACIAL INJURIES—UNITED STATES 1993-94

Approximately 39 percent (35 million of the 90 million annual visits) to hospital emergency departments are injury-related. Nonfatal injuries are a significant public health problem due to the large number of persons involved and resultant health and economic burdens; yet data have been sparse. Unlike mortality data, these injuries traditionally have not been quantified by official statistical sources. Similarly, estimates of the frequency of orofacial injuries vary widely, as they have been generated from disparate sources. To obtain a more generalized population sample, it is desirable to obtain unbiased estimates of the prevalence and scope of injuries in the population. The aim of this project was to evaluate the relative frequency of craniofacial injuries reported to US hospital emergency departments and to describe their distribution across categories of pertinent sociodemographic characteristics of the population using data from the National Hospital Ambulatory Medical Survey. During 1993-94, craniofacial injuries were the first-listed diagnosis for about 20 million visits to hospital emergency departments throughout the coterminous United States. This volume of visits reflected an average annual rate of hospital emergency department utilization for craniofacial injuries (CFI) of about 77 visits for every 1,000 persons in the civilian noninstitutionalized population. The rate of CFI injury visits was 1.5 times higher for males and 1.7 times higher for blacks than it was for their respective counterparts. The black/white differentials that occurred were largely accounted for by age; however, sex differences were largely independent of the effects of age among both whites and blacks. Craniofacial injuries comprised 22 percent of all injury-related emergency department visits and facial injuries accounted for the largest portion of CFI visits. The leading causes of injury for CFI visits by percent distribution were assaults and falls (each at 31%), sports injuries (14%), and motor vehicle-related injuries (13%). From these data it can be concluded that CFI visits account for a substantial portion of injury visits to US emergency departments and that variability in the rate of CFI visits occurs (in order of appearance) by age, sex, and race.

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EDUCATIONAL AND BEHAVIORAL DIAGNOSES OF LATINO YOUTHS IN RELATION TO ORAL CANCER, TOBACCO, AND ALCOHOL

Tobacco and alcohol are known risk factors for oral cancers. Habits such as smoking cigarettes and drinking alcohol are often initiated during adolescence. The purpose of this study was to assess Latino youths' knowledge about oral cancer and practices regarding tobacco and alcohol, because limited information is available for this group. In addition, a survey of stores in the community was done to assess minors' access to cigarettes. A survey instrument was developed from information collected in six focus groups and then pilot tested. SAS was utilized for the statistical analysis. The survey was administered to 189 Latino youths (55% females and 45% males). Cigarette use was reported by 29 percent and alcohol use by 45 percent. Cigarette use was associated positively with alcohol use ($P<.05$, Fisher's exact test). Only 28 percent had heard about oral cancer, while 89 percent identified lung cancer as an outcome of smoking cigarettes. Alcohol was identified as the cause of liver diseases by 62 percent of the respondents; however, only 21 percent identified an association with oral cancer. Further, over one-third of the sample indicated that dental caries is caused by smoking and alcohol. In the stores surveyed, over 60 percent would have sold cigarettes without asking for identification. Health promotional activities needed in this community must address enforcement of existing laws and misinformation about oral health, tobacco, and alcohol use.

Aljernon J. Bolden, DMD, MPH, Catherine Watkins, DDS, MS, Jed Hand, DDS, MHSA, John Warren, DDS, MS, Steve Levy, DDS, MPH, Jill Jones, BS, RDH, University of Iowa College of Dentistry, Iowa City, IA.*

OBTAINING INFORMATION ON DENTAL PREVENTION PERCEPTIONS OF IOWA ELDERS

Projections for the US elderly population indicate that there will be a greater number of elders retaining their teeth. A greater emphasis on prevention may be needed. Health promotion and education strategies require knowing a population's circumstances and attitudes, and then structuring prevention messages that focus on their health values. As part of the Iowa Oral Lesion Detection Study, community-dwelling elders aged 79+ years are being surveyed about their perspectives on dental preventive activities. This presentation will report on challenges of surveying a population of rural elders who varied greatly in living, dentate, functional, cognitive, and dental utilization status. The dental prevention practice survey instrument used had been successfully piloted on other groups in Iowa: dental school and hospital patients, dental students, and health care administrators. The instrument proved less useful in this elderly population. They experienced difficulties in understanding and responding to some questions. These difficulties decreased completion of the survey, thus introducing bias and leading to questions of validity in the resulting data. This presentation will discuss modification of the survey protocol and instrument that were necessary to meet the challenges presented by these 79+ elders. Supported by NIDR grant DE10758.

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COMPARATIVE RESEARCH AMONG FOUR DIFFERENT EXAMINATION METHODS FOR THE DIAGNOSIS OF DENTAL CARIES IN 12-YEAR-OLD SCHOOLCHILDREN

The objectives of this research were to compare results of four different examination methods in diagnosing dental caries, to perform validation tests of clinical examinations using bitewing radiographs for posterior teeth and FOTI for anterior teeth, and to evaluate the influence of the four methods for diagnosing dental caries on the DMFS index. 117 12-year-old males registered in state schools were examined. The methods of examination used were: I—examination using only a plane

buccal mirror; II—examination using only a plane buccal mirror and explorer probe, I and II being performed in a schoolyard with natural light; III—examination using only a plane buccal mirror; and IV—examination using only a plane buccal mirror and explorer probe, III and IV performed in a standard odontological consulting room. Before each of the examinations, toothbrushing was performed under supervision of dental hygienists. The conclusions of this research are: (1) examination method IV showed the best performance in diagnosing dental caries; (2) examination methods I, II, III, and IV showed sensitivities in relation to FOTI of 0.23, 0.31, 0.43, and 0.54, respectively; (3) examination methods I and II showed a specificity of 1.0 in relation to FOTI, and examination methods III and IV showed 0.99; (4) examinations methods I, II, III, and IV showed sensitivities in relation to bitewing radiographic examination of 0.16, 0.19, 0.14, and 0.23, respectively; (5) examination methods I, II, III, and IV showed specificities in relation to bitewing radiographic examination of 0.99; (6) the DMFS index was underestimated by 9.46 percent when comparing examination method II with IV, together with FOTI and bitewing radiographs.

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ASSESSMENT OF THE IMPACT OF TOBACCO USE CESSATION TRAINING

To address the lack of formal training indicated from the 1993 survey of Minnesota dental personnel, the ADA and NCI sponsored tobacco use cessation (TUC) training in May 1995. To assess the impact of this training, a one-group pre-post intervention study was conducted. A self-report questionnaire was administered before the TUC training and then again in September 1996. The purpose of this study was to identify changes in behaviors or attitudes of the attendees 18 months after training. The study group was made up of 89 dental hygienists or student hygienists in practice. The response rate for the mailed follow-up questionnaire was 64 percent (57/89). Individual comparison was not possible; however, the pre- and postgroups were similar for age, years of education, and practice setting. Responses to questions related to the use of the 4 As (Ask, Advise, Assist, Arrange) were also similar. Most (65% of morning and 80% of all-day) attendees reported that they used information from the training with their patients. The major change after training was that a higher proportion (36% vs 8%) felt well or very well prepared to assist patients in stopping tobacco use. Interestingly, 42 hygienists reported they assisted 263 people to decrease or stop tobacco use.

