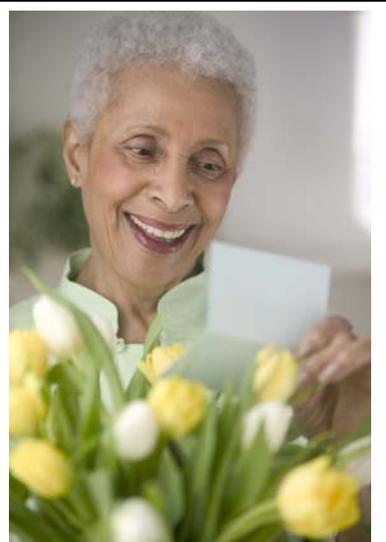
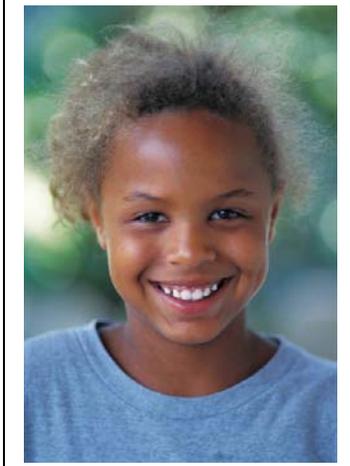


# THE IMPACT OF ORAL DISEASE IN NEW YORK STATE



**NEW YORK STATE DEPARTMENT OF HEALTH  
BUREAU OF DENTAL HEALTH  
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Comments regarding the format or content of this report are welcomed and can be sent to the New York State Department of Health's Bureau of Dental Health, Empire State Plaza, Corning Tower Building, Room 542, Albany NY 12237.

## A Message

Dear Colleague:

I am pleased to present this comprehensive report on the Impact of Oral Disease in New York State. The report summarizes the most current information available on the burden of oral disease on the people of New York State and was developed by the New York State Department of Health in collaboration with the Centers for Disease Control and Prevention, Division of Oral Health.

New York State has a strong commitment to improving oral health care for all New Yorkers and in reducing the burden of oral disease, especially among minority, low income, and special needs populations. This report not only highlights the numerous achievements made in recent years in the oral health of New Yorkers and in their ability to access dental services, but also describes groups and regions in our State that continue to be at highest risk for oral health problems and provides a roadmap for future prevention efforts.

We hope that the information provided in this report will help raise awareness of the need for monitoring oral health and the burden of oral diseases in New York State and guide efforts to prevent and treat oral diseases and enhance the quality of life of all New York State residents.

Sincerely,

Antonia C. Novello, M.D., M.P.H., Dr. P.H.  
Commissioner

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## I. INTRODUCTION

The burden of oral disease is manifested in poor nutrition, school absences, missed workdays, and increasing public and private expenditures for dental care. Poor oral health, which ranges from cavities to cancers, causes needless pain, suffering, and disabilities for countless Americans.

The mouth is an integral part of human anatomy, with oral health intimately related to the health of the rest of the body. A growing body of scientific evidence has linked poor oral health to adverse general health outcomes, with mounting evidence suggesting that infections in the mouth, such as periodontal disease can increase the risk for heart disease, put pregnant women at greater risk for premature delivery, and can complicate the control of blood sugar for people living with diabetes. Additionally, dental caries in children, especially if untreated, can predispose children to significant oral and systemic problems, including eating difficulties, altered speech, loss of tooth structure, inadequate tooth function, unsightly appearance and poor self-esteem, pain, infection, tooth loss, difficulties concentrating and learning, and missed school days. Behaviors that affect general health, such as tobacco use, excessive alcohol use and poor dietary choices are also associated with poor oral health outcomes. Conversely, changes in the mouth are often the first signs of problems elsewhere in the body, such as infectious diseases, immune disorders, nutritional deficiencies, and cancer.

Our mouth is our primary connection to the world. In addition to providing us a way to take in water and nutrients to sustain life, it is our primary means of communication and the most visible sign of our mood and a major part of how we appear to others. Oral health is more than just having all your teeth and having those teeth being free from cavities, decay, or fillings. It is an essential and integral component of people's overall health throughout life. Oral health refers to your whole mouth: not just your teeth, but your gums, hard and soft palate, the linings of the mouth and throat, your tongue, lips, salivary glands, chewing muscles, and your upper and lower jaws. Good oral health means being free of tooth decay and gum disease, but also being free from conditions producing chronic oral pain, oral and throat cancers, oral tissue lesions, birth defects such as cleft lip and palate, and other diseases, conditions, or disorders that affect the oral, dental and craniofacial tissues. Together, the oral, dental and craniofacial tissues are known as the craniofacial complex. Good oral health is important because the craniofacial complex includes the ability to carry on the most basic human functions such as chewing, tasting, swallowing, speaking, smiling, kissing, and singing.

This report summarizes the most current information available on the burden of oral disease on the people of New York State. It also highlights groups and regions in our State that are at highest risk for oral health problems, and discusses strategies to prevent these conditions and provide access to dental care. Comparisons are made to national data whenever possible, and to *Healthy People 2010* objectives when appropriate. For some conditions, national data, but not State data, are available at this time. It is hoped that the information provided in this report will help raise awareness of the need for monitoring oral health and the burden of oral diseases in New York State and guide efforts to prevent and treat oral diseases and enhance the quality of life of all New York State residents.

## II. EXECUTIVE SUMMARY

Over the last five decades, New York State has seen a dramatic improvement in the oral health of its residents through the actions of individuals, professionals, policy makers, State and local governments, educational institutions and health care organizations. Efforts of the Bureau of Dental Health, New York State Department of Health, to promote oral health through research, community-based prevention interventions and programs are a testament to its commitment to achieve optimum oral health for all New Yorkers.

Borrowing from the World Health Organization's definition of health, oral health is a state of complete physical, mental and social wellbeing, not merely the absence of tooth decay, oral and throat cancers, gum disease, chronic pain, oral tissue lesions, birth defects such as cleft lip and palate, and other diseases and disorders that affect the oral, dental and craniofacial tissues. The mouth is our primary means of communication, the most visible sign of our mood, and a major part of how we appear to others. Diseases and disorders that damage the mouth and face can negatively impact on an individual's quality of life, self-esteem, social interactions, and ability to communicate; disrupt vital functions such as chewing, swallowing, and sleep; and result in social isolation.

The impact of oral disease, or burden of disease, is measured through a comprehensive assessment of mortality, morbidity, incidence and prevalence data, risk factors, and health service availability and utilization, and is defined as the total significance of disease for society beyond the immediate cost of treatment. Estimates of the burden of oral disease reflect the amount of dental care already being provided, as well as the effects of all other actions which protect (e.g., dental sealants) or damage (e.g., tobacco) oral health. Analysis of the burden of oral disease can provide a comprehensive, comparative overview of the status of oral health among New Yorkers, help identify factors affecting oral health, identify vulnerable population groups, assist in developing interventions and establishing priorities for surveillance and future research, and be used to measure the effectiveness of interventions in reducing the burden of oral disease.

This report presents the most currently available information on the burden of oral disease on the people of New York State, highlights groups and regions at highest risk for oral health problems, and discusses strategies to prevent these conditions and provide access to dental care. Based on an analysis of the data, the burden of oral disease is spread unevenly throughout the population, with dental diseases and unmet need for dental care more prevalent in racial/ethnic minority groups and in populations whose access to oral health care services is compromised by the inability to pay for services, lack of adequate insurance coverage, lack of available providers and services, transportation barriers, language barriers, and the complexity of oral and medical conditions.

### **ORAL HEALTH STATUS OF NEW YORKERS:**

Although oral diseases are for the most part preventable and effective interventions are available both at the community and individual level, oral diseases still affect a large proportion of the New York State population, with disparities in oral health observed.

- ☒ Over half of New York State third graders (54%) experience dental caries, with a greater percent going untreated (33%) compared to third graders nationally (26%). Third graders

- in New York City had more untreated caries (38%) than third graders statewide and nationally.
- ☒ Caries experience and untreated dental decay were more prevalent among third graders from lower socioeconomic groups and minority children.
    - Children from lower income groups in New York State (60%) and New York City (56%) experienced more caries than their higher income counterparts (48% and 48%, respectively).
    - Lower income children in New York State (41%) and New York City (40%) had more untreated dental decay than higher income third graders (23% and 25%, respectively).
    - Hispanic/Latino, Black/African American, and Asian third graders in New York City had more untreated dental decay (37%, 38%, and 45%, respectively) than White, non-Hispanic/Latino children (27%).
  - ☒ Adult New Yorkers fared much better than their national counterparts with respect to tooth retention, with 56% of 35-44 year olds reporting never having had a tooth extracted as a result of oral disease compared to 39% nationally. Similarly, 17% of 65-74 year old New Yorkers reported having lost all of their teeth, compared to 25% nationally. New York State also performed better than the Healthy People 2010 targets of 42% of 35-44 year olds having no tooth extractions and not more than 20% of 65-74 year olds having lost all of their natural teeth.
  - ☒ Similar to national trends, disparities were found in the oral health of adult New Yorkers by race/ethnicity, education level, and gender.
    - Racial/ethnic minorities, females, and individuals with less education were found to have more tooth loss.
    - A greater percentage of individuals at lower annual income levels reported having had a tooth extracted due to dental caries or periodontal disease (65%) and edentulism (22%) compared to their higher income age counterparts (37% and 14%, respectively).
  - ☒ Since 1999, there has been a declining statewide trend in both tooth loss due to dental caries or periodontal disease and edentulism among New York State adults. Not all groups, however, have benefited to the same extent, with disparities noted in the level of improvements in oral health.
    - From 1999 to 2004, the percent of minority adults having a tooth extracted due to dental caries or periodontal disease increased from 51% to 56%; during the same time period, the percentage of White, non-Hispanic/Latino adults having a tooth extracted decreased from 46% to 35%.
    - The percent of lower income adults having a tooth extracted due to oral disease remained unchanged from 1999 to 2004 (65%), while improvements in oral health were found among higher income individuals (46% down to 37%).
    - With the exception of racial/ethnic minority individuals, there was a downward trend in the prevalence of edentulism across gender, income, and education level from 1999 to 2004. During the same time period, however, complete tooth loss among Blacks, Hispanics, and other racial/ethnic minority individuals increased from 14% to 19%.
  - ☒ Based on newly reported cases of oral and pharyngeal cancers in New York State from 1999-2003, the incidence rates of cancers of the oral cavity and pharynx were 14.6 per 100,000 males and 5.9 per 100,000 females, compared to 15.7 and 6.1, respectively, for males and females nationally.

- ☒ Similar to national trends, Black males (15.6) and men of Hispanic origin (15.5) were most at risk for developing oral and pharyngeal cancers.
- ☒ Age-adjusted mortality rates from oral and pharyngeal cancers between 1999-2003 were higher among New York State males (3.7) than females (1.4) and higher among Black (5.5), Asian and Pacific Islander (5.0), and Hispanic (4.0) males than White (3.3) males.
- ☒ New York State performed better than the national average with respect to the early detection of oral and pharyngeal cancers, with 34.0% of men and 46.8% of women with invasive oral and pharyngeal cancers diagnosed at an early stage. Black males, however, were the least likely to have been diagnosed at an early stage (21.9%).

### **PREVENTION MEASURES:**

Prevention measures, such as community water fluoridation, topical fluoride treatments, dental sealants, routine dental examinations and prophylaxis, screening for oral cavity and oropharyngeal cancers, and the reduction of risk behaviors known to contribute to dental disease, have all been demonstrated to be effective strategies for improving oral health and reducing the burden of oral disease.

- ☒ During 2005, more than 12.7 million New Yorkers received optimally fluoridated water, representing 73% of the State's population served by public water systems. In New York City, 100% of the population is on a fluoridated community water supply; outside of New York City, 46% of the population receives fluoridated water.
- ☒ Fluoride tablets are prescribed to children living in areas of Upstate New York State where water is not fluoridated. Nearly 27% of Upstate 3<sup>rd</sup> graders surveyed reported the regular use of fluoride tablets, with fluoride tablet use greater among higher income (30.5%) than lower-income children (17.7%).
- ☒ New York State third graders (27%) were similar to third graders nationally (26%) with respect to the prevalence of dental sealants.
- ☒ The prevalence of dental sealants was found to vary by family income, with children who reportedly participated in the free and reduced-priced school lunch program having a much lower prevalence of dental sealants (18%) than children from higher income families (41%).
- ☒ A much higher percentage of New York State third graders (73%) reported having visited a dentist or a dental clinic within the past 12 months than their national counterparts (55%).
- ☒ New York State adults were similar to adults nationally with respect to visiting a dentist or dental clinic within the prior 12 months (72% and 70%, respectively) and having their teeth cleaned within the past year (72% and 69%, respectively).
- ☒ Similar to national findings, disparities were noted in utilization of dental services based on race and ethnicity, income, and level of education.
  - A lower proportion of lower-income third grade children (61%) had a dental visit in the prior 12 months compared to higher-income children (87%).
  - Black (69%) and Hispanic/Latino (66%) New York State adults were less likely to have visited a dentist or dental clinic in the past year than Whites (75%). A smaller percentage of Black (66%), Hispanic (70%), and other racial/ethnic minority (63%) individuals also reported having had their teeth cleaned within the prior 12 months compared to Whites (75%).

- o Low income New Yorkers were less likely to have visited a dentist or dental clinic (58%) or have their teeth cleaned (55%) in the past year than higher income New Yorkers (82% and 80%, respectively).
  - o A smaller percentage of New Yorkers 25 years of age and older with less than a high school education visited the dentist (60%) or had their teeth cleaned (60%) in the prior year compared to those graduating from college (79% and 78%, respectively).
  - o Younger (34%), less educated (29%), Black (35%), and unmarried women (38%), and those with Medicaid coverage (35%) were less likely to have visited a dentist or dental clinic during pregnancy than older (57%), more educated (55%), married (51%), White (49%), and non-Medicaid enrolled (52%) women.
- ☒ The percentage of New York State adults 18 years of age and older reporting smoking 100 cigarettes in their lifetime and smoking every day or on some days was less than that reported nationally for non-minority individuals, males, adults under 25 years of age or between 35 and 64 years of age, those with annual incomes under \$35,000, and among individuals with less than a college education. Blacks (24%), adults 25-34 years of age (28%) those with incomes under \$15,000 a year (28%), and individuals not completing high school (27%) were found to be most at risk for smoking.
  - ☒ High school students in the State had slightly healthier behavior than high school students nationally with respect to current cigarette smoking (20% and 22%, respectively) and use of chewing tobacco (4% and 7%, respectively).
  - ☒ The percentage of New York State students at risk for smoking decreased across all racial/ethnic groups and by gender from 1999 to 2003. The use of chewing tobacco by male high school students decreased from 9.3% in 1997 to 6.7% in 2003; over the same time period, the use of chewing tobacco by female students increased from 0.9% to 1.6%, respectively.
  - ☒ 35% of individuals 18 years of age and older in New York State reported having had an oral cancer examination during their lifetime.
  - ☒ In New York State and nationally, a higher proportion of females, White non-Hispanics, and individuals with more education and higher incomes had been examined for oral and pharyngeal cancers.

#### **ACCESS TO DENTAL SERVICES:**

Access to and utilization of dental services is dependent not only on one's ability to pay for dental services, either directly or through third party coverage, but also on awareness about the importance of oral health, recognition of the need for services, oral health literacy, the value placed on oral health care, the overall availability of providers, provider capacity to provide culturally competent services, and the willingness of dental professionals to accept third party reimbursements. Increasing the number of dental care professionals from under-represented racial/ethnic groups, as well as enhancing the oral health literacy of consumers are essential for improving access to and utilization of services and reducing disparities in the burden of oral disease.

- ☒ As of July 1, 2006, there were 15,291 dentists, 8,390 dental hygienists, and 667 certified dental assistants registered by the New York State Education Department Office of the Professions to practice in New York State.

- ☒ New York State has 79.6 dentists per 100,000 population or 1 dentist per 1,256 individuals and is well above the national dentist to population rate. The ratio of dental hygienists to State population (43.8 per 100,000 or 1 dental hygienist per 2,285 people) was slightly higher than nationally.
- ☒ The distribution of dentists and dental hygienists is geographically uneven. There are many rural and inner city areas in the State where shortages of dentists and dental hygienists exist, where specialty services may not be available, and where the number of dental professionals treating underserved populations is inadequate.
- ☒ The demand for dentists, based on current employment levels, is projected to increase by 3.1% from 10,220 jobs in 2002 to 10,530 in 2012. During the same time period, the demand for dental hygienists and dental assistants are both projected to increase by nearly 30%.
- ☒ Data on New York State dentists are consistent with national findings with respect to the expected decline in the number of dentists per 100,000 population and the aging of the dental workforce; 85% of the average number of dentists per year needed to meet statewide demands (200), are needed to replace those either retiring or leaving the profession for other reasons.
- ☒ Of the 350 average number of dental hygienists needed each year to meet increasing statewide demands, 77% of this number reflects the creation of new positions versus the replacement of those exiting the profession. Although 352 new dental hygienists register annually in New York State, it is not known how many of these individuals actually practice in the State.
- ☒ New York State has impressive dental resources and assets, with four Schools of Dentistry, 10 entry-level State-accredited Dental Hygiene Programs, and over 50 training programs in advanced education in dentistry.
- ☒ Nine regional Area Health Education Centers (AHEC) were established in the State to respond to the unequal distribution of the health care workforce. Each center is located in a medically underserved community. Approximately 7% of recent dental graduates in New York State practice in a designated Dental Health Professional Shortage Area, with Western and Northern New York AHEC regions accounting for the largest percentage of dental graduates practicing in 2001.
- ☒ Enrollment of under-represented minority students at New York State dental schools has not kept pace with national enrollment levels. Of the 428 reported enrollees in New York State dental schools in 2002, only 22 students reported being Black/African American (1.4%) or Hispanic (3.7%). The distribution of White (42%) and Asian/Pacific Islander (40.9%) enrollees, on the other hand, were nearly equally split, with the percentage of Asian/Pacific Islanders enrolled in New York State dental schools far exceeding the national average of 5.4%.
- ☒ In 2003, 31.6% of all New Yorkers lived under 200% of the Federal Poverty Level and 14.3% lived under 100% of the Federal Poverty Level; nearly 21% of related children under 5 years of age lived below poverty in the past 12 months and 22% of unrelated individuals 15 years of age and older lived in poverty.
- ☒ 15% of adult New Yorkers and 9.4% of children less than 18 years of age are uninsured for medical care.
- ☒ In 2004, of the 14,932 dentists licensed to practice in New York State, 46% were enrolled in Medicaid and 20% were enrolled in Child Health Plus B. During the same time period,

however, only 3,845 dentists statewide (26%) had at least one claim paid by Medicaid. Of the 3,845 dentists submitting at least one claim, 90% (3,454) had \$1,000 or more in Medicaid claims during 2004.

- ☒ New York State total Medicaid expenditures in 2004 approached \$35 billion:
  - \$6.4 billion was spent for individuals enrolled in prepaid Medicaid Managed Care.
  - \$28.5 billion was spent on fee for services.
    - Nearly \$303 million or 1.1% of all Medicaid fee-for-service expenditures was spent on dental services.
- ☒ During the 2004 calendar year, on average, 4.05 million individuals per month were eligible to receive Medicaid benefits. Approximately 15% of Medicaid eligible individuals in New York City and 14% in the rest of the State utilized dental services.
- ☒ About 75¢ out of every Medicaid dollar spent for dental services during 2004 was for the treatment of dental caries, periodontal disease, or for more involved dental problems. Only 14¢ of every Medicaid dental-service dollar was for diagnostic services, while just 11¢ was for preventive services
- ☒ During calendar year 2004, gross expenditures for dental health education provided by local departments of health totaled nearly \$5.47 million while gross expenditures for dental services reached almost \$7.79 million. Fifty-one of 57 counties and New York City received funding to provide dental education, while 15 of 57 counties and New York City received funding for the provision of dental health services.
- ☒ Nearly 11% (\$65.5 million) of all 2004 grant funding from HRSA Bureau of Primary Health Care was spent for the provision of dental services.
  - Of the 1 million plus individuals receiving grant-funded services during the year, 19% (195,162) received dental care either directly or through referral, with 2.61 dental encounters per dental user at a cost of \$129 per encounter.
  - Of those receiving dental services, 36% had an oral examination, 37% had prophylactic treatment, 12% received fluoride treatments, 6% had sealants applied, 26% had restorative services, 15% had rehabilitative services, 9% had tooth extractions, and 8% received emergency dental services.

## **SUCCESSSES:**

New York State has a strong commitment to improving oral health care for all New Yorkers and reducing the burden of oral disease, especially among minority, low income, and special needs populations. Numerous achievements in the oral health of New Yorkers and reductions in the burden of oral disease have been realized in recent years. Compared to national data, more New York State adults report never having had a tooth extracted as a result of caries or periodontal disease, fewer older adults have lost all of their natural teeth, more children and adults have visited a dentist or dental clinic within the past year, more children and adults have had their teeth cleaned in the last year, fewer adults are smoking and fewer high school students are smoking or using smokeless tobacco, more New Yorkers are being diagnosed with oral cavity and pharyngeal cancers at an earlier stage and less are dying from these cancers, and more New Yorkers have access to dental services through Family Health Plus, Child Health Plus B, Medicaid, school-based oral health programs, community health centers, and through special programs targeting the homeless, migrant and seasonal farm workers, and residents of public housing sites.

The State's newly released Oral Health Plan, which was developed by the New York State Department of Health in collaboration with the New York State Public Health Association and stakeholders from across the State, addresses the burden of oral disease and identifies a wide range of strategies for achieving optimal oral health for all New Yorkers. Six priorities were identified by Plan developers:

1. Explore opportunities to form regional oral health networks to work together to identify prevention opportunities and address access to dental care in their communities.
2. Formalize a statewide coalition to promote oral health.
3. Encourage professional organizations, educational institutions, key State agencies, and other stakeholders to examine and make recommendations on laws and regulations that affect the provision of dental services, the financing of dental education, approaches to address disparities in oral health, and strengthening the dental health workforce.
4. Assess gaps in dental health educational materials and identify ways to integrate oral health into health literacy programs.
5. Develop and widely disseminate guidelines, recommendations, and best practices to address childhood caries, maternal oral health, and tobacco and alcohol use.
6. Strengthen the oral health surveillance system to periodically measure oral diseases and their risk factors in order to monitor progress.

Major gains have been made in the past year in these priority action areas.

- The Bureau of Dental Health, New York State Department of Health, held six Regional Oral Health Forums throughout the State to introduce New York State's Oral Health Plan and engage stakeholders in implementation strategies. Attendees were provided the opportunity to meet with individuals and agencies involved with promising new and innovative ways to promote oral health for Early Head Start, Head Start and school-aged children; develop action plans to promote oral health; and to explore the roles they can play in improving oral health in Head Start/Early Head Start/Migrant Head Start children and school-aged children.

Regional oral health networks/coalitions are presently being established as a result of the Regional Oral Health Forums. One regional coalition has already brought stakeholders together to identify the dental needs of the community, available dental services in the area, propose activities to meet service needs, and to develop and implement activities to promote and improve oral health for all children in the region.

- On October 18, 2005, the Bureau of Dental Health, New York State Department of Health, introduced the New York State Oral Health Coalition Listserv (NYSOHC-L); as of August 1, 2006, there are 540 member subscribers. The goal of the Listserv is to support and encourage ongoing communication and collaboration on a local, regional and statewide level; link private and public sectors; and to involve as many stakeholders as possible in order to enhance oral health information and knowledge sharing, facilitate improved collaborations, communicate best practices, and to replicate effective programs and proven interventions.
- Steering Committee members previously involved in development of the New York State Oral Health Plan serve on an Interim Steering Committee to formalize the organization and structure of the New York State Oral Health Coalition. The mission and vision of the

coalition were finalized, priorities for establishing the Coalition identified, and two work groups formed to work on rules of operation/By-Laws and sustainability.

The first meeting of the statewide Oral Health Coalition was held on May 9, 2006, with more than 130 persons from health agencies, social service organizations, the business community, and educational institutions in attendance. The objectives of the meeting were to explore the role stakeholders can play in implementing strategies outlined in the NYS Oral Health Plan and to formalize a diverse statewide coalition to promote oral health. A follow-up meeting will be held in November 2006 to implement the activities presented at the May 2006 meeting.

- ☒ The New York State Maternal Child Health Services Block Grant Advisory Council recently identified improved access to dental health services for low-income women and children as one of its six highest priority areas in maternal child health. The Council will be conveying its recommendations to the Governor as New York State prepares for the coming year. The recommendations of the Council are based on information provided by consumers, providers of health services to women and children, and by public health professionals at annual public hearings held throughout the State and are the result of intense discussion and thoughtful deliberation.

According to a statement issued by the Council, in every region of the State, especially in counties outside Metropolitan New York City and Long Island, citizens testified of the difficulty faced by low-income pregnant women and children in finding access to dental care. Private dental practices have been unable to meet the need in most communities, leaving Article 28 clinics as the major suppliers of dental care.

- ☒ On August 4, 2005, a new law went into effect to improve access to health services for preschool and school-aged children by allowing dental clinics to be located on school property. Having dental clinics on school property will help to expand access to and provide needed services in a timelier manner and minimize lost school days.
- ☒ The Bureau of Dental Health submitted a grant application in response to a recent solicitation from Health Resources and Services Administration (HRSA) for funding to address demonstrated oral health workforce needs. In its proposal, the Bureau plans to work with the Center for Workforce Studies, New York State Academic Dental Centers, and other partners to address workforce issues, initiate implementation of the workforce-related strategies outlined in the State's Oral Health Plan, and produce a report detailing the oral health workforce at the State and regional level. The report can be used by policy makers, planners and other stakeholders to better understand the supply and distribution of the oral health workforce in order to assure adequate access to oral health services for state residents.
- ☒ The Bureau of Dental Health, New York State Department of Health, in conjunction with an expert panel of health professionals involved in promoting the health of pregnant women and children, finalized a comprehensive set of guidelines for health professionals on oral health care during pregnancy and early childhood. Separate recommendations were developed for prenatal, oral health, and child health professionals based on the literature, existing interventions, practices and guidelines, and consensus opinions when controlled clinical studies were not available.

The Bureau of Dental Health was invited to submit a grant application in response to the March of Dimes 2007 Community Grants Program to develop an interactive satellite broadcast for training prenatal, oral health, and child health professionals on practice guidelines for oral health during pregnancy and early childhood. The proposed project will

provide training on the guidelines to 4,500 health professionals through the interactive broadcast or use of a web stream version of the broadcast. The goals of the project are to establish oral health care during pregnancy as the standard of care for all pregnant women; increase access to oral health services, improve the oral health of young children, and reduce the incidence of dental caries; and improve the oral health and birth outcomes of all pregnant women.

- ☒ Plans were initiated to update “Oral Health Care for People with HIV Infection” and revisions were made on the Infection Control chapter to reflect issues addressed in *CDC Guidelines for Infection Control in Dental Health Care Settings*. In light of smoking being more prevalent in the HIV-infected population than the general population and increase in oral disease with smoking, a new chapter on smoking and oral health will be included in the updated book.

### III. NATIONAL AND STATE OBJECTIVES ON ORAL HEALTH

*Oral Health in America: A Report of the Surgeon General (the Report)* alerted Americans to the importance of oral health in their daily lives [USDHHS 2000a]. Issued May 2000, the *Report* detailed how oral health is promoted, how oral diseases and conditions can be prevented and managed, and what actions need to be taken on a national, state, and local level to improve the quality of life and eliminate oral health disparities. The *Report's* message was that oral health is essential to general health and wellbeing and can be achieved, but that a number of barriers hinder the ability of some Americans from attaining optimal oral health.

The Surgeon General's report on oral health was a wake-up call, spurring policy makers, community leaders, private industry, health professionals, the media, and the public to affirm that oral health is essential to general health and wellbeing and to take action. That call to action led a broad coalition of public and private organizations and individuals to generate *A National Call to Action to Promote Oral Health* [USDHHS 2003]. The Vision of the *Call to Action* is "To advance the general health and well-being of all Americans by creating critical partnerships at all levels of society to engage in programs to promote oral health and prevent disease." The goals of the *Call to Action* reflect those of **Healthy People 2010**:

- To promote oral health
- To improve quality of life
- To eliminate oral health disparities

National objectives on oral health, such as those in **Healthy People 2010**, provide measurable and achievable targets for the nation and form the basis for an oral health plan. National key indicators of oral disease burden, oral health promotion, and oral disease prevention were developed in the fall of 2000 as part of **Healthy People 2010** to serve as a comprehensive, nationwide health promotion and disease prevention agenda [USDHHS 2000b] and roadmap for improving the health of all people in the United States during the first decade of the 21st century. Included in **Healthy People 2010** are objectives for key structures, processes, and outcomes related to improving oral health. These objectives represent the ideas and expertise of a diverse range of individuals and organizations concerned about the Nation's oral health.

The *National Call to Action to Promote Oral Health* calls for development of plans at the state and community level, following the nationwide health promotion and disease prevention agenda and roadmap. Most of the core public health functions of assessment, assurance, and policy development are to occur at the state level, along with planning, evaluation, and accountability [USDHHS 2003]. In New York State, data on oral health status, risk factors, workforce, and the use of dental services are available to assess problems, monitor progress, and identify solutions. Data are also collected on a variety of key indicators of oral disease prevention, oral health promotion, and oral health disparities to assess the State's progress toward the achievement of selected **Healthy People 2010** Oral Health Objectives.

The New York State Oral Health Surveillance System includes data from oral health surveys of third grade children, the Behavioral Risk Factor Surveillance System, the Cancer Registry, the Congenital Malformations Registry, the Water Fluoridation Reporting System, the Pregnancy Risk Assessment Monitoring System, Medicaid, Managed Care Performance Reports, and the State Education Department. Enhancement and expansion of the current system, however, are needed to provide required data for problem identification and priority setting and to assess progress toward reaching both State and national objectives. In the past, oral health problems,

including dental caries, periodontal disease, trauma, oral cancer, risk factors, distribution of the workforce, and utilization of dental services were not adequately measured and reported.

The New York State Department of Health, in collaboration with the New York State Public Health Association and stakeholders from across the State, developed a comprehensive State Oral Health Plan identifying priorities for action. One of the priorities was the strengthening of the oral health surveillance system so that oral diseases and their risk factors can be periodically measured by key socio-demographic and geographic variables and tracked over time to monitor progress. The New York State Oral Health Plan set as one of its goals to maintain and enhance the existing surveillance system to adequately measure key indicators of oral health and expand the system to include other elements and address data gaps.

Objectives over the next five years include:

- Expand the oral health component of existing surveillance systems to provide more comprehensive and timely data.
- Enhance the surveillance system to assess the oral health needs in special population groups.
- Expand the existing New York State Oral Health Surveillance System to collect data from additional sources, including community dental clinics, schools, and private dental practices.
- Implement a surveillance system to monitor dental caries in one to four year old children.
- Explore opportunities for establishing a surveillance system to monitor periodontal disease in high-risk patients, such as persons with diabetes and pregnant women.
- Implement a surveillance system to monitor oro-facial injuries.
- Encourage stakeholders to participate in surveillance activities and make use of the data that are obtained.
- Develop a system to assess the distribution of the dental workforce and the characteristics of dental practitioners.
- Ensure data are available to the public in a timely manner.

The following tables list the Healthy People 2010 Oral Health Objectives for the Nation, and, where applicable, New York State Oral Health Objectives. Currently available data on oral disease, oral health promotion, and oral health disparities are reported to determine both national and State progress toward the achievement of targets. Where State data are either not available or limited in scope, strategies for addressing identified gaps or limitations in the data in order to measure New York State's progress toward achieving **Healthy People 2010** targets and/or New York State Oral Health targets are described.

New York State has had a long time commitment to improving the oral health of its residents, with the Bureau of Dental Health established within the Department of Health well over 50 years ago. Statewide dental health programs to prevent, control, and reduce dental diseases and other oral health conditions and promote healthy behaviors are implemented and monitored. Bureau of Dental Health programs include:

- Preventive Dentistry Program
- Community Water Fluoridation
- School-Based Supplemental Fluoride Program

- Dental Rehabilitation Program of the Physically Handicapped Children's Program
- Innovative Dental Services Grant
- Dental Public Health Residency Program
- Oral Health Initiative
- New York State's Oral Cancer Control Partnership
- HRSA Oral Health Collaborative Systems Grant: School-Based Dental Health Centers

## PREVALENCE OF ORAL DISEASES

Over the last five decades, New York has seen a dramatic improvement in the oral health of its residents through the actions of individuals, professionals, policy makers, State and local governments, educational institutions, and health care organizations. The ongoing efforts of the New York State Department of Health to promote oral health through research, community-based prevention interventions and programs are a testament to its commitment to achieve optimum oral health for all New Yorkers. These efforts are needed because oral diseases still affect a large proportion of the State's population (**Table I-A**). In New York State, approximately 54% of children experience tooth decay by third grade, 18% of Early Head Start/Head Start children and 33% of third graders have untreated dental caries, approximately 44% of 35 to 44 year old adults have lost one or more teeth due to tooth decay or gum diseases, about 17% of persons 65 years of age and older have lost all of their teeth, and five New Yorkers a day are diagnosed with life threatening cancers of the mouth and throat.

<b>TABLE I-A: Healthy People 2010 and New York State Oral Health Indicators: Prevalence of Oral Disease</b>				
	<b>Target</b>	<b>U.S. Status<sup>a</sup></b>	<b>NYS Target</b>	<b>NYS Status</b>
Dental Caries Experience: <b>Objective 21-1</b>				
Ages 2-4: <b>Objective 21-1a</b>	11%	23%		DNC
Ages 6-8: <b>Objective 21-1b</b>	42%	50%	42%	54%
Adolescents, age 15: <b>Objective 21-1c</b>	51%	59%		DNC
Dental Caries Untreated: <b>Objective 21-2</b>				
Ages 2-4: <b>Objective 21-2a</b>	9%	20%		18% <sup>f</sup>
Ages 6-8: <b>Objective 21-2b</b>	21%	26%	20%	33%
Adolescents, age 15: <b>Objective 21-2c</b>	15%	16%		DNC
Adults, 35-44: <b>Objective 21-2d</b>	15%	26%		DNC
Adults with no tooth loss (35-44 yrs): <b>Objective 21-3</b>	42%	39%		56% <sup>g</sup>
Edentulous (toothless) older adults (65-74 yrs): <b>Objective 21-4</b>	20%	25% <sup>b</sup>		17% <sup>g</sup>
Gingivitis, ages 35-44: <b>Objective 21-5a</b>	41%	48% <sup>c</sup>		DNC
Destructive periodontal (gum) diseases, ages 35-44: <b>Objective 21-5b</b>	14%	20%		DNC
Oral and pharyngeal cancer death rates reduction (per 100,000 population): <b>Objective 3-6</b>	2.7	2.7 <sup>d</sup> 4.1-males 1.5-females		2.5 <sup>d</sup> 3.7-males 1.4-females
Oral and pharyngeal cancers detected at earliest stages, all: <b>Objective 21-6</b>	50%	33% <sup>e</sup> 30%-male 40%-female		34%-male <sup>e</sup> 47%-female <sup>e</sup>
Children younger than 6 years receiving treatment in hospital operating rooms			1500/yr	2900/yr <sup>h</sup>

Sources:

*Healthy People 2010, Progress Review, 2000*. U.S. Department of Health and Human Services. Accessed online at <http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls> on July 26, 2005.

