



# Oral Health

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## PROGRESS REVIEW



In the 17th session in the second series of assessments of *Healthy People 2010*, Acting Assistant Secretary for Health Donald Wright chaired a Progress Review on Oral Health. He was assisted by staff of the co-lead agencies for this *Healthy People 2010* focus area, the Centers for Disease Control and Prevention (CDC), the National Institutes of Health (NIH), the Health Resources and Services Administration (HRSA), and the Indian Health Service (IHS). Also participating in the review were representatives from other offices and agencies within the U.S. Department of Health and Human Services (HHS) and from the U.S. Department of Justice Bureau of Prisons. Dr. Wright noted that the great strides in improving the Nation's oral health over the past 50 years have been a major public health success story. Most of the gains have resulted from application of effective prevention and control measures. The most serious barrier to further improvement is difficulty in accessing prevention and treatment services, a burden that falls heaviest on residents in rural areas or inner cities, certain racial and ethnic populations, children, older adults, and persons of lower socioeconomic status.

The complete November 2000 text for the Oral Health focus area of *Healthy People 2010* is available online at [www.healthypeople.gov/document/html/volume2/21oral.htm](http://www.healthypeople.gov/document/html/volume2/21oral.htm). Revisions to the focus area chapter that were made after the January 2005 Midcourse Review are available at [www.healthypeople.gov/data/midcourse/html/focusareas/fa21toc.htm](http://www.healthypeople.gov/data/midcourse/html/focusareas/fa21toc.htm). Additional data used in the Progress Review for this focus area's objectives and their detailed definitions can be accessed at [wonder.cdc.gov/data2010](http://wonder.cdc.gov/data2010). For comparison with the current state of the focus area, the report on the first-round Progress Review (held on March 17, 2004) is archived at [www.healthypeople.gov/data/2010prog/focus21/2004fa21.htm](http://www.healthypeople.gov/data/2010prog/focus21/2004fa21.htm). The meeting agenda, tabulated data for all focus area objectives, charts, and other materials used in the Progress Review can be found at a companion site maintained by the CDC National Center for Health Statistics (NCHS): [www.cdc.gov/nchs/about/otheract/hpdata2010/focusareas/fa21-oral2.htm](http://www.cdc.gov/nchs/about/otheract/hpdata2010/focusareas/fa21-oral2.htm).

### Data Trends

In his overview of data for the focus area, Richard Klein of the NCHS Health Promotion Statistics Branch noted that dental caries (tooth decay) is the most common chronic disease in children. Despite increases in insurance coverage, nearly three times as many children lacked dental insurance as lacked medical insurance in both 1995 and 2003–04. Of the objectives and subobjectives in the focus area that were continued after the Midcourse Review

of *Healthy People 2010*, 2 have met or exceeded their targets, 6 are improving, 1 moved away from the target, 11 have shown little or no progress, and 6 are without data for measuring progress. Mr. Klein then examined in greater detail the 12 objectives and subobjectives in the focus area that were highlighted in the Progress Review. These had to do with the oral health of children and adults and with the dental health care system and its use.

**(Obj. 21-1c):** Dental caries in children aged 15 years declined from a prevalence of 61 percent in the period 1988–1994 to 56 percent in 1999–2004. The 2010 target is 51 percent.

**(Obj. 21-1b):** The prevalence of dental caries in primary or permanent teeth among children aged 6 to 8 years changed little between 1988–1994, when it was 52 percent, and 1999–2004 (53 percent). Among Mexican American children in that age group, the prevalence in 1999–2004 was 69 percent. The target for all population groups is 42 percent.

**(Obj. 21-1a):** Among young children aged 2 to 4 years, the prevalence of dental caries in primary teeth increased from 18 percent in 1988–1994 to 24 percent in 1999–2004. By comparison with older children, caries in preschool children increased significantly in the past decade. This trend could portend a future increase in caries in older children, as influenced by changes in diet or food consumption patterns. The target is 11 percent.

**(Obj. 21-9):** In 2006, 69 percent of the U.S. population was served by community water fluoridation, an increase from 62 percent in 1992. The target is 75 percent.