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DENTAL HEALTH CARE OF PRISON POPULATIONS

The objective of this study was to determine how states provide dental care to inmates. Survey forms were sent to the Department of Corrections (DOCs) of 50 states and the District of Columbia in 1996. Information was requested about the level of care, scope of care, clinician-to-inmate ratio, and administrative policies. 44 states and the District of Columbia returned surveys (88%). 32 of the respondents (70%) had dental directors who coordinated dental care. 76 percent of the respondents described their DOCs as providing emergency care and some routine care. 23 of the respondents (51%) require inmates to make a copayment for dental services. 12 states (54%) that did not have a copayment system are considering implementation of such a system. 26 percent of the respondents indicated that their states were providing dental care through managed care or managed care group. There is substantial variation in the way dental care is provided to inmate populations by the states.

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OBSERVED ORAL HEALTH STATUS OF AFRICAN AMERICANS AND WHITES IN THE DETROIT TRI-COUNTY AREA, MICHIGAN

Oral health status of non-Hispanic African Americans (AAs) and whites (Ws) was investigated using a probability sample of adults aged 18-93 years in the Detroit tri-county area, Michigan. Status was measured with the Oral Health Status Index (OHSI). Data were collected by in-home interviews (n=787; 70% response rate) and dental examinations (n=577; 74% of interviewed) in 1994. For AAs, median age=39 years; median income=$30,000; median education level=12 years; and median OHSI=80.9 (mean=69.7). Among AAs, OHSI scores declined with age (P<.001), increased as education (P<.001) and income (P<.01) levels rose, and were higher for those having dental insurance (P<.05). Scores were not different between males and females, and between those with acceptable or unacceptable brushing habits. Higher scores were observed in AAs with acceptable flossing (P<.01), those with one checkup per year (P<.001), and those who did not smoke (P<.01). Regarding Ws, median age=44 years; median income=$50,000; median education level=13 years; and median OHSI=93.8 (mean=80.1). For Ws, OHSI scores declined with age (P<.001), and increased with education (P<.001) and income (P<.001) levels. Higher scores were observed in Ws with one checkup per year (P<.001). Scores were not different between males and females, those with or without dental insurance, those with acceptable or unacceptable brushing or flossing habits, and those who did or did not smoke. Factors associated with OHSI scores varied somewhat by race; however, similitude of relationships was also evident. Supported by NIDR Grant DE10145.

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FACTORS ASSOCIATED WITH THE ORAL HEALTH IMPACT PROFILES OF RESIDENTS IN THE DETROIT TRI-COUNTY AREA, MICHIGAN

This research assessed self-reported dysfunction, discomfort, and disability attributed to oral conditions using the Oral Health Impact Profile (OHIP) on a probability sample of adults aged 18-93 years living in the Detroit tri-county area of Michigan. Data were collected by in-home interviews (n=787; 70% response rate) and dental examinations (n=577; 74% of interviewed) in 1994. With weighting, median age=42 years; median income=$41,759; median education level=13 years; 28 percent of examinees were nonwhite; and 55 percent were female. The mean OHIP score was 24.8; range=0 to 215. OHIP scores did not differ by sex or age, but did by white/nonwhite subgroup (P<.001). OHIP scores declined as education (P<.001) and income (P<.001) levels increased; were lower for those with dental insurance (P<.001), at least one checkup/year (P<.001), and a usual source of care (P<.001). Lower OHIP scores were reported by those who brushed (P<.001) and flossed (P<.05) at least once a day and did not smoke (P<.001). Inverse relations were observed between OHIP and the Oral Health Status Index (r=-.14; P<.01) and number of filled surfaces (r=-.09; P<.05). Direct relations were observed between OHIP and decayed teeth (r=.44; P<.001), LPA (r=.13, P<.01), pocket depth (r=.21; P<.001), percent of teeth with calculus (r=.38; P<.001), and percent of teeth with gingival bleeding (r=.25; P<.001). OHIP scores in relation to independent variables were consistent with expectations, and illuminated the impact of oral disease from the patient's perspective. Supported by NIDR grant DE10145.

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TOOTH LOSS IN AFRICAN AMERICANS AND WHITES IN THE DETROIT TRI-COUNTY AREA, MICHIGAN

Tooth loss in non-Hispanic African Americans (AAs) and whites (Ws) was investigated using a probability sample of adults aged 18-93 years living in the Detroit tri-county area of Michigan. Data were collected by in-home interviews (n=787; 70% response rate) and dental examinations (n=577; 74% of interviewed) in 1994. For AAs, median age=38.1 years; median income=$30,000; median education level=12 years; and median number of teeth=25.0. Among AAs, numbers of teeth declined with age (P<.001), but were higher as education level increased (P<.01) and in those with one checkup per year (P<.001), a usual source of care (P<.05), higher self-rated oral health (P<.01), higher self-rated general health (P<.001), in AAs with acceptable flossing (P<.01) and in those who did not smoke (P<.01). Tooth loss was not different between

AA males and females, by income level, or between those with acceptable or unacceptable brushing habits. For Ws, median age=44 years; median income=$50,000; median education level=13 years; and median number of teeth=27.0. In Ws, numbers of teeth declined with age ($P<.001$), increased with education ($P<.001$) and income ($P<.01$) levels, increased with higher self-rated general health ($P<.001$), and were higher in those reporting one checkup per year ($P<.001$). No differences were observed between W males and females, those with or without dental insurance, those with acceptable or unacceptable brushing or flossing habits, those who did or did not smoke, or by self-rated oral health. Factors associated with tooth loss varied somewhat by race. Supported by NIDR grant DE10145.

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LINKING AN ACADEMIC PROGRAM WITH PUBLIC HEALTH PRACTICE

The objective of this project is to link the New York State (NYS) Dental Public Health Residency Program with the Sullivan County Public Health Nursing Service in planning a dental program for children. Sullivan County is a rural county in New York State with a population of 70,000. It has a higher rate of poverty (18%) and a higher proportion of people on Medicaid (28%) compared to upstate New York. Only 10 percent of the population receive fluoridated water and no other organized dental programs are available within the county. Utilization of dental services under the EPSDT program is low. Therefore, the county requested the assistance of the state in planning a dental program. Assistance was provided by the students enrolled in the School of Public Health, University of Albany, in conducting a survey of second grade children to determine dental caries prevalence and untreated caries. A questionnaire was designed to obtain information from local dentists regarding the availability of dental care, waiting time, and willingness to support a county sponsored dental clinic. In addition, various proposals were developed for discussing a school-based preventive and treatment program. Funds were solicited from philanthropic organizations. As of today, a fluoride mouthrinse program is operational in six schools with approximately 3,000 students participating. The Philanthropic Relief Altruistic Service and Development Project (PRASAD) has donated a mobile van and agreed to staff the facility. Supported in part by a Health Resources Services Administration contract.