*Healthy People 2010, 2<sup>nd</sup> Edition*. U.S. Department of Health and Human Services, November 2000.

DNC: data not currently collected

<sup>a</sup> Data are for 1999–2000, unless otherwise noted

<sup>b</sup> Data are for 2002

<sup>c</sup> Data are for 1988-1994

<sup>d</sup> U.S. data are for 2000-2003 and are from *Cancer of the Oral Cavity and Pharynx*, National Cancer Institute SEER Surveillance Epidemiology and End Results, <http://seer.cancer.gov/statfacts/html/oralcav.html>, accessed May 3, 2006. New York State data are from State Cancer Profiles, National Cancer Institute, <http://state.cancerprofiles.cancer.gov>, accessed November 22, 2005 and from the New York State Cancer Registry for the period 1999-2003. All rates are age-adjusted to the year 2000 standard population.

<sup>e</sup> U.S. data are for 1996-2002; New York State data are from the New York State Cancer Registry for the period 1999-2003.

<sup>f</sup> New York State data are from the 2003-2004 Head Start/Early Head Start Program Information Report

<sup>g</sup> New York State data are from the Behavioral Risk Factor Surveillance System: Oral Health Module, 2004

<sup>h</sup> New York State data are taken from the *Oral Health Plan for New York State*, August 2005.

Other than data derived from a survey of third grade children conducted between 2002 and 2004, New York State has limited information available on caries experience and untreated tooth decay among children 2 to 4 years of age and 15 years of age, untreated dental caries among adults 35 to 44 years of age, and gingivitis and destructive periodontal diseases among the adult populations of New York State.

To address gaps in needed information on oral diseases, a variety of diverse strategies have been developed to:

- Collect more comprehensive data on the oral health status of children 1 to 5 years of age enrolled in Early and Periodic Screening, Diagnostic and Treatment (EPSDT).
- Collaborate with Head Start Centers and the WIC Program to collect data regarding oral health status and unmet treatment needs.
- Work with CDC and the State Education Department to explore inclusion of oral health questions in the Youth Risk Behavior Surveillance System (YRBSS).
- Explore annual collection of oral health data in the Behavioral Risk Factor Surveillance System (BRFSS).
- Require oral health screening as part of the school physical health examination in appropriate grade levels.
- Collect data from school based programs on the occurrence of oro-facial injuries.
- Use the Statewide Planning and Regional Cooperative System (SPARCS) to assess oro-facial injuries.
- Identify existing data collection systems regarding diabetes and pregnant women and explore opportunities to include oral health indicators, especially those pertaining to gingivitis and destructive periodontal diseases.

## ORAL DISEASE PREVENTION

New York State has set as its oral disease prevention goals addressing risk factors by targeting population groups and utilizing proven interventions and promoting oral health as a valued and integral part of general health across the life cycle. Several issues have been identified, however, that impact on greater utilization of both community and individual level interventions and the public's understanding of the meaning of oral health and the relationship of the mouth to the rest of the body, including:

- In general, oral health care is not adequately integrated into general health care.
- Common risk factors need to be addressed by both medical and dental providers.
- Efforts are needed to encourage more dental and health care professionals to include an annual oral cancer examination as part of the standard of care for all adults and to educate the public about the importance of early detection and treatment of oral and pharyngeal cancers as effective strategies for reducing morbidity and decreasing mortality.
- Efforts to educate the public and policy makers about the benefits of water fluoridation are needed.
- Several barriers exist for promoting fluoride rinse and tablet programs in schools, Head Start Centers, and Child Care facilities.
- Common fears and misconceptions about oral health and treatment create barriers.
- Coordinated statewide oral health education campaigns are needed.
- Educational materials are needed that are comprehensive, culturally competent and available in multiple languages, and meet appropriate literacy levels for all populations.

State objectives have been developed that address these issues, as well as focus oral health prevention efforts on the achievement of **Healthy People 2010** Oral Health targets (**Table I-B**).

To address current gaps in the availability of data on the utilization of dental sealants by adolescents, strategies have been identified to:

- Evaluate feasibility of incorporating diagnostic and procedural codes in billing procedures.
- Explore the feasibility of adding a measure on dental sealants to Medicaid Managed Care quality measures.

Strategies will also need to be developed for surveying schools of dentistry and dental hygiene to determine the number of schools teaching their students about US Public Health Services Clinical Practice Guidelines for Treating Tobacco Use and Dependence, as well as the number of students provided such training annually. Plans for the collection of baseline data on the current availability and distribution of oral health educational materials, the utilization of existing dental health-related campaigns, and the inclusion of oral health screening in routine physical examinations will need to be formulated in order to measure subsequent progress in these areas.

**TABLE I-B: Healthy People 2010 and New York State Oral Health Indicators:  
Oral Disease Prevention**

	Target	U.S. Status <sup>a</sup>	NYS Target	NYS Status
Oral and pharyngeal cancer exam within past 12 months, ages 40+: <b>Objective 21-7</b>	20%	13% <sup>b</sup>	50%	38% <sup>f</sup>
Dental sealants: <b>Objective 21-8</b>				
Children, age 8 (1st molars): <b>Objective 21-8a</b>	50%	28%		27% <sup>g</sup>
Adolescents (1 <sup>st</sup> & 2 <sup>nd</sup> molars), age 14: <b>Objective 21-8b</b>	50%	14%		DNC
Population served by fluoridated water systems, all: <b>Objective 21-9</b>	75%	67% <sup>c</sup>	75%	73% <sup>h</sup>
Dental visit in past 12 months -Children and adults ages 2+				
Visited dentist of dental clinic: <b>Objective 21-10</b>	56%	43% <sup>d</sup>		72% <sup>i</sup>
Had teeth cleaned by dentist of dental hygienist		69% <sup>e</sup>		72% <sup>j</sup>
Schools of dentistry and dental hygiene teaching their students about US Public Health Services Clinical Practice Guidelines for Treating Tobacco Use and Dependence			all	
Availability and distribution of culturally and linguistically appropriate oral health educational materials that enhance oral health literacy to the public and providers.			increase	
Build on exiting campaigns that communicate the importance of oral health, signs and symptoms of oral disease, and ways of reducing risk.			increase	
Oral health screening as part of routine physical examinations.			increase	

Sources:

*Healthy People 2010, Progress Review, 2000.* U.S. Department of Health and Human Services. Accessed online at <http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls> on July 26, 2005.

*Healthy People 2010, 2<sup>nd</sup> Ed.* U.S. Department of Health and Human Services, November 2000.

Water Fluoridation Reporting System. As reported in the National Oral Health Surveillance System. Accessed online at <http://www2.cdc.gov/nohss/FluoridationV.asp> on July 29, 2005.

DNC: data not currently collected

<sup>a</sup> Data are for 1999–2000, unless otherwise noted

<sup>b</sup> Data are for 1998

<sup>c</sup> Data are for 2005

<sup>d</sup> Data are for 2000

<sup>e</sup> Data are for 2002 and are for individuals 18 years of age and older from the BRFSS.

<sup>f</sup> New York State data are from the 2003 BRFSS Oral Cancer Module. Percentages reported are for the receipt of lifetime oral cancer examination for individuals 40 years of age and older.

<sup>g</sup> New York State data are from the New York State Oral Health Surveillance System, 2002-2004 survey of third grade students.

<sup>h</sup> Data on New York State are from the Centers for Disease Control and Prevention and Association of State and Territorial Dental Directors, 2005 Synopsis of State and Territorial Dental Public Health Programs, <http://apps.nccd.cdc.gov/synopses/StateData.NY&Year=2005>, accessed August 3, 2006.

<sup>i</sup> New York State data are for individuals 18 years of age and older and are from the Behavioral Risk Factor Surveillance System: Oral Health Module, 2004.

<sup>j</sup> Data for New York State are for individuals 18 years of age and older and are from the Behavioral Risk Factor Surveillance System: Oral Health Module, 2002.

## ELIMINATION OF ORAL HEALTH DISPARITIES

New York State identified disparities in the availability and utilization of oral health care (**Table I-C**) as a major problem and set as a goal to improve access to high quality, comprehensive, continuous oral health services for all New Yorkers and eliminate disparities for vulnerable populations. Dental diseases and unmet need for dental care are more prevalent in populations whose access to and utilization of oral health care services are compromised by the inability to pay for services, lack of adequate insurance coverage, lack of awareness of the importance of oral health, lack of recognition of the need for services, limited oral health literacy, a low value placed on oral health care, lack of available providers and services, transportation barriers, language barriers, the complexity of oral and medical conditions, and unwillingness on the part of dental professionals to accept third party reimbursements, especially Medicaid. Access to dental care is also especially problematic for vulnerable populations, such as: the institutionalized, elderly, low income, children with special health care needs, persons with HIV infection, adults with mental illness or substance abuse problems, and developmentally disabled or physically challenged children and adults.

In addition to the *Healthy People 2010* objectives for eliminating oral health disparities, New York State is targeting its efforts over the next five years on expanding access to high quality oral health services and eliminating oral health disparities for its most vulnerable populations. Toward this end, State objectives and targets have been added to national *Healthy People 2010* oral health objectives and indicators and strategies developed to expand services to vulnerable populations and to measure the subsequent success of those efforts in eliminating disparities in oral health.

In order to assess progress towards the achievement of State objectives in eliminating oral health disparities, expansion of the New York State Oral Health Surveillance System, use of additional databases, and implementation of new data collection strategies will be required.

- Collect information about workforce, facilities, and demographics to identify areas for the development of new dental practices.
- Use data collected through the Children with Special Health Care Needs (CSHCN) National Survey to determine the capacity to serve their oral health care needs.
- Survey Article 28 facilities to identify their ability to provide services to children and adults with special needs.
- Enhance the surveillance system to assess the oral health needs in special population groups.
- Collect information from dentists and dental hygienists as part of their re-registration process on services provided to vulnerable populations.
- Utilize Medicaid dental claims information to assess the level and types of oral health services provided to low-income individuals at both a county and statewide level.
- Expand existing data collection systems targeting special population groups to include questions on oral health care, prevention, and service utilization.
- Explore the feasibility of including items covering the provision of oral health care in inspection surveys of nursing homes and residential care facilities.

**TABLE I-C: Healthy People 2010 and New York State Oral Health Indicators:  
Elimination of Oral Health Disparities**

	Target	U.S. Status <sup>a</sup>	NYS Target	NYS Status
Adults use of oral health care system by residents in long term care facilities: <b>Objective 21-11</b>	25%	19% <sup>b</sup>		DNC
Low-income children and adolescents receiving preventive dental care during past 12 months, ages 0-18: <b>Objective 21-12</b>	57%	31% <sup>c</sup>		24% <sup>f</sup>
Children < 21 with an annual Medicaid dental visit:				
Medicaid Managed Care			57%	44% <sup>g</sup>
Child Health Plus			57%	53% <sup>g</sup>
Medicaid Fee for Service			57%	30% <sup>g</sup>
School-based health centers with oral health component, K-12: <b>Objective 21-13</b>	increase	DNC		75 <sup>h</sup>
Community-based health centers and local health departments with oral health components, all: <b>Objective 21-14</b>	75%	61% <sup>d</sup>		90% <sup>i</sup>
Low-income adults receiving annual dental visit: <b>Objective 21-10</b>	83%	51% <sup>e</sup>	83%	58% <sup>k</sup>
Low income pregnant women receiving comprehensive dental care			26%	13% <sup>t</sup>
Dental visit during pregnancy.				49% <sup>f</sup>
Number of dentists actively participating in Medicaid Program			3600	2620 <sup>m</sup>
Number of oral health care providers serving people with special needs.			increase	
Waiting time for treatment for special needs populations in hospitals for routine and emergency visits			< 1 mo. <24 hrs	
Article 28 facilities providing dental services			increase	
Article 28 facilities establishing school based dental health centers in schools and Head Start Centers in high need areas			increase	
Minority enrollment in schools of dentistry and dental hygiene programs reflect racial/ethnic distribution of the population			62% White 16% Black 6% API 9% Hispanic 7% Other	42% White 1.4% Black 40.9% API 3.7% Hispanic 12% Other
Health care workers employed to assist the elderly and people with disabilities trained in daily oral health care for the people they serve			all	

Sources:

*Healthy People 2010, Progress Review, 2000.* U.S. Department of Health and Human Services. Accessed online at <http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls> on July 26, 2005.

*Healthy People 2010, 2<sup>nd</sup> Ed.* U.S. Department of Health and Human Services, November 2000.

DNC = Data not currently collected

<sup>a</sup> Data are for 1999–2000, unless otherwise noted

<sup>b</sup> Data are for 1997

<sup>c</sup> Data are for 2000

<sup>d</sup> Data are for 2002

- <sup>e</sup> Data are for 2004 from the Behavioral Risk Factor Surveillance System. Low income is defined as an annual income of less than \$15,000.
- <sup>f</sup> New York State data are for 2003 and are from the *Oral Health Plan for New York State*, August 2005.
- <sup>g</sup> New York State data are 2004 and are from the New York State Managed Care Plan Performance Report on Quality, Access to Care, and Consumer Satisfaction, New York State Department of Health, December 2005.
- <sup>h</sup> Data on New York State are from the Centers for Disease Control and Prevention and Association of State and Territorial Dental Directors, 2005 Synopsis of State and Territorial Dental Public Health Programs, <http://apps.nccd.cdc.gov/synopses/StateData.NY&Year=2005>, accessed August 3, 2006.
- <sup>i</sup> Data on dental services at community-based clinics are from HRSA Bureau of Primary Health Care for calendar year 2004, <http://ask.hrsa.gov/pc/searchresults.cfm>, accessed January 4, 2006.
- <sup>k</sup> New York State data are from the 2004 Behavioral Risk Factor Surveillance System. Low income is defined as an annual income of less than \$15,000.
- <sup>m</sup> *Oral Health Plan for New York State*, August 2005.

## ORAL HEALTH SURVEILLANCE SYSTEMS

New York State utilizes a variety of data sources to monitor oral diseases, risk factors, access to programs, utilization of services, and workforce (**Table I-D**). Plans have been developed to expand and enhance the oral health surveillance system in order to address current gaps in information as well as to be able to measure progress toward achievement of both State and national oral health objectives.

<b>TABLE I-D: Healthy People 2010 and New York State Oral Health Indicators: Oral Health Surveillance System</b>			
	<b>Target</b>	<b>U.S. Status<sup>a</sup></b>	<b>NYS Status</b>
System for recording and referring infants and children with cleft lip and cleft palate, all: <b>Objective 21-5</b>	51 all states and DC	23 states and DC <sup>a</sup>	yes
Oral health surveillance system, all: <b>Objective 21-16</b>	51 all states and DC	0 states <sup>b</sup>	yes
Tribal, state, and local dental programs with a public health trained director, all: <b>Objective 21-17</b>	increase	45 of 213 <sup>c</sup>	5 of 13 <sup>d</sup>

Sources:

*Healthy People 2010, Progress Review, 2000*. U.S. Department of Health and Human Services. Accessed online at <http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls> on July 26, 2005.

*Healthy People 2010, 2<sup>nd</sup> Ed.* U.S. Department of Health and Human Services, November 2000.

DNC: Data not currently collected

<sup>a</sup> Data are for 1997

<sup>b</sup> Data are for 1999

<sup>c</sup> U.S. data are from the Centers for Disease Control and Prevention and Association of State and Territorial Dental Directors, 2005 Synopsis of State and Territorial Dental Public Health Programs, <http://apps.nccd.cdc.gov/synopses/NatTrendTableV.US&Year=2005>, accessed August 3, 2006.

<sup>d</sup> Data on New York State are from the Centers for Disease Control and Prevention and Association of State and Territorial Dental Directors, 2005 Synopsis of State and Territorial Dental Public Health Programs, <http://apps.nccd.cdc.gov/synopses/StateData.NY&Year=2005>, accessed August 3, 2006.

## IV. THE BURDEN OF ORAL DISEASES

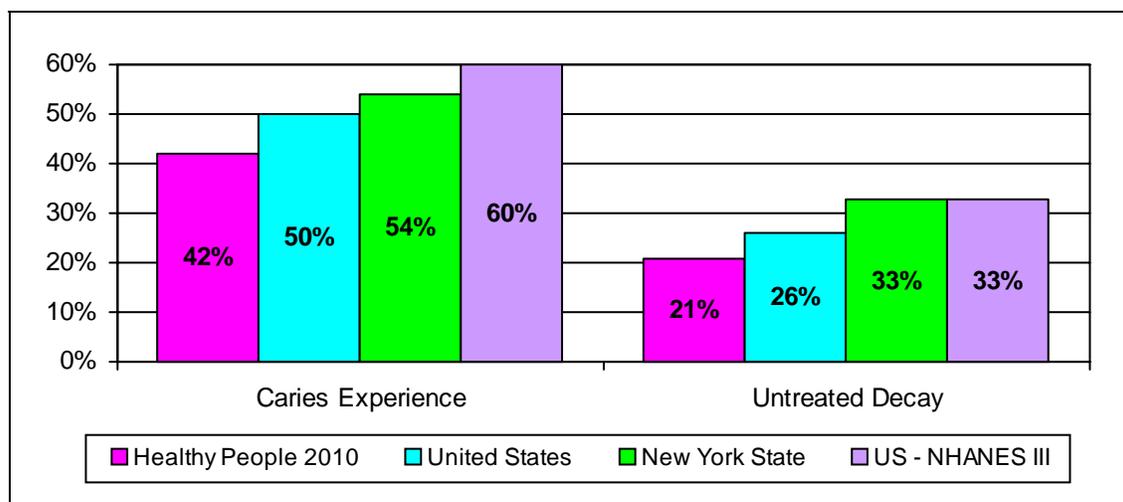
### A. PREVALENCE OF DISEASE AND UNMET NEED

#### i. Children

According to the Surgeon General's report on oral health, nationally, dental caries (tooth decay) is five times more common than childhood asthma and seven times more common than hay fever. Dental caries is a disease in which acids produced by bacteria on the teeth lead to loss of minerals from the enamel and dentin, the hard substances of teeth. Unchecked, dental caries can result in loss of tooth structure, inadequate tooth function, unsightly appearance, pain, infection, and tooth loss.

The prevalence of decay in children is measured through an assessment of caries experience (if they have ever had decay and now have fillings), untreated decay (unfilled cavities), and missing teeth. Caries experience and untreated decay are monitored by New York State consistent with the National Oral Health Surveillance System (NOHSS), allowing for comparisons to other states and to the Nation. **Figure I** compares the prevalence of these indicators for New York State 3<sup>rd</sup> grade children with national data on both 6 to 8 year olds and 3<sup>rd</sup> grade children and *Healthy People 2010* targets. New York State 3<sup>rd</sup> graders had slightly more caries experience (54%) and a greater prevalence of untreated decay (33%) than 6 to 8 year olds nationally (50% and 26%, respectively), but substantially less caries experience and the same degree of untreated decay as 3<sup>rd</sup> graders nationally (60% and 33%, respectively). Information on 3<sup>rd</sup> grade children nationally is from NHANES III, and although it represents the most recently available data on 3<sup>rd</sup> graders, the data are over 10 years old and may not necessarily reflect the current oral health status of 3<sup>rd</sup> grade children in the United States.

**Figure I. Dental Caries Experience and Untreated Decay among 3<sup>rd</sup> Grade Children in New York State Compared to Both 6-8 Year Olds and 3<sup>rd</sup> Grade Children in the United States and to Healthy People 2010 Targets**



Source: *Healthy People 2010*, 2<sup>nd</sup> Ed. U.S. Department of Health and Human Services, November 2000.  
New York data are from the New York State Oral Health Surveillance System  
2002-2004 survey of third grade students.

Dental caries is not uniformly distributed in the United States or in New York State, with some groups of children more likely to experience the disease and less likely to receive needed treatment than others. **Table II** summarizes the most recently available data for 3rd grade children in New York State and nationally and children 6 to 8 years of age nationally for selected demographic characteristics.

<b>TABLE II. Dental Caries Experience and Untreated Dental Decay Among 6 to 8 Year Old Children and 3<sup>rd</sup> Graders in the United States and 3rd Grade Children in New York State by Selected Demographic Characteristics</b>				
	<b>Caries Experience</b>		<b>Untreated Decay</b>	
	<b>United States<sup>a</sup></b>	<b>New York State<sup>b</sup></b>	<b>United States<sup>a</sup></b>	<b>New York State<sup>b</sup></b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
<b>ALL CHILDREN</b>	50		26	
<b>SELECT POPULATIONS</b>				
3rd grade students	60 <sup>c</sup>	54	33 <sup>c</sup>	33
<b>CHILDREN PARTICIPATING IN THE FREE AND REDUCED-PRICE LUNCH PROGRAM</b>				
Yes	DNC	60		41
No		48		23
<b>RACE AND ETHNICITY</b>				
American Indian or Alaska Native	91 <sup>d</sup>		72 <sup>d</sup>	
Asian	90 <sup>e</sup>		71 <sup>e</sup>	
Black or African American	50 <sup>c</sup>		36 <sup>c</sup>	
Black/African American, not Hispanic/Latino	56		39	
White	51 <sup>c</sup>		26 <sup>c</sup>	
White, not Hispanic or Latino	46		21	
Hispanic or Latino	DSU		DSU	
Mexican American	69		42	
Others				
<b>EDUCATION LEVEL (HEAD OF HOUSEHOLD)</b>				
Less than high school	65 <sup>c</sup>		44 <sup>c</sup>	
High school graduate	52 <sup>c</sup>		30 <sup>c</sup>	
At least some college	43 <sup>c</sup>		25 <sup>c</sup>	
<b>GENDER</b>				
Female	49		24	
Male	50		28	

Sources: *Healthy People 2010, Progress Review, 2000*. U.S. Department of Health and Human Services. <http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls> Accessed July 26, 2005.

*Healthy People 2010, 2<sup>nd</sup> Ed.* U.S. Department of Health and Human Services, November 2000.

DNC: Data not collected

DSU: Data are statistically unreliable or do not meet criteria for confidentiality

<sup>a</sup> All national data are for children aged 6–8-years-old, 1999–2000, unless otherwise noted.

<sup>b</sup> Data are for 3<sup>rd</sup> grade children from the New York State Oral Health Surveillance System, 2002–2004.

<sup>c</sup> Data are from NHANES III, 1988–1994.

<sup>d</sup> Data are for Indian Health Service areas, 1999.

<sup>e</sup> Data are for California, 1993–94.

The New York State Oral Health Surveillance System includes data collected from oral health surveys of third grade children throughout the State. Limited demographic data are available on third grade children outside of the New York City Metropolitan area, compared to New York City

third graders. The New York City Oral Surveillance Program collects extensive demographic information on children and families, including: home language spoken, race/ethnicity, parental education, socioeconomic status, school lunch status, and dental insurance coverage.

Similar to national findings, disparities in oral health based on family income and race/ethnicity were found among New York State third graders, with children from lower socioeconomic groups and minority children experiencing a greater burden of oral disease.

- Children from lower income groups (based on reported participation in the free and reduced-price school lunch program) in New York State (60%) experienced more caries than their higher income counterparts (48%).
- Lower income children in New York State (41%) had more untreated dental decay than higher income third graders (23%).
- Although analogous data on caries experience and untreated dental decay among third graders nationally based on reported participation in the free and reduced-price school lunch program are not available for comparison, the following findings illustrate similar disparities in oral health based on family income:
  - 55% of children 2-11 years of age whose family incomes were 100% below the Federal Poverty Level (FPL) had dental caries in their primary teeth compared to 31% of their age peers with incomes at or above 200% of the FPL (National Health and Nutrition Examination Survey, 1999-2002, MMWR, August 26, 2005).
  - 33% of children 2-11 years of age whose family incomes were 100% below the Federal Poverty Level (FPL) had untreated tooth decay in primary teeth compared to 13% of their age peers with incomes at or above 200% of the FPL (National Health and Nutrition Examination Survey, 1999-2002, MMWR, August 26, 2005).
  - 47% of children 6-8 years of age with family incomes below the FPL had untreated dental caries compared to 22% of 6-8 year olds from families with incomes at or above the FPL (Third National Health and Nutrition Examination Survey, 1988-1994).
- When examining the education level of the head of household, consistent with national data, caries experience and untreated caries decreased as the education level of the parent increased.

Exact comparisons between New York City and national data with respect to race and ethnicity are difficult to make due to differences in racial/ethnic categories reported and inconsistencies across the data sources used and reported. Of the 1,935 children sampled from New York City schools, 10% were White, non-Hispanic; 19% were Black, non-Hispanic; 12% were Asian; 35% were Hispanic; and nearly 24% were classified as "Other". New York City's Hispanic and Latino subgroups are comprised mainly of Puerto Ricans and Dominicans. National data are presented for Mexican American children. A recent report issued by the CDC National Center for Health Statistics on access to dental care among Hispanic or Latino subgroups in the United States from 2000 to 2003 (May 12, 2005), found disparities in access to and utilization of dental care within Hispanic or Latino subgroups, with Mexican children more likely than Puerto Rican children and other Hispanic or Latino children to experience unmet dental needs due to cost. Additionally, unmet dental need in New York City was found to be higher for foreign-born than U.S.-born Hispanic or Latino children.

- Dental caries experience and untreated decay were greater among Hispanic or Latino third graders in New York City (55% and 37%, respectively) than among their White, non-Hispanic or Latino counterparts (52% and 27%, respectively).

- Nationally, minority children experienced more dental caries and untreated dental decay than White, non-Hispanic or Latino children.
- Similar to national findings, Asian children in New York City had the highest percentage of caries experience and untreated decay than any other racial or ethnic minority.
- Foreign-born New York City third graders had more caries experience (60% versus 53%) and slightly more untreated caries (40% versus 37%) than children born in New York City.

Data on the oral health of children 2 to 4 years of age in New York State are currently limited to the results of dental examinations of children in Early Head Start/Head Start programs. Of the 55,962 children enrolled in Early Head Start/Head Start in New York State during the 2004-2005 program year, 86% had a source of continuous and accessible dental care and 89.6% had a completed oral health examination. Of those children with a completed exam, 80% received preventive care and 18% were diagnosed as needing treatment. Based on National Health Services Information from the PIR (Program Information Report) for the 2004-2005 program year, a much smaller percentage of New York State preschoolers in Early Head Start/Head Start were diagnosed as being in need of treatment compared to their national counterparts (27%).

## ii. Adults

### Dental Caries

People are susceptible to dental caries throughout their lifetime. Like children and adolescents, adults also may experience new decay on the crown (enamel covered) portion of the tooth. But adults may also develop caries on the root surfaces of teeth as those surfaces become exposed to bacteria and carbohydrates as a result of gum recession. Recently published national examination survey data (NHANES, 1999-2002) report a 3.3% reduction in coronal caries experience among adults 20 years of age and older from 1988-1994 (95%) to 1999-2002 (91%) and a 5.8% decrease in root caries experience during the same time period (23% to 18%, respectively). The percentage of adults 20 years of age and older with untreated tooth decay similarly decreased between the two survey periods for both untreated coronal caries (from 28% to 23%) and untreated root caries (from 14% to 10%).

Dental caries and untreated tooth decay is a major public health problem in older people, with the interrelationship between oral health and general health particularly pronounced. Poor oral health among older populations is seen in a high level of dental caries experience, with root caries experience increasing with age; a high level of tooth loss; and high prevalence rates of periodontal disease and oral pre-cancer/cancer (Petersen & Yamamoto, 2005). Although no data are currently available on the oral health of older New Yorkers with respect to dental caries and untreated tooth decay, data on tooth loss and oral and pharyngeal cancers are available to assess the burden of oral disease on older New Yorkers.

### Tooth Loss

A full dentition is defined as having 28 natural teeth, exclusive of third molars and teeth removed for orthodontic treatment or as a result of trauma. Most persons can keep their teeth for life with adequate personal, professional, and population-based preventive practices. As teeth are lost, a person's ability to chew and speak decreases and interference with social functioning can occur. The most common reasons for tooth loss in adults are tooth decay and periodontal (gum) disease. Tooth loss can also result from head and neck cancer treatment, unintentional injury,

and infection. In addition, certain orthodontic and prosthetic services sometimes require the removal of teeth.

Despite an overall trend toward a reduction in tooth loss in the U.S. population, not all groups have benefited to the same extent. Females tend to have more tooth loss than males of the same age group. Black/African Americans are more likely than Whites to have tooth loss. The percentage of African Americans who have lost one or more permanent teeth is more than three times as great as for Whites. Among all predisposing and enabling factors, low educational level often has been found to have the strongest and most consistent association with tooth loss.

**Table III-A** presents data for New York State and the U.S. on the percentage of adults 35 to 44 years of age who never had a permanent tooth extracted due to dental caries or periodontal disease and the percentage of adults 65 years of age and older who have lost all their permanent teeth. On average, adult New Yorkers have fared much better than their national counterparts with respect to tooth retention, with 56% of 35-44 year olds reporting never having had a tooth extracted as a result of oral disease compared to 39% nationally. Similarly, 17% of 65-74 year old New Yorkers reported having lost all of their teeth, compared to 25% nationally. New York State also performed better than the Healthy People 2010 targets of 42% of 35-44 year olds having no tooth extractions and not more than 20% of 65-74 year olds having lost all of their natural teeth.

**TABLE III-A. Selected Demographic Characteristics of Adults Aged 35-44 Years Who Have Had No Tooth Extractions and Adults Aged 65-74 Who Have Lost All Their Natural Teeth**

	No Tooth Extractions <sup>1</sup> Adults Aged 35-44 Years		Lost All Natural Teeth <sup>2</sup> Adults Aged 65-74 Years	
	United States %	New York State <sup>c</sup> %	United States %	New York State <sup>c</sup> %
<b>HEALTHY PEOPLE 2010 TARGET</b>	42	42	20	20
<b>TOTAL</b>	39	56	25	17
<b>RACE AND ETHNICITY</b>				
American Indian or Alaska Native	23 <sup>a</sup>		25 <sup>a</sup>	
Black or African American	12 <sup>b</sup>		34	
Black or African American, not Hispanic or Latino	30		34	
White	34 <sup>b</sup>		23	
Black, Hispanic, and Others		44		19
White, not Hispanic or Latino	43	65	23	16
Hispanic or Latino	DSU		20	
Mexican American*	38			
<b>GENDER</b>				
Female	36	56	24	19
Male	42	56	24	14
<b>EDUCATION LEVEL</b>				
Less than high school	15 <sup>b</sup>	39	43	34
High school graduate	21 <sup>b</sup>	42	23	20
At least some college	41 <sup>b</sup>	65	13	10
<b>INCOME</b>				
Less than \$15,000				22
Less than \$25,000		35		
\$15,000 or more				14
\$25,000 or more		63		
<b>DISABILITY STATUS</b>				
Persons with disabilities	DNA		34	
Persons without disabilities	DNA		20	

Sources: *Healthy People 2010, Progress Review, 2000*. U.S. Department of Health and Human Services. <http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls> Accessed July 26, 2005.

*Healthy People 2010, 2<sup>nd</sup> Ed.* U.S. Department of Health and Human Services, November 2000.

DNA: Data not analyzed

DSU: Data are statistically unreliable or do not meet criteria for confidentiality

<sup>1</sup> U.S. data are for 1999–2000 unless otherwise indicated

<sup>2</sup> U.S. data are for 2002 unless otherwise indicated

<sup>a</sup> Data are for Indian Health Service areas, 1999

<sup>b</sup> Data are from NHANES III, 1988-1994

<sup>c</sup> New York State data are from the Behavioral Risk Factor Surveillance System: Core Oral Health Questions, 2004

Since 1999, statewide trends in tooth loss and edentulism have improved among New York State adults: the percentage of 35-44 year olds never having a permanent tooth extracted increased from 53% in 1999 to 56% in 2004, while the prevalence of complete tooth loss among those 65 years of age and older decreased from 22% to 17% (**Table III-B**).

**TABLE III-B. Percent of New York State Adults Aged 35-44 Years With No Tooth Loss and Adults Aged 65-74 Who Have Lost All Their Natural Teeth 1999 to 2004**

	No Tooth Extractions Adults Aged 35-44 Years		Lost All Natural Teeth Adults Aged 65-74 Years	
	1999 %	2004 %	1999 %	2004 %
<b>TOTAL</b>	53	56	22	17
<b>RACE AND ETHNICITY</b>				
Black, Hispanic, and Others	49	44	14	19
White, not Hispanic or Latino	54	65	24	16
<b>GENDER</b>				
Female	54	56	25	19
Male	51	56	18	14
<b>EDUCATION LEVEL</b>				
Less than high school	23 <sup>a</sup>	39	44	34
High school graduate	36	42	23	20
At least some college	60	65	13	10
<b>INCOME</b>				
<\$25,000 / <\$15,000 <sup>b</sup>	35	35	36 <sup>a,b</sup>	22 <sup>b</sup>
≥\$25,000 / ≥\$15,000 <sup>b</sup>	54	63	18 <sup>a</sup>	14 <sup>b</sup>

Sources: Data are from the New York State Behavioral Risk Factor Surveillance System: Core Oral Health Questions, 1999 and 2004, unless otherwise noted.