**(Obj. 21-8a):** Dental sealants provide a physical barrier and effectively protect the pits and fissures on the biting surfaces of teeth from dental decay. Application of dental sealants for children aged 8 years increased from a prevalence of 23 percent in 1998–1994 to 32 percent in 1999–2004. Over that period, sealant application for children aged 8 years increased among all racial and ethnic groups for whom data were available: from 29 percent to 38 percent among non-Hispanic whites; from 11 percent to 23 percent among non-Hispanic blacks; and from 10 percent to 19 percent among Mexican Americans. The target for all population groups is 50 percent.

**(Obj. 21-12):** Among low-income youth aged 19 years and younger, provision of annual preventive

dental services (i.e., examination, x-ray, fluoride treatment, cleaning, or sealant application) increased from 25 percent in 1996 to 31 percent in 2004. The target is 66 percent.

**(Obj. 21-10):** The proportion of persons aged 2 years and older (age-adjusted) who had visited a dentist in the previous year changed little between 1996 (44 percent) and 2004 (45 percent). Among racial and ethnic groups for whom data were available, the proportions of persons in that age group who made such visits in or just prior to 2004 were as follows: non-Hispanic white, 50 percent; Asian/Pacific Islander, 44 percent; American Indian/Alaska Native, 33 percent; non-Hispanic black, 30 percent; and Hispanic, 29 percent. The proportion of persons aged 25 years and older with at least some college education who made such visits in or just prior to 2004 was 59 percent, a significantly higher proportion than for high school graduates in that age category (41 percent) and for those in that age category who had not completed high school (20 percent). The target for all population groups is 56 percent.

**(Obj. 21-4):** In the period 1999–2004, 24 percent of older adults aged 65 to 74 years had lost all their natural teeth, compared with 29 percent in 1998–1994. Among racial and ethnic groups for whom data were available, the proportions of older adults who had complete tooth loss in 1999–2004 were as follows: non-Hispanic black, 26 percent; non-Hispanic white, 23 percent; and Mexican American, 18 percent. Among older adults in the age group who had some college education, the proportion who had complete tooth loss in 1999–2004 was 11 percent (surpassing the target), compared with 43 percent of those in the age group who had not completed high school. The target for all population groups is 22 percent.

**(Obj. 21-5b):** Among adults aged 35 to 44 years, the proportion who had destructive periodontal disease (i.e., loss of attachment  $\geq$  4mm in one or more periodontal sites) decreased from 22 percent in

1998–1994 to 16 percent in 1999–2004. Significant reductions over this period were recorded for all racial and ethnic groups surveyed. By gender and by racial or ethnic group for which data were available, the proportions in 1999–2004 were as follows: female, 12 percent (surpassing the target); male, 20 percent; non-Hispanic white, 14 percent; Mexican American, 16 percent; and non-Hispanic black, 23 percent. The target for all population groups is 14 percent.

**(Obj. 21-14):** Local health departments and community-based health centers serve groups that traditionally have limited access to dental services—for example, minorities and persons with low income. The proportion of local health departments and community-based health centers that offered onsite oral health services increased from 52 percent in 1997 to 70 percent in 2006. The target is 75 percent.

**(Obj. 21-17a):** The number of State and local dental programs that were directed by a dental professional with public health training increased from 39 in 2003 to 51 in 2006, surpassing the target of 41. Over the same period and at a roughly proportionate ratio, the number of State and local dental programs serving a population of at least 250,000 increased from 123 to 152.

**(Obj. 21-17b):** The number of IHS and Tribal dental programs that were directed by a dental professional with public health training increased from 9 in 2003 to 10 in 2006. The target is 9. Over the same period and at a roughly proportionate ratio, the number of IHS and Tribal dental programs serving a population of at least 30,000 increased from 32 to 34.