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DENTAL BENEFIT PLAN CHOICE: CONJOINT MODELING FOR UNIVERSITY OF IOWA FACULTY

The purpose of this study was to use conjoint analysis to determine the importance of specific dental benefit plan features for University of Iowa (UI) faculty/professional staff and to build a model to predict enrollment. From a random sample of 2,000, 41 percent responded ($n=812$). The survey instrument was developed using 6 attributes (5 dental benefit plan features and time to complete treatment), each offered at 4 levels (e.g., family premium=$33, $27, $21, $15/month). Eighteen hypothetical dental benefit plans were developed using fractional factorial combinations of the 4 levels for each of the 6 attributes. For all of the hypothetical dental benefit plans, dental care was to be provided in the UI predoctoral dental clinic. Plan profiles were arranged 4 per page by combining the 2 existing plans with 2 hypothetical plans, for a total of 9 pages. Respondents' task was to select one plan from each set of four dental benefit plans. A regression-like statistical model (Multi Nominal Logit) was used to estimate importance of each feature and each feature level. Relative importance (and coefficients) ($P<.001$) for each of the 6 attributes are as follows: time to complete treatment (1.29), orthodontic copayment (.67), restorative maximum annual benefit (.40), restorative copayment (.40), monthly premium (.37), and preventive maximum annual benefit (.36). For each attribute, relative importance of each of 4 levels also will be presented. These coefficients for each level can be used to predict enrollment for plans with specific combinations of the dental benefit plan features.

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DENTISTS' CHARACTERISTICS ASSOCIATED WITH MEDICAID PARTICIPATION

This study of dentists' characteristics related to Medicaid participation was based on a statewide mail survey that gathered data from Medicaid participants and nonparticipants. A total of 1,081 surveys were returned (51.7% response rate). Groups of dentists at varying participation levels were compared using ANOVA and multivariable logistic regression. Full participants, defined as those accepting all new Medicaid patients, were twice as likely to participate in capitation-based managed care plans (OR=2.3; $P=.0001$) and twice as likely to file Medicaid claims electronically (OR=2.0; $P=.0001$). Full participants reported lower rates of expected Medicaid reimbursement (80.9% UCR vs 85.6% UCR; $P=.0006$; unpaired T-test) for seven commonly reported dental services when compared to dentists who limit acceptance of new Medicaid patients. Hispanic dentists were twice as likely to have been full Medicaid participants (OR=2.1; $P=.0464$) compared to whites. A similar trend for blacks (OR=1.5; $P=.0731$) was not statistically significant. While several noneconomic factors were found to be important, dental practice economics appeared to be most significant for dentists deciding whether to accept new Medicaid patients. Supported by the Agency for Health Care Administration and the University of Florida.

Luisa N. Borrell, DDS, MPH, George Ionita, MD, MPH, MSc, Joan Grcevic, DDS, Victor M. Badner, DMD, MPH, Community Dental Division, Department of Dentistry, Montefiore Medical Center.*

AN ALTERNATIVE DELIVERY SYSTEM TO IMPROVE ACCESS TO CARE IN THE BRONX, NYC

Montefiore Dental Department established a Community Dental Division to improve access to care to indigent populations in the Bronx. As an alternative delivery system, dental portable units are used to deliver care at inaccessible sites. Pilot funds were provided by the Dental Department. Capital funding was obtained through a state grant and support initiatives in primary care. The program offers services to children in schools, homeless shelter residents, community family health centers, substance abuse treatment programs, and HIV clinics. Dental services such as health promotion, disease prevention, comprehensive dental treatment, and referrals are offered regardless of insurance or Medicaid status. The personnel consists of part-time attending dentists ($n=2$), dental public health residents ($n=2$), pediatric dental resident ($n=1$), and rotating general practice residents ($n=2$). Currently, the program is being evaluated for its cost effectiveness. This program has the potential to provide dental care to the most needed segments of the population. This presentation will include the evaluation results and assess the impact that this program may have on the population served based on the number of services rendered.

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SOCIAL MARKETING—A TOOL FOR EXCELLENCE: IMPLICATIONS FOR DENTAL PUBLIC HEALTH PROFESSIONALS

Social marketing has been defined as the application of commercial marketing technologies to the analysis, planning, execution, and evaluation of programs designed to influence the voluntary behavior of target audiences to improve their personal welfare and that of their society (Andreason, 1995). Social marketing is a social change strategy with the goal of initiating voluntary behavior change. The social marketing process is a continuous, iterative process consisting of six major steps or tasks: initial planning, formative research, strategy development, campaign development, implementation, and tracking and evaluation. Social marketing has been applied to public health for more than 20 years, with few applications in oral health. This presentation will provide an understanding of social marketing principles, effective uses of social marketing, and how dental public health practitioners and educators can effectively use social marketing as a means to initiate voluntary behavior change.

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THE CULTURAL ADAPTABILITY OF OLD DOMINION UNIVERSITY HEALTH SCIENCE STUDENTS

This investigation determined the cross-cultural adaptability of undergraduate and graduate students in the College of Health Sciences at Old Dominion University, Norfolk, VA. The instrument used was the Cross-Cultural Adaptability Inventory (CCAI), developed by Kelley and Meyers, containing statements on cultural adaptability. The final score is a composite of traits and skills associated with a person's ability to interact, adjust, and adapt effectively with other cultures. An overall response rate of 59 percent was obtained among the health science students. Analysis of variance revealed a statistically significant difference, at the .01 level, in the overall CCAI scores among the students. The instrument yields an overall cross-cultural adaptability score, as well as scores on the four subdivisions of emotional resilience, flexibility/openness, perceptual acuity, and personal autonomy. Overall, the health science students exhibited higher mean CCAI scores than the CCAI norm group, which consisted of individuals with cross-cultural experience and training. The results suggest the majority of the health science students possess qualities necessary to be cross-culturally adaptable.

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SCC-NET: AN ELECTRONIC NETWORK FOR INFORMATION CONCERNING SOCIOCULTURAL COMPETENCE IN HEALTH CARE

In response to the Creighton University strategic planning process on cultural diversity, a tutorial was developed to sensitize dental students and other health professionals to distinctive issues concerning access and dental care delivery in a diverse sociocultural environment. The SCC (Socio Cultural Competence) NET at Creighton University School of Dentistry provides resources and information of interest to dental students, dentists, dental hygienists, and other professionals involved in the dental field. The main purpose is to provide access to up-to-date, validated information, and appropriate learning and reference materials. Information is organized into three different modules: education, research, and links to other sites. The education module contains a three-part interactive multimedia program. Part I refers to the Developmental Stage Models for improving competency in cross-cultural delivery of health care. This interactive computer model also provides a review of the literature. Part II, Self-Assessment of Cultural Competence, allows participants to determine their own profiles. A computer program tracks participants' answers to self-awareness questions of their own culture and attributes of other cultures. The program generates individualized profiles and e-mails them back to students and instructor. Finally, Part III includes a bulletin board for live interaction with other individuals participating in the same program. The research module contains descriptions of current projects, abstracts, and scientific presentations in sociocultural competence. Links to other sites provide information on government agencies and university sites where similar programs have been developed. This initiative will serve as a catalyst for other agencies to develop similar approaches.