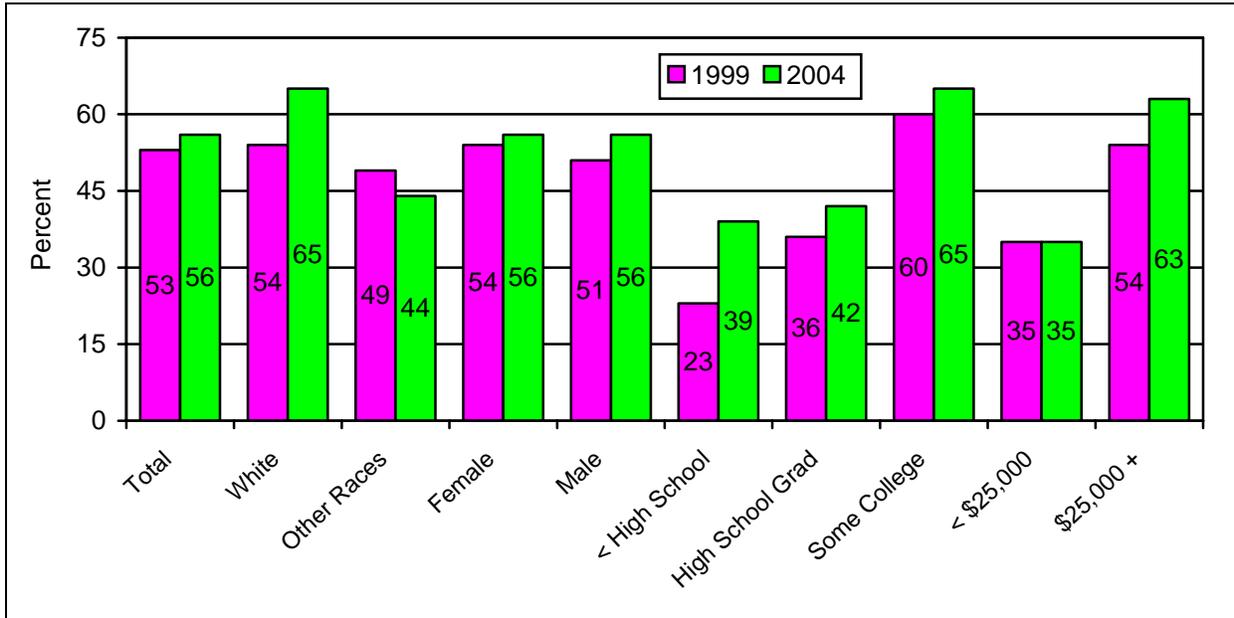
<sup>a</sup> Data are for 2002

<sup>b</sup> Income levels used for complete tooth loss are less than \$15,000 and \$15,000 or more per year.

Disparities in oral health, as measured by tooth loss due to dental caries or periodontal disease and edentulism, however, were noted, with not all groups benefiting to the same extent (**Figure II-A** and **Figure II-B**).

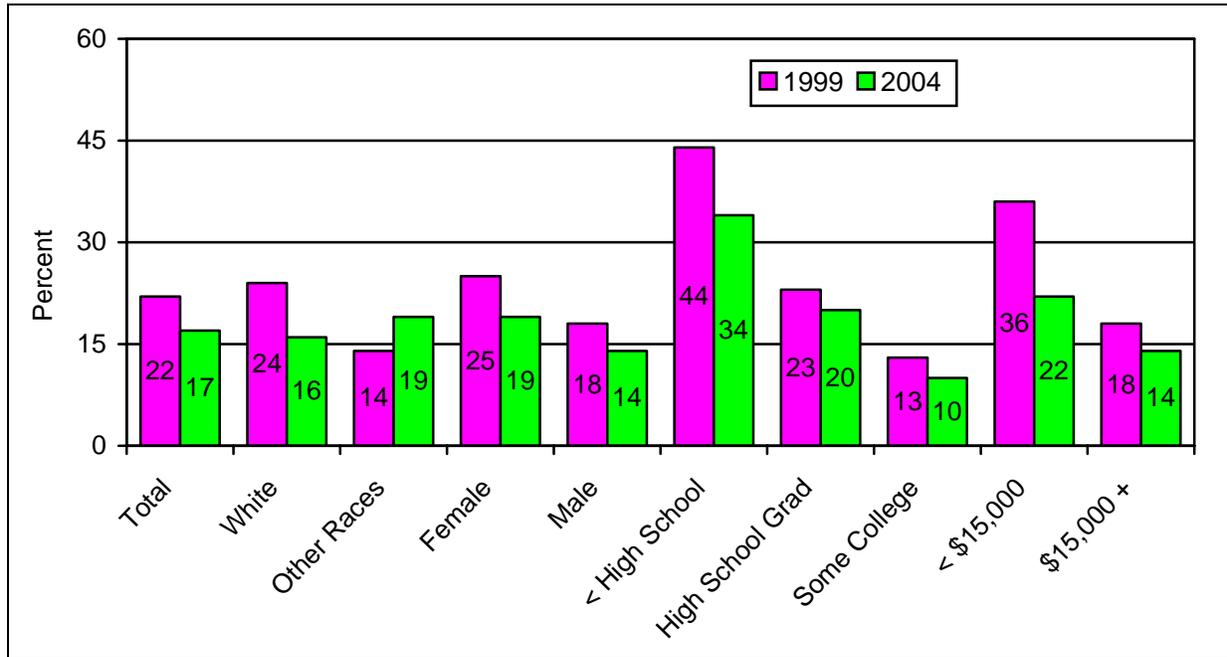
- Between 1999 and 2004, the percentage of minority individuals reporting having one or more teeth extracted due to dental caries or periodontal disease increased from 51% to 56%, while the percentage of White, non-Hispanic/Latino adults reporting tooth loss decreased from 46% to 35%.
- The percentage of adults from lower income groups reporting having one or more teeth extracted due to oral disease remained unchanged between 1999 and 2004 (65%), while improvements in oral health were found among higher income individuals during the same time period. The percentage of higher income adults reporting having had one or more teeth extracted due to caries or periodontal disease decreased from 46% in 1999 to 37% in 2004.
- With the exception of racial/ethnic minority individuals, there was a downward trend in the prevalence of edentulism across gender, income, and education level between 1999 and 2004. During the same time period, however, a higher percentage of Blacks, Hispanics, and other racial/ethnic minority individuals experienced complete tooth loss (14% in 1999 to 19% in 2004).

**Figure II-A. Percent of New York State Adults Aged 35-44 Years with No Tooth Loss 1999 and 2004**



Sources: Data are from the New York State Behavioral Risk Factor Surveillance System: Core Oral Health Questions, 1999 and 2004, unless otherwise noted.  
 Note: Data for < High School are from 2002 and not 1999.

**Figure II-B. Percent of New York State Adults Aged 65-74 Years With Complete Tooth Loss, 1999 and 2004**



Sources: Data are from the New York State Behavioral Risk Factor Surveillance System: Core Oral Health Questions, 1999 and 2004, unless otherwise noted.  
 Note: Data for < \$15,000 are from 2002 and not 1999.

## **Periodontal (Gum) Diseases**

Gingivitis is characterized by localized inflammation, swelling, and bleeding gums without a loss of the bone that supports the teeth. Gingivitis usually is reversible with good oral hygiene. Removal of dental plaque from the teeth on a daily basis with good brushing is extremely important to prevent gingivitis, which can progress to destructive periodontal disease.

Periodontitis (destructive periodontal disease) is characterized by the loss of the tissue and bone that support the teeth. It places a person at risk of eventual tooth loss unless appropriate treatment is provided. Among adults, periodontitis is a leading cause of bleeding, pain, infection, loose teeth, and tooth loss [Burt & Eklund 1999].

Cases of gingivitis likely will remain a substantial problem and may increase as tooth loss from dental caries declines or as a result of the use of some systemic medications. Although not all cases of gingivitis progress to periodontal disease, all periodontal disease starts as gingivitis. The major method available to prevent destructive periodontitis, therefore, is to prevent the precursor condition of gingivitis and its progression to periodontitis.

Nationally, 48% of adults 35 to 44 years of age have been diagnosed with gingivitis and 20% with destructive periodontal disease. Comparable data are not available for New York State.

## **Oral Cancer**

Cancer of the oral cavity and pharynx (oral cancer) is the sixth most common cancer in Black/African American males and the ninth most common cancer in White males in the United States [Ries et al. 2006]. An estimated 29,370 new cases of oral cancer and 7,320 deaths from these cancers occurred in the United States in 2005. The 2000-2003 age-adjusted (to the 2000 U.S. population) incidence rate of oral cancer in the United States was 10.5 per 100,000 people. Nearly 90% of cases of oral cancer in the United States occur among persons aged 45 years and older. The age-adjusted incidence was more than twice as high among males (15.5) than among females (6.4), as was the mortality rate (4.2 vs. 1.6).

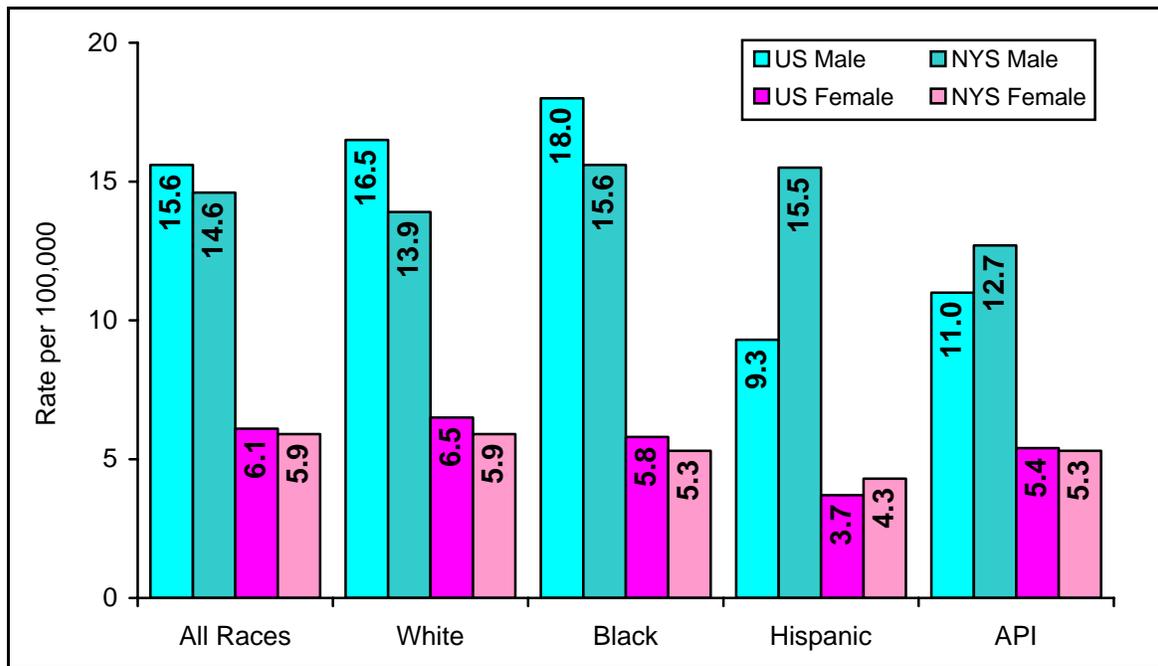
Survival rates for oral cancer have not improved substantially over the past 25 years. More than 40% of persons diagnosed with oral cancer die within five years of diagnosis [Ries et al. 2006], although survival varies widely by stage of disease when diagnosed. The 5-year relative survival rate for persons with oral cancer diagnosed at a localized stage is 82%. In contrast, the 5-year survival rate is only 51% once the cancer has spread to regional lymph nodes at the time of diagnosis, and just 27.6% for persons with distant metastasis.

Some groups experience a disproportionate burden of oral cancer. In New York State, Black/African American and Hispanic males are more likely than White males to develop oral cancer, while Black, Asian and Pacific Islander, and Hispanic males are much more likely to die from it. Cigarette smoking and alcohol are the major known risk factors for oral cancer in the United States, accounting for more than 75% of these cancers [Blot et al. 1988]. Using other forms of tobacco, including smokeless tobacco [USDHHS 1986; IARC 2005] and cigars [Shanks & Burns 1998] also increases the risk for oral cancer. Dietary factors, particularly low consumption of fruit and some types of viral infections, have also been implicated as risk factors for oral cancer [McLaughlin et al. 1998; De Stefani et al. 1999; Levi 1999; Morse et al. 2000; Phelan 2003; Herrero 2003]. Radiation from sun exposure is a risk factor for lip cancer [Silverman et al. 1998].

**Figure III** depicts the incidence rate for cancers of the oral cavity and pharynx for New York State and the United States by gender, race and ethnicity. Across all racial/ethnic groups, men,

both nationally and in New York State, are more than twice as likely as women to be diagnosed with oral and pharyngeal cancers. Based on new cases of oral and pharyngeal cancers reported to the New York State Cancer Registry from 1999-2003, the incidence rates of cancers of the oral cavity and pharynx were highest among Black (15.6 per 100,000) and Hispanic (15.5) males, compared to non-Hispanic White males (13.9), and highest among non-Hispanic White females (5.9) compared to Black (5.3), Asian/Pacific Islander (5.3), and Hispanic (4.3) females. New York State exceeded the national rates for oral cancers for Hispanic individuals of both genders and for Asian and Pacific Islander males.

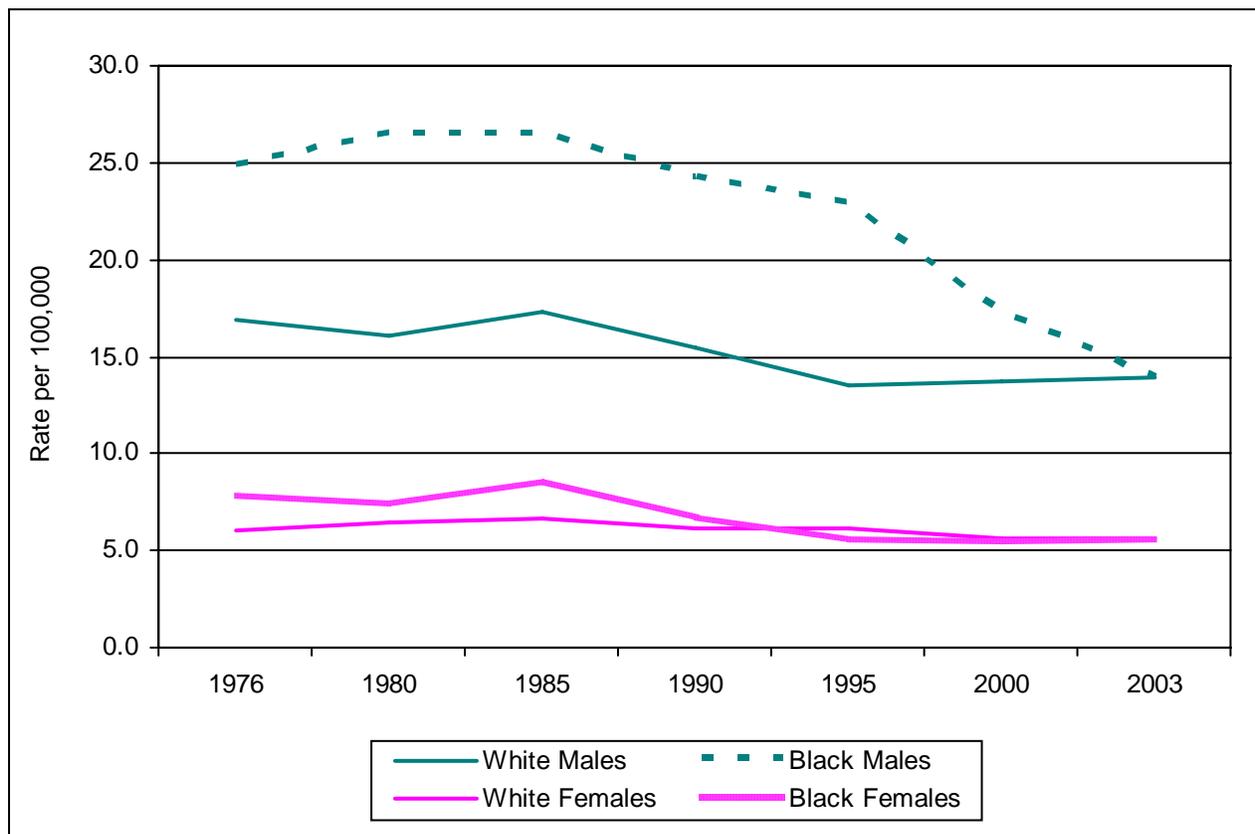
**Figure III. Incidence Rate of Oral and Pharyngeal Cancer by Race/Ethnicity and Sex New York State, 1999-2003 and United States, 2000-2003**



\*Per 100,000, age-adjusted to 2000 US population  
 Source: National Cancer Institute, SEER Cancer Statistics Review: 1975-2003  
 New York State data are from the New York State Cancer Registry for 1999-2003.

New York State has experienced a downward trend in the incidence of oral and pharyngeal cancer, based on the number of newly diagnosed cases reported each year from 1976 to 2003, with Black/African Americans of both genders experiencing a substantially greater decrease in the incidence of oral cancers than their White counterparts (**Figure IV**). The incidence of oral cavity and pharyngeal cancers decreased by 44.2% (from 24.9 per 100,000 to 13.9) for Black males and by 29.5% for Black females (from 7.8 to 5.5) from 1976 to 2003. The incidence of oral cancers among White males, on the other hand, decreased by 17.8% (from 16.9 per 100,000 to 13.9), while the incidence for White females decreased by 6.7% (from 6.0 to 5.6) over the same time period. Based on the number of cases of oral cancer diagnosed in 2003 and reported to the New York State Cancer Registry, racial disparities in the incidence of oral cavity and pharyngeal cancers were not apparent. Data on diagnosed cases during subsequent years are needed to determine if this trend will continue.

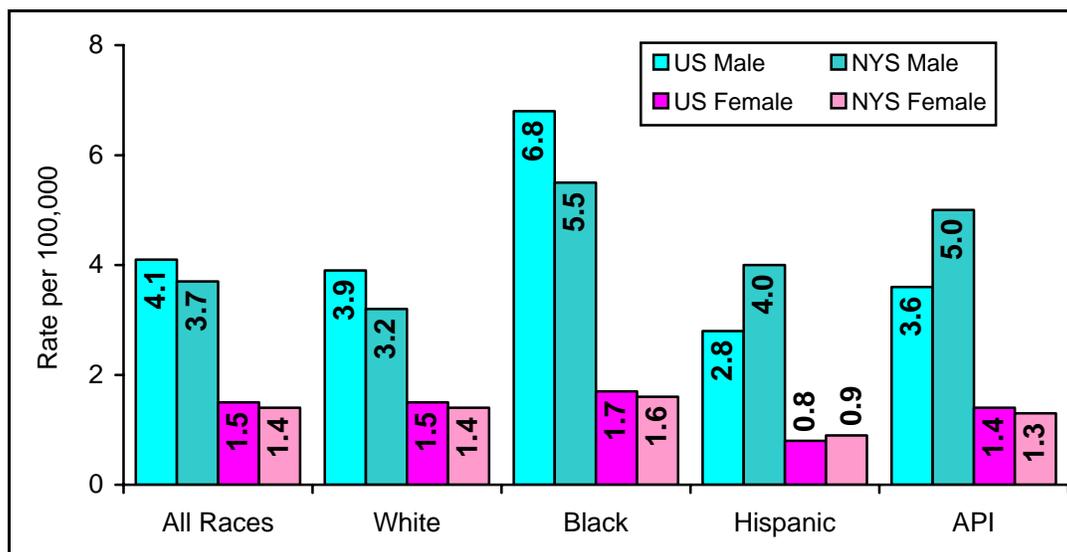
**Figure IV. Trends in the Annual Incidence of Oral and Pharyngeal Cancer in New York State by Gender and Race (1976-2003)**



Source: New York State data: Cancer Incidence and Mortality by Ethnicity and Region, 1999-2003, New York State Cancer Registry, <http://www.health.state.ny.us/nysdoh/cancer/nyscr/htm>. Accessed May 15, 2006.

Age-adjusted mortality rates from oral and pharyngeal cancers from 1999 to 2003 were higher among New York State males (3.7) than females (1.4) and higher among Black (5.5), Asian/Pacific Islander (5.0), and Hispanic (4.0) males than non-Hispanic White (3.2) males. Although overall mortality rates in New York State for both males and females were lower than national rates for both genders (4.1 for males and 1.5 for females), mortality rates for New York State Asian/Pacific Islander and Hispanic males were higher than those of their national counterparts (3.6 and 2.8, respectively) (see **Figure V**). Despite advances in surgery, radiation, and chemotherapy, the five-year survival rate for oral cancer has not improved significantly over the past several decades. Early detection and treatment of oral and pharyngeal cancers are critical if survival rates are to improve.

**Figure V. Oral Cancer Death Rate\* by Sex, Race, and Hispanic Origin  
New York State (1999-2003) and United States (2000-2003)**



\*Per 100,000, age-adjusted to 2000 US population

Sources: National Cancer Institute, SEER Cancer Statistics Review: 1975-2003  
New York State data are from the New York State Cancer Registry for 1999-2003.

Given available evidence that oral cancer diagnosed at an early stage has a better prognosis, several **Healthy People 2010** objectives specifically address early detection of oral cancer: Objective 21-6 is to “Increase the proportion of oral and pharyngeal cancers detected at the earliest stage,” and Objective 21-7 is to “Increase the proportion of adults who, in the past 12 months, report having had an examination to detect oral and pharyngeal cancer” [USDHHS 2000]. **Table IV** presents data for New York State and the United States on the proportion of oral cancer cases detected at the earliest stage (stage I, localized).

<b>TABLE IV. Oral Cancer Cases Detected at the Earliest Stage By Selected Demographic Characteristics</b>		
	<b>United States (%)</b>	<b>New York State (%)</b>
<b>HEALTHY PEOPLE 2010 TARGET</b>	50	50
<b>TOTAL</b>	33 <sup>a</sup>	
<b>RACE AND ETHNICITY</b>		
American Indian or Alaska Native	24 <sup>b</sup>	
Asian or Pacific Islander	29 <sup>b</sup>	
Black or African American, not Hispanic or Latino	21 <sup>a</sup>	
Male	17 <sup>a</sup>	22 <sup>c</sup>
Female	31 <sup>a</sup>	38 <sup>c</sup>
White	35 <sup>a</sup>	
Male	32 <sup>a</sup>	32 <sup>c</sup>
Female	42 <sup>a</sup>	46 <sup>c</sup>
White, not Hispanic or Latino	38 <sup>b</sup>	
Hispanic or Latino	35 <sup>b</sup>	
<b>GENDER</b>		
Female	40 <sup>a</sup>	47 <sup>d</sup>
Male	30 <sup>a</sup>	34 <sup>d</sup>

Sources: *Healthy People 2010, Progress Review, 2000*. U.S. Department of Health and Human Services. <http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls> Accessed July 26, 2005.

*Healthy People 2010, 2<sup>nd</sup> Ed.* U.S. Department of Health and Human Services, November 2000.

Surveillance, Epidemiology, and End Results (SEER) Program, SEER Cancer Statistical Review 1975-2003, National Cancer Institute, Bethesda, MD. [http://seer.cancer.gov/csr/1975-2003/results/merged/sect\\_20\\_oral\\_cavity.pdf](http://seer.cancer.gov/csr/1975-2003/results/merged/sect_20_oral_cavity.pdf). Accessed May 4, 2006.

<sup>a</sup> U.S. data are for 1996–2002

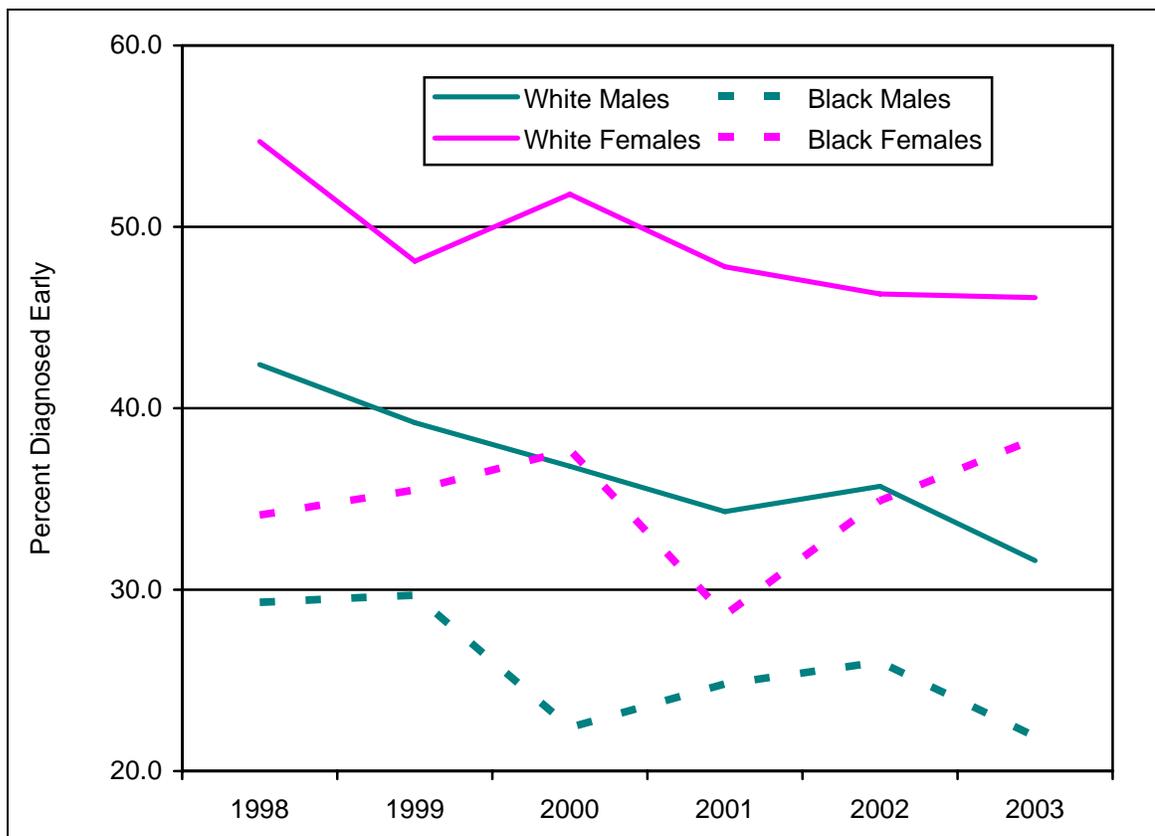
<sup>b</sup> U.S. data are for 1995-2001. <http://seer.cancer.gov/faststats/sites.htm>. Accessed November 9, 2005.

<sup>c</sup> New York State data are from the New York State Cancer Registry and are for cases diagnosed in 2003.

<sup>d</sup> New York State data are from the New York State Cancer Registry and cover the period 1999-2003.

A greater percentage of New York State males and females overall, as well as Black/African Americans of both genders and White females were diagnosed at the earliest stage in the progression of their oral cancers compared to their respective national counterparts. With the exception of Black females, however, the percentage of New Yorkers diagnosed each year at the earliest stage of their cancers has not improved over the most recent 6-year time period (**Figure VI**). In fact, just the opposite has been observed: there has been a downward trend in the percentage of New Yorkers diagnosed when their oral cancers were still at the localized stage.

**Figure VI. Trends in the Percentage of Oral Cancers Detected at the Earliest Stage by Gender and Race, New York State, 1998 - 2003**



Source: *Percent of Invasive Cancers Diagnosed at an Early Stage by Gender, Race and Year of Diagnosis, 1976-2003*, <http://www.health.state.ny.us/nysdoh/cancer/nyscr/htm>. Accessed May 4, 2006.

The higher mortality rates among African American males can be partly attributed to the fact that their cancers are more often discovered at an advanced stage. Among Black males, only 21.9% were diagnosed at an early stage. According to data reported to the New York State Cancer Registry, the primary sites for oral and pharyngeal cancers were the tongue (24%), gingival (17%), salivary gland (12%), and tonsillar (11%) areas.

## **B. DISPARITIES**

### **i. Racial and Ethnic Groups**

Although there have been gains in oral health status for the population as a whole, they have not been evenly distributed across subpopulations. Non-Hispanic Blacks, Hispanics, and American Indians and Alaska Natives generally have the poorest oral health of any of the racial and ethnic groups in the U.S. population. As reported above, these groups tend to be more likely than non-Hispanic Whites to experience dental caries in some age groups, are less likely to have received treatment for it, and have more extensive tooth loss. African American adults in each age group are more likely than other racial/ethnic groups to have gum disease. Compared to White Americans, African Americans are more likely to develop oral or pharyngeal cancer, are less likely to have it diagnosed at early stages, and suffer a worse 5-year survival rate.

The oral health status of New Yorkers mirrors national findings with respect to the disparities in oral health found among the different racial and ethnic groups within the State. A higher proportion of Asian and Hispanic children were found to have dental caries than White children of the same age, while a much greater percentage of Asian, Hispanic and Black children had untreated dental decay than their White, non-Hispanic counterparts.

Disparities in the oral health of adults by race/ethnicity, as measured by tooth loss due to dental caries or periodontal disease, were also noted based on statewide data collected in 2004. A smaller percentage of White, non-Hispanic New Yorkers reported tooth loss due to oral disease and the prevalence of edentulism compared to African American, Hispanic and other non-White racial/ethnic minority group individuals. Similar to national data, Black males and men of Hispanic origin are most at risk for developing oral and pharyngeal cancers and more likely than Whites to die from these cancers.

### **ii. Women's Health**

Most oral diseases and conditions are complex and represent the product of interactions between genetic, socioeconomic, behavioral, environmental, and general health influences. Multiple factors may act synergistically to place some women at higher risk for oral diseases. For example, the comparative longevity of women, compromised physical status over time, and the combined effects of multiple chronic conditions often with multiple medications, can result in increased risk of oral disease (Redford 1993). Many women live in poverty, are not insured, and are the sole head of their households. For these women, obtaining needed oral health care may be difficult or impossible as they sacrifice their own health and comfort to ensure that the needs of other family members are met. In addition, gender-role expectations of women may also affect their interaction with dental care providers and could affect treatment recommendations as well.

Many, but not all, statistical indicators show women to have better oral health status compared to men (Redford 1993; USDHHS 2000a). Adult females are less likely than males at each age group to have severe periodontal disease. Both Black and White females have a substantially

lower incidence rate of oral and pharyngeal cancers compared to Black and White males, respectively. However, a higher proportion of women than men have oral-facial pain, including pain from oral sores, jaw joints, face/cheek, and burning mouth syndrome.

The oral health of women in New York State has improved since 1999 based on data collected from the Behavioral Risk Factor Surveillance System. Modest gains were noted in the percentage of women 35 to 44 years of age who never lost a permanent tooth due to dental caries or periodontal disease, while a marked decrease in the prevalence of edentulism in women 65 years of age and older was found between 1999 and 2004. As of 2004, gender differences for tooth extraction no longer existed in New York State for 35 to 44 year olds; older adult women, however, continued to have a higher prevalence of edentulism than men. Women of all races and ethnicities also have much lower incidence rates of oral and pharyngeal cancers, were diagnosed at an early stage, and have lower mortality rates than men.

In 2004, a slightly greater proportion of women than men reported visiting the dentist, dental hygienist, or a dental clinic within the previous 12 months. Given emerging evidence showing the associations between periodontal disease and increased risk for preterm labor and low birth weight babies, dental visits during pregnancy are recommended to avoid the consequences of poor health. Based on data from the Pregnancy Risk Assessment and Monitoring System (2003), it is estimated that nearly 50% of pregnant women had a dental visit during pregnancy. A greater percentage of women who were older, more educated, married, White, and non-Medicaid enrolled were found to have visited the dentist during their pregnancies. Additionally, approximately 13% of low-income women received comprehensive dental care during their pregnancy. For many low-income pregnant women, the addition of the fetus to family size for calculations of financial eligibility for Medicaid may open the door to Medicaid participation for the first time, thereby making it possible to see a dentist for needed care.

### **iii. People with Disabilities**

The oral health problems of individuals with disabilities are complex. These problems may be due to underlying congenital anomalies as well as to inability to receive the personal and professional health care needed to maintain oral health. There are more than 54 million individuals in the United States defined as disabled under the Americans with Disabilities Act, including almost a million children under age 6 and 4.5 million children between 6 and 16 years of age.

No national studies have been conducted to determine the prevalence of oral and craniofacial diseases among the various populations with disabilities. Several smaller-scale studies show that the population with intellectual disability or other developmental disabilities has significantly higher rates of poor oral hygiene and needs for periodontal disease treatment than the general population, due, in part, to limitations in individual understanding of and physical ability to perform personal prevention practices or to obtain needed services. There is a wide range of caries rates among people with disabilities, but overall their caries rates are higher than those of people without disabilities (USDHHS 2000a).

Statewide data are presently not available on the oral health of and/or prevalence of oral and craniofacial diseases among individuals with disabilities. Based on current Medicaid enrollment information, as of June 2005, a total of 656,115 New Yorkers were eligible for either Medicaid (Blind and Disabled) and SSI (516,145) or Medicaid (Blind and Disabled) only (139,970), while an additional 153,063 older adults were enrolled in Medicaid and subsistence (SSI Aged). The

oral health status and State expenditures for dental services for these 809,178 individuals are not known at the current time.

#### **iv. Socioeconomic Disparities**

People living in low-income families bear a disproportionate burden of oral diseases and conditions. For example, despite progress in reducing dental caries in the United States, children and adolescents in families living below the poverty level experience more dental decay than those who are economically better off. Furthermore, the caries seen in individuals of all ages from poor families is more likely to be untreated than caries in those living above the poverty level. Nationally, based on the results of the 1999-2002 National Health and Nutrition Examination Survey, 33.4% of poor children aged 2-11 years have one or more untreated decayed primary teeth, compared to 13.2% of non-poor children (MMWR, August 2005). Poor children and adolescents aged 6-19 years were also found to have a higher percentage of untreated decayed permanent teeth (19.5%) than non-poor children and adolescents (8.1%). Adult populations show a similar pattern, with the proportion of untreated tooth decay (coronal) higher among the poor (40.9% of those living below 100% of the Federal Poverty Level [FPL]) than the non-poor (15.7% of those at or above 200% of the FPL). The prevalence of untreated root caries among adults was also higher among the poor (22.8%) than the non-poor (6.8%) (MMWR, August 2005).