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## Key Challenges and Current Strategies

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In presentations that followed the data overview, the principal themes were introduced by William Maas, Director, Division of Oral Health, CDC National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP); Isabel Garcia, Deputy Director, NIH National Institute of Dental and Craniofacial Research (NIDCR); Jay Anderson, Chief Dental Officer, HRSA Bureau of Primary Health Care; and Patrick Blahut, Deputy Director, IHS Division of Oral Health. Their statements and Progress Review briefing materials identified a number of barriers to achieving the objectives, as well as activities under way to meet these challenges, including the following:

### Barriers

- In general, decisionmakers and parents have low levels of awareness that oral health is integral to general health and that most oral disease can be prevented or controlled.
- Dental care providers who will accept Medicaid fees are in short supply because reimbursement fees

are widely considered to be set at too low a level. In addition, there is a paucity of providers who will treat very young children—an age group with a high incidence of decay.

- Severe Early Childhood Caries is a destructive presentation of dental decay that often involves multiple teeth, including front teeth. Left untreated, this decay can cause pain and affect a child's ability to chew and speak properly. Treatment for advanced cases involves general anesthesia in the operating room, incurring both risk to the patient and high financial cost.
- The increase in the prevalence of dental caries among preschool children may reflect unhealthy eating choices and reduced attention on the part of child caregivers to good oral hygiene practices, including optimal fluoride exposure through toothbrushing and fluoridated water.

- Nominal fluoridation of water supplies does not guarantee that area consumers will receive the optimum benefits of this preventive practice. For best results, water supply managers must ensure that the desirable concentration of fluoride ions is consistently achieved week after week.
- Despite the proven benefits of water fluoridation, both for adults as well as children, formidable barriers continue to impede more widespread adoption of this public health practice, including lack of sufficient personnel at the State level, costs, maintenance, public misperceptions about safety, and political opposition.
- Population-based surveillance of periodontal disease is virtually nonexistent at the State and local levels, even though most public health activities are designed to target State and local populations.
- A 1999 survey documented in detail the great discrepancy in oral health status between the U.S. population in general and Native Americans, who continue to be in acute need of preventive, emergency, and restorative dental health services. For example, 76 percent of Native American children have had decay and 67 percent have active, untreated decay. Among Native American children aged 2 to 5 years, IHS dentists found an average of six decayed teeth surfaces per child, compared with a prevalence of approximately one decayed surface among the general U.S. population of this age group.
- For reasons of salary levels, length of commitment, more attractive employment opportunities elsewhere, and other factors, recruitment and retention of dental health care professionals has become a continuing and worsening problem for IHS. Currently, 32 percent of full-time dental positions in IHS are vacant, an all-time high.

## **Activities and Outcomes**

- The combined oral health activities of the five HRSA Bureaus provide safety-net dental services for the Nation.
- The increase in the proportion of low-income children receiving annual preventive dental services can be attributed in part to favorable changes between 1996 and 2000 in the dental Medicaid program and the State Children's Health Insurance Program.
- CDC/NCCDPHP is helping to develop public health law-related educational information to support oral health partners and the legal community in conducting analyses of public health legal principles and issues relating to community water fluoridation.
- IHS hospitals and clinics in 35 States offer dental services to approximately 3 million Native Americans at no cost to the patients. The number of federally recognized Tribes and the number of individuals enrolled in those Tribes have grown rapidly in the past four decades. At present, IHS is seeking a contractor in the private sector to create a model electronic dental record, a development that should improve the comprehensiveness and efficiency of data collection and analysis.
- HRSA completed a pilot program in 2007 in which dentists were trained to provide primary care interventions for children under 2 years of age. Widespread adoption of such an approach to the provision of dental health services would help to fill a gap in professional instruction, since schools of dentistry have not, traditionally, provided their students training in dealing with very young children, a group whose risk of developing dental caries has increased in recent years.
- Annually, NIH/NIDCR distributes about 130,000 copies of publications to inform the public

about the risk factors, signs, and symptoms of oral cancer and the steps involved in an oral cancer examination. NIDCR is now developing a new series of materials for distribution by community groups around the country to raise African American men's awareness of their high risk for the disease and the need for early detection.