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HIV PRIMARY CARE AND COMPUTER-BASED DISTANCE LEARNING FOR COMMUNITY HEALTH CENTERS IN RURAL MISSISSIPPI

The incidence of HIV in Mississippi is highest among African-Americans and the uninsured. Rural Community Health Center (CHC) clinics in Mississippi provide primary health care to a large proportion of this segment of the state's population; however, they are ill prepared to test, counsel, and treat persons at risk for infection with HIV. Health educators at the University Medical Center (UMC) have organized a series of comprehensive HIV primary care training programs for CHC clinics using distance learning delivered via computer network from UMC in Jackson. CHC primary care practitioners are provided updated medical references, access to sources of additional HIV funding, and interactive training supervised by HIV specialists at UMC. CHC clinics in areas of highest HIV prevalence have been targeted.

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ORAL HEALTH PROJECT: TRAINING TRAINERS TO TEACH EARLY CHILDHOOD WORKERS ORAL HEALTH ISSUES

The Oral Health 3 Project (OHT3) consists of an oral health training curriculum for parents, caretakers, and individuals who care for children under age 6. OHT3 is a component of the T3 program, community based training project with curriculum on early childhood health issues administered by Arizona Department of Health Services (ADHS) Office of Women's and Children's Health (OWCH). The first training module consists of three oral health topics: oral disease prevention, oral health awareness and safety, and group toothbrushing. The objectives of the training are to promote "best practice" health behaviors, increase the oral health awareness of care givers, improve decision making about oral health problems, and increase compliance and effectiveness of group toothbrushing programs. The second training module consists of a curriculum for trainers to teach pediatricians, nurse practitioners, school nurses, and lay health workers. Objectives are to increase the participants recognition of oral diseases, to incorporate a simple dental screening into routine health assessments, and to facilitate timely referrals for at-risk preschool children. Adult learning strategies are employed in the curriculum design.

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A REVIEW OF NUTRITIONAL MANAGEMENT FOR INFANTS WITH CLEFT LIP AND CLEFT PALATE

This paper reviews the current literature on the variety of feeding options and devices available for the nutritional management of infants with cleft lip and/or cleft palate. Achieving and maintaining optimal nutritional status is a primary goal for the nutritional management for infants. Additional literature provides insight into the feeding management of infants following the surgical repair of cleft lip and cleft palate. Current practice reveals that full-liquid diets—i.e., high protein beverages and supplements—provide adequate energy for weight maintenance and healing. However, the literature reviewed uses the healing process for the wound site and the ability to masticate as the rationale for recommending certain feeding methods for nutritional management. This paper describes a number of commonly available feeding devices, including the advantages and disadvantages of each.

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THE MANAGEMENT OF EARLY CHILDHOOD CARIES USING ATRAUMATIC RESTORATIVE TREATMENT

Atraumatic Restorative Treatment (ART) is a minimally invasive treatment technique for restoring teeth utilizing hand instrumentation for decay removal and fluoride-releasing adhesive materials (glass ionomer) for filling. ART has been promoted by the World Health Organization as a means of delivering care in underdeveloped countries that do not have electricity or access to sophisticated dental equipment. In this presentation, ART is promoted for use in the management of early childhood caries. ART can provide a simple, cost-effective means of stabilizing the caries process in some young children until they are old enough to cooperate for definitive care. In addition, ART can be the definitive treatment of choice for selected procedures. The advantages of the ART technique include: (1) the noise and vibration of dental handpieces are eliminated, (2) the needs for water coolant and high velocity suction are eliminated, (3) less need for local anesthesia; (4) the technique can easily be carried out in the knee-to-knee position, and (4) the use of a fluoride-releasing restorative material helps prevent further decay. Multiple cases are presented.

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IOWA'S FIRST SCHOOL-BASED SEALANT PROGRAM: 18-MONTH UPDATE

To increase sealant utilization among children from low-income families, some states and local agencies are implementing school-based sealant programs. With cooperating efforts from the Iowa State Department of Health, the University of Iowa, and the Scott County Decatorization program, Iowa's first school-based sealant program is in its second year of existence. This presentation will provide a program update and report dental findings after 18 months. Children in grades 2-4 in an eastern Iowa metropolitan school district were selected to receive sealants based on their eligibility for free or reduced lunch. Dental exams were conducted by University of Iowa pediatric dentistry faculty and sealants were placed by third year dental students. As of April 1997, 15 schools had been visited, 1,225 children had been examined, and 662 children had received one or more sealants. A total of 2,565 sealants were placed. 42 percent of the children examined had untreated dental decay. Overall evaluation of the program has been favorable from the children, parents, school personnel ,and dental team.

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DENTAL SEALANT NEED AND PREVALENCE IN US MILITARY RECRUITS

This paper explores the need for and prevalence of dental sealants in US military recruits. Data were collected on 2,711 Army, Air Force, Marine Corps, and Navy recruits at one recruiting processing center per service from February to July 1994. Participants were selected using systematic random sampling. Women and minorities were oversampled. Calibrated examiners recorded the presence of or need for sealants on occlusal, labial, and lingual surfaces of teeth. A tooth surface was defined as needing a sealant if a dental explorer would catch after moderate to firm pressure and there was no softness at the base of the area. Demographic characteristics of participants were noted by examiners. Bivariate (weighted data) and logistic regression (unweighted data) analyses were performed to determine associations between demographics and the presence of at least one sealant as well as between demographics and the need for at least one sealant. All analyses were done using Stata statistical software. Results show that 8.7 percent of recruits need sealants while 14.8 percent have sealants. Need for dental sealants varies across branch of service only, while prevalence of dental sealants varies across age, rank, and branch of service. Blacks and Asians are less likely to have sealants than whites, Hispanics, or Native Americans. These results may reflect differences in at-risk teeth that would benefit from sealant placement, as well as differences in the availability of or in access to sealants when these young adults were children.

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WHAT'S IN YOUR CUP?

Water fluoridation has been one of the most cost effective preventive measures for controlling tooth decay. An optimal concentration of 0.6 to 1.2 ppm has proved effective in caries reduction. Recently, Americans have increased their consumption of bottled water. As a result, fluoride concentration of bottled water is becoming a concern. The purpose of this study was twofold: to determine the percentage of bottled water use in an average WV city, and to determine the fluoride concentration of bottled water supplies in the area. A survey was done in 100 homes, a 100 percent response rate of sampled homes. 50 percent of the homes surveyed had at least one consumer of bottled water, 12.5 percent of the homes consumed only bottled water, and 10 percent of the homes included children. Ten water samples were analyzed for fluoride concentration. All were found to be within a range of .05 to .33 ppm—less than optimal fluoride concentration. The results of this study indicate that there is a significant problem with the fluoride concentration in bottled water supplies. With the increased consumption of bottled water in the population, there exists a critical need to educate patients as to optimal fluoride consumption especially for children in their developing years.

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DENTAL SEALANTS: PREVALENCE AND NEED IN ACTIVE DUTY US MILITARY PERSONNEL

This paper explores the need for and prevalence of dental sealants in active duty US military personnel. The data come from a 26-site study of active duty Army, Air Force, Marine Corps, and Navy personnel conducted from April 1994 to January 1995. From a target sample of 15,924, data were collected on 13,050 service members (82 percent response rate) by calibrated examiners. Women and minorities were oversampled. Examiners recorded the presence of or need for sealants on occlusal, labial, and lingual surfaces of teeth. A tooth surface was defined as needing a sealant if a dental explorer would catch after moderate to firm pressure and there was no softness at the base of the area. Demographic characteristics of participants were noted by examiners. Bivariate (weighted data) and logistic regression (unweighted data) analyses were performed to determine associations between demographics and the presence of at least one sealant, as well as between demographics and the need for at least one sealant. All analyses were done using Stata statistical software. Results show that 3.6 percent of service members need sealants while 6.8 percent have sealants. Both outcome measures vary inversely with age and rank. Blacks and Asians are less likely to have sealants than whites, Hispanics, or Native Americans. These results may reflect differences in at-risk teeth that would benefit from sealant placement, differences in access to cost-free dental care, as well as differences in the availability of or access to sealants when the adults were children.

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AVAILABLE INFORMATION ON OCCUPATIONAL EXPOSURES AND FEMALE DENTISTS' PERCEPTION OF RISK

Many adverse health outcomes have been suggested in the scientific literature as being implicated with exposures commonly associated with dentistry. There is a question as to whether this information is being conveyed to the general population of dentists. As part of a larger study of occupational exposures and reproductive health of a national sample of 3,622 female dentists, Medline searches were made. These searches were conducted to place the dentists' responses to perceptions of risk of specific infectious diseases, reproductive health conditions, and chronic diseases in the context of the available literature. As a measure of possible access, the literature search on "dental staff" and "occupational diseases or exposures" was restricted to review articles in the dental literature between 1966 and 1995. Thus restricted, 19 papers were identified. Nearly two-thirds of the reviews were on infectious diseases (n=12). The three reviews on mercury were not in English. Three reviews covered nitrous oxide and one review was on latex. The perception of risks appeared to vary for the female dentists. Between 90-96 percent of the dentists perceived at least slight risk for the infectious diseases, with similar perceptions for flu/colds, HepB, and HIV; 44-78 percent perceived risk for the reproductive health conditions with the least perception for infertility as contrasted with birth defects and miscarriage; and relatively low perception of risk existed for the chronic diseases of cancer, heart disease, emphysema, or multiple sclerosis (15-48%). The female dentists' perceptions of risk appear to be affected by the limitations of the information available to them and further research is warranted to better understand the transfer of occupational health information to dentists.

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EFFICIENCY OF A CHAIRSIDE MERCURY REMOVAL DEVICE AND FILTER

In an effort to protect the environment, the Naval Dental Research Institute has characterized the physical and chemical properties of dental unit waste water, and has developed a device to remove its

inorganic mercury. In this study, we found that 99.6 percent of the mercury was bound insettleable amalgam particles. We have developed and tested a chairside device and filter which removed the majority of these particles and hence the majority of the mercury. Waste water was collected from a single operatory at one of the dental clinics at the Naval Dental Center, Great Lakes, Illinois. Mercury levels in the waste water before and after our device were analyzed for the total sample, the supernatant after settling, the settled particles, and the soluble fraction. The mercury levels in these fractions were determined using anatomic absorption spectrophotometer. In 28 trials, our device removed an average of 89.7 percent (SD=13.5) of the total mercury. Also, it filtered effectively for an equivalent of 22 work days. This type of device could effectively remove the majority of the mercury from dental waste water.

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FLUORIDATION AND ITS IMPACT ON THE USE AND COST OF DENTAL CARE

It is widely accepted that community water fluoridation programs reduce the occurrence of dental caries. However, little has been reported regarding the impact of this reduction in disease on use of dental services and associated costs. The purpose of this project was to investigate differences in dental treatment and cost of care for populations residing in fluoridated and nonfluoridated areas. Members of a large group-model HMO in the Pacific Northwest with continuous dental eligibility between 1/1/90 and 12/31/95 were identified electronically (n=61,695). Current addresses for each subscriber (n=25,685) were provided to the Geographic Information System to classify a residence as fluoridated (F) (n=39,489) or nonfluoridated (NF) (n=12,194). Subjects residing in mixed water districts were excluded. After eliminating duplicate records and CHR employees and dependents, the final population was 51,683. A randomly selected sample of 10,000 subjects, half residing in an F and half in an NF community, were surveyed to determine tap water source, length of time at current residence, fluoride use from other sources, and additional sociodemographic information (adjusted response rate=60.9%; 6,074 surveys analyzed; 50.4% of responses from NF areas). Number of dental visits, type of services received, and associated costs were compared for the F and NF groups. Preliminary results suggest an association between fluoridation status and use of services. Supported through a contract with the Centers for Disease Control and Prevention.

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STUDY ON TWO-STAGE OSSEO-INTEGRATED TITANIUM DENTAL IMPLANTS IN CHINA

Two-stage osseo-integrated titanium dental implants were performed from February 1990 to March 1992 with 5-year follow-up. The success rate was 87.06 percent (249/286), while the failure rate was 12.93 percent (37/286). Within two months after the first operation, 3.85 percent of all implants were unsatisfactory because of infection, pain, or fistulae, causing loosening and even discharge; six months after the first operation until the second operation, fibrous tissue formed in the bone-implant interface of 6.64 percent (19/286) that became loose and were removed. During the five years postreconstruction of the dental crown, 1.45 percent (n=7) of implants were removed because they gradually loosen and discharged. The results of follow-up show that failure occurs easier in the thinner alveolar bone region (5.94%,17/286), and accounts for 45.94 percent of the total failure rate (n=37). The possible reason for this finding is that the alveolar bone in Chinese is thinner compared to that of Western people, especially in the anterior and premolar regions. The average thickness of the anterior region is 6-8 mm, while the diameter of these implants was 3.75 mm, leaving a labial-lingual alveolar thickness of 1-2 mm, and perhaps a shortage of local blood supply, further infection, fistulae formation, fibrous tissue formation in the interface, and finally implant loosening and removal. Now, suitable implants 3.0 or 3.2 mm in diameter are made for the Chinese and are used successfully clinically.

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A PROPHY EVERY 6 MONTHS: A REVIEW OF THE PUBLISHED EVIDENCE THAT FREQUENT PROPHYS ARE AN EFFECTIVE PREVENTIVE REGIMEN FOR THE PROMOTION OF THE PUBLIC'S ORAL HEALTH

The importance of routine 6-month tooth cleanings in promoting the public's oral health is a basic belief among dental professionals and the public; yet, neither the efficacy nor the effectiveness of that treatment has ever been demonstrated in a randomized clinical trial. In fact, both prospective (Lightener, 1971; Suomi, 1973; Lindhe, 1983; Listgarten, 1986, 1989) and retrospective (Papapanou, 1990; Brown, 1994) studies have failed to show an association between utilization of prophylaxis treatments and periodontal health at outcome for adults subjects. The cost of a single prophylaxis is quite small, ranging between $45.00-$50.00. However, because this procedure is recommended to virtually all dental patients, the total cost represented by this procedure is quite large. Adult prophylaxes represent between 10-15 percent of all dental costs submitted for reimbursement and is the single most costly procedure as reported by an electronic claims clearinghouse (Hayden, 1997), a Delta Dental Plan, and a dental HMO. Given the large impact that prophylaxis services have on dental resources, it is important to understand the evidence present in the dental literature supporting that expenditure.

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FACTORS RELATED TO DECISIONS TO EXTRACT OR RETAIN TEETH

A number of studies have reported on the reasons for tooth extraction as they relate to oral diseases such as caries or periodontal disease. However, few studies have examined patient factors or other non-disease factors, and none have tried to differentiate factors related to decisions to extract or retain teeth. A convenience sample of 19 dentists in private practice were asked to prospectively complete detailed questionnaires on several patients where decisions to extract or retain teeth were made. These patients were also asked to complete a brief, parallel questionnaire. Information was received for 71 extractions and 64 cases where teeth were retained. Significant differences in rates of tooth extraction/retention were found for degree of periodontal disease, with 28 percent of teeth with no periodontal disease extracted compared to 91 percent of teeth with >6 mm of attachment loss. New patients in a practice or patients who presented only for emergency treatment were more likely to have extractions than were patients who made regular visits. Dentists' assessment of patients' dental hygiene and dental knowledge, as well as patients' education level, were also associated with differences in rates of extraction/retention. Dentists and patients identified distinctly different reasons for these treatment decisions, with dentists most commonly citing clinical conditions, and patients citing cost, likely success of treatment, and pain as factors. Supported by a grant from Oral Health America.

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DENTAL UTILIZATION BY ACTIVE MILITARY PERSONNEL

This paper compares annual dental utilization between active duty US military personnel (n=11,765) and 18-49-year-old, white and black employed US civilians (n=10,798). Military data come from a 26-site study of active duty Army, Air Force, Marine Corps, and Navy personnel conducted from April 1994 to January 1995. Civilian data come from the 1985-86 National Survey of Oral Health in US Employed Adults and Seniors (NIDR, 1987). From a target sample 15,924 service members, 12,950 (81% response rate) completed self-administered questionnaires on dental utilization. Demographic characteristics of participants were noted by examiners. Women and minorities were oversampled. To make the two samples comparable, we eliminated all nonblack, nonwhite service members as well as any service member not 18-49 years of age. Prior to analysis, the data were weighted to reflect the respective populations. For analysis, we stratified the data simultaneously by age,

sex, and race and calculated point estimates and 95 percent confidence intervals using Stata and SUDAAN. Overall, population comparisons were made after standardizing data. Results show dental utilization by active duty service members exceed their employed civilian cohorts. Overall, 86 percent of active duty military personnel have seen a dentist within the past year versus barely half of employed civilians. Further, for service members, dental utilization is invariant across age, sex, race, education, rank, and branch of service. These results probably reflect access to cost-free dental care as well as efforts by the services to ensure that service members are dentally fit for deployment.

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SERVICE MIX AND DEMOGRAPHICS OF MANAGED CARE AND INDEMNITY DENTAL INSURANCE PATIENTS

The Massachusetts Public Employee Fund covers approximately 65,000 employees and families of Massachusetts. The Fund's Dental Plan offers subscribers their choice between two plans, an Open Plan and a Closed Plan. The Open Plan is patterned after regular indemnity insurance. In the Closed Plan, subscribers must choose from a panel of Closed Plan managed care dentists. The primary aim of this study was to compare adult subscriber plan membership with patient service mix and demographics. A random sample of plan members (n=3,908) and their 1996 dental claims was selected for analysis. Dental services were broken down into 20 categories. In addition, each patient was matched with census demographic variables: median household income, mean years of school completed, median home value, and white/blue collar employment index. Age was another demographic variable derived from the claims file. The purpose was to determine the profile of dental services and demographics that separates Open and Closed Plan members. Stepwise logistic regression was used to select which of the 25 variables, both service mix and demographic, were statistically significant in determining plan membership. Of the 25 variables entered, two demographic and five service categories were selected for the final model. The likelihood of being an Open Plan participant increased with income and age. We found preventive services were associated with membership in the Open Plan. In contrast, greater use of crown and bridge, removable prosthetic, and diagnostic and nonsurgical periodontal services were associated with the Closed Plan after controlling for the sociodemographic variables.

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ADULT DENTAL VISITS AND REASONS FOR NOT VISITING—CALIFORNIA, SELECTED YEARS 1991-95, BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM

The California Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing telephone survey of randomly selected adults conducted by the California Department of Health Services. From 1991 to 1995, (excluding 1994), >14,000 adults aged >18 years were interviewed on a wide variety of health behaviors, including recency of a dental visit. In 1995, persons who reported that they had not been to a dentist in the preceding year were asked their main reason for not going. Use of dental services did not change appreciably over this 5-year period. In 1995, 34.4 percent of the respondents reported they had not been to a dentist in the preceding year. Use of dental services was directly related to household income, ranging from 50.4 percent among households with incomes <$10,000 to 77.0 percent for those >$50,000. Dental visits were more likely for persons with dental insurance (74.8%) than those without (54.0%). Use was lowest for edentulous persons (22.9%). The most common reasons for not seeing a dentist were perceived lack of reason to go (36.9%), cost (30.4%), and fear or apprehension (9.1%). Cost was cited much more frequently by those without dental insurance (42.7%) than those with insurance (12.7%). Lack of reason to go to a dentist was cited most commonly by edentulous persons (74.0%). Based on the findings in this survey, use of dental care services continues to be associated with socioeconomic status, both directly (thorough available financial resources) and indirectly (through differences in perceived utility of dental visits). There appears to be a need for expanded educational efforts among California's adults on the importance of periodic dental visits for prevention and early detection of disease.

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ADULT DENTAL PROBLEMS IN HARLEM: HIDDEN MORBIDITY IN THE INNER CITY

The oral health of the United States population is among the best in the world; however, important differences persist and may be increasing among population subgroups. While it is well known that central Harlem has strikingly high mortality rates, little is known about oral health. In 1992-94 we undertook a population-based survey of adults in a representative sample of Harlem households. A total of 695 interviews were completed (response rate 72%). The sample was 86.5 percent African-American; the remainder, mainly Hispanic. Questioned about a range of over 50 common complaints, the most commonly noted was problems with teeth or gums. Nearly one-third of respondents (30.1%) admitted to such problems in the past 12 months. Of those with oral health complaints, two-thirds (66.0%) reported having seen a dentist for that complaint. Prevalence of oral health complaints did not vary by age and complaints were common (34.2%) in young adults (18-24 years). Medical insurance status was as follows: 20 percent uninsured, 46 percent Medicaid, 5 percent Medicare/Medicaid, 29 percent private insurance. The frequency of dental care for complaints varied by insurance status. Among the uninsured, fewer than half (47.6%) had seen a dentist. Respondents with Medicaid and Medicare were more likely to see a dentist (62.0%, P=.12), those with private plans were much more likely to have received care (87%, P<.0001). Dental problems are the most common health complaint in Harlem, a fact not always recognized. One-third of respondents did not receive dental care for presumed dental emergencies. Access varied by medical insurance status and was somewhat better for Medicaid and Medicare-insured than the uninsured. In New York, Medicaid provides adult dental benefits. Our data suggest that these benefits do not result in care. The best access was for private health insurance. The results show huge unmet needs for oral health care.

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PRODUCTIVITY AS DETERMINED BY PRACTICE CONFIGURATION

Productivity is an important aspect of today's dental practice, enabling practitioners to serve as many patients as possible while maintaining the highest quality of care. Two ways of increasing productivity without increasing the number of dentists are to increase the number of operatories and/or to increase the number of dental assistants. The purpose of this study was to determine the most productive dentist/assistant/ operatory configuration. Production was based on the amount of time it took to perform different dental procedures. Surveys were mailed to 330 US Army general dentists who recorded a month's worth of procedures, the number of hours they provided direct patient care, and their practice configurations during the month. Since we were interested in which configuration was most productive, we focused on dentists who worked in one configuration for the entire survey period (n=166). Six configurations were studied ranging from 1 operatory/0 assistants to 3 operatories/3 assistants. Nearly 80 percent of questionnaires were returned and each provider's hourly productivity was calculated by dividing total output by reported chairside hours. The most productive configuration consisted of 3 operatories and 2 assistants. Furthermore, there was a 61 percent increase in productivity for providers using 3 operatories/2 assistants over the very popular 1 operatory/1 assistant configuration. These results are useful in determining the cost-benefit of changing practice configurations.

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ORAL HEALTH FOR MATERNITY PATIENTS: A PILOT PROJECT

Dental services were made available to low-income pregnant

women at the Anne Arundel County Department of Health. The objectives of the program were: (1) to provide oral health education for the pregnant patient and introduce concepts of proper infant oral health; (2) to eliminate or diminish pain, infection, active carious lesions and to maintain periodontium through appropriate cleanings; and (3) to assess specific oral health needs particular to this population. Following an unremarkable health history and patient questionnaire, initial examinations were performed, recording DMFS and PSR indices. Oral health education for the mother and infant was presented chairside, as well as dental therapy consisting of cleanings, fillings, extractions, temporization, and emergency care. Treatment was performed within established guidelines for maternity dental care, with physician consultation as necessary. All patients were allowed to complete necessary dental procedures after delivery of their baby. 44 maternity patients have received dental care through the program thus far. Preliminary findings are as follows: maternity patients range in age from 15 to 38 years, with a mean age of 25. The mean number of years since last dental visit is 4.5 years. Upon initial exam, 64 percent of patients experienced tooth pain and 61 percent of patients experienced bleeding gums. The mean DMFS is 11.10 and the mean D/DMFS is 47 percent. The mean PSR score is 2. 65 percent of patients have heard of baby bottle tooth decay and 30 percent of patients are currently smoking. The program is ongoing, with infant oral examinations being made available to babies of all maternity patients. Mothers are being urged to bring their child in by the age of 1 year.

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IMPACT OF AIDS ON THE PRACTICE OF DENTISTRY IN HOUSTON, TEXAS: DENTISTS' KNOWLEDGE, ATTITUDES, AND BEHAVIOR

Texas ranks fifth in the nation for the number of documented HIV-infected and AIDS cases and the city of Houston has the highest prevalence of HIV-infected and AIDS cases in the state of Texas. Dental health personnel have an ethical and legal obligation to provide dental services for HIV-infected persons. The purpose of this study was to assess the impact of AIDS on the practice of dentistry in Houston. The study population was all dentists with a current Houston practice address registered with the Texas State Dental Board. A 41-item questionnaire was mailed to a stratified random sample of 500 dentists in Houston. The questionnaire covered four main areas: general demographics, knowledge, attitudes, and behavior. The data collected were analyzed using an SPSS statistical program. About three-quarters of the dentists said they had treated an AIDS or HIV+ patient. More respondents said they were comfortable treating homosexuals (62 percent) than treating hemophiliacs (54 percent) or IV drug abusers (48 percent). Sixty percent of the dentists did not know breastmilk was a mode of transmission of HIV. The dentists were more willing to treat AIDS patients of record than AIDS patients not of record and more willing to treat HIV-infected patients than AIDS patients. There was a significant correlation between ever treated an HIV+ patient and willingness to treat an AIDS or HIV+ patient ($P<.01$). Although there have been improvements in dentists' attitudes and behaviors, their knowledge of HIV and AIDS is still only average.

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ASSOCIATIONS BETWEEN NONNUTRITIVE SUCKING AND CESSATION OF BREASTFEEDING

Breastmilk is the recommended method of nutrition for newborns and infants. A few studies have investigated factors associated with cessation of breastfeeding. The purpose of this paper is to report on the associations between nonnutritive sucking and breastfeeding cessation from age 6 weeks to 12 months among 1,235 infants in the Iowa Fluoride Study. Mothers completed mailed questionnaires at 6 weeks, 3, 6, 9, and 12 months. Percentages with any breastmilk were 47 percent (6 wk.), 36 percent (3 mo.), 27 percent (6 mo.), 18 percent (9 mo.), and 11 percent (12 mo.). Percentages using pacifiers were 81 percent, 71 percent, 59 percent, 46 percent, and 41 percent. Survival analysis assessed factors related to stopping breastfeeding. Pacifier use was most strongly related (RR=12.4, $P=.0001$). Other significant factors were not planning (assessed at birth) to breastfeed (RR=12.2), digit sucking (RR=1.6), infant antibiotic use (RR=1.3), less maternal education (RR=1.3), lower paternal age (RR=1.2), child care (per week, RR=1.2), higher income group (RR=1.2), and maternal smoking (RR=1.1). Although pacifier use was strongly associated with cessation of breastfeeding, it is not clear whether it is directly contributing to breastfeeding cessation. Supported in part by NIH grants RO1-DE09551 and P30-DE10126.

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CHILDREN'S DENTAL HEALTH: RECOMMENDATIONS VERSUS REALITY

A number of national organizations have established guidelines that indicate that children should be seen by a dentist by age 1; however, few studies have evaluated how effectively these guidelines are being followed. The American Dental Association (ADA) and American Academy of Pediatric Dentistry (AAPD) recommend that parents take action early to insure the health of their children's teeth. AAPD recommends that children see a dentist when the first tooth appears, usually between the age of 6 months and 1 year. These recommendations are intended to instill good attitudes and habits at an early age so the children will maintain good oral health throughout life. National Children's Dental Health Month was established as a method to help the dental team, parents, teachers, and others keep children's oral health an important factor in their overall health. The purpose of this cross-sectional study was to examine the oral health beliefs and behaviors of children and mothers in low-income populations. The sample consisted of 670 mothers and children enrolled in the Women, Infant, and Children Clinics (WIC) in Jackson County, Missouri. Mothers completed a self-administered, 32-item questionnaire to assess the mother and her child's oral health beliefs, behavior, and past use of dental services. The data collected were variables related to demographic information of the mother and child, perceived oral health status and need for care, and utilization of dental services by the mother and child. Findings showed that most children do not follow the recommendations of the ADA or AAPD. Results from the study showed that the main reason for not taking their child to the dentist was that the child was not old enough (child mean age: <2.4 years old).

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UTILIZATION OF DENTAL SERVICES AMONG WIC PARTICIPANTS IN MASSACHUSETTS

Public health officials are concerned that individuals living in lower SES groups have the lowest utilization of dental services and the highest level of dental need. To determine the reasons for this limited utilization, it is important to determine the attitudes and oral health behaviors and practices of such individuals. The purpose of this investigation was to examine the health related behaviors and attitudes among WIC recipients. A telephone survey was conducted of families participating in WIC programs in five rural communities in Massachusetts. Two hundred forty families agreed to participate in a telephone interview. A total of 177 (74%) interviews were completed. Sixty percent of respondents reported having had at least one dental visit within the past year; yet approximately 50 percent felt they were in need of dental care. Of these, approximately 20 percent reported that pain and discomfort related to an oral problem limited their usual activities. The most commonly cited barrier to receiving care was cost (50%). These results suggest that although the majority of respondents indicated that they had visited a dentist within the past year pain and discomfort continue to be a problem. Although the proportion of respondents who reported a dental visit within the past year was higher than expected, these findings suggest that number of dental visits may not be the most appropriate measure of dental utilization. Supported by the Massachusetts Department of Public Health.

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EFFECT OF MEDICAID MANAGED CARE ON DENTAL USE AND SATISFACTION

This study compared dental care use and satisfaction for Medicaid HMO clients versus fee-for-service (FFS) clients in south Florida. Random samples of Dade County Medicaid enrollees (aged 1-19 years) assigned to HMOs offering dental benefits and FFS clients from Dade, Broward, and Palm Beach counties were selected. Primary caregivers (n=232 FFS, 312 HMO) were contacted for a 12-minute telephone interview. FFS clients were more likely to report a dental visit for their child within the previous 12 months than were HMO clients (75.0% vs 59.6%; P=.001; chi-square). The groups were not significantly different in proportion reporting their child gets needed dental care (FFS 86.4%; HMO 83.8%; P=.454) or has a usual source of care (FFS 69.7%; HMO 64.1%; P=.214). FFS clients were more likely to report that they usually take their child to a private practitioner (72.1% vs 53.6%; P=.001). FFS clients reported higher satisfaction with appointment availability (P=.0082; unpaired T-test), treatment by office staff (P=.0291), and overall quality of care (P=.0148). Children assigned to Medicaid HMOs in south Florida seem to experience less accessible and satisfactory dental care than do fee-for-service Medicaid recipients. Supported by the Agency for Health Care Administration and the University of Florida.

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CORRELATES OF DENTAL SERVICE USE BY MEDICAID-ENROLLED CHILDREN

In 1996, the Florida legislature commissioned a study to evaluate accessibility to dental care for children enrolled in Medicaid. A systematic random sample of primary caregivers of Medicaid-enrolled children was developed, and caregivers with telephone numbers (53.3% of total sample) were contacted for a 12-minute telephone interview. Data from rural and urban respondents (n=1,302) were analyzed separately using univariate methods and multivariable logistic regression. The report of a usual source of dental care was the strongest correlate of dental service use for both urban (OR=14.6; P=.0001) and rural children (OR=16.8; P=.0001). In the rural group, other factors associated with a child's use of dental services included age, caregiver's marital status, race, and recent dental visit for the caregiver. The most commonly reported barriers to care were lack of perceived need (33%) and lack/inaccessibility of providers (26%). Respondents with a usual source of dental care for children reported high levels of satisfaction with the quality and accessibility of dental care. Providing a usual source of care for Medicaid-enrolled children appears to increase dramatically the likelihood that these children will use dental services. Supported by the Agency for Health Care Administration and the University of Florida.

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A NEW MODEL OF CAUSATION FOR BABY-BOTTLE TOOTH DECAY

"Inappropriate" infant feeding practices (nonnutritive sucking, prolonged bottle/breastfeeding, nap-time feeding) are believed to cause baby bottle tooth decay (BBTD). The association of these practices with BBTD is inconsistent and the strength of the association varies greatly. These practices increase the exposure to lactose, a cariogenic carbohydrate; however, the current causation model fails to explain why the majority of children with these risk factors do not develop BBTD. An element of susceptibility is required. Prevention has focused exclusively on education aimed at changing the postnatal feeding practices despite the fact that teeth begin formation in utero. Prenatal vitamin D deficiency can cause tooth defects. Defective teeth are liable to decay. The focus on individual risk factors misses the social context of this disease. The association of BBTD with low socioeconomic status is strong and consistent. BBTD may be a consequence of poor socioeconomic conditions and malnutrition.

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DENTAL PROCEDURES PROVIDED TO MEDICAID-ENROLLED CHILDREN WITH EARLY CHILDHOOD CARIES UNDER GENERAL ANESTHESIA

Early childhood caries is a significant oral health problem, with the most severe cases requiring treatment in a hospital operating room under general anesthesia. Many of these children are enrolled in state Medicaid programs through the Early and Periodic Screening, Diagnosis and treatment Program (EPSDT). Iowa Medicaid claims and eligibility files were used to evaluate the mix of services provided to children treated for early childhood caries under general anesthesia during fiscal year 1994. Hospital claims with a diagnosis code of dental caries (ICD-9 code 521.0) were matched by recipient ID# with dentists claims and anesthesiologists claims. 272 children under age 6 years were treated under general anesthesia for caries out of 64,358 children enrolled at some point in the year. Each child received an average of 18 procedures. The most frequently provided services were stainless steel crowns (SSCs), pulpotomies, and amalgam and composite restorations. The number of procedures varied by age, with the greatest number of procedures per child provided to 4-year-olds. They also had the greatest number of pulpotomies per case (5). Five-year-olds had the most SSCs per case (7.5) and the most extractions per case (2). The study was funded in part by the Iowa Prevention of Disabilities Policy Council and the Iowa Department of Human Services.

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SURVEILLANCE TECHNIQUE FOR DENTAL CARIES IN SCHOOL-CHILDREN

The purpose of this study was to develop and test a surveillance technique for use by public health programs to determine the number of caries-free children, the total number of decayed and filled primary and permanent teeth, and the proportion of untreated dental caries. The technique was used by five dental professionals to assess 160 second grade children. Those children also were examined by a single dentist using a standard epidemiologic index (dfs) and methods. Reliability was tested by pairwise comparison of mean scores for all screeners. Validity was determined by a comparison of surveillance data with dfs scores. There were no significant differences in dmft or dt calls among the screeners. Kappa scores by examiner for agreement between caries-free students and those with caries ranged from 0.69 to 0.93. Collapsing data into categories of low, medium, and high caries produced kappa scores ranging from 0.78 to 0.91. The mean dft for the epidemiologic assessment was 2.2, a difference of 9 percent from the screeners. There were no significant differences in dmft scores between any of the screeners and dft of the examiner. Sensitivity values for caries (dt) ranged from 85 to 90 percent, and from 85 to 94 percent for specificity. A simple surveillance technique for the measurement of caries-free status and number of primary and permanent teeth that show evidence of caries experience was developed and pilot tested. The technique proved to be practical, reliable, and valid when used in public health programs.