At every age, a higher proportion of those at the lowest income level have periodontitis than those at higher income levels. Adults with some college (15%) have 2 to 2.5 times less destructive periodontal disease than those with high school (28%) and with less than high school (35%) levels of education (USDHHS 2000b). Overall, a higher percentage of Americans living below the poverty level are edentulous than are those living above (USDHHS 2000a). Among persons aged 65 years and older, 39% of older adults with less than a high school education were edentulous (had lost all their natural teeth) in 1997, compared with 13 percent of those with at least some college (USDHHS 2000b). People living in rural areas also have a higher disease burden due primarily to difficulties in accessing preventive and treatment services.

Socioeconomic disparities in oral health in New York State mirror those found nationally with respect to income and education. Using eligibility for free or reduced school lunch as a proxy measure of family income, children from lower income groups experienced more caries and had more untreated dental decay than their higher income counterparts. Consistent with national data, caries experience and untreated caries decreased as the education level of the parent increased. Among the adult population of New York State, individuals at lower income levels and with less education reported more tooth loss and edentulism than those with higher annual incomes and more education. Additionally, the percentage of individuals visiting a dentist, dental hygienist, or dental clinic within the past year also increased as education and income increased.

### **C. SOCIETAL IMPACT OF ORAL DISEASE**

#### **i. Social Impact**

Oral health is integral to general health and essential for wellbeing and the quality of life as measured along functional, psychosocial, and economic dimensions. Diet, nutrition, sleep, psychological status, social interaction, school, and work are affected by impaired oral and craniofacial health. Oral and craniofacial diseases and conditions contribute to compromised ability to bite, chew, and swallow foods; limitations in food selection; and poor nutrition. These conditions include tooth loss, diminished salivary functions, oral-facial pain conditions such as

temporomandibular disorders, functional limitations of prosthetic replacements, and alterations in taste. Oral-facial pain, as a symptom of untreated dental and oral problems and as a condition in and of itself, is a major source of diminished quality of life. It is associated with sleep deprivation, depression, and multiple adverse psychosocial outcomes.

More than any other body part, the face bears the stamp of individual identity. Attractiveness has an important effect on psychological development and social relationships. Considering the importance of the mouth and teeth in verbal and nonverbal communication, diseases that disrupt their functions are likely to damage self-image and alter the ability to sustain and build social relationships. The social functions of individuals encompass a variety of roles, from intimate interpersonal contacts to participation in social or community activities, including employment. Dental diseases and disorders can interfere with these social roles at any or all levels. Whether because of social embarrassment or functional problems, people with oral conditions may avoid conversation or laughing, smiling, or other nonverbal expressions that show their mouth and teeth.

The social impact of poor oral health on general health and quality of life issues is particularly pronounced among older adults. Poor oral health can increase the risks to general health, with compromised chewing performance and eating abilities affecting food choices and nutritional status. Many of the diseases associated with advancing age (e.g., hypertension, heart disease, chronic respiratory disease, or urinary or psychiatric problems), systemic diseases, and/or the adverse side effects of their treatments, as well as the high prevalence of multi-medication therapies in this age group can compromise oral health. These factors can lead to an increased risk of oral diseases, a reduced salivary flow, altered senses of taste and smell, oro-facial pain, gingival overgrowth, alveolar bone resorption and mobility of teeth. Additionally, oral health can be further compromised as a result of inadequate oral hygiene due to poor dexterity with increasing age. Pain, dental abscesses, problems with eating and chewing, and missing or damaged teeth can all adversely affect the daily lives, self-esteem and wellbeing of older adults (Petersen & Yamamoto, 2005).

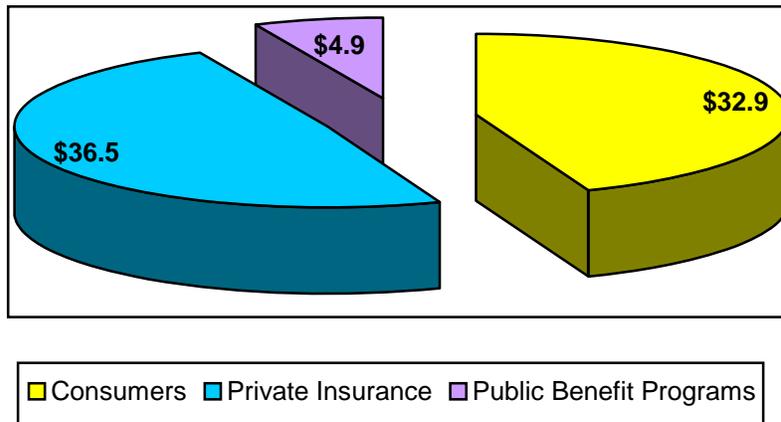
## ii. Economic Impact

### Direct Costs of Oral Diseases

Expenditures for dental services in the United States in 2003 were \$74.3 billion, or 4.6% of the total spent on health care (\$1,614.2 billion) that year (National Health Expenditures for 2003). Of the \$74.3 billion expended in 2003 for dental services (**Figure VII**):

- Consumer out-of-pocket payments accounted for 44.3% (\$32.9 billion) of all expenditures.
- Private health insurance covered 49.1% (\$36.5 billion) of all dental services.
- Public benefit programs covered only 6.6% (\$4.9 billion) of all dental services (**Figure VIII**):
  - Federal - \$2.9 billion
    - Medicaid - \$2.3 billion
    - Medicare - \$0.1 billion
    - Medicaid SCHIP Expansion and SCHIP - \$0.5 billion
  - State and Local - \$1.9 billion
    - Medicaid - \$1.7 billion
    - Medicaid SCHIP Expansion and SCHIP - \$0.2 billion

**Figure VII. National Expenditures in Billions of Dollars for Dental Services in 2003**

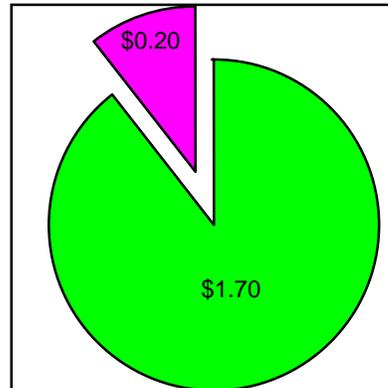
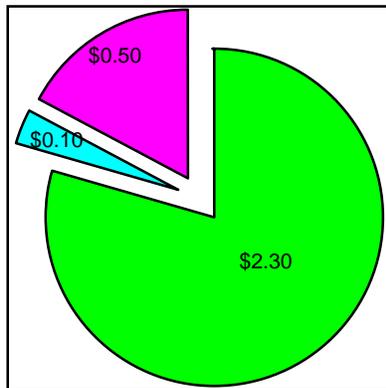


Source: National Health Expenditures for 2003

**Figure VIII. Public Benefit Programs  
2003 Expenditures for Dental Services in Billions**

**Federal Expenditures  
Total: \$2.9 Billion**

**State/Local Expenditures  
Total: \$1.9 Billion**



Source: National Health Expenditures for 2003

The costs for dental services accounted for 5.2% of all private and public personal health care expenditures during 2003, 0.6% of all federal dollars spent for personal health care, 1.2% of all state and local spending for personal health care services, and 0.9% of all Medicare, Medicaid, and SCHIP health care expenditures combined.

The National Center for Chronic Disease Prevention and Health Promotion reported that Americans made about 500 million visits to dentists in 2004, with an estimated \$78 billion spent on dental services. A negligible amount of total expenditures for dental services were for persons 65 years of age and older covered under the Medicare Program. Medicare does not cover routine dental care and will only cover dental services needed by hospitalized patients with very specific conditions (Oral Health in America: A Report of the Surgeon General, 2000).

The Medicaid Program, on the other hand, provides dental services for low income and disabled children and adults. Even though dental spending comprises a very small portion of total Medicaid expenditures, many states have cut or eliminated dental benefits for disabled beneficiaries and adults as cost saving measures. Dental screenings and diagnostic, preventive, and treatment services are required to be provided to all enrolled children less than 21 years of age under Medicaid's Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) service. The State Children's Health Insurance Program (SCHIP) complements the Medicaid Program by providing health insurance coverage to children whose family income is above Medicaid eligibility standards (up to 200% of the FPL); SCHIP includes optional dental benefits. While dental services accounted for only 4.4% of total health care expenditures paid by Medicaid in 2003, they accounted for 25.4% of all Medicaid expenditures in children less than 6 years of age.

In the New York State Medicaid Program, dental care is provided either on a fee-for-service basis or as part of the benefit package of managed care programs; limited orthodontic services are provided through the Physically Handicapped Children's Program as part of the Medicaid fee-for-service program, but only if determined to be medically necessary for the treatment of physically handicapping malocclusions or qualifying congenital defects, as defined by law. As of September 1, 2005, 2 million individuals were enrolled in the Medicaid Managed Care Program, with all 31 participating managed care plans offering dental services as part of their benefit packages. Comprehensive dental services (including preventive, routine and emergency dental care, endodontics, and prosthodontics) are available through Children's Medicaid (Child Health Plus A) for Medicaid-eligible children. New York State Child Health Plus B (SCHIP), is a health insurance Managed Care Program that provides benefits for children less than 19 years of age who are not eligible for Child Health Plus A and who do not have private insurance. As of September 2005, a total of 338,155 children were enrolled in Child Health Plus B.

Family Health Plus is New York State's public health insurance program for adults between the ages of 19 and 64 who do not have health insurance, either on their own or through their employers, but whose income or resources are too high to qualify for Medicaid. Family Health Plus is available to single adults, couples without children, and parents with limited incomes and provides comprehensive coverage through participating managed care plans. Dental services are an optional plan benefit and as of June 2005, all but one of the 29 managed care plans participating in Family Health Plus included dental services in their benefit packages. As of September 1, 2005, a total of 523,519 individuals were enrolled in Family Health Plus.

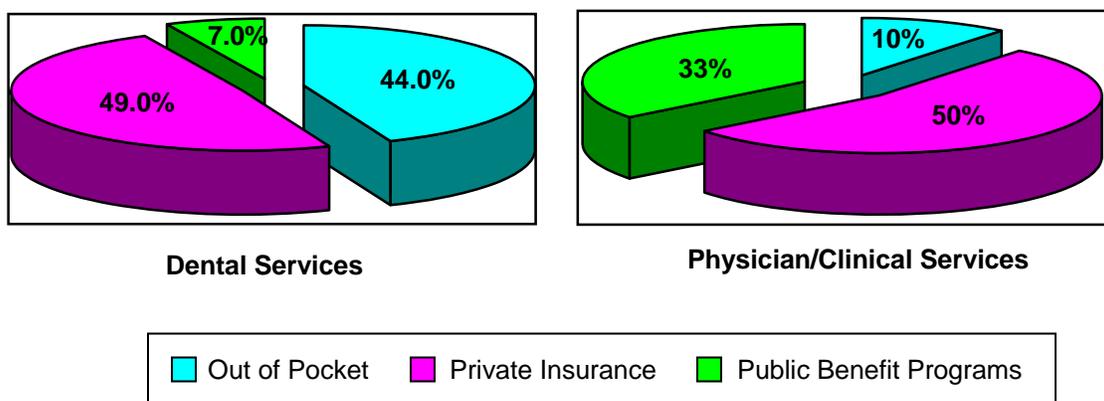
Based on data from the Current Population Survey, in 2003, 31.6% of all New Yorkers lived under 200% of the FPL, while 14.3% lived under 100% of the FPL. Recently published data from the U.S. Census Bureau American Community Survey estimate that in 2003, nearly 21% of related children less than 5 years of age in New York State lived below poverty in the past 12 months and 22% of unrelated individuals 15 years of age and older lived in poverty. Access to dental care, as measured by the percent of children receiving preventive dental services within the prior year, was found to vary by family income. According to the 2003 National Survey of Children's Health, NYS children with family incomes below 200% of the FPL were the least

likely to have received preventive dental care during the prior 12 months. Slightly more than half of children (57.9%) in families with incomes below 100% of the FPL and 72% of children in families with incomes falling between 100-199% of the FPL had a preventive dental care visit during the previous year compared to 80-82% of children in families with incomes at or above 200% of the FPL.

Additionally, 15% of adult New Yorkers (2004 Behavioral Risk Factor Surveillance System) and 9.4% of children less than 18 years of age (Percent Uninsured for Medical Care by Age, 1994-2003) were found to be uninsured for medical care. The continuing expansion of Child Health Plus B and Family Health Plus will help to address some of the disparities noted in access to health care and dental services experienced by low income New Yorkers.

During the 2004 calendar year, New York State total Medicaid expenditures approached \$35 billion, with \$6.4 billion spent for individuals enrolled in prepaid Medicaid Managed Care and \$28.5 billion spent on fee for services. Slightly over 1% (\$302 million) of all Medicaid fee-for-service expenditures during 2004 was spent on dental services. Nationally, a large proportion of dental care is paid out-of-pocket by patients. In 2003, 44% of dental care was paid out-of-pocket, 49% was paid by private dental insurance, and 7% was paid by federal or state government sources (**Figure IX**). In comparison, 10% of physician and clinical services nationally was paid out-of-pocket, 50% was covered by private medical insurance, and 33% was paid by government sources (Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group, 2005)

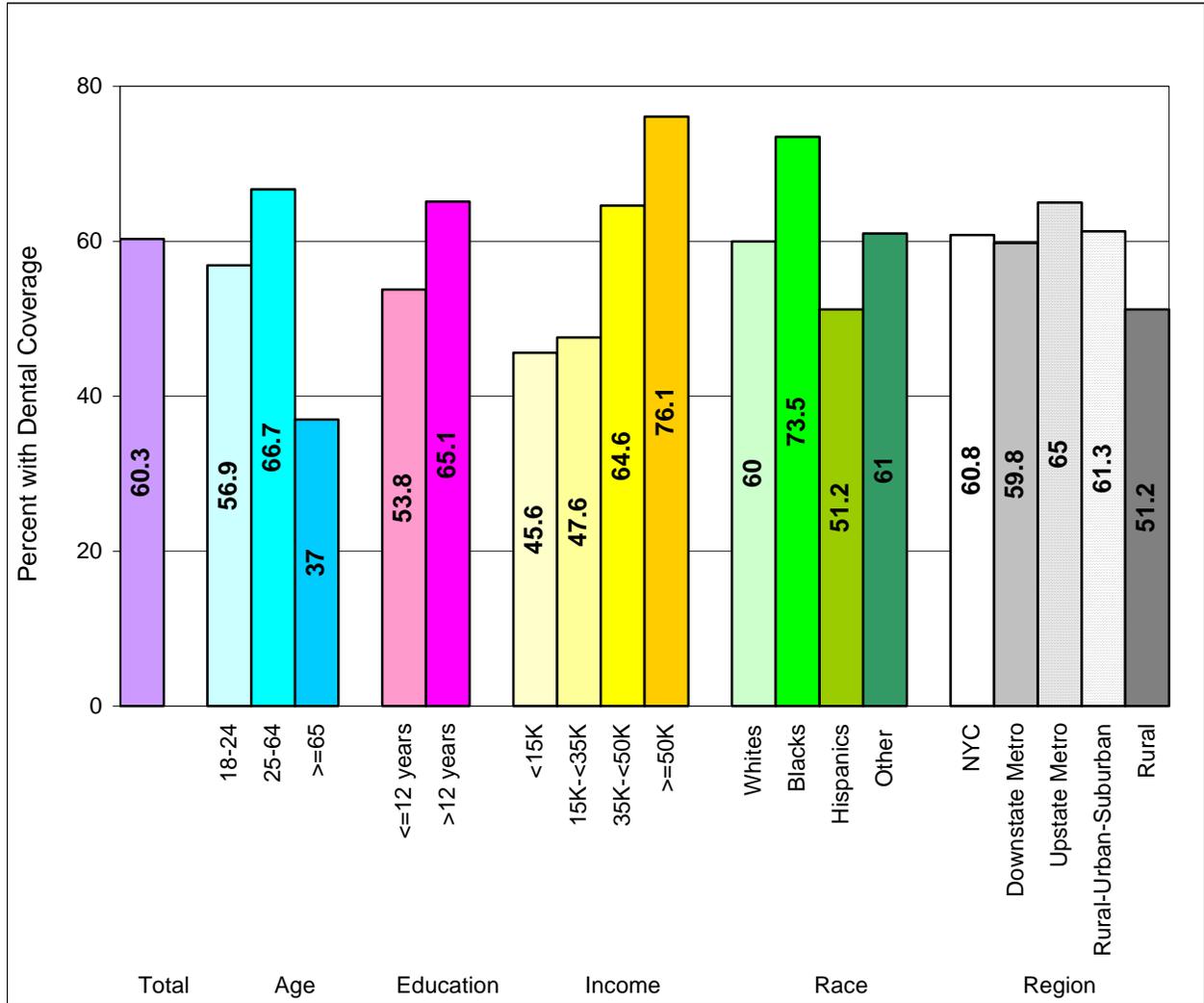
**Figure IX. Sources of Payment for Dental and Physician/Clinical Services  
United States, 2003**



Source: Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group, 2005.

Statewide data on the sources of payment for dental care are presently not available. Data on the percentage of New York State adults 18 years of age and older who have any kind of insurance (e.g., dental insurance, Medicaid) covering some or all of the costs for routine dental care, however, are available from the 2003 Behavioral Risk Factor Surveillance System. Approximately 60% of survey respondents reported having dental insurance coverage, with a greater percentage of 26 to 64 year olds (67%) having dental coverage, compared to those 65 years of age and older (37%) or between 18 and 25 years of age (57%). Additionally, individuals with 12 or fewer years of education (54%), annual incomes below \$15,000 (46%), those of Hispanic or Latino descent (51%), and New Yorkers residing in rural areas of the State (51%) were least likely to have dental insurance coverage (**Figure X**).

**Figure X. Socio-Demographic Characteristics of New York State Adults with Dental Insurance Coverage, 2003**



Source: New York State Behavioral Risk Factor Surveillance System, 2003.

A survey of third grade children conducted between 2002 and 2004 as part of the New York State Oral Health Surveillance System found that 80.1% of children surveyed statewide (85.5% of surveyed children in New York City and 77.1% of surveyed children in rest of the State) had dental insurance coverage. Largely due to income eligibility for Medicaid, a greater percentage of children who reportedly participated in the free and reduced-price school lunch program had dental insurance (NYS: 84.1%; NYC: 87.9%; and ROS: 79.0%) compared to children from families with higher incomes not eligible for participation in the free and reduced-price school lunch program (NYS: 76.2%; NYC: 82.8%; ROS: 76.2%). Of the children with dental coverage, 60% reported having insurance that covered over 80% of dental expenses and 16% reported plans covering from 50 to 80% of dental fees. Limited data are also available on Early Head Start and Head Start preschoolers enrolled in New York State programs from annual Program Information Reports. Based on 2003-2004 enrollment figures, 97.7% of children in New York State Early Head Start/Head Start Programs had health insurance coverage, compared to

90.5% nationally. Additionally, 85.6% had an ongoing source of continuous, accessible dental care.

As part of a needs assessment for the development of an Oral Cancer Control Plan, the Bureau of Dental Health, New York State Department of Health, analyzed hospital discharge data for the period 1996-2001 for every patient in New York State with a primary diagnosis of oral and pharyngeal cancer. By quantifying hospitalization charges related to oral and pharyngeal cancer care, new information is now available on the economic burden of oral and pharyngeal cancer in New York State. A total of 10,544 New Yorkers were hospitalized between 1996 and 2001 for oral and pharyngeal cancer. Although the number of individuals hospitalized for oral cancer care and their corresponding length of stay decreased by nearly 15% and 10%, respectively, from 1996 to 2001, daily hospital charges (\$2,534 to \$3,834) and total charges per admission (\$29,141 to \$39,874) dramatically increased over the same time period (increases of 51% and 37%, respectively). Additionally, daily hospital-related costs for the care and treatment of New Yorkers with oral and pharyngeal cancer (\$3,834 in 2001) were nearly 58% higher than the average charges per hospital day (\$2,434 in 2002) nationally, illustrating a greater financial burden for treatment of oral and pharyngeal cancer.

### **Indirect Costs of Oral Diseases**

Oral and craniofacial diseases and their treatment place a burden on society in the form of lost days and years of productive work. In 1996, the most recent year for which national data are available, U.S. school children missed a total of 1.6 million days of school due to acute dental conditions; this is more than 3 days for every 100 students (USDHHS 2000a). Acute dental conditions were responsible for more than 2.4 million days of work loss, and contributed to a range of problems for employed adults, including restricted activity and bed days. In addition, conditions such as oral and pharyngeal cancers contribute to premature death and can be measured by years of life lost.

### **iii. Oral Disease and Other Health Conditions**

Oral health and general health are integral for each other. Many systemic diseases and conditions, including diabetes, HIV, and nutritional deficiencies, have oral signs and symptoms. These manifestations may be the initial sign of clinical disease and therefore may serve to inform health care providers and individuals of the need for further assessment. The oral cavity is a portal of entry as well as the site of disease for bacterial and viral infections that affect general health status. Recent research suggests that inflammation associated with periodontitis may increase the risk for heart disease and stroke, premature births in some females, difficulty in controlling blood sugar in people with diabetes, and respiratory infection in susceptible individuals [Dasanayake 1998; Offenbacher et al. 2001; Davenport et al. 1998; Beck et al. 1998; Scannapieco et al. 2003; Taylor 2001]. More research is needed in these areas, not just to determine effect, but also to determine whether or which treatments have the most beneficial outcomes.

## V. RISK AND PROTECTIVE FACTORS AFFECTING ORAL DISEASES

The most common oral diseases and conditions can be prevented. There are safe and effective measures that can reduce the incidence of oral disease, reduce disparities, and increase quality of life.

### A. COMMUNITY WATER FLUORIDATION

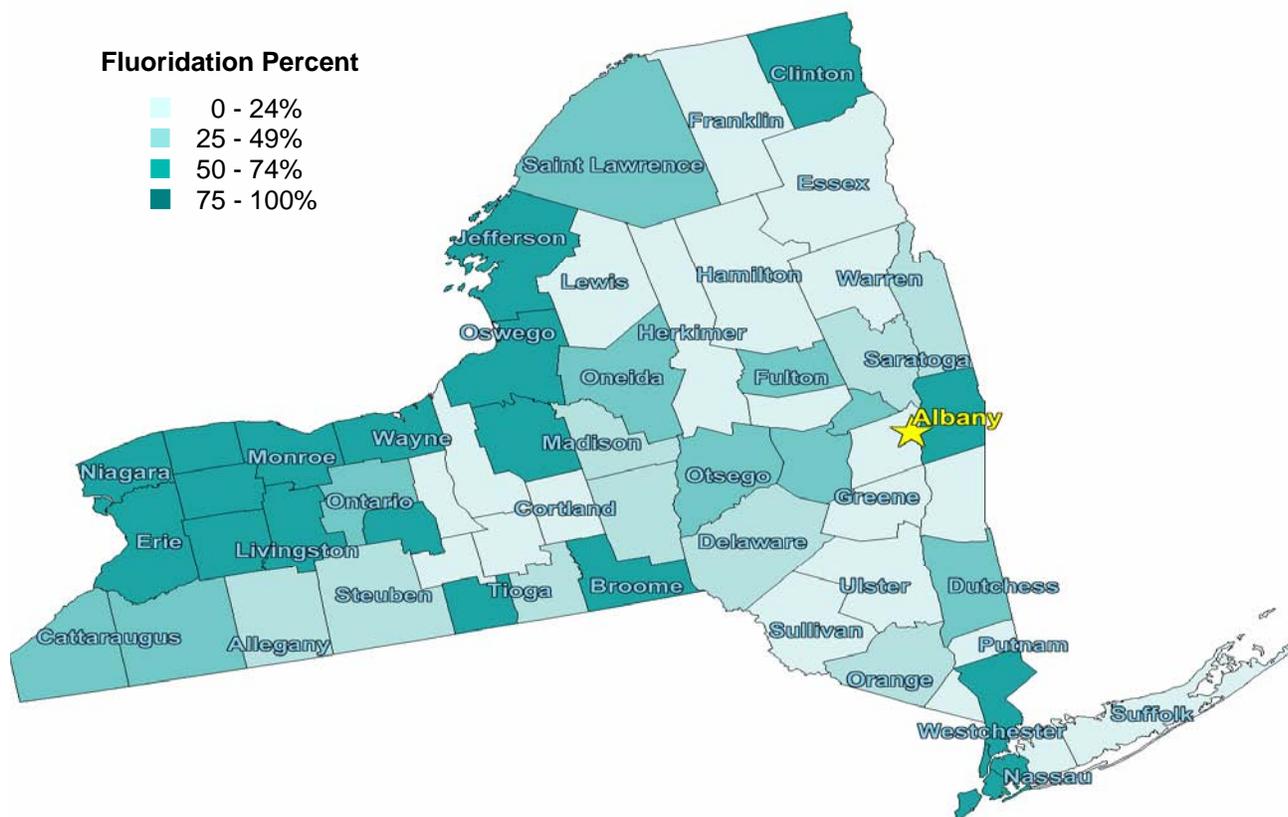
Community water fluoridation is the process of adjusting the natural fluoride concentration of a community's water supply to a level that is best for the prevention of dental caries. In the United States, community water fluoridation has been the basis for the primary prevention of dental caries for 60 years and has been recognized as one of 10 great achievements in public health of the 20th century (CDC 1999). It is an ideal public health method because it is effective, eminently safe, inexpensive, requires no behavior change by individuals, and does not depend on access or availability of professional services. Water fluoridation is equally effective in preventing dental caries among different socioeconomic, racial, and ethnic groups. Fluoridation helps to lower the cost of dental care and helps residents retain their teeth throughout life (USDHHS 2000a).

Recognizing the importance of community water fluoridation, *Healthy People 2010* Objective 21-9 is to "Increase the proportion of the U.S. population served by community water systems with optimally fluoridated water to 75%." In the United States during 2002, approximately 162 million people (67% of the population served by public water systems) received optimally fluoridated water (CDC 2004). In New York State during 2005, more than 12.7 million New Yorkers received optimally fluoridated water, representing 73% of the State's population served by public water systems. In New York City, 100% of the population is on a fluoridated community water supply; outside of New York City, only 46% of the population receives fluoridated water. Counties with large proportions of the population not covered by fluoridation include Nassau, Suffolk, Rockland, Ulster, Albany, Oneida, and Tompkins (**Figure XI**).

Not only does community water fluoridation effectively prevent dental caries, it is one of very few public health prevention measures that offer significant cost saving in almost all communities (Griffin et al. 2001). It has been estimated that about every \$1 invested in community water fluoridation saves approximately \$38 in averted costs. The cost per person of instituting and maintaining a water fluoridation program in a community decreases with increasing population size. A recent study conducted in Colorado on the cost savings associated with community water fluoridation programs (CWFPs) estimated annual treatment savings of \$148.9 million or \$60.78 per person in 2003 dollars (O'Connell et al. 2005). Treatment savings were based on averted dental decay attributable to CWFPs, the costs of treatment over the lifetime of the tooth that would have occurred without CWFPs, and patient time spent for dental visits using national estimates for the value of one hour of activity.

The Bureau of Dental Health, New York State Department of Health, in collaboration with the Department's Bureau of Water Supply Protection, monitors the quality of fluoridation services statewide. Technical assistance is also provided to communities interested in implementing water fluoridation.

**Figure XI. New York State  
Percentage of County PWS Population Receiving Fluoridated Water**



Source: Centers for Disease Control and Prevention, Division of Oral Health, [www.cdc.gov/OralHealth](http://www.cdc.gov/OralHealth).  
Map generated Thursday, December 15, 2005

**B. TOPICAL FLUORIDES AND FLUORIDE SUPPLEMENTS**

Because frequent exposure to small amounts of fluoride each day will best reduce the risk for dental caries in all age groups, all people should drink water with an optimal fluoride concentration and brush their teeth twice daily with fluoride toothpaste (CDC 2001). For communities that do not receive fluoridated water and persons at high risk for dental caries, additional fluoride measures may be needed. Community measures include fluoride mouth rinse or tablet programs, typically conducted in schools. Individual measures include professionally applied topical fluoride gels or varnish for persons at high risk for caries.

The Bureau of Dental Health, New York State Department of Health administers and oversees the School-Based Supplemental Fluoride Program. This Program targets children in fluoride-deficient areas of the State and consists of a school-based Fluoride Mouth Rinse Program for elementary school children and a Preschool Fluoride Tablet Program for 3-5 year olds in Head Start Centers and migrant childcare centers. More than 115,000 children participate in these programs annually.

The regular use of fluoride tablets was found to be higher in children from higher income groups, based on results from the New York State Oral Health Surveillance System (2002-2004)

survey of third grade children in upstate New York counties. Approximately 18% of third graders participating in the free and reduced-price school lunch program reported the use of fluoride tablets on a regular basis, compared to 30.5% of their peers from families with incomes exceeding the eligibility limit for participation in the free and reduced-price school lunch program.

### **C. DENTAL SEALANTS**

Since the early 1970s, childhood dental caries on smooth tooth surfaces (those without pits and fissures) has declined markedly because of widespread exposure to fluorides. Most decay among school-aged children now occurs on tooth surfaces with pits and fissures, particularly the molar teeth.

Pit-and-fissure dental sealants (plastic coatings bonded to susceptible tooth surfaces) have been approved for use for many years and have been recommended by professional health associations and public health agencies. First permanent molars erupt into the mouth at about age 6 years. Placing sealants on these teeth shortly after their eruption protects them from the development of caries in areas of the teeth where food and bacteria are retained. If sealants were applied routinely to susceptible tooth surfaces in conjunction with the appropriate use of fluoride, most tooth decay in children could be prevented (USDHHS 2000b)

Second permanent molars erupt into the mouth at about age 12-13 years. Pit-and-fissure surfaces of these teeth are as susceptible to dental caries as the first permanent molars of younger children. Therefore, young teenagers need to receive dental sealants shortly after the eruption of their second permanent molars.

The *Healthy People 2010* target for dental sealants on molars is 50% for 8-year-olds and 14-year-olds. Table V presents the most recent estimates of the proportion of children aged 8 with dental sealants on one or more molars.

Statewide data on the use of dental sealants are based on the results of surveys of third grade students from the New York State Oral Health Surveillance System (2002-2004); comparable data are currently not available on 14-year olds. New York State third graders were similar to third graders nationally with respect to the prevalence of dental sealants, with 27% of the third graders in New York State having dental sealants on one or more molars, compared to 26% nationally (**Table V**).

Nationally, the prevalence of dental sealants was found to vary by race and ethnicity, the education level of the head of household and family income. Nationally, White, non-Hispanic children had the highest prevalence of dental sealants and Black, non-Hispanic children the lowest; while children from families in which the head of household had no high school education had the lowest prevalence of dental sealants, with the prevalence of sealants increasing with parental education. Consistent with national data, lower income New York State 3<sup>rd</sup> graders, based on reported participation in the free and reduced-price school lunch program, had a lower prevalence of dental sealants (17.8%) compared to children from higher income families (41.1%). Additionally, children lacking any type of dental insurance were found to have the lowest use of dental sealants, compared to children receiving dental services through Child Health Plus B, Medicaid, or some other insurance plan.

The Bureau of Dental Health, New York State Department of Health provides grant support to many communities to implement school-based and school-linked dental programs. School-

based programs provide dental sealants on site, while school-linked programs identify children in need of sealants and refer them to private offices or facilities for sealant placement. Nearly 68% of third grade children in Upstate New York in schools with a dental sealant program had dental sealants compared to 33% of third-grade children in schools without a program. Disparities in dental sealant prevalence based on family income (i.e., reported participation in the free and reduced-price school lunch program) were greatly reduced in schools with a dental sealant program (approximately 63% for children in lower income groups compared to 71% for children in higher income groups).

<b>TABLE V. Percentage of Children Aged 8 Years in United States and 3<sup>rd</sup> Graders in New York State with Dental Sealants on Molar Teeth by Selected Characteristics</b>		
	<b>United States<sup>a</sup></b>	<b>New York State<sup>b</sup></b>
	<b>%</b>	<b>%</b>
<b>HEALTHY PEOPLE 2010 TARGET</b>	50	50
<b>TOTAL: 8 Year Olds</b>	28	
<b>3RD GRADE STUDENTS</b>	26 <sup>d</sup>	27
<b>INCOME</b>		
Free and Reduced-Price School Lunch Program		18
Not Eligible for Free and Reduced-Price School Lunch Program		41
<b>SCHOOL-BASED DENTAL SEALANT PROGRAM</b>		
No Program		33
Has Program		68
Lower-Income Children		63
Higher-Income Children		71

Sources: *Healthy People 2010, Progress Review, 2000*. U.S. Department of Health and Human Services. <http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls> Accessed July 26, 2005.

*Healthy People 2010, 2<sup>nd</sup> Ed.* U.S. Department of Health and Human Services, November 2000.

DNC: Data not collected

DSU: Data are statistically unreliable or do not meet criteria for confidentiality

<sup>a</sup> National data are from NHANES 1999–2000 unless otherwise indicated

<sup>b</sup> Statewide and Rest of State data from New York State Oral Health Surveillance System (2002-2004) survey of third grade children.

#### **D. PREVENTIVE VISITS**

Maintaining good oral health takes repeated efforts on the part of the individual, caregivers, and health care providers. Daily oral hygiene routines and healthy lifestyle behaviors play an important role in the prevention of oral diseases. Regular preventive dental care can reduce the development of disease and facilitate early diagnosis and treatment. One measure of preventive care that is being tracked is the percentage of people (adults) who had their teeth cleaned in the past year. Having one's teeth cleaned by a dentist or dental hygienist is indicative of preventive behaviors.

Statewide data on the percentage of New Yorkers who had their teeth cleaned within the past year is limited to information obtained from the 2002 Behavioral Risk Factor Surveillance Survey (**Table VI**). Seventy-two percent of those surveyed reported having their teeth cleaned during the prior year. A greater percentage of females, individuals 45 to 64 years of age, those with higher incomes and educational attainment, and White, non-Hispanic individuals reported having had their teeth cleaned.

<b>TABLE VI. Percentage of People Who Had Their Teeth Cleaned Within the Past Year Aged 18 Years and Older</b>		
	<b>United States, 2002 Median</b>	<b>New York State<sup>a</sup> 2002</b>
	<b>%</b>	<b>%</b>
<b>TOTAL</b>	69	72
<b>AGE</b>		
18 - 24	70	71
25 - 34	66	66
35 - 44	70	70
45 - 54	71	75
55 - 64	72	78
65 +	72	74
<b>RACE AND ETHNICITY</b>		
White	72	75
Black	62	66
Hispanic	65	70
Other	64	63
Multiracial	56	68
<b>GENDER</b>		
Male	67	68
Female	72	75
<b>EDUCATION</b>		
Less than high school	47	60
High school or G.E.D.	65	68
Post high school	72	74
College graduate	79	78
<b>INCOME</b>		
Less than \$15,000	49	55
\$15,000 – 24,999	56	63
\$25,000 – 34,999	65	65
\$35,000 – 49,999	72	74
\$50,000+	81	80

Source: Division of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System Online Prevalence Data, 1995–2004.

<sup>a</sup> Data for New York State are from the 2002 Behavioral Risk Factor Surveillance System.

A slightly higher percentage of adults in New York State reported having had their teeth cleaned within the past year compared to adults nationally. Overall, similar trends in preventive dental visits for teeth cleaning were found with respect to gender, age, education, and income. The only noted exceptions were for individuals in other racial/ethnic groups, college graduates, and those with annual incomes in excess of \$50,000.

New York State children under 18 years of age fared better than their national counterparts with respect to preventive health and dental care. According to findings from the 2003 National Survey of Children's Health (NSCH), nearly 69% of children in New York State reported having had **both** a preventive medical care visit and preventive dental care visit in the past year compared to 59% of children nationally. In contrast to other large population states, a greater proportion of New York children under 18 years of age received preventive medical and dental care compared to children in California (53%), Florida (54%), and Texas (54%).

## E. SCREENING FOR ORAL CANCER

Oral cancer detection is accomplished by a thorough examination of the head and neck and an examination of the mouth including the tongue and the entire oral and pharyngeal mucosal tissues, lips, and palpation of the lymph nodes. Although the sensitivity and specificity of the oral cancer examination have not been established in clinical studies, most experts consider early detection and treatment of precancerous lesions and diagnosis of oral cancer at localized stages to be the major approaches for secondary prevention of these cancers (Silverman 1998; Johnson 1999 CDC 1998). If suspicious tissues are detected during examination, definitive diagnostic tests are needed, such as biopsies, to make a firm diagnosis.

Oral cancer is more common after age 60. Known risk factors include use of tobacco products and alcohol. The risk of oral cancer is increased 6 to 28 times in current smokers. Alcohol consumption is an independent risk factor and, when combined with the use of tobacco products, accounts for most cases of oral cancer in the United States and elsewhere (USDHHS 2004). Individuals also should be advised to avoid other potential carcinogens, such as exposure to sunlight (risk factor for lip cancer) without protection (use of lip sunscreen and hats recommended).

Recognizing the need for dental and medical providers to examine adults for oral and pharyngeal cancer, **Healthy People 2010** Objective 21-7 is to increase the proportion of adults who, in the past 12 months, report having had an examination to detect oral and pharyngeal cancers. Nationally, relatively few adults aged 40 years and older (13%) reported receiving an examination for oral and pharyngeal cancer, although the proportion varied by race/ethnicity (**Table VII**).

Comparable data on the percentage of New York State adults 40 years of age and older having an oral cancer examination in the past 12 months are not available. As part of its efforts to address oral and pharyngeal cancers and promote oral cancer examinations as a routine standard of care, in 2003 the Bureau of Dental Health, New York State Department of Health included an Oral Cancer Module in the State's Behavioral Risk Factor Surveillance System (BRFSS). Questions were included in order to obtain baseline information on public awareness of and knowledge about oral cancer, document the percentage of New York State adults having an oral cancer examination, and to identify disparities in awareness of oral cancer and receipt of an oral cancer examination. Data from the Oral Cancer Module are presented in Table VII.

Although exact comparisons cannot be made between New York State and national findings due to differences in the age range of survey respondents (i.e., 18 years of age and older or 40 years of age and older) and the timeframes used for the receipt of an oral cancer exam (i.e., at any time during one's life or within the past 12 months), comparisons can still be made between State and national data with respect to the direction of any differences found based on gender, race and ethnicity, education, and income. In New York State and nationally, a higher proportion

of females, White non-Hispanics, and individuals with more education and higher incomes had been examined for oral and pharyngeal cancers.

**TABLE VII. Proportion<sup>a</sup> of Adults in the United States<sup>b</sup> and New York<sup>c</sup> Examined for Oral and Pharyngeal Cancers**

Adults Aged 40 Years and Older – U.S. Adults Aged 18 Years and Older - NYS	Oral and Pharyngeal Cancer	
	United States Exam in Last 12 Mos. (1998)	New York State Exam in Lifetime 2003
	%	%
<b>HEALTHY PEOPLE 2010 TARGET</b>	20	
<b>TOTAL</b>	15	35
<b>RACE AND ETHNICITY</b>		
Asian or Pacific Islander	12 <sup>d</sup>	
Black or African American only	7 <sup>d</sup>	
White only	14 <sup>d</sup>	
Hispanic or Latino	7	23
Not Hispanic or Latino	14	
Black or African American, not Hispanic or Latino	7	33
White, not Hispanic or Latino	17	40
<b>GENDER</b>		
Female	15	36
Male	14	34
<b>EDUCATION LEVEL</b>		
Less than high school	6	20
High school graduate	8	30
At least some college	17	46
<b>INCOME</b>		
Below the Federal Poverty Level	6	
At or above the Federal Poverty Level	17	
Below \$15,000 a year		22
At or above \$15,000 per year		44

Sources: *Healthy People 2010, Progress Review, 2000*. U.S. Department of Health and Human Services. <http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls> Accessed July 26, 2005.

*Healthy People 2010, 2<sup>nd</sup> Ed.* U.S. Department of Health and Human Services, November 2000.

<sup>a</sup> Data age adjusted to the year 2000 standard population

<sup>b</sup> Data are from the 1998 National Health Interview Survey, National Center for Health Statistics, CDC. [http://drc.nidcr.nih.gov/reports/dqs\\_tables/dqs\\_13\\_2\\_1.htm](http://drc.nidcr.nih.gov/reports/dqs_tables/dqs_13_2_1.htm) Accessed October 20, 2005.

<sup>c</sup> New York State data are from the 2003 BRFSS Oral Cancer Module. Percentages reported are for the receipt of lifetime oral cancer examination.

<sup>d</sup> Persons reported only one or more than one race and identified one race as best representing their race.

## F. TOBACCO CONTROL

Use of tobacco has a devastating impact on the health and well being of the public. More than 400,000 Americans die each year as a direct result of cigarette smoking, making it the nation's leading preventable cause of premature mortality, and smoking caused over \$150 billion in annual health-related economic losses (CDC 2002). The effects of tobacco use on the public's oral health also are alarming. The use of any form of tobacco, including cigarettes, cigars, pipes, and smokeless tobacco, has been established as a major cause of oral and pharyngeal cancer

(USDHHS 2004a). The evidence is sufficient to consider smoking a causal factor for adult periodontitis (USDHHS 2004a); one-half of the cases of periodontal disease in this country may be attributable to cigarette smoking (Tomar & Asma 2000). Tobacco use substantially worsens the prognosis of periodontal therapy and dental implants, impairs oral wound healing, and increases the risk for a wide range of oral soft tissue changes (Christen et al. 1991; AAP 1999).

Comprehensive tobacco control also would have a large impact on oral health status. The goal of comprehensive tobacco control programs is to reduce disease, disability, and death related to tobacco use by

- Preventing the initiation of tobacco use among young people.
- Promoting quitting among young people and adults.
- Eliminating nonsmokers' exposure to secondhand tobacco smoke.
- Identifying and eliminating the disparities related to tobacco use and its effects among different population groups.

The New York State Department of Health has a longstanding history of working to reduce tobacco use and addiction, dating back to the mid-1980s. The program was greatly enhanced by the signing of the national Master Settlement Agreement. Implemented in 2000, the State's Tobacco Control Program is a comprehensive, coordinated program that seeks to prevent the initiation of tobacco use, reduce current use of tobacco products, eliminate exposure to second-hand smoke and reduce the social acceptability of tobacco use. The program consists of community-based, school-based and cessation programs, special projects to reduce disparities, and surveillance and evaluation. The program achieves progress toward these goals through:

- Local action to change community attitudes about tobacco and "denormalize" tobacco use;
- Paid media to highlight the dangers of second-hand smoke and motivate smokers to quit;
- Counter-marketing to combat messages from the tobacco industry and make tobacco use unglamorous; and
- Efforts to promote the implementation of tobacco use screening systems and health care provider attempts to counsel patients to quit smoking.

Tobacco addiction is the number one preventable cause of illness and death in New York State and kills almost 28,000 New Yorkers each year, including an estimated 2,500 non-smokers. Infants and children exposed to tobacco smoke are more often born at low birth weights, are more likely to die as a result of Sudden Infant Death Syndrome, to be hospitalized for bronchitis and pneumonia, to develop asthma, and experience more frequent upper respiratory and ear infections. New Yorkers spend an estimated \$6.4 billion a year on direct medical care for smoking-related illnesses and billions more in lost productivity due to illness, disability and premature death.

During 2004, the Department of Health issued millions of dollars in grants for programs such as local tobacco control, youth action, tobacco enforcement and prevention, and cessation. The New York State Smoker's Quitline (1-866-NY QUITs) continues to be a key evidence-based component of the program's cessation efforts. Current funding for tobacco control, prevention, and cessation efforts total \$40 million in State, federal and foundation funding.

Based on data from the 2004 BRFSS (**Table VIII**), overall, the percentage of New York State adults 18 years of age and older reporting having smoked 100 or more cigarettes in their lifetime

and smoking every day or some days (20%) was similar to that reported nationally (21%). Consistent with national trends, the prevalence of smoking decreased as the level of education increased and was slightly less among women than men. New York State adults between 25-34 years of age (28%), those with annual incomes under \$15,000 (28%), individuals with less than a high school education (27%), and Black African Americans (24%) were found to be most at risk for smoking.

Approximately 19% of women in New York State (excluding New York City) monitored through the Pregnancy Risk Assessment Monitoring System (PRAMS) in 1997 reported smoking during the last three months of their pregnancy (Table VIII). Similar trends in the prevalence of smoking were noted with respect to age, race, income, and education, with women between 20-24 years of age (27%), Blacks (27%), those with limited annual incomes (29%), and women with less than a high school education (37%) being most at risk for smoking during the last trimester of pregnancy.

<b>TABLE VIII. Cigarette Smoking Among Adults Aged 18 Years and Older</b>			
<i>Healthy People 2010 Target:</i> 12%	<b>United States<sup>a</sup></b>	<b>New York State<sup>b</sup></b>	
	<b>Median</b>	<b>Adults</b>	<b>Pregnant Women</b>
	<b>%</b>	<b>%</b>	<b>%</b>
<b>TOTAL</b>	21	20	19
<b>RACE/ETHNICITY</b>			
White	21	20	18
Black	20	24	27
Hispanic	15	18	12
Other	13	17	6
<b>GENDER</b>			
Male	23	21	
Female	19	19	19
<b>AGE</b>			
< 20			25
18 - 24	28	19	27 <sup>c</sup>
25 - 34	26	28	16
35 - 44	24	21	17 <sup>d</sup>
45 - 54	22	22	
55 - 64	18	16	
65+	9	11	
<b>INCOME</b>			
Less than \$15,000	30	28	29 <sup>e</sup>
\$15,000-\$24,999	29	24	30 <sup>f</sup>
\$25,000-\$34,999	26	19	19 <sup>g</sup>
\$35,000-\$49,000	24	24	12 <sup>h</sup>
\$50,000 and over	16	16	
<b>EDUCATION</b>			
Less than High School	33	27	37
High School Graduate - GED	27	26	26
Some College	23	22	10 <sup>i</sup>
College Graduate	11	12	

Sources:

<sup>a</sup> National data are from the 2004 Behavioral Risk Factor Surveillance System (BRFSS).

- <sup>b</sup> Data on New York State adults are from the 2004 BRFSS. Data on pregnant women are from the 1997 Pregnancy Risk Assessment Monitoring System (PRAMS), exclude New York City, and reflect the percentage of women smoking during the last three months of pregnancy.
- <sup>c</sup> Data are for pregnant women 20-24 years of age.
- <sup>d</sup> Data are for pregnant women 35 years of age and older.
- <sup>e</sup> Income is \$15,999 or less.
- <sup>f</sup> Income is \$16,000-\$24,999.
- <sup>g</sup> Income is \$25,000-\$39,999.
- <sup>h</sup> Income is \$40,000 or more.
- <sup>i</sup> Percentage of women with over 12 years of education.

New York State high school students had slightly healthier behavior than high school students nationally with respect to current cigarette smoking and the use of chewing tobacco (**Table IX**). Based on data from the Youth Risk Behavior Surveillance System (see <http://www.cdc.gov/yrbss>), the percentage of New York State students currently at risk for smoking decreased across all racial and ethnic groups and by gender from 1999 to 2003. The use of chewing tobacco by New York State male high school students decreased each survey year, from 9.3% in 1997, to 7.5% in 1999, and down to 6.7% in 2003; over the same time period, however, the use of chewing tobacco by female students increased (0.9%, 1.2%, and 1.6%, respectively). White males remained most at risk for using smokeless tobacco, but the use of smokeless tobacco by Hispanic and other racial/ethnic minority students has increased each year since 1997. The increase in use of smokeless tobacco by females and racial/ethnic minority students is particularly troubling, considering that nearly 12% of individuals found to have smokeless tobacco lesions in NHANES III (1988-1994) were only 18 to 24 years of age.

<b>TABLE IX. Percentage of Students in High School (Aged 12-21 Years) Who Smoked Cigarettes or Who Used Chewing Tobacco / Snuff One or More of the Past 30 Days</b>				
	<b>Cigarettes</b>		<b>Chew</b>	
	<b>United States (%)</b>	<b>New York State (%)</b>	<b>United States (%)</b>	<b>New York State (%)</b>
<b>TOTAL</b>	22	20	7	4
<b>RACE</b>				
White	25	24	8	5
Black	15	10	3	2
Hispanic	18	18	5	2
Other	18	16	10	4
<b>GENDER</b>				
Female	22	21	2	2
Male	22	20	11	7

Sources: Division of Adolescent and School Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Youth Risk Behavior Surveillance System Online, <http://apps.nccd.cdc.gov/yrbss>. Accessed August 22, 2005.

New York State data are from the 2003 YRBSS

The dental office provides an excellent venue for providing tobacco intervention services. More than one-half of adult smokers see a dentist each year (Tomar et al. 1996) as do nearly three-quarters of adolescents (NCHS 2004). Approximately 66.3% of New York State adult smokers (weighted to the 2000 New York State population) reported visiting a dentist during the past 12 months, compared to 73.4% non smokers or former smokers (BRFSS, 2004). Dental patients are particularly receptive to health messages at periodic check-up visits, and oral effects of tobacco use provide visible evidence and a strong motivation for tobacco users to quit. Because

dentists and dental hygienists can be effective in treating tobacco use and dependence, the identification, documentation, and treatment of every tobacco user they see needs to become a routine practice in every dental office and clinic (Fiore et al. 2000). National data from the early 1990s, however, indicated that just 24% of smokers who had seen a dentist in the past year reported that their dentist advised them to quit, and only 18% of smokeless tobacco users reported that their dentist ever advised them to quit.

Given the findings in New York State of higher prevalence rates of oral cancer among Blacks and Hispanics, a larger proportion of Black adults reporting cigarette smoking, and the increasing use of smokeless tobacco by Hispanic and other racial/ethnic minority high school students, more emphasis needs to be placed on tobacco cessation education within dental settings. Statewide data on the proportion of tobacco users who saw a dentist and were advised to quit are presently not available.

## **G. ORAL HEALTH EDUCATION**

Oral health education for the community is a process that informs, motivates, and helps people to adopt and maintain beneficial health practices and lifestyles; advocates environmental changes as needed to facilitate this goal; and conducts professional training and research to the same end (Kressin and DeSouza 2003). Although health information or knowledge alone does not necessarily lead to desirable health behaviors, knowledge may help empower people and communities to take action to protect their health.

New York State relies on its local health departments to promote, protect, and improve the health of residents. Article 6 of the State Public Health Law requires each local health department to provide dental health education as a basic public health service. All children under the age of 21 are to have access to information with respect to dental health, with local health departments either providing or assuring that education programs on oral health are available to children who are underserved by dental health providers or are at high risk for dental caries. Local health departments are also responsible for coordinating the use of private and public sector resources for the provision of dental education. During 2004, approximately 50,000 individuals were provided oral health education and 20,000 mothers and children were served through the Early Childhood Caries/Baby Bottle Tooth Decay Prevention Program.

The New York State Dental Association (NYSDA), in conjunction with the American Dental Association Nation Children's Dental Health Month, produces patient fact sheets, slide shows and event information to assist dentists in local promotion efforts. NYSDA invites children to participate in the "Keeping Smiles Brighter" creative contest and also observes a "Sugarless Wednesday" to increase the awareness of added sugars in diets. New York State also participates in National Dental Hygiene Month sponsored by the American Dental Hygienists' Association (ADHA). The focus during 2004 was on tobacco cessation, with State dental hygienists encouraged to help in increasing public awareness of the harmful effects of tobacco. Both of these oral health education campaigns successfully reach millions of New Yorkers each year.

Dental screenings provided as part of the Special Olympics Special Smiles component of the Special Olympics Health Athletes Initiative are also effectively used as venues for the provision of oral hygiene education to help ensure adequate brushing and flossing practices and for providing nutrition education so that people with intellectual disabilities will better understand how diet affects their total health.

The Bureau of Dental Health, New York State Department of Health works closely with the Department's Office of Public Affairs on constantly assessing, updating and revising existing and developing new oral health educational materials. A wide selection of oral health educational materials, pamphlets, brochures and coloring books are available free of charge to the general public, local health departments, school systems, and dental clinics and practices. The Bureau of Dental Health also maintains an Oral Health Homepage on the Department's public website. By visiting the Oral Health Homepage, individuals are able to obtain information on the connection between good oral health and general health, prenatal oral health, oral health for infants and children, adult and senior oral health, the impact of oral disease, and oral health programs in New York State. Linkages to a large variety of additional resources and Internet sites on oral health are also provided.

## VI. PROVISION OF DENTAL SERVICES

### A. DENTAL WORKFORCE AND CAPACITY

The oral health care workforce is critical to society's ability to deliver high quality dental care in the United States. Effective health policies intended to expand access, improve quality or constrain costs must take into consideration the supply, distribution, preparation and utilization of the health workforce.

According to data reported by the New York State Education Department Office of the Professions, as of July 1, 2006, 15,291 dentists, 8,390 dental hygienists, and 667 certified dental assistants were registered to practice in New York State. New York State, with 79.6 dentists per 100,000 population or 1 dentist per 1,256 individuals, is well above the national rate of dentists to population. The ratio of dental hygienists to State population (43.8 per 100,000 or 1 dental hygienist per 2,285 people) was slightly higher than nationally. These data do not take into account that some licensed dentists or dental hygienists may be working less than full time or not at all in their respective professions.

#### *Distribution of Dental Workforce in New York State*

While the dentist-to-population and dental hygienist-to-population ratios in New York State are favorable compared to national data, the distribution of dentists and dental hygienists are geographically uneven. There are many rural and inner city areas in the State where shortages of dentists and dental hygienists exist and specialty services may not be available. This is compounded by the inadequate number of dentists treating underserved populations and an under-representation of minorities in the workforce. The reasons for inadequate capacity in certain areas and lack of diversity of the workforce are complex, but include the closing of some dental schools, reduced enrollment in the 1980's, difficulty in recruiting and retaining dental and dental hygiene faculty, the aging of the workforce, the high cost of dental education, and the costs of establishing dental practices.

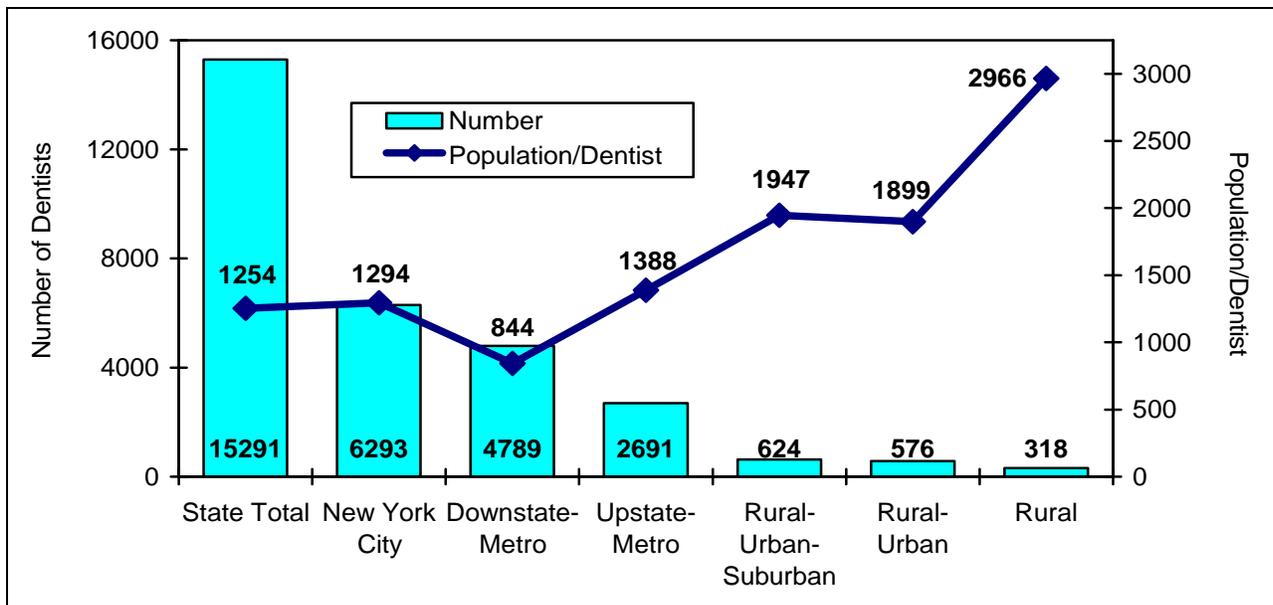
The concentration of registered dentists was highest in New York City followed by the neighboring counties of Suffolk, Nassau, Westchester and Rockland; the concentration of hygienists was highest in the rest of the State followed by Suffolk, Nassau, Westchester and Rockland Counties. While there were relatively more dentists in New York City, there was only one dental hygienist per 5,627 residents. **Table X** and **Figures XII** and **XIII** provide information on the geographic distribution of dentists and dental hygienists in the State in 2006, based on the licensee's primary mailing address on record with the New York State Education Department Office of the Professions. The data are limited in that they do not necessarily reflect the licensee's practicing address and exclude the geographic distribution of all individuals licensed in New York State but with mailing addresses outside of the State.

**TABLE X. Distribution of Licensed Dentists and Dental Hygienists in 2006 by Selected Geographic Areas of the State**

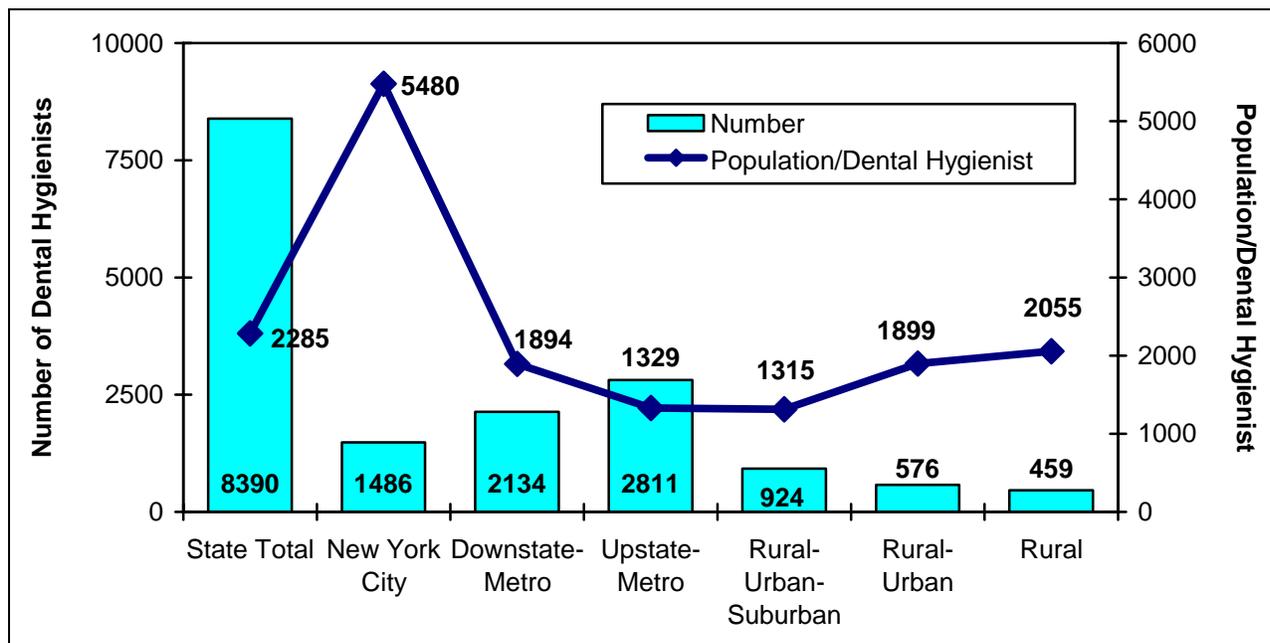
Region	New York State Population	Number Dentists	Number Dental Hygienists	Population per Dentist	Population per Hygienist
<b>New York City</b>	8,143,197	6,293	1,486	1,294	5,480
<b>Downstate-Metro</b> (Suffolk, Nassau, Westchester, and Rockland Counties)	4,041,787	4,789	2,134	844	1,894
<b>Rest of State</b>	6,987,144	4,209	4,770	1,660	1,465
<i>Upstate-Metro</i>	3,735,338	2,691	2,811	1,388	1,329
<i>Rural-Urban-Suburban</i>	1,214,645	624	924	1,947	1,315
<i>Rural-Urban</i>	1,093,991	576	576	1,899	1,899
<i>Rural</i>	943,170	318	459	2,966	2,055
<b>New York State</b>	19,172,128	15,291	8,390	1,254	2,285
Mailing Addresses Outside NYS		2,740	1,049		
Total Licensed in NYS		18,031	9,439	1,063	2,031

Data are from the New York State Education Department and reflect the geographic distribution of licensed individuals registered to use the professional title of Dentist or Dental Hygienist or to practice within New York State as of July 1, 2006. The data do not mean the licensee is actively practicing or that the mailing address is the licensee's practice address. <http://www.op.nysed.gov/dentcounts.htm>. Accessed September 6, 2006.

**Figure XII. Number of New York State Dentists and Population Per Dentist, 2006**



**Figure XIII. Number of New York State Dental Hygienists and Population Per Dental Hygienist, 2006**



### ***Increasing Access to Dental Services***

New York State has taken several steps to increase access to dental services in the State, especially in areas designated as a dental health professional shortage area (DHPSA). The State Education Department Board of Regents (see <http://www.op.nysed.gov/dentlimlic.htm>) may grant a three year limited license in dentistry/dental hygiene to qualified individuals who meet all requirements for licensure as a dentist or dental hygienist except for the citizenship/permanent residence requirement. A limited waiver of the citizenship/permanent residence requirements is granted if the applicant agrees to provide services in a New York State DHPSA. Dentists or dental hygienists who obtain a three-year limited dentistry/dental hygiene license are required to sign and have notarized an Affidavit of Agreement with the New York State Department of Health formally agreeing to practice only in a specified shortage area. Limited licenses are valid only for a three-year period, but may be extended for an additional 6 years.

### ***Growth in the Demand of Dental Professionals in New York State***

Although registration data are useful to understand the relative distribution of dentists and dental hygienists, not all licensed dentists and dental hygienists registered in New York State practice in the State. According to a New York State Department of Labor report on projected demands for dental professionals over the next ten years based on current employment levels, the demand for dentists is projected to increase by 3.1% from 10,220 jobs in 2002 to 10,530 in 2012. During the same time period, the demand for both dental hygienists and dental assistants are both projected to increase by nearly 30% (**Table XI**).

TABLE XI. Employment Projections for Dental Professionals in New York State							
			Growth 2002 to 2012		Average Annual Openings		
Professions	2002	2012	Number	%	Total	New	Replace
Dentists <sup>a</sup>	10,220	10,530	320	3.1	200	30	170
Dental Hygienists <sup>b</sup>	8,990	11,680	2,690	29.9	350	270	80
Dental Assistants <sup>b</sup>	17,000	22,010	5,010	29.5	980	500	480

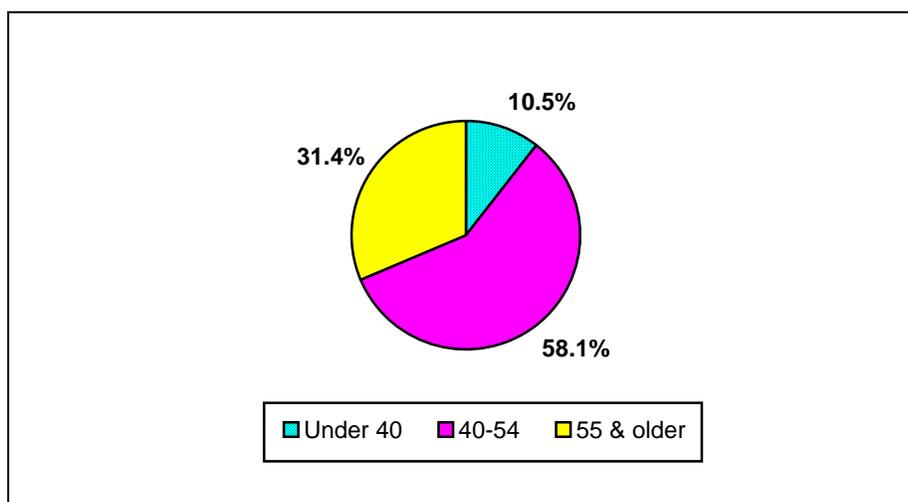
<sup>a</sup> New York State Department of Labor, Labor Market Information, Occupational Outlook, 2002-2012. <http://www.labor.state.ny.us/workforceindustrydata/demand.asp>. Accessed October 21, 2005.

<sup>b</sup> Health Care Workforce in New York State, 2004: Trends in Supply and Demand for Health Workers, Center for Health Workforce Studies, School of Public Health, University at Albany, May 2005

Growth in New York State dental occupations and the resulting number of annual openings required to be filled to keep pace with projected demands reflects both the creation of new positions and replacement of individuals in existing positions. Based on data from the New York State Department of Labor, an average of 200 dentists, 350 dental hygienists, and 980 dental assistants are needed per year to meet increasing demands. According to New York State Education Department's licensure data from 1999 through 2003, an average of 593 new dentists and 352 new dental hygienists register annually in New York State. It is not known, however, how many of these individuals actually practice in New York State.

According to the American Dental Association's 2002 Survey of Dental Practices, the average age of a dentist is 51.1 years (**Figure XIV**), with the number of dentists in the United States per 100,000 population expected to decline from 58.3 in 2000 to 53.7 in 2020. This declining trend in part reflects the retirement of older dentists with insufficient numbers of new dentists replacing them. Data on New York State dentists are consistent with national findings, with 85% of the average number of dentists per year needed to meet statewide demands, required to replace those either retiring or leaving the profession for other reasons.

**Figure XIV. Distribution of Dentists in the United States by Age**



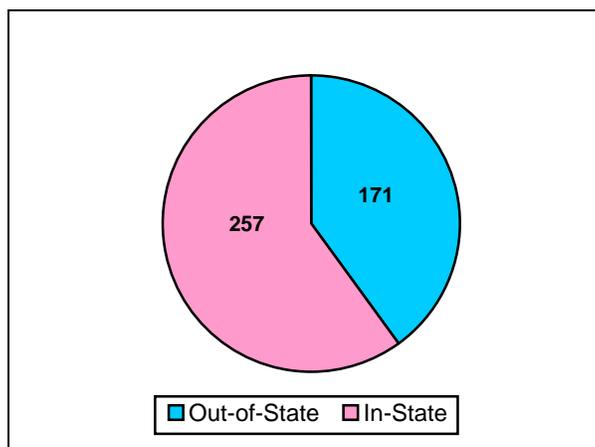
American Dental Association 2002 Dental Practice Survey, ADA News, 7-12-2004

Growth in the demand for dental hygienists, on the other hand, reflects the need for the creation of new positions (77%) versus the replacement of those exiting the profession; future demand for dental assistants is nearly equally split between the creation of new positions (51%) and the replacement of those exiting the field (49%) (Health Care Workforce in New York State, 2004: Trends in Supply and Demand for Health Workers, Center for Health Workforce Studies, School of Public Health, University at Albany, May 2005).

### **Dental Educational Institutions**

There are four Schools of Dentistry in New York State: New York University, State University of New York at Buffalo School of Dental Medicine, Columbia University School of Dental & Oral Surgery, and the School of Dental Medicine State University of New York at Stony Brook. In 2002, the number of first year enrollees in New York State dental schools was 428 of which 257 students were from New York State (**Figure XV**); there were another 67 New York State residents enrolled in out-of-State dental schools.

**Figure XV. First Year Enrollees in New York State Dental Schools**



New York State residents accounted for 7% of all first year enrollees in dental schools in 2002 nationally. According to a recent report in the *Journal of Dental Education* on applicants to and enrollees in U.S. dental school during 2003 and 2004 (Weaver et al. 2005), the number of new first time enrollees and total first year enrollees (includes first time and repeating students) both declined between 2003 and 2004, despite a 15% increase in the number of dental school applications. Weaver and his colleagues concluded that the decline in first time, first year enrollees after more than a decade of increasing enrollments may be an indication that dental schools are approaching or have reached their full capacity and capability to further increase their enrollments. Additionally, according to a 2004 survey of dental school deans on their interest and capacity to increase class sizes, there is little further expansion of first year enrollment expected (Weaver et al. 2005).

In addition to its four dental schools, New York State also has an accredited Dental Public Health Residency Program designed for dentists planning careers in dental public health. The Program, which prepares residents via didactic instruction and practical experience in dental public health practice, is accredited by the Commission on Dental Accreditation, a specialized accrediting body recognized by the Council on Post Secondary Accreditation and the United States Department of Education. The Program is affiliated with the School of Public Health,

State University at New York, Albany; Montefiore Medical Center, Bronx; and the University of Rochester's Eastman Department of Dentistry. Residents are also trained at New York University College of Dentistry.

The New York State Education Department added a new continuing education requirement for dentists in 2002, in addition to the original continuing education requirement implemented in 1997. This new continuing education requirement is a one-time only requirement under which dentists must complete at least two hours of acceptable coursework in recognizing, diagnosing, and treating the oral health effects of the use of tobacco and tobacco products.

There are presently 10 entry-level State-accredited Dental Hygiene Programs in New York State awarding associate degrees in Dental Hygiene; 2 degree-completion Dental Hygiene Programs awarding a Bachelor of Science-Dental Hygiene; and one distance-learning, degree-completion program (American Dental Hygienists' Association [ADHA], <http://www.adha.org/careerinfo/ny.htm>). Based on national data from the American Dental Education Association, first year student capacity at all 265 U.S. accredited dental hygiene programs during the 2002-2003 academic year totaled 7,261 students; during the same time period, first year enrollment was 6,729 and the number of graduates was 5,693. To meet the projected statewide demand for dental hygienists through 2012, New York State would need 6% of all new dental hygienists expected to graduate annually in the United States during each of the next 6 years.

In response to an increased focus on oral health following the release of the Surgeon General's 2000 Report on Oral Health in America, the ADHA has recently issued recommendations for revisions of the dental hygiene educational curriculum to better prepare future graduates. In its 2005 report on *Dental Hygiene: Focus on Advancing the Profession*, the ADHA identified the need to redesign dental hygiene curricula to meet the increasingly complex oral health needs of the public and to replace the two-year associate with a baccalaureate degree as the point of entry into the profession. In New York State, 6 of 10 dental hygiene programs are affiliated with two-year community colleges and only two programs statewide currently confer a four-year baccalaureate degree; there are no master's-level degree programs in dental hygiene in the State. If ADHA recommendations are implemented with respect to requiring the baccalaureate degree as the entry point for dental hygiene practice within five years, and once established, then creating a 10-year plan for initiating the master's degree as the entry to practice, New York State educational institutions will be unable to meet the future demands for dental hygienists within the State without significantly modifying their existing programs.

### ***New York State Area Health Education Center System***

The New York State Area Health Education Center System (AHEC) was established in 1998 to respond to the unequal distribution of the health care workforce. There are nine regional AHECs in the State, each located in a medically underserved community. Each AHEC tailors the statewide AHEC strategy to fit the particular circumstances of its respective region. At the local level, the AHEC represents facilities and community-based organizations that carry out a wide range of health care education activities within a region.

The mission of AHEC is to enhance the quality of and access to health care, improve health care outcomes and address health workforce needs of medically underserved communities and populations by establishing partnerships between the institutions that train health professionals and the communities that need them the most. AHEC strategies for recruiting and retaining health professionals to practice in underserved communities include:

- developing opportunities and arranging placements for future health professionals to receive their clinical training in underserved communities;
- providing continuing education and professional support to practitioners in these communities; and
- encouraging local youth to pursue careers in health care.

New York State has 36 federally designated dental health professional shortage areas (DHPSAs) in which 1.7 million New Yorkers reside. According to a recent report issued by the Institute for Urban Family Health (May 2004), there were 12 National Health Service Corps dentists in 2002 fulfilling service obligations in New York State. Of the 2,905 recent dental school graduates (1993-1999) practicing in New York State in 2001, approximately 7% practice in a designated DHPSA, with Western and Northern New York AHEC regions accounting for the largest percentage of recent dental graduates.

### ***Financing Dental Education in New York State***

According to the Allied Dental Education Association (ADEA) Institute for Policy and Advocacy, the average costs for in-district tuition and fees for dental hygiene programs nationally during the 2003-2004 academic year was \$11,104. Regents Professional Opportunity Scholarships are offered by the New York State Education Department in order to increase representation of minority and disadvantaged individuals in New York State licensed professions. Applicants must be beginning or be already enrolled in an approved degree-bearing program of study in New York State that leads to licensure in dental hygiene or other designated professions. Pending the appropriation of State funds during the yearly session of the New York State legislature, at least 220 scholarship winners will receive awards up to \$5,000 per year for payment of college expenses.

In 2003, nearly 65% of all graduates from dental school nationwide owed between \$100,000 and \$350,000 for the cost of dental education (ADEA Institute for Policy and Advocacy). According to the ADEA, the average debt of all students upon graduation from all types of dental schools was \$118,750, with the average debt of those students with debt being \$132,532. The New York State Education Department sponsors a Regents Health Care Scholarship Program in Medicine and Dentistry, which is intended to increase the number of minority and disadvantaged individuals in medical and dental professions. Applicants must be beginning or be already enrolled in an approved medical or dental school in New York State and are eligible to receive up to \$5,000 per year. Award recipients must agree, upon licensure, to practice in an area or facility within an area of the State designated by the New York State Board of Regents as having a shortage of physicians or dentists and serve 12 months for each annual payment received, with a minimum commitment of 24 months.

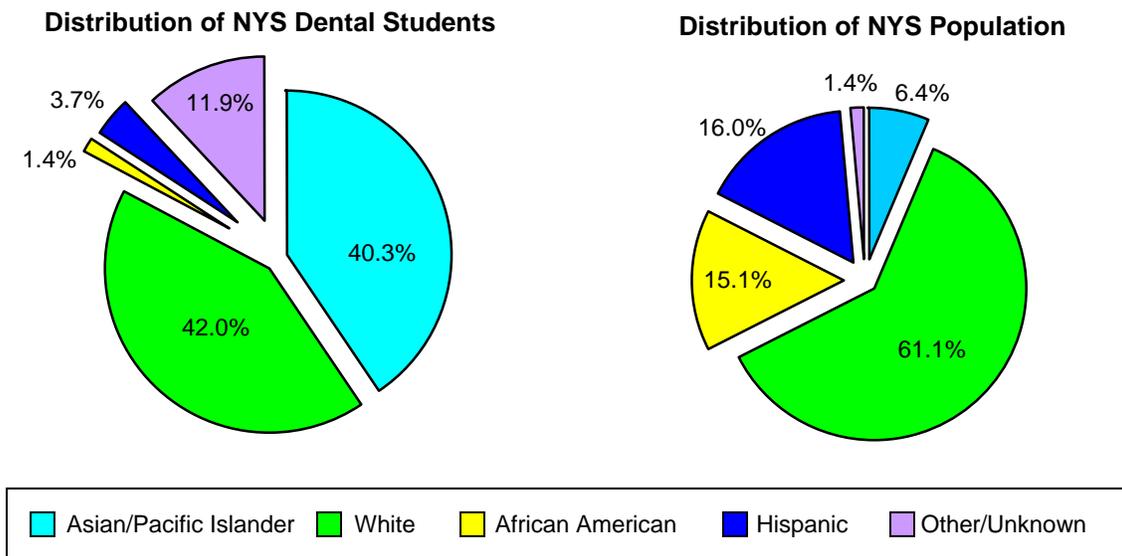
## **B. DENTAL WORKFORCE DIVERSITY**

One cause of oral health disparities is the lack of access to oral health services among under-represented minorities. Increasing the number of dental professionals from under-represented racial and ethnic groups is viewed as an integral part of the solution to improving access to care (HP2010). Data on the race/ethnicity of dental care providers were derived from surveys of professionally active dentists conducted by the American Dental Association (ADA 1999). In 1997, 1.9% of active dentists in the United States identified themselves as Black or African American, although that group comprised 12.1% of the U.S. population. Hispanic/Latino dentists comprised 2.7% of U.S. dentists, compared to 10.9% of the U.S. population that was Hispanic/Latino.

Although the number of women entering dental schools increased from only about 2% of entering classes in the early 1970s to 42-43% in recent years (Weaver et al. 2005), this has not been the case for other underrepresented minority groups. According to Weaver, whether one uses ADEA first-time, first-year enrollee data or first-year enrollment data from the ADA, there has been little change in the number of underrepresented minority dental students from 1990. Based on reported race/ethnicity data on first-time enrollees entering 2004 classes, 18.3% were Asian/Pacific Islanders, 5.4% were Black/African American, and 5.7% were Hispanic/Latino (Weaver et al. 2005).

Enrollment of under-represented minority students at New York State dental schools has not kept pace with national enrollment levels. Of the 428 reported enrollees in New York State dental schools in 2002, only 22 students reported being Black/African American (1.4%) or Hispanic (3.7%). The distribution of White (42%) and Asian/Pacific Islander (40.9%) enrollees, on the other hand, were nearly equally split, with the percentage of Asian/Pacific Islanders enrolled in New York State dental schools far exceeding the national average of 18.3%. Additionally, the racial/ethnic distribution of first year New York State dental students did not mirror the racial/ethnic distribution of the State population, with under-representation of all minority groups, with the exception of Asian/Pacific Islanders (**Figure XVI**).

**Figure XVI. 2002 First Year Enrollees in New York State Dental Schools and 2004 New York State Population by Race/Ethnicity**



The racial/ethnic distribution of students in allied dental education programs has steadily increased between 1995 and 2002 based on data published by the ADEA Institute for Policy and Advocacy. During this time period, the percentage of Black/African American students enrolled in dental hygiene programs increased by 58%, while enrollment of Hispanics/Latinos and Asian/Pacific Islanders increased by 77% and 75%, respectively. Hispanic/Latino students comprised the largest number among all underrepresented racial/ethnic groups. Similar data on enrollees in New York State allied dental education programs are presently not available.

## C. USE OF DENTAL SERVICES

### *i. General Population*

Although appropriate home oral health care and population-based prevention are essential, professional care is also necessary to maintain optimal dental health. Regular dental visits provide an opportunity for the early diagnosis, prevention, and treatment of oral diseases and conditions for people of all ages, as well as for the assessment of self-care practices. Adults who do not receive regular professional care can develop oral diseases that eventually require complex treatment and may lead to tooth loss and health problems. People who have lost all their natural teeth are less likely to seek periodic dental care than those with teeth, which, in turn, decreases the likelihood of early detection of oral cancer or soft tissue lesions from medications, medical conditions, and tobacco use, as well as from poor fitting or poorly maintained dentures.

Based on currently available survey data from the 2004 Behavioral Risk Factor Surveillance System, disparities were found in the proportion of New York State adults 18 years of age and older visiting the dentist within the previous 12 months based on the gender, age, race and ethnicity, education, and income of survey respondents (**Table XII**). Men, racial and ethnic minorities, individuals with less education and more limited incomes were less likely to have visited a dentist or dental clinic within the last year. Similar trends in the utilization of dental services were found nationally for individuals 18 years of age and older. Both nationally and in New York State, adults categorized as being in other racial/ethnic minority groups, having less than a high school education, and with annual incomes of under \$15,000 were found to be the least likely to have been to a dentist or dental clinic within the prior 12 months. These findings are consistent with those found in 2002 on individuals who had had their teeth cleaned during the past year.

Compared to other adults nationally, on the whole, a higher percentage of New York State adults, regardless of gender, race/ethnicity, and income, visited the dentist or a dental clinic in the previous 12-month period. Although a greater proportion of New Yorkers with less than a high school education or with a high school diploma reported receiving dental services within the prior year compared to similarly educated adults nationally, New York State college graduates (79%) were less likely to have seen a dentist during the previous year compared to other college graduates nationally (82%).

**TABLE XII. Proportion of Persons Aged 2 Years and Older Who Visited a Dentist in the Previous 12 Months**

	Dental Visit in Previous Year	
	United States <sup>a</sup> (%)	New York State <sup>a</sup> (%)
<b>TOTAL</b>	71 <sup>a</sup>	72
<b>RACE AND ETHNICITY</b>		
American Indian or Alaska Native	41 <sup>b</sup>	
Asian or Pacific Islander	36 <sup>b</sup>	
Black or African American	64	69
White	72	75
Hispanic or Latino	64	66
Other	70	64
<b>GENDER</b>		
Female	73	73
Male	68	70
<b>EDUCATION LEVEL (PERSONS ≥ 25 YEARS OF AGE)</b>		
Less than high school	51	60
High school graduate	66	67
At least some college	73	72
College Graduate	82	79
<b>INCOME</b>		
Less than \$15,000	51	58
\$15,000 - \$24,999	57	60
\$25,000 - \$34,999	67	71
\$35,000 - \$49,000	72	73
\$50,000+	82	82
<b>DISABILITY STATUS</b>		
Persons with disabilities	30 <sup>b</sup>	
Persons without disabilities	43 <sup>b</sup>	
<b>SELECT POPULATIONS</b>		
Children aged 2 to 17 years	48 <sup>b</sup>	
Children at first school experience (aged 5 years)	50 <sup>c</sup>	
3rd grade students	55 <sup>d</sup>	73 <sup>e</sup>
Children, adolescents, and young adults aged 2 to 19 years <200% of poverty level	33 <sup>b</sup>	24 <sup>f</sup>
Adults aged 18 years and older	71	72
Adults aged 65 years and older	66	67
Dentate adults aged 18 years and older	44 <sup>b</sup>	
Edentate adults 18 and older	23 <sup>b</sup>	

Sources: *Healthy People 2010*, Progress Review, 2000. U.S. Department of Health and Human Services. <http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls> Accessed July 26, 2005. <http://www.meps.ahrq.gov/>

<sup>a</sup> U.S. data are from the 2004 Behavioral Risk Factor Surveillance System for adults 18 years of age and older and are reported as median percentages. New York State data are from the 2004 BRFSS. <http://apps.nccd.cdc.gov/brfss/index.asp>. Accessed October 26, 2005.

<sup>b</sup> U.S. data are for 2000.

<sup>c</sup> Data are for children aged 5-6 years

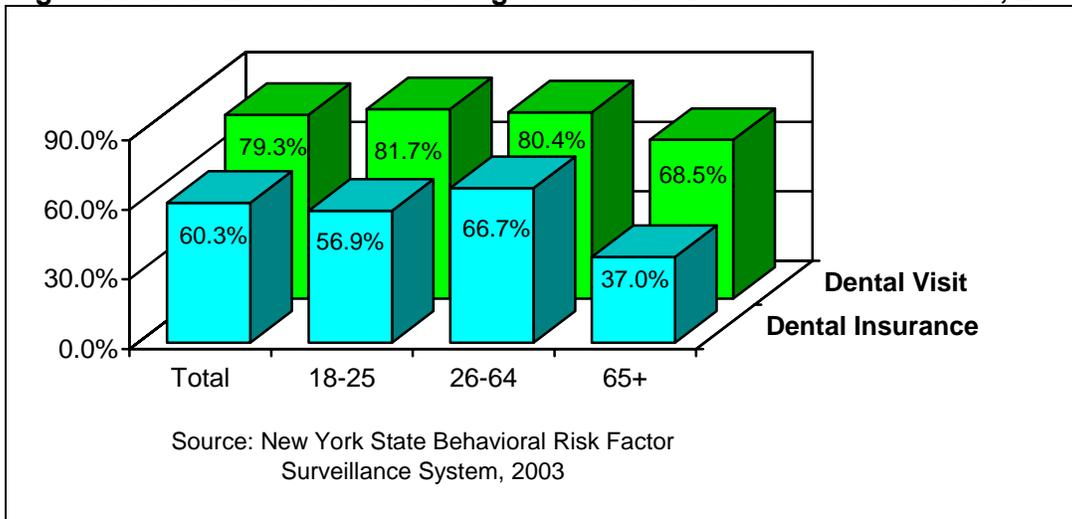
<sup>d</sup> Data are for children aged 8-9 years

<sup>e</sup> Data are from the New York State Oral Health Surveillance System survey of third grade students, 2002-2004.

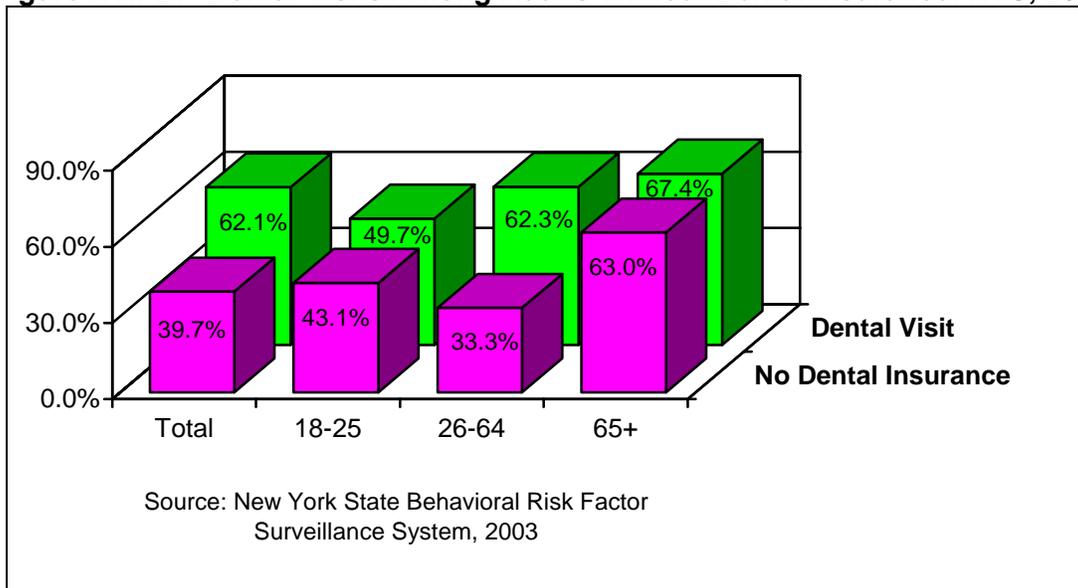
<sup>f</sup> Data are for children under 21 receiving an annual Medicaid dental visit.

Based on responses to supplemental questions included in the 2003 Behavioral Risk Factor Surveillance System, dental insurance coverage was found to be a strong correlate to the receipt of dental services (**Figures XVII-A and XVII-B**). New York State adults 18 years of age and older with insurance that paid for some or all of the costs of routine dental care were more likely to have visited a dentist or dental clinic in the prior year (79%) than individuals without dental insurance coverage (62%). Approximately 82% of adults aged 18 to 25 years and 80% of those aged 26 to 64 years with dental insurance coverage received dental services during the prior year compared to only 50% of 18 to 25 year olds and 62% of 26 to 64 year olds without insurance coverage. Dental visits by adults 65 years of age and older did not vary based on having insurance coverage that paid for some or all of the costs for routine dental services.

**Figure XVII-A. Dental Visits Among Adults With Dental Insurance: NYS, 2003**



**Figure XVII-B. Dental Visits Among Adults Without Dental Insurance: NYS, 2003**



Newly available provisional data from the Child Trends Data Bank found that in 2004, 23% of children 2 to 17 years of age in the United States had not seen a dentist, dental hygienist, or other dental professional within the past year. Visits to the dentist varied by the age of the child, race/ethnicity, family income, poverty status, and health insurance coverage. Children 2-4 years of age (53%), Hispanic children (34%), children whose family income was under \$20,000 (34%) or that fell below the Federal Poverty Level (35%), and children without health insurance coverage (50%) were least likely to have seen a dentist in the past year. Disparities were also found among children identified as having unmet dental needs (defined as those not receiving needed dental care in the past year due to financial reasons). Adolescents 12 to 17 years of age (8.5%), Hispanic children (10%), children whose family income was between \$20,000-\$34,999 (11%) or 100%-200% of the FPL (11%), and children lacking health insurance coverage (21%) were most likely to report not having received needed dental care due to financial reasons. New York State children under 18 years of age fared better than their national counterparts with respect to preventive health and dental care. According to findings from the 2003 National Survey of Children's Health (NSCH), nearly 69% of children in New York State reported having had **both** a preventive medical care visit and preventive dental care visit in the past year compared to 59% of children nationally.

Statewide data on individuals under 18 years of age visiting the dentist or a dental clinic within the previous twelve months are limited to findings from the New York State Oral Health Surveillance System survey of third grade students and on information available from the Centers for Medicare and Medicaid Services on annual dental visits by Medicaid-eligible children under 21 years of age. Based on a 2002-2004 statewide survey of third grade students, 73% of those surveyed reported having been to a dentist or dental clinic within the prior 12 months. The percent of New York State third graders visiting a dentist or dental clinic during the preceding year (73%) far exceeded the percent of third grade students nationally (55%) reporting having been to the dentist within the prior 12 months. A smaller percentage of children, adolescents, and young adults aged 2-19 years in New York State with family incomes below 200% of the FPL, on the other hand, were found to have had a dental visit during the preceding year compared to their national counterparts (24% and 33%, respectively).

State-level data on dental visits during the previous 12-month period are currently not available on disabled individuals, children when beginning school, children aged 2-17 years and dentate and edentate adults.

## ***ii. Special Populations***

### **School Children**

Based on the School Health Program Report Card of State school health programs and services from the School Health Policies and Program Study (2000), all New York State elementary, middle/junior high and senior high schools are required to teach students about dental and oral health, alcohol or other drug use prevention, and tobacco use prevention. Additionally, school districts or schools are also required to screen students for oral health. On August 4, 2005, new legislation went into effect that would improve access to health services for preschool and school-aged children by allowing dental clinics to be located on school property. The costs of providing dental services to children, according to the amended section of the Education Law, would not be charged to school districts, but rather would be supported by federal, State, or local funds specifically available for such purposes. The establishment of dental clinics located on school property is seen as way to expand access to and provide needed services and minimize lost school days. Students requiring dental services are able to visit the clinic and often return to classes the same day, thereby reducing absenteeism. The location of dental

clinics on school property is also seen as a way of addressing dental issues in a more timely and collaborative manner as a result of facilitated communication between education and clinic staff.

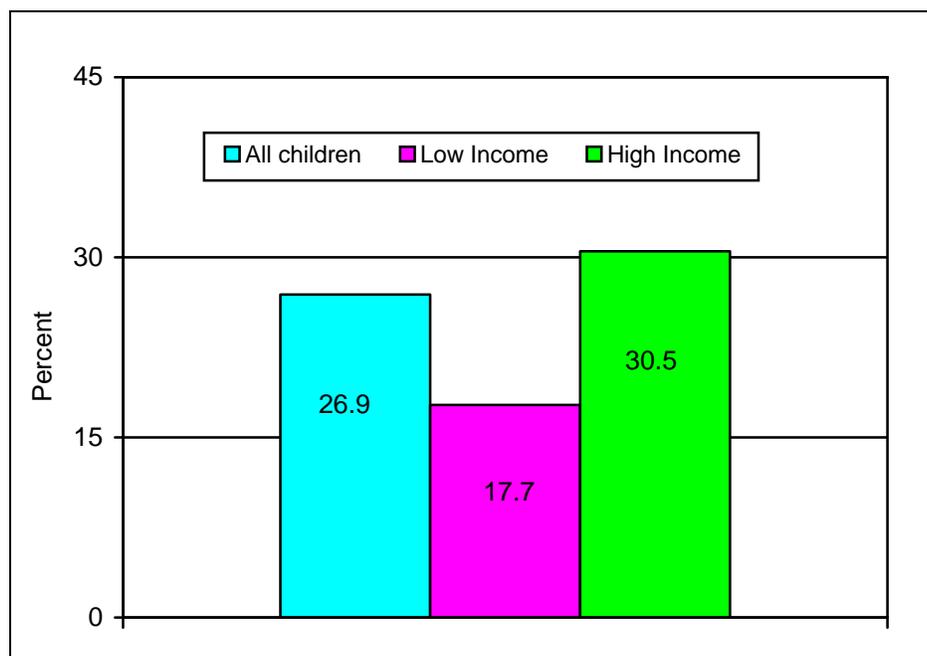
In 2005, New York State had 75 school-based or school-linked dental clinics and 70 school-based health centers with an oral health component; the number of clinics is expected to increase as a result of implementation of the August 4, 2005 legislation. During 2005, 35,000 high risk and underserved children received dental services, 43,000 children had dental sealants applied on one or more molars, 115,000 children participated in the fluoride mouth rinse program, and 6,000 children received fluoride supplements (tablets or drops).

Statewide data from the New York State Oral Health Surveillance System (2002-2004) survey of third grade students found that 73% of third graders in New York State had visited a dentist in the previous 12 months and 27% had dental sealants on one or more molars, compared to 55% and 26% nationally.

- **Fluoride Use**

Fluoride tablets are prescribed to children living in areas of Upstate New York State where water is not fluoridated. About 30.5% of higher-income and 17.7% of lower-income children in Upstate New York reported the use of fluoride tablets on a regular basis (**Figure XVIII**).

**Figure XVIII. Regular Use of Fluoride Tablets in 3<sup>rd</sup> Graders in Upstate New York State**

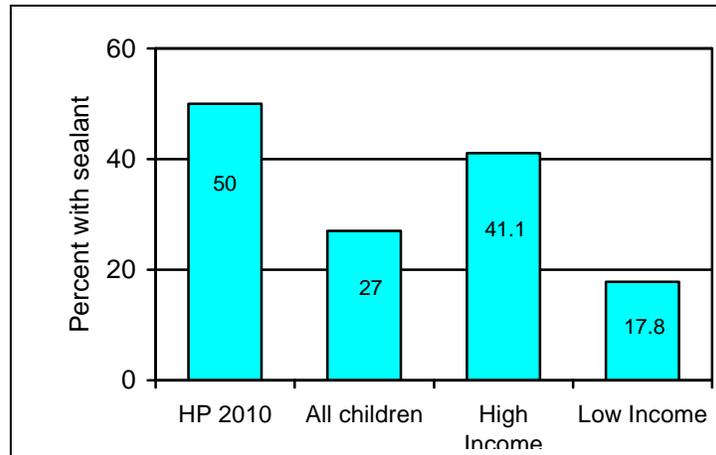


New York State Oral Health Surveillance System, 2002-2004

- **Dental Sealants**

The estimated percent of children with a dental sealant on a permanent molar in New York State was 17.8% for lower-income and 41.1% for high-income children (**Figure XIX**).

**Figure XIX. Prevalence of Dental Sealants (Percent) in 3<sup>rd</sup> Grade Children**

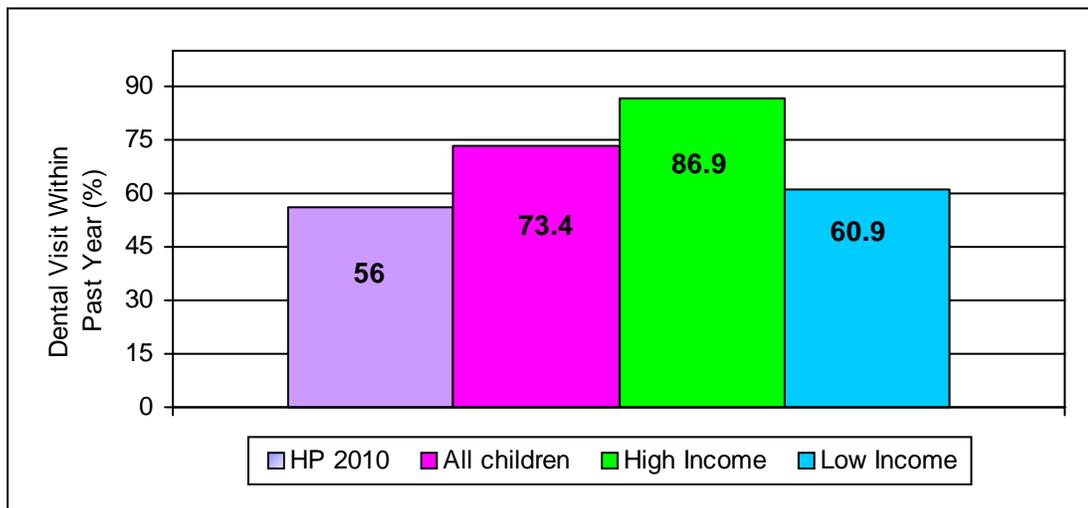


New York State Oral Health Surveillance System, 2002-2004

▪ **Dental Visit in the Past Year**

The percent of children with a dental visit in the past year was 73.4% (**Figure XX**), with a lower proportion of lower-income children (60.9%) visiting a dentist or dental clinic in the prior 12 months compared to higher-income children (86.9%).

**Figure XX. Dental Visit in the Past Year in 3<sup>rd</sup> Grade Children**



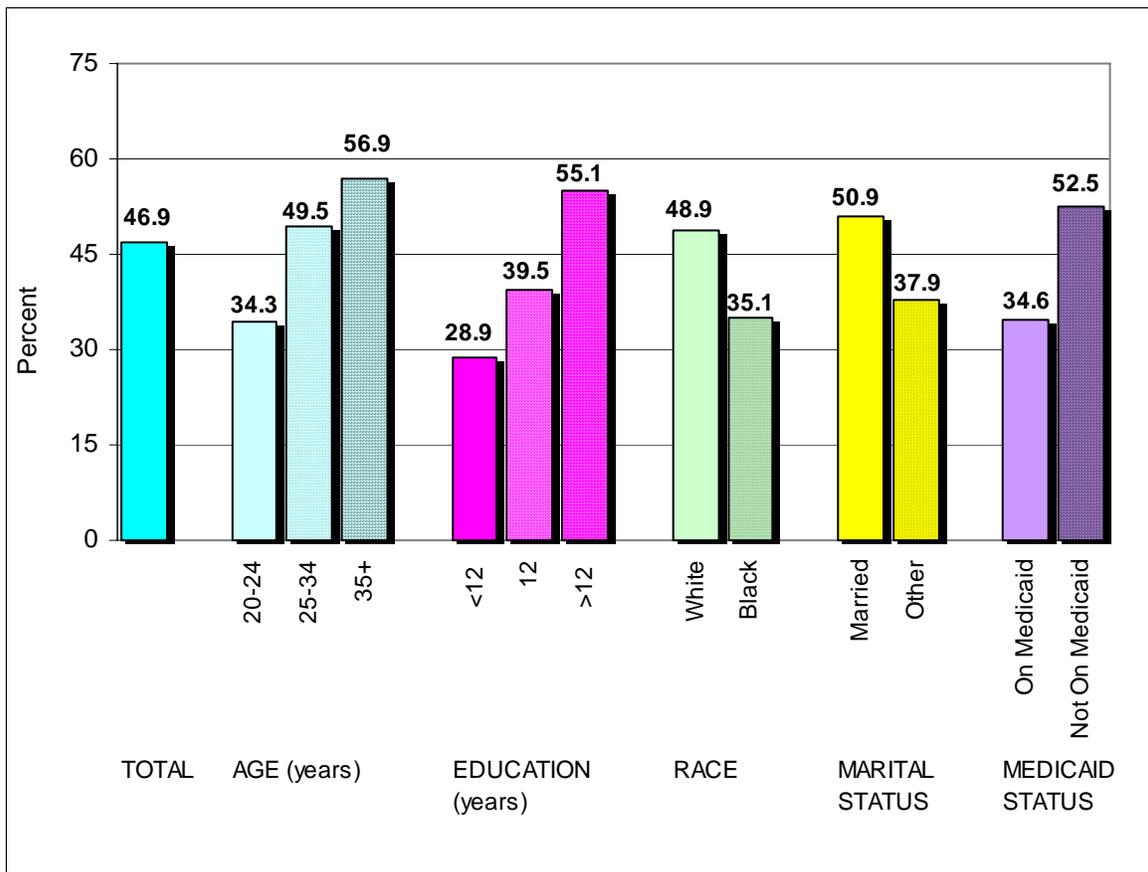
New York State Oral Health Surveillance System, 2002-2004.

**Pregnant Women**

Studies documenting the effects of hormones on the oral health of pregnant women suggest that 25% to 100% of these women experience gingivitis and up to 10% may develop more serious oral infections (Amar & Chung 1994; Mealey 1996). Recent evidence suggests that oral infections such as periodontitis during pregnancy may increase the risk for preterm or low birth weight deliveries (Offenbacher et al. 2001). During pregnancy, a woman may be particularly amenable to disease prevention and health promotion interventions that could enhance her own health or that of her infant (Gaffield et al. 2001).

Based on the most recently available data from the Pregnancy Risk Assessment and Monitoring System (PRAMS), approximately 49% of pregnant women in 2002 and 47% in 2003 had at least one dental visit during pregnancy. During 2002, 13% of low-income pregnant women received comprehensive dental care. The use of dental services during pregnancy varied by the age, marital status, level of education, and race of women and their participation in Medicaid (**Figure XXI-A**). In both 2002 and 2003, younger women, those with less education, Blacks or African Americans, unmarried women, and those with Medicaid coverage were least likely to have seen a dentist or visit a dental clinic during pregnancy.

**Figure XXI-A. Dental Visit During Most Recent Pregnancy by Age, Years of Education, Race, Marital Status and Participation in Medicaid - 2003**

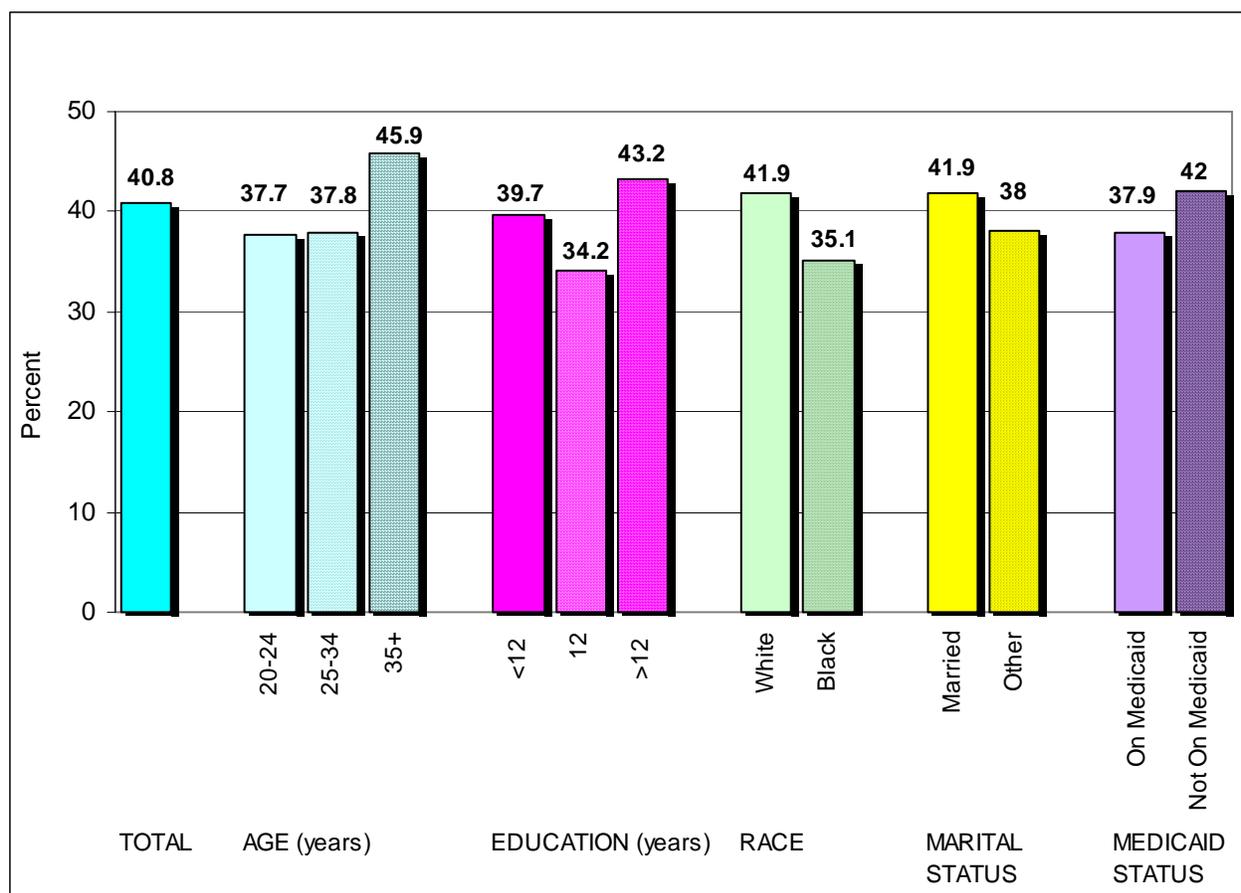


PRAMS 2003: New York State, Excluding New York City

Between 2002 and 2003, the percentage of women visiting a dentist or dental clinic during their most recent pregnancy remained basically unchanged among women 25 years of age and older, those with 12 or more years of education, non-minority individuals, and by marital and Medicaid status. The percentage of Black/African American women receiving dental care during their pregnancy increased from 22.5% in 2002 to 35.1% in 2003, while dental visits for women with 11 or fewer years of education decreased from 38.6% to 28.9% during the same time period.

PRAMS data were also collected on the percentage of women who received information on oral health care from a dental or health care professional during their most recent pregnancy. Older women, those with more than 12 years of education, Whites, married women and those not on Medicaid were more likely to have been counseled during their pregnancy about oral health care (**Figure XXI-B**). A higher percentage of pregnant women with less than 12 years of education (39.7%) and those participating in Medicaid (37.9%) received oral health education in 2003 compared to 2002 (30.4% and 30.0%, respectively), while a smaller percentage of women aged 25 to 34 years received oral health education in 2003 (37.8%) than in 2002 (43.4%).

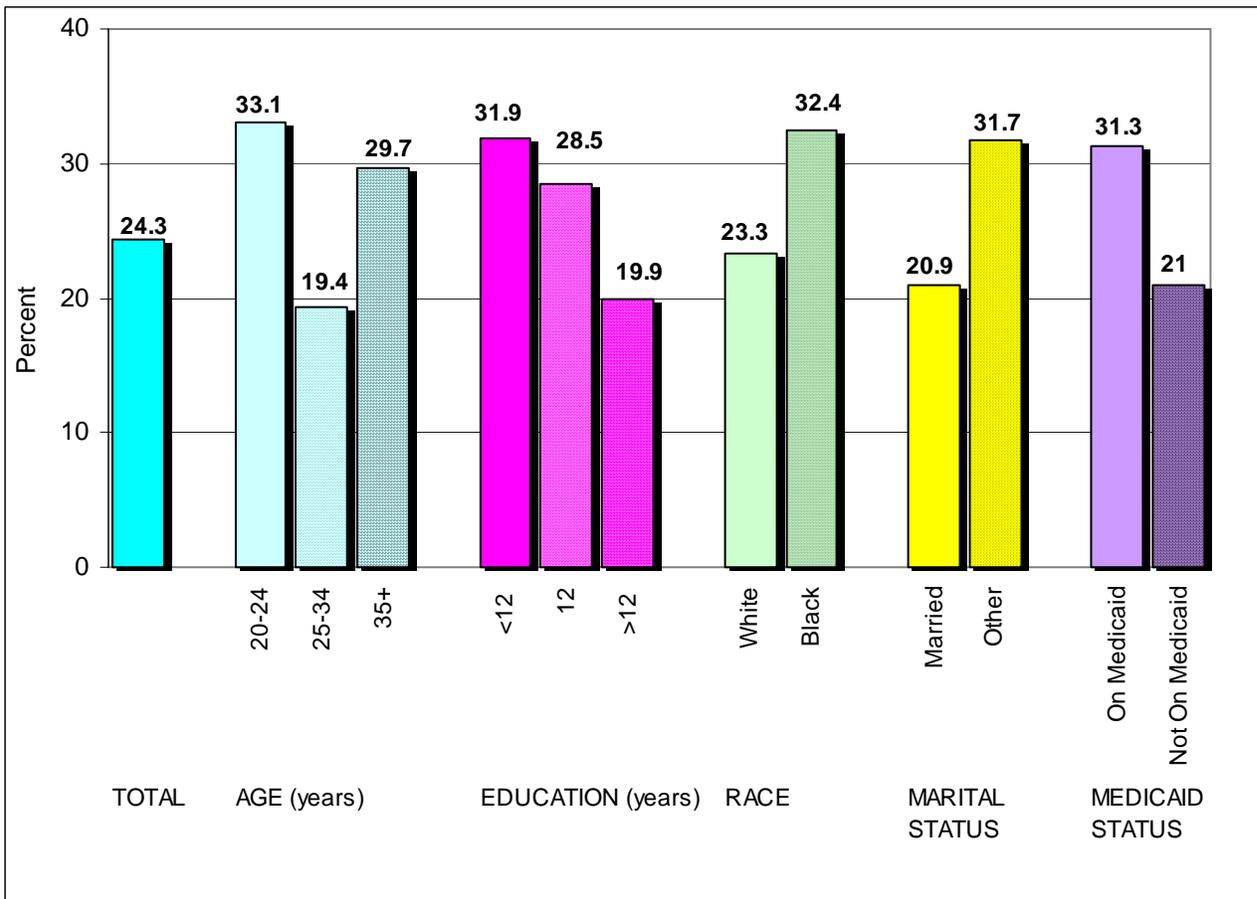
**Figure XXI-B. Percentage of Women Who Talked to a Dental or Health Care Worker About How to Care for Teeth and Gums During Most Recent Pregnancy By Age, Years of Education, Race, Marital Status and Participation In Medicaid – 2003**



PRAMS 2003: New York State, Excluding New York City

Minority women, women under 25 years of age, those with less than a 12<sup>th</sup> grade education, women who were not married, and those on Medicaid were most likely to have required dental care for an oral health-related problem during their most recent pregnancy (**Figure XXI-C**). The percentage of Black/African American women and women 35 years of age and older needing to see a dentist during their most recent pregnancy for an oral health problem increased from 2002 (23.3% and 24.2%, respectively) to 2003 (32.4% and 29.7%, respectively). The need for dental care during pregnancy remained unchanged between 2002 and 2003 among all other women.

**Figure XXI-C. Percentage of Women Who Needed to See a Dentist for a Problem During Most Recent Pregnancy By Age, Years of Education, Race, Marital Status and Participation in Medicaid – 2003**



PRAMS 2003: New York State, Excluding New York City

**Dentate Adults with Diabetes**

Adults with diabetes have a higher prevalence of periodontal disease, as well as more severe forms of the disease (MMWR, November 2005). Periodontal disease has been associated with the development of glucose intolerance and poor glycemic control among diabetic adults. Regular dental visits provide opportunities for prevention, the early detection of, and treatment of periodontal disease among diabetics. One of the *Healthy People 2010* objectives is to increase the percentage of diabetics having an annual dental examination to 71%.

Based on responses to oral health-related questions in the Behavioral Risk Factor Surveillance System during both 1999 and 2004, when estimates are age-adjusted to the 2000 U.S. standard adult population, dentate adults with diabetes nationally were less likely to have been to a dentist within the prior 12 months (66% in 1999 and 67% in 2004) compared to all adults, nationally, in 2000 (70%). Age-adjusted estimates of the percentage of dentate adults with diabetes in the United States who had a dental visit during the preceding 12 months varied by age, race/ethnicity, education, annual income, health insurance coverage, smoking history, attendance of a class to manage diabetes, and having lost any teeth due to dental decay or periodontal disease. Based on responses to the 2004 BRFSS (MMWR, November 2005), adults

aged 18 to 44 years (63%); Black non-Hispanic (53%), multiracial non-Hispanic (51%), and Hispanic (55%) adults; individuals with annual incomes below \$10,000 (44%); those without health insurance coverage (49%); individuals who never attended a class on diabetes management (60%); occasional (56%) and active (58%) smokers; and those who had lost more than 5 but not all of their teeth (60%) were least likely to have had an annual dental examination in the prior 12 months.

Age-adjusted estimates of New York State dentate adults with diabetes revealed a downward trend from 1999 (69%) to 2004 (54%) in the percentage of adults who had a dental examination during the preceding 12 months (MMWR, November 2005). When analyzing BRFSS data for 2002-2004 with respect to diabetic individuals visiting the dentist, dental clinic, or dental hygienist for any reason during the year and age-adjusting based on the New York State population, the same downward, but less dramatic, trend was observed: 75.5% of diabetic individuals reported visiting the dentist or dental clinic in 2002, 74% in 2003, and 64% in 2004.

#### **D. DENTAL MEDICAID AND STATE CHILDREN'S HEALTH INSURANCE PROGRAM**

Medicaid is the primary source of health care for low-income families, elderly, and disabled people in the United States. This program became law in 1965 and is jointly funded by the Federal and State governments (including the District of Columbia and the Territories) to assist States in providing medical, dental, and long-term care assistance to people who meet certain eligibility criteria. People who are not U.S. citizens can only get Medicaid to treat a life-threatening medical emergency. Eligibility is determined based on state and national criteria.

In the New York State Medicaid Program, dental care is provided either on a fee-for-service basis or as part of the benefit package of managed care programs; medically necessary orthodontic services are provided as part of the Medicaid fee-for-service program. During July 2006, nearly 2.02 million individuals were enrolled in the Medicaid Managed Care Program, with all of the 31 participating managed care plans offering dental services as part of their benefit packages. Coverage for adults aged 19 to 64 years who do not have health insurance, either on their own or through their employers, but whose income or resources are too high to qualify for Medicaid, are covered under the State's public health insurance program, Family Health Plus. Family Health Plus is available to single adults, couples without children, and parents with limited incomes and provides comprehensive coverage through participating managed care plans. Dental services are an optional plan benefit and as of June 2005, all but one of the 29 managed care plans included dental services in their benefit packages. A total of 510,232 individuals were enrolled in Family Health Plus during July 2006.

Dental services are a required service for most Medicaid-eligible individuals under the age of 21, as a required component of the Early and Periodic Screening, Diagnostic and Treatment (EPSDT) benefit. Services must include at a minimum, relief of pain and infections, restoration of teeth and maintenance of dental health. Dental services may not be limited to emergency services for EPSDT recipients. In New York State, comprehensive dental services for children (preventive, routine and emergency dental care, endodontics, and prosthodontics) are available through Child Health Plus A for Medicaid-eligible children and Child Health Plus B for children under 19 years of age not eligible for Child Health Plus A and who do not have private insurance. During December 2005, a total of 1,708,830 children under 21 years of age were enrolled in Medicaid and 384,802 children were enrolled in Child Health Plus B during July 2006.

## **i. Dental Medicaid at the National and State Level**

Of the 51,971,173 individuals receiving Medicaid benefits nationally during federal fiscal year (FFY) 2003, 16.4% received dental services (Fiscal Year 2003 National MSIS Tables, revised 01/26/2006). Dental expenses for these individuals totaled nearly \$2.6 billion or 1.1% of all Medicaid expenditures (\$233 billion) in FFY 2003. The average cost per dental beneficiary was \$304.93, compared to the average cost per all beneficiaries of \$4,487.22. During the same time period, 22.2% (989,424) of all Medicaid beneficiaries in New York State (4,449,939) received dental services, at an average cost of \$414.71 per dental beneficiary (FFY 2003 MSIS Tables). New York State Medicaid beneficiaries comprised 8.6% of all Medicaid beneficiaries nationally in FFY2003 and 11.6% of beneficiaries receiving dental service; additionally, New York State accounted for 15.1% of total and 15.8% of dental service expenditures during the same time period.

## **ii. New York State Dental Medicaid**

### **Dentists Participating in Medicaid**

In 2004, of the 14,932 dentists licensed to practice in New York State, 46% were enrolled in Medicaid and 20% were enrolled in Child Health Plus B. During the same time period, however, only 3,845 dentists statewide (26%) had at least one claim paid by Medicaid. Of the 3,845 dentists submitting at least one claim, 90% (3,454) had \$1,000 or more in Medicaid claims during 2004.

### **New York State Expenditures for Dental Services**

During the 2004 calendar year, nearly \$303 million in Medicaid expenditures were spent on dental services; this represents slightly over 1% of total State Medicaid expenditures (\$28.5 billion) during the year. These payments to participating dental practitioners were made on behalf of the 579,585 unduplicated individuals statewide (67% in New York City and 33% in the rest of the State [ROS]) receiving Medicaid-covered dental services during the year.

At the time these data were generated, providers still had slightly over 12 months remaining in which to submit 2004 calendar year claims to Medicaid for reimbursement. Total Medicaid claims and expenditures, as well as the number of beneficiaries receiving dental services, may therefore be higher than currently reported and be more in line with the FFY 2003 CMS data presented above.

For purposes of analysis, all Medicaid-covered dental services were categorized as diagnostic, preventive, and all others. Diagnostic dental services (procedure codes D0100-D0999) included periodic oral evaluations, limited and detailed or extensive problem-focused evaluations, and radiographs and diagnostic imaging. Preventive dental services (D1000-D1999) included dental prophylaxis, topical fluoride treatment, application of sealants, and passive appliances for space maintenance. All other dental services included the following:

- restorative services (D2000-D2999),
- endodontics (D3000-D3999),
- periodontics (D4000-D4999),
- prosthodontics - removable (D5000-D5899),
- maxillofacial prosthetics (D5900-D5999),
- oral and maxillofacial surgery (D7000-D7999),
- orthodontics (D8000-D8999), and
- adjunctive general services (D9000-D9999).

Approximately 75¢ out of every Medicaid dollar spent for dental services during 2004 was for the treatment of dental caries, periodontal disease, or for more involved dental problems. Only 14¢ of every Medicaid dental-service dollar was for diagnostic services, while just 11¢ was for preventive services (**Table XIII-A**).

<b>TABLE XIII.A. 2004 Medicaid Payments to Dental Practitioners and Dental Clinics</b>			
<b>GEOGRAPHIC REGION<sup>1</sup></b>	<b>DOLLARS</b>	<b>CLAIMS</b>	<b>RECIPIENTS</b>
<b>NEW YORK CITY</b>			
Diagnostic Services	\$ 29,563,411.82	1,085,577	336,387
Preventive Services	\$ 24,117,045.80	551,915	280,107
All Other Dental Services	\$166,102,809.60	1,373,289	283,350
NYC Total	\$219,783,267.22	3,010,781	386,020 <sup>2</sup>
Monthly Average of all Medicaid Eligibles in 2004			2,649,025 <sup>3</sup>
<b>REST OF STATE</b>			
Diagnostic Services	\$ 11,739,851.21	442,692	167,908
Preventive Services	\$ 11,234,951.04	283,148	130,640
All Other Dental Services	\$ 60,166,664.56	545,724	121,034
ROS Total	\$ 83,141,466.81	1,271,564	193,572 <sup>2</sup>
Monthly Average of all Medicaid Eligibles in 2004			1,401,537 <sup>3</sup>
<b>NEW YORK STATE</b>			
Diagnostic Services	\$ 41,303,263.03	1,528,269	504,295
Preventive Services	\$ 35,351,996.84	835,063	410,747
All Other Dental Services	\$226,269,474.16	1,919,013	404,384
NYS Total	\$302,924,734.03	4,282,345	579,585 <sup>2</sup>
Monthly Average of all Medicaid Eligibles in 2004			4,050,562 <sup>3</sup>

Source: New York State Department of Health, Office of Medicaid Management, Fiscal and Program Planning Data Mart, November 9, 2005.

<sup>1</sup> Since a given provider may have a service location both within New York City and outside of New York City and may provide services to any Medicaid recipient regardless of the recipient's county of fiscal responsibility, data are presented by the geographic region of recipients.

<sup>2</sup> Total recipient counts are unduplicated.

<sup>3</sup> Data on the monthly average number of Medicaid-eligible individuals during calendar year 2004 were obtained from the New York State Medicaid Program, [http://www.health.state.ny.us/nysdoh/medstat/el2004/cy\\_04\\_el.htm](http://www.health.state.ny.us/nysdoh/medstat/el2004/cy_04_el.htm). Accessed December 14, 2005.

During the 2004 calendar year, an average of 4.05 million individuals per month was eligible to receive Medicaid benefits. Utilization of dental services by Medicaid recipients varied between New York City and Rest of the State, with a higher percentage of Medicaid eligible individuals in New York City (14.6%) receiving dental services during 2004, compared to Medicaid eligible individuals in Rest of State (13.8%).

Statewide, the average cost per diagnostic service claim and preventive service claim were \$27.03 and \$42.33, respectively, compared to the substantially higher cost per claim for other dental services (\$117.91). The average number of claims per recipient for treatment of dental caries, periodontal disease, or more involved dental problems was over twice that of claims for preventive services. Additionally, total costs per recipient for preventive services were from one-sixth to one-seventh the costs of services for the treatment of dental caries, periodontal disease, and other more complex dental problems (**Table XIII-B**).

**TABLE XIII-B. Medicaid Payments for Dental Services During Calendar Year 2004**

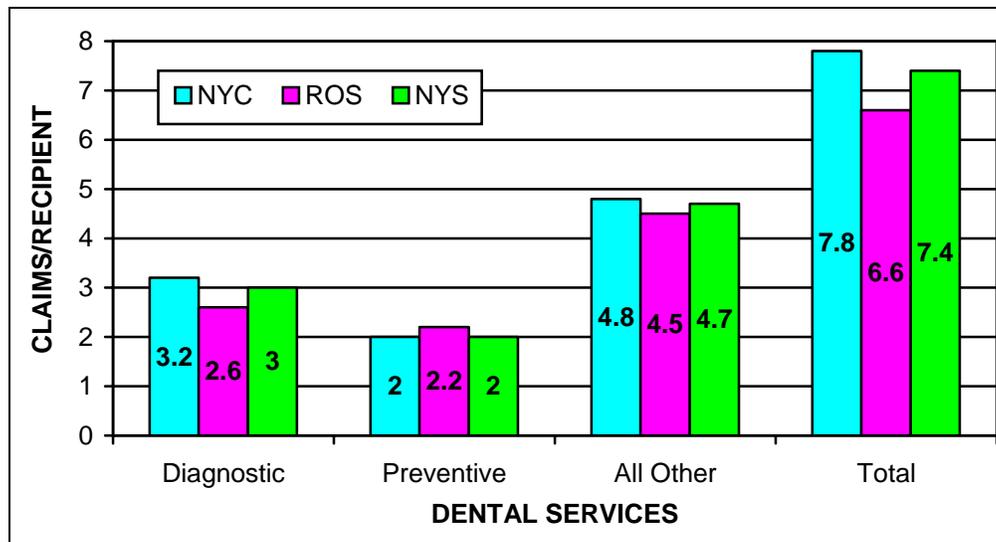
GEOGRAPHIC REGION <sup>1</sup>	DOLLARS/CLAIM	CLAIMS/RECIPIENT	DOLLARS/RECIPIENT
<b>NEW YORK CITY</b>			
Diagnostic Services	\$ 27.23	3.2	\$ 87.89
Preventive Services	\$ 43.70	2.0	\$ 86.10
All Other Dental Services	\$120.95	4.8	\$586.21
NYC Total	\$ 73.00	7.8	\$569.36
<b>REST OF STATE</b>			
Diagnostic Services	\$ 26.52	2.6	\$ 69.92
Preventive Services	\$ 39.68	2.2	\$ 86.00
All Other Dental Services	\$110.25	4.5	\$497.10
ROS Total	\$ 65.38	6.6	\$429.51
<b>NEW YORK STATE</b>			
Diagnostic Services	\$ 27.03	3.0	\$ 81.90
Preventive Services	\$ 42.33	2.0	\$ 86.07
All Other Dental Services	\$117.91	4.7	\$559.54
NYS Total	\$ 70.74	7.4	\$522.66

Source: New York State Department of Health, Office of Medicaid Management, Fiscal and Program Planning Data Mart, November 9, 2005.

<sup>1</sup> Since a given provider may have a service location both within New York City and outside of New York City and may provide services to any Medicaid recipient regardless of the recipient's county of fiscal responsibility, data are presented by the geographic region of recipients.

Medicaid recipients averaged 3 diagnostic service claims, 2 prevention service claims, and 4.7 claims for other dental services during the year (**Figure XXII-A**). The average number of claims per recipient by type of dental service varied between NYC and ROS, with Medicaid recipients in NYC averaging more diagnostic (3.2) and treatment (4.8) claims and less preventive services claims (2.0) than Medicaid recipients in ROS (2.6, 4.5, and 2.2, respectively).

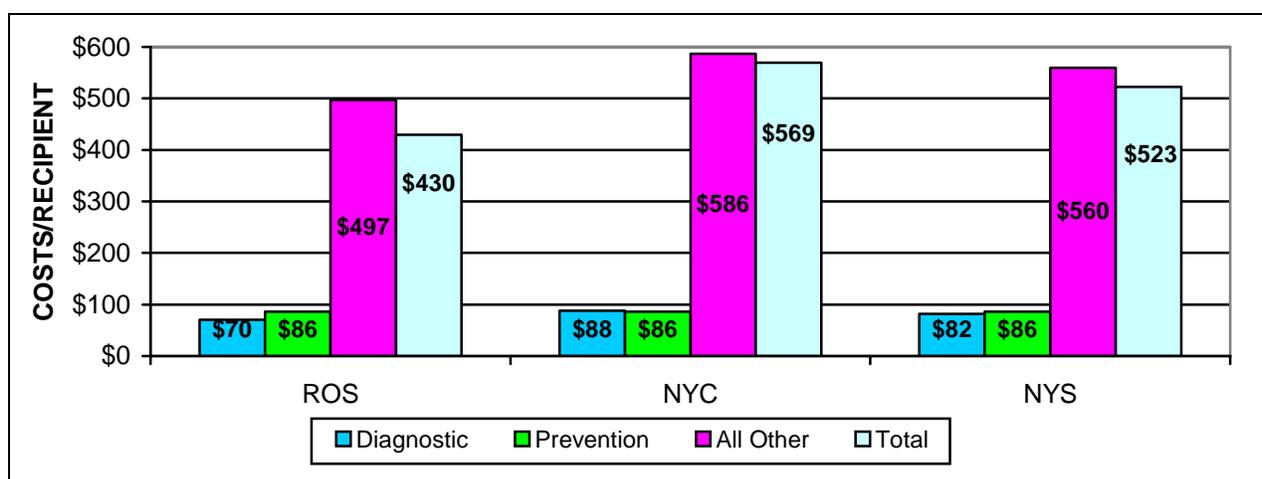
**Figure XXII-A. Average Number of Medicaid Dental Claims per Recipient in 2004**



Source: New York State Department of Health, Office of Medicaid Management, Fiscal and Program Planning Data Mart, November 9, 2005.

Average per person Medicaid expenditures for dental services was slightly over 32% higher for NYC recipients (\$569.36) compared to Medicaid beneficiaries in ROS (\$429.51). The greater number of claims for diagnostic and treatment services, as well as the slightly higher average cost per claim incurred on behalf on NYC Medicaid recipients, are largely responsible for the disproportionate per person costs between NYC and ROS (**Figure XXII-B**). Differences in NYC-ROS average Medicaid costs per recipient may also be a function of the specific types of services rendered (billed procedure codes) within each service category. For example, under diagnostic services, the Medicaid fee schedule for a single bitewing film is \$14 (D0270), versus \$17 for two films (D0272) and \$29 for four films (D0274); for amalgam restorations, which are included under all other dental services, the Medicaid fee schedule for amalgam on one surface is \$55 (D2140), for two surfaces \$84 (D2150), three surfaces \$106 (D2160) and four surfaces \$142 (D2161).

**Figure XXII-B. Average Medicaid Costs per Recipient for Dental Services During 2004**



Source: New York State Department of Health, Office of Medicaid Management, Fiscal and Program Planning Data Mart, November 9, 2005.

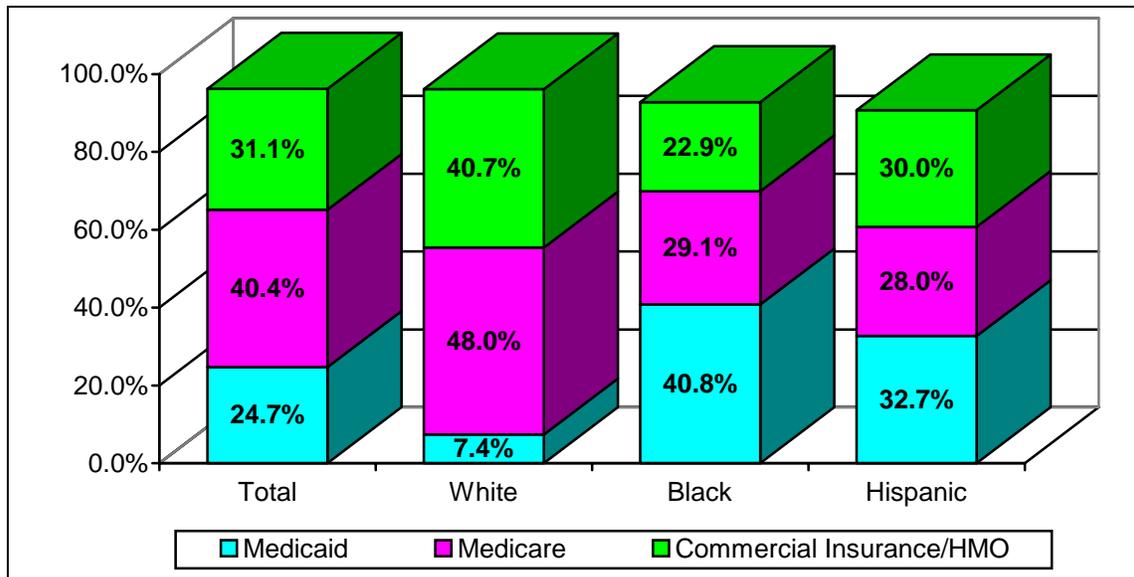
### iii. State Expenditures for the Treatment of Oral Cavity and Oropharyngeal Cancers

Between 1996 and 2001, 10,544 New Yorkers with a primary diagnosis of oral and pharyngeal cancer were hospitalized for cancer care. Total charges for oral cancer hospitalizations during this time period approached \$288.4 million, with Medicare covering 40%, Medicaid 25% and commercial insurance carriers and health maintenance organizations covering 31% of these hospital charges (**Figure XXIII**). Black and Hispanic/Latino patients were more dependent on Medicaid for coverage of cancer-related hospitalizations (40.8% and 32.7%, respectively), compared to White oral cancer patients (7.4%). A higher percentage of oral cancer-related hospital expenses for non-minority patients, on the other hand, were covered by Medicare (48.0%) and commercial insurance carriers (40.7%).

The age of the individual and stage of cancer at the time of diagnosis may have some import to whether Medicare or Medicaid is used for payment of oral cancer-related hospital charges. Non-minority individuals tend to be older at the time of diagnosis (median age is 63 years) compared to Black/African Americans (median age is 57.5 years). Whites are also diagnosed at an earlier stage in the progression of their cancer (38% diagnosed early) compared to Hispanics (35%) and Blacks (21%). This means a smaller percentage of minority patients would be old enough to

quality for Medicare and a greater percentage would incur higher hospitalization costs due to the more advanced stage of their cancer and increased need for more radical and costly surgical treatments.

**Figure XXIII. Expenditures for Treatment of Oral Cavity and Oropharyngeal Cancers  
Distribution of Hospital Costs by Source of Payment and Race/Ethnicity, 1996-2001**

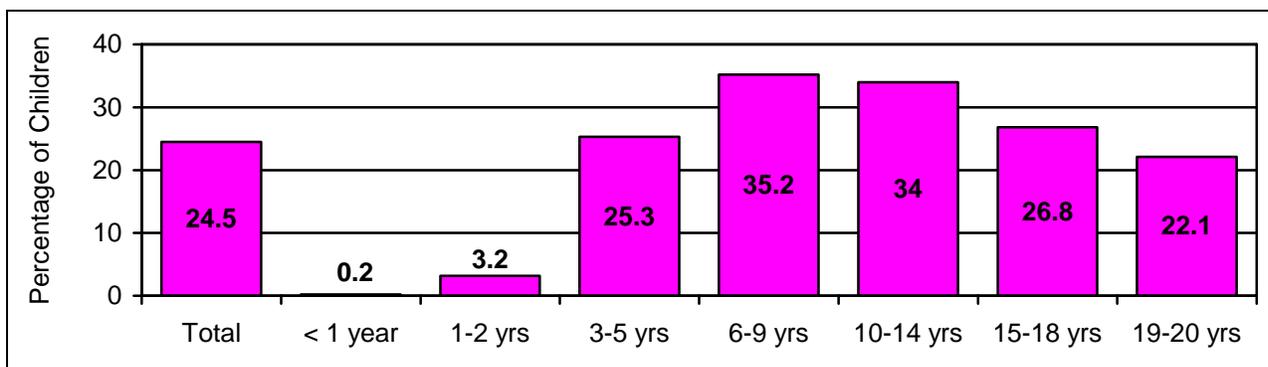


Bureau of Dental Health, New York State Department of Health, Unpublished data, 2005.

#### iv. Use of Dental Services by Children in Medicaid and Child Health Plus Programs

The American Dental Association, American Academy of Pediatric Dentistry, and the American Academy of Pediatrics recommend at least an annual dental examination beginning as early as the eruption of the first tooth, or no later than 12 months of age. Based on data from the Centers for Medicare and Medicaid Services (CMS), 24.5% of all New York State children less than 21 years of age enrolled in the EPSDT Program in 2003 received an annual dental visit (**Figure XXIV-A**). The percentage of children with an annual dental visit varied by age, with only a very small proportion of children under 3 years of age having an annual dental visit.

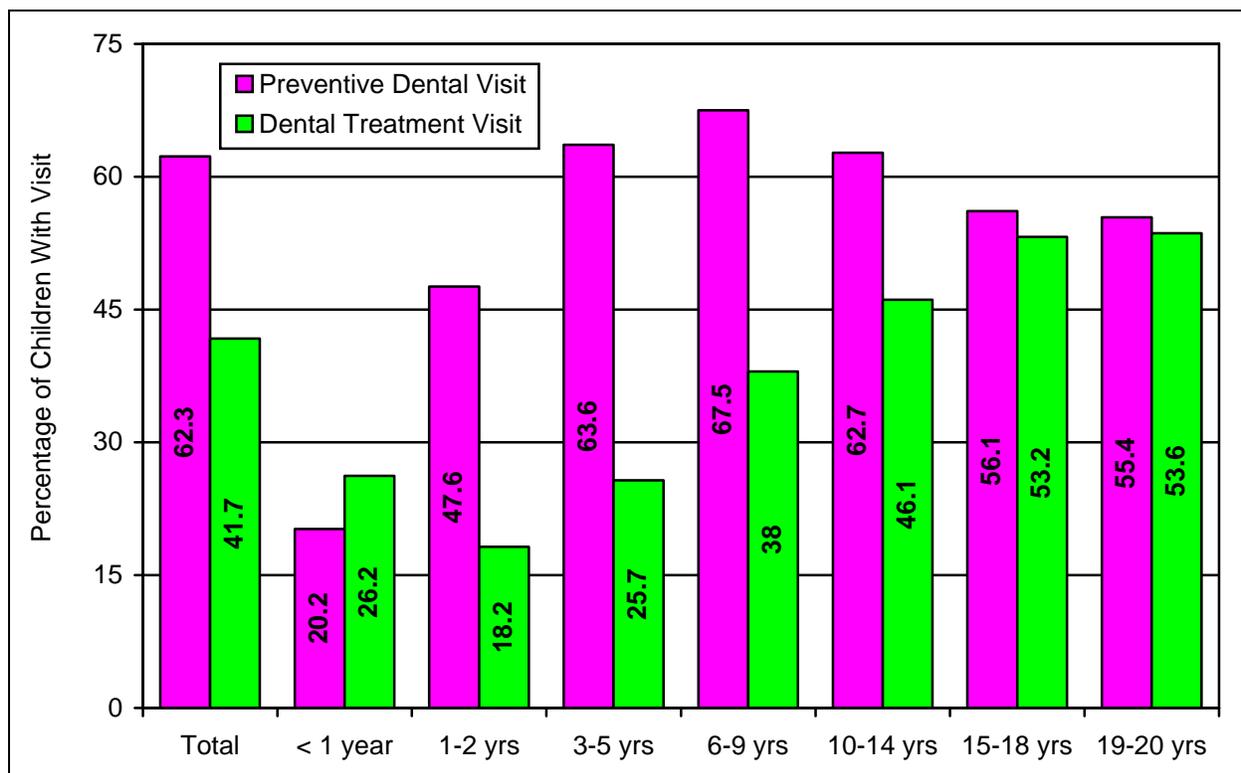
**Figure XXIV-A. Percent of Children Enrolled in EPSDT Having an Annual Dental Visit  
New York State, 2003**



Source: Annual EPSDT Participation Report, January 20, 2005, New York FY: 2003. <http://new.cms.hhs.gov/MedicaidEarlyPeriodicScrn/Downloads/FY2003EPSDTStateReport.pdf>. Accessed March 6, 2006.

Among children under 1 year of age visiting the dentist during 2003, 20.2% received preventive care and 26.2% had dental treatment services; among children 1 through 2 years of age having an annual dental visit during 2003, 47.6% received preventive services and 18.2% received treatment services. The percentage of children having an annual dentist visit was greatest among children 6-9 (35.2%) and 10-14 (34.0%) years of age, with 67.5% and 62.7% of those with an annual visit, respectively, receiving preventive services. The percentage of children over 12 months of age receiving treatment services trended upward with the increasing age of the child (**Figure XXIV-B**).

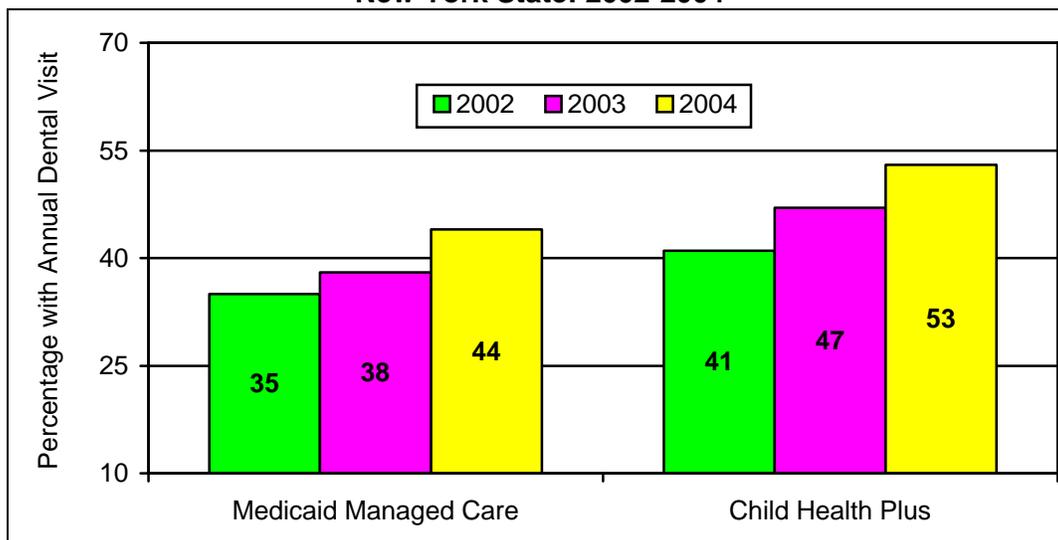
**Figure XXIV-B. Among Children in EPSDT with an Annual Dental Visit, the Percentage Receiving Preventive and Treatment Services  
New York State, 2003**



Source: Annual EPSDT Participation Report, January 20, 2005, New York FY: 2003.  
<http://new.cms.hhs.gov/MedicaidEarlyPeriodicScrn/Downloads/FY2003EPSDTStateReport.pdf>.  
 Accessed March 6, 2006.

Children in New York State Medicaid Managed Care Programs and Child Health Plus did better than their counterparts covered under the Medicaid EPSDT Program with respect to annual dental visits. During 2003, 38% of children aged 4 through 21 years in Medicaid Managed Care Plans and 47% of children aged 4 through 18 years in Child Health Plus had an annual dental visit (New York State Managed Care Plan Performance Report on Quality, Access to Care, and Consumer Satisfaction, New York State Department of Health, December 2005), compared to 30.1% of children aged 3-20 years in the Medicaid EPSDT Program. The receipt of an annual dental visit has increased each year over the last 3 years for children in both Medicaid Managed Care and Child Health Plus programs (**Figure XXV**).

**Figure XXV. Annual Dental Visits by Children in Medicaid Managed Care (Aged 4 through 21 Years) and Child Health Plus (Aged 4-18 Years) New York State: 2002-2004**



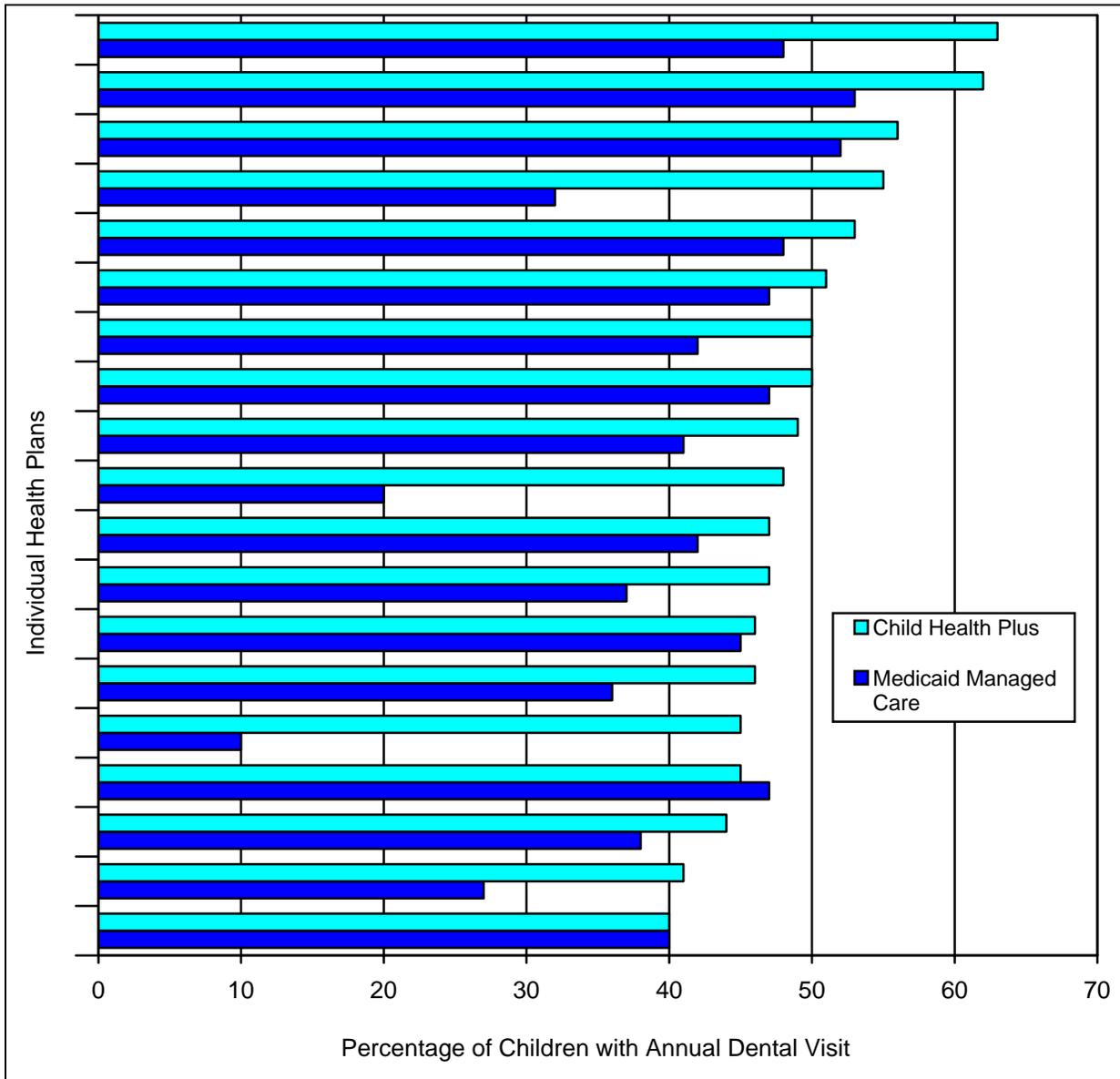
Source: New York State Managed Care Plan Performance Report on Quality, Access to Care, and Consumer Satisfaction, New York State Department of Health, December 2005

There were 27 health plans enrolled in the Medicaid Managed Care Program during 2004, 20 of which (74%) provided dental care services as part of their benefit package. For the seven plans not offering dental services, enrollees have access to dental services through Medicaid fee-for-service. Figure XXIII does not include data on dental visits for children in Medicaid Managed Care Programs obtaining dental services under Medicaid fee-for-service. Children having an annual dental visit varied by health plan, from a low of 10% of all children aged 4 through 21 years in one plan to a high of 53% of all children covered under another plan. The statewide average of 44% of children having an annual dental visit in 2004 exceeded the 2004 national average of 39% of all children in Medicaid Managed Care.

All health plans (27 plans) participating in Child Health Plus provided dental services in 2004, with the percentage of children 4-18 years of age receiving an annual dental visit found to similarly vary by health plan enrollment. Children having an annual dental visit varied from a low of 40% of all children aged 4-18 years to a high of 72% of all children.

There were 20 different individual health plans providing dental services to children under both Medicaid Managed Care and Child Health Plus; 19 of these plans had data available on the percentage of children receiving an annual dental visit during 2004 (**Figure XXVI**). Within the same health plan, the percentage of children receiving an annual dental visit was higher for children enrolled in Child Health Plus compared to those enrolled in Medicaid Managed Care in all but two cases. In one health plan, 40% of all children covered under Medicaid Managed Care and Child Health Plus received an annual dental visit (40% under each plan), while in another plan, a slightly higher percentage of children in Medicaid Managed Care (47%) had an annual dental visit, compared to children covered under Child Health Plus (45%).

**Figure XXVI. Percent of Children in Medicaid Managed Care and Child Health Plus With the Same Health Insurance Carrier Having an Annual Dental Visit in 2004**



Source: New York State Managed Care Plan Performance Report on Quality, Access to Care, and Consumer Satisfaction, New York State Department of Health, December 2005

Just as the types of insurance provided under each health plan differ, the statewide availability of the plans themselves varies. Twelve (12) plans provide coverage in only one geographic or service area of the State, while only one plan provides statewide coverage; the remainder of plans is available to eligible individuals in two or more service areas of the State.

**Use of Dental Rehabilitation Services by Children Under 21 Years of Age**

Children under 21 years of age with congenital or acquired severe physically-handicapping malocclusions are provided access to appropriate orthodontic services under the Bureau of Dental Health’s Dental Rehabilitation Program and are eligible to receive both diagnostic/

evaluative and treatment services. The Program operates in most counties under the auspices of the Physically Handicapped Children's Program and is supported by both State and federal funds, with \$50,000 available annually for diagnostic/evaluative services and \$1.5 million for treatment services.

Medicaid eligible children receive orthodontic services through the Physically Handicapped Children's Program as part of the Medicaid fee-for-service program, but only if services are determined to be medically necessary for treatment of physically handicapping malocclusions or qualifying congenital defects, as defined by law. During the 2003-2004 Program fiscal year (December 1<sup>st</sup>- November 30<sup>th</sup>), excluding New York City, a total of 5,379 children received services under Medicaid fee-for-services, with total expenditures reaching slightly over \$7.03 million, or an average of \$1,307.75 per child. Children not eligible for Medicaid are covered under the Public Health Law (<http://www.health.state.ny.us/regulations/>), with the State covering initial costs of approved diagnostic/evaluative services and counties covering the treatment costs. During the 2003-2004 Program fiscal year, a total of 1,581 children outside of New York City were provided services under the Public Health Law at a total cost of \$1.8 million, or \$1,160.39 per child. During 2004, an additional 12,000 children in New York City received services either as part of the Medicaid fee-for-service program or under the Public Health Law.

#### **E. COMMUNITY AND MIGRANT HEALTH CENTERS AND OTHER STATE, COUNTY, AND LOCAL PROGRAMS**

Community Health Centers (CHCs) provide family-oriented primary and preventive health care services for people living in rural and urban medically underserved communities. CHCs exist in areas where economic, geographic, or cultural barriers limit access to primary health care. The Migrant Health Program (MHP) supports the delivery of migrant health services, serving over 650,000 migrant and seasonal farm workers. Among other services provided, many CHCs and Migrant Health Centers provide dental care services.

Healthy People 2010 objective 21-14 is to "Increase the proportion of local health departments and community-based health centers, including community, migrant, and homeless health centers, that have an oral health component" (USDHHS 2000b). In 2002, 61% of local jurisdictions and health centers had an oral health component (USDHHS 2004b); the Healthy People 2010 target is 75%.

##### **Local Health Departments and Community-Based Health Centers**

New York State relies on its local health departments to promote, protect and improve the health of residents. The core public health services administered by New York State's 57 county health departments and the New York City Department of Health and Mental Hygiene include disease investigation and control, health education, community health assessment, family health and environmental health. Under Article 6 of the State Public Health Law, New York State provides partial reimbursement for expenses incurred by local health departments for approved public health activities (<http://www.health.state.ny.us/regulations/>).

Article 6 requires dental health education be provided as a basic public health service, with all children under the age of 21 underserved by dental health providers or at high risk of dental caries to have access to information on dental health. Local health departments either provide or assure that education programs on oral health are available to children. Local health departments also have the option of providing dental health services targeted to children less than 21 years of age who are underserved or at high risk for dental diseases.

During calendar year 2004, gross expenditures for dental health education provided by local departments of health totaled nearly \$5.47 million while gross expenditures for dental services reached almost \$7.79 million. Fifty-one of 57 counties and New York City received funding during 2004 to provide dental education, while 15 of 57 counties and New York City received funding for the provision of dental health services.

Article 28 of the State Public Health Law governs hospitals and Diagnostic and Treatment Centers in New York State. Article 28 facilities may provide, as part of their Certificate of Need, dental outpatient services. These services include the provision of preventive and emergency dental care under the supervision of a dentist or other licensed dental personnel. A key focus area in New York State Department of Health's *Oral Health Plan* is to work with Article 28 facilities to:

- increase the number of Article 28 facilities providing dental services across the State and approve new ones in areas of highest need;
- encourage Article 28 facilities to establish comprehensive school-based oral health programs in schools and Head-Start Centers in areas of high need;
- identify barriers to including dental care in existing community health center clinics and in hospitals not currently providing dental care; and
- to encourage hospitals in underserved areas to provide dental services.

As of 2004, 193 of 215 (90%) community-based health centers (139 of 155) and local health departments (54 of 60) in the State had an oral health component.

### **New York State HRSA Bureau of Primary Health Care Section 330 Grantees**

A total of 41 community health centers and 9 community-based organizations throughout the State received funding from HRSA in 2004 to provide health and dental services in a variety of settings: community health centers, school-based health centers, homeless shelters, migrant sites, and at public housing projects. Of these 50 HRSA Section 330 grantees:

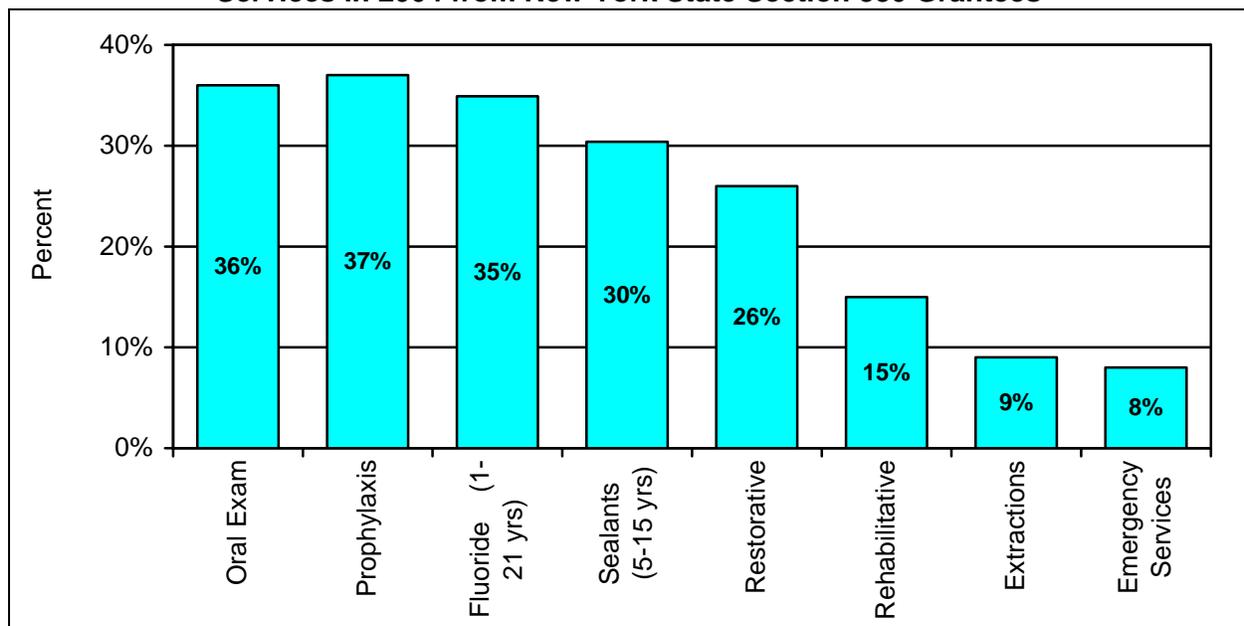
- 98% provided preventive dental care, with 88% providing direct dental care and 28% providing care through referral,
- 98% provided restorative care (86% directly and 44% by referral),
- 96% offered emergency dental care (82% directly and 52% by referral), and
- 92% provided rehabilitative dental care (58% directly and 64% through referral).

Individuals using grantee services during 2004 were mainly racial/ethnic minorities: 30% Black/African American, 32% Hispanic or Latino, 5% Asian, and 24% White, with 27% of all users reportedly best served in a language other than English. The majority of grant service users were adults 35-64 years of age (33%), school-aged children 5-18 years of age (25%), young adults 25-34 years of age (14%), and children under 5 years of age (11%). Approximately one-fourth of service recipients were uninsured, 46% were Medicaid-eligible, 18% had private health insurance, and 2.5% were enrolled in Child Health Plus B.

Grant funding for community health centers accounted for nearly 82% of all HRSA Bureau of Primary Health Care grants, with the costs for all dental services in 2004 totaling \$65.5 million, or nearly 11% of all grantee service costs. Based on data collected from all 50 grantees, services were provided to over 1 million individuals during the year, with 195,162 individuals

(19%) receiving dental services either directly or through referral, with 2.61 dental encounters per dental user at a cost of \$129 per encounter or \$336 per dental user. Of the 195,162 individuals receiving dental services, 36% had an oral examination, 37% had prophylactic treatment, 26% had restorative services, 15% had rehabilitative services, 9% had tooth extractions, and 8% received emergency dental services (**Figure XXVII-A**). The application of sealants is limited to only those children between 5 and 15 years of age (CPY code D1351), while fluoride treatment (CPT code D1203) is applicable to children under 21 years of age. After taking into account age limitations on the use of these two dental services, 35% of children aged 1 to 21 years received fluoride treatments and 30% of children aged 5 to 15 years had sealants applied.

**Figure XXVII-A. Types of Dental Services Provided to Individuals Receiving Dental Services in 2004 from New York State Section 330 Grantees**



HRSA Bureau of Primary Health Care Section 330 Grantees Uniform Data System,  
New York Rollup Report, Calendar Year 2004.

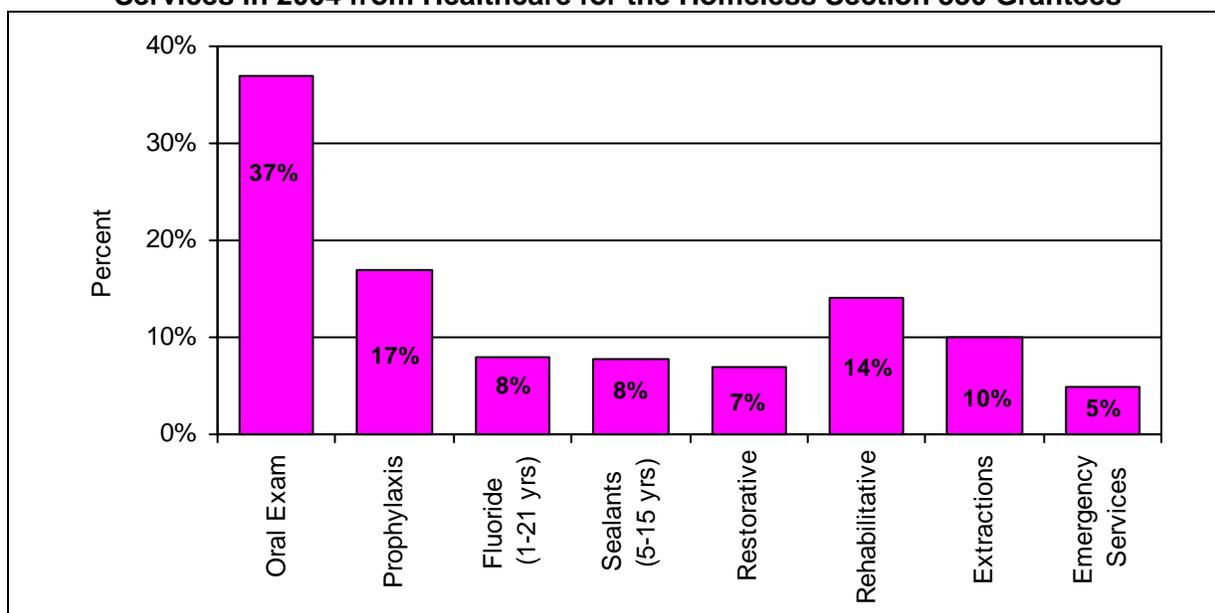
### Health Care Services for the Homeless

Thirteen (13) out of 50 HRSA Section 330 grantees were funded in 2004 to provide health care services for the homeless. Of the 41,546 individuals receiving services during the year:

- 60% were male,
- 45% were between 35-64 years of age,
- 15% were between 25-34,
- 14% were 19-24 years of age,
- 13% were school-aged children between 5 and 18 years of age,
- 9% were under 5 years of age,
- 55% were Black/ African American
- 29% were Hispanic or Latino individuals (29%),
- nearly 96% reported incomes 100% and below the Federal Poverty Level,
- 40% were uninsured, and
- 57% were Medicaid eligible.

Services were predominately provided in homeless shelters (59%), on the street (16%), or at transitional housing sites (10%). Slightly over 10% of individuals receiving services from Healthcare for the Homeless Programs during 2004 received dental services, with an average of 2 dental encounters per person. Of the 4,303 individuals receiving dental services, 37% had an oral examination, 17% had prophylactic treatment, 14% had rehabilitative services, 10% had tooth extractions, 7% had restorative services, and 5% received emergency dental services (**Figure XXVII-B**). Taking into account age limitations on the receipt of fluoride treatments and application of dental sealants, 8.0% of children aged 1 to 21 years received fluoride treatments and 7.7% of children aged 5 to 15 years had sealants applied.

**Figure XXVII-B. Types of Dental Services Provided to Individuals Receiving Dental Services in 2004 from Healthcare for the Homeless Section 330 Grantees**



HRSA Bureau of Primary Health Care Section 330 Grantees Uniform Data System, New York Rollup Report, Calendar Year 2004.

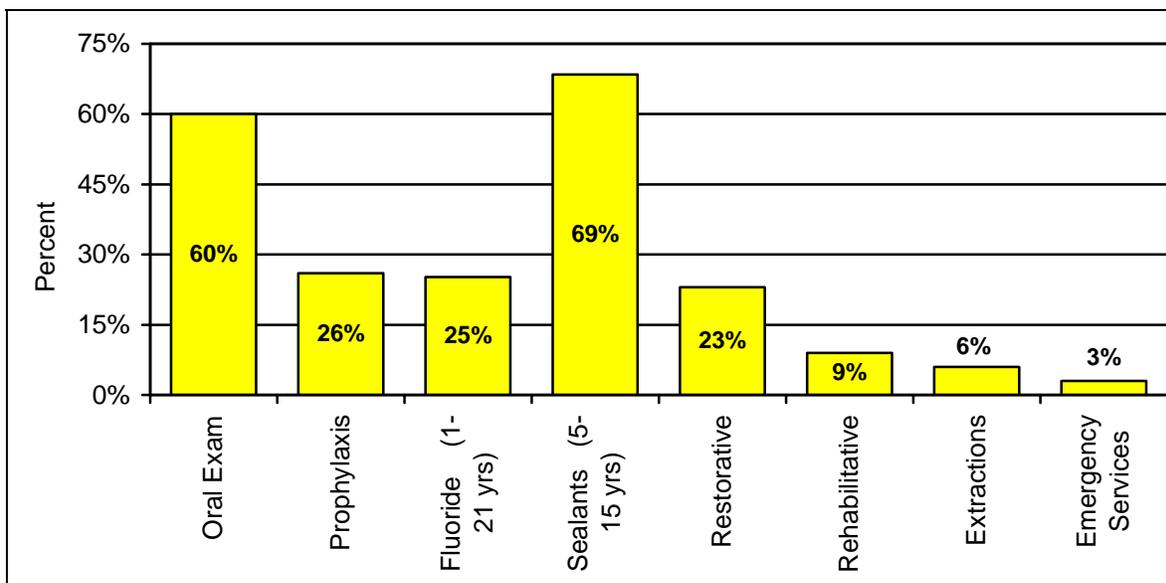
### Health Care Services at Public Housing Sites

Three HRSA Section 330 grantees also received funding in 2004 to provide health care services at public housing sites, with services provided in New York City and Peekskill, New York. Of the 8,162 individuals receiving services during 2004:

- 63% were female,
- 30% were school-aged children between 5 and 18 years of age,
- 20% were children under 5 years of age,
- 13% were between 25-34 years of age,
- 10% were between 35-44 years of age,
- 57% were Hispanic or Latino,
- 35% were Black/African American,
- 79% reported incomes 100% and below the Federal Poverty Level,
- 25% were uninsured,
- 53% were Medicaid eligible,
- 13% had private health insurance, and
- 4% were enrolled in Child Health Plus B.

Nearly 7% (536 individuals) of all individuals received dental services during 2004, with 60% having an oral examination, 26% prophylactic treatment, 23% receiving restorative services, 9% having rehabilitative services, 6% having tooth extractions and 3% receiving emergency dental services (**Figure XXVII-C**). Taking into account age limitations on the receipt of fluoride treatments and application of dental sealants, 25.2% of children aged 1 to 21 years received fluoride treatments and 68.5% of children aged 5 to 15 years had sealants applied.

**Figure XXVII-C. Types of Dental Services Provided to Individuals Receiving Dental Services in 2004 from Healthcare at Public Housing Sites Section 330 Grantees**



HRSA Bureau of Primary Health Care Section 330 Grantees Uniform Data System,  
New York Rollup Report, Calendar Year 2004.

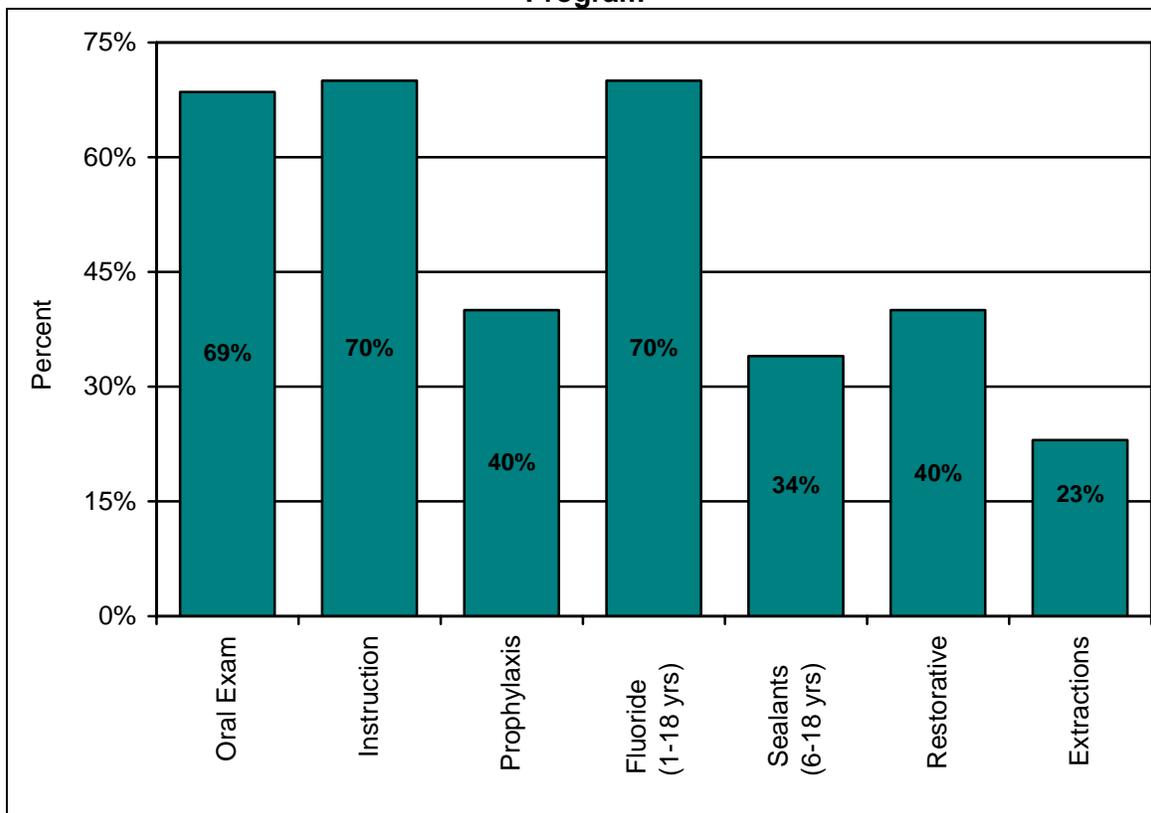
### **Migrant/Seasonal Agricultural Worker Health Program**

New York State's Migrant and Seasonal Farm Worker (MSFW) Health Program provides funding to 15 contractors, including seven county health departments, three community health centers, one hospital, a day care provider with 12 sites statewide, and three other organizations to deliver services in 27 counties across New York State. Each contractor provides a different array of services that may include outreach, primary and preventive medical and dental services, transportation, translation, health education and linkage to services provided by other health and social support programs. The services are designed to reduce the barriers that discourage migrants from obtaining care, such as inconvenient hours, lack of bilingual staff and lack of transportation. Health screening, referral and follow-up are also provided in migrant camps. Eight (8) contractors provide dental services either directly or through referral, while 3 provide services through referral only.

During 2004, a total of 2,209 individuals received dental services directly through the MSFW Health Program and an additional 2,663 were referred elsewhere for dental care services. Of those receiving dental services from the contractor, slightly over a third (35.8%) was less than 19 years of age. Individuals averaged 2 visits each with 68.5% of recipients receiving a dental examination, 70% instruction in oral hygiene, 40% prophylaxis and 40% restorative services. Taking into account age limitations on the receipt of fluoride treatments and application of dental

sealants, 70% of children less than 19 years of age received fluoride treatments and 34% of children aged 6 to 18 years had sealants applied (**Figure XXVII-D [1]**).

**Figure XXVII-D [1]. Types of Dental Services Provided to Individuals Receiving Dental Services in 2004 from the New York State Migrant and Seasonal Farm Worker Health Program**



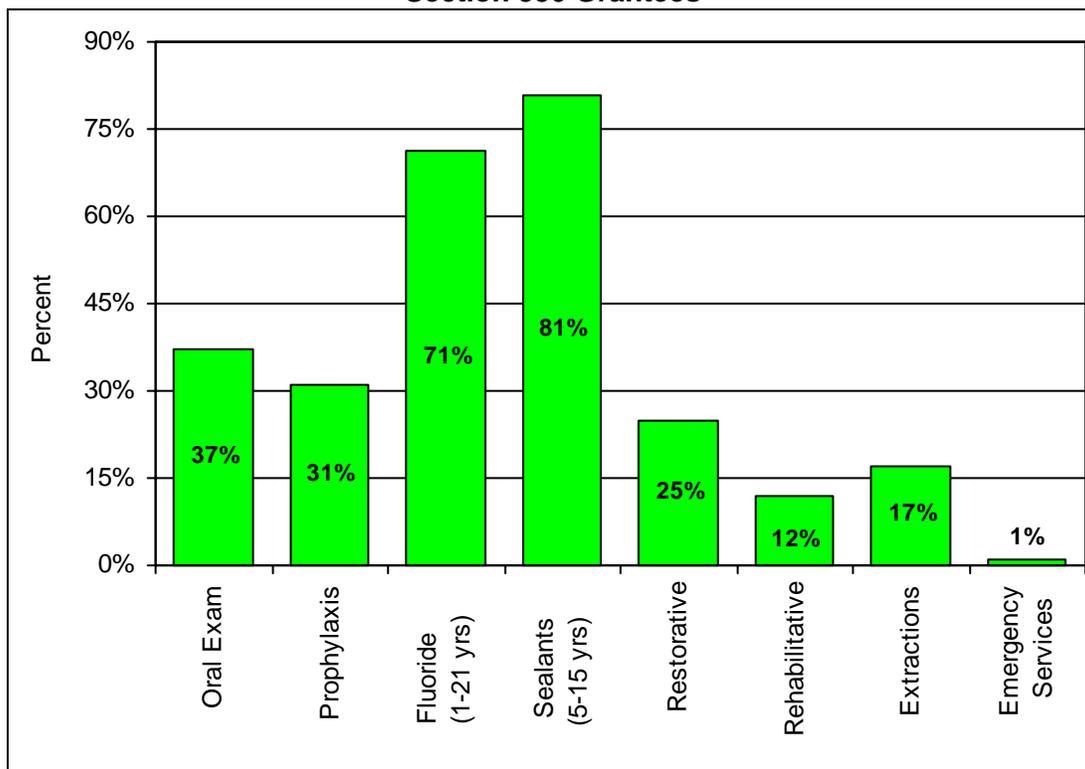
New York State Department of Health Migrant and Seasonal Farm Worker Health Program, 2004.

Two community health centers and one community-based program also received HRSA funding through the Bureau of Primary Health Care during 2004 to provide health services to migrant (68% of service recipients) and seasonal agricultural workers (32% of service recipients) and their dependents. Of the 11,566 individuals receiving services during the year:

- 87% reported incomes 100% and below the Federal Poverty Level,
- 90% were uninsured,
- 4.5% were Medicaid eligible
- 91% were Hispanic or Latino,
- 89% reported being best served in a language other than English,
- 65% were male,
- 31% were between 25-34 years of age,
- 19% between 19-24 years of age,
- 18% were school-aged children from 5-18 years of age,
- 16% were 35-44 years of age, and
- 8% were children under 5 years of age.

Approximately 18% of all migrant/seasonal agricultural workers and their dependents were provided dental services during the year; dental service encounters accounted for almost 10% of all program encounters for the year. Of the 2,021 individuals receiving dental services in 2004, 37% had an oral examination, 31% had prophylactic treatment, 25% received restorative services, 17% had tooth extractions, 12% had rehabilitative services, and 1% received emergency dental services (**Figure XXVII-D [2]**). Taking into account age limitations on the receipt of fluoride treatments and application of dental sealants, 71.4% of children