- In 2008, CDC/NCCDPHP, in partnership with the American Dental Association, expects to release updated recommendations to inform the dental profession of the science base supporting the effectiveness of sealants delivered in the non-ideal conditions of school settings.
- Recipients of IHS dental health care services have the highest rates for dental sealant application in the world; the Agency places more than a quarter million sealants each year. A survey of 8- and 14-year-old IHS clients found that their average levels of such applications were 10 percent higher than the targets set for the pertinent *Healthy People 2010* objectives.
- In 2001, NIH/NIDCR established five Centers for Research to Reduce Oral Health Disparities. Each received a 7-year award. The centers assembled multidisciplinary research teams and forged partnerships with State and local health agencies and other organizations. One resulting center study showed that only 14 percent of tooth decay in one particular impoverished urban neighborhood could be explained by classical individual risk factors, strongly suggesting that prevailing social, economic, and environmental factors must be taken into account in programs to improve the oral health status of people with low income. NIH/NIDCR recently recomputed the program, with plans for the next generation of centers to test the effectiveness of interventions on a wider scale.
- To sustain and improve the ability to conduct surveillance of periodontal disease at the State and local levels, CDC/NCCDPHP has developed a promising nonclinical alternative for surveillance using self-report measures to predict the prevalence of periodontal disease. This new approach will be further tested in the 2009–2010 National Health and Nutrition Examination Survey (NHANES). If successful, this approach can be adapted to available interview-based surveillance systems.
- NIH/NIDCR is supporting new technologies to measure subtle changes in the mineral content of dental enamel that signal the earliest stages of caries. One technology under development is a nondestructive imaging system that records changes in the way that polarized light backscatters from enamel in order to distinguish between normal and demineralized tissue.
- The newly organized HRSA Bureau of Clinician Recruitment and Service is the organizational home of the National Health Service Corps (NHSC), in which approximately 475 dentists, whose professional training was supported by the NHSC, are fulfilling their service obligation by providing oral health services, mostly to low-income people living in clinically underserved areas of the country.
- Seven NIH Institutes are funding the largest long-term epidemiologic study of health and disease in Hispanic populations living in the United States. The Hispanic Community Health Study will run for over 6 years and include as many as 16,000 participants. The study includes an oral health component funded by NIH/NIDCR to estimate the prevalence of oral diseases.
- The HRSA Office of Rural Health Policy supports dental health services for underserved populations in the most impoverished rural counties in the United States. Selection of the recipients of grant funds from the office is frequently influenced by an area's degree of disparity with respect to *Healthy People 2010* objectives.

- CDC/NCCDPHP and NIH/NIDCR played a key role in the development and release of A National Call to Action to Promote Oral Health, a public-private partnership under the Office of the Surgeon General. The five action areas called for are to 1) change

perceptions of oral health, 2) overcome barriers to care, 3) build the science base, 4) increase workforce diversity, and 5) increase collaboration among public health agencies, nongovernmental agencies, private practitioners, and others.

## **Approaches for Consideration**

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Participants in the Progress Review made the following suggestions for public health professionals and policymakers to consider as steps to enable further progress toward achievement of the objectives for Oral Health:

- Endeavor to increase the oral health literacy of decisionmakers and parents, specifically in connection with the need for early intervention to prevent dental caries in young children.
- Enhance efforts to increase the proportion of underrepresented racial and ethnic minorities in the dental workforce who are compatible with the populations in highest need of care.
- To achieve greater integration of oral and general health programs, promote more active collaboration among public agencies and private health organizations, private practitioners, and other health disciplines.
- Explore the possibility of adapting the less expensive community version of NHANES for use in collecting data on oral health status on Indian reservations.
- Intensify efforts to develop new or refined diagnostic tools for detecting dental diseases in their early or precursor stages.
- Expand school-based sealant programs.
- Develop measures for periodontal disease surveillance that demand fewer resources and that can be integrated into State and local surveys.

- Make efforts to induce health professions schools to introduce students to career opportunities offered by IHS and by the HRSA-supported Community Health Centers.

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[Signed May 6, 2008]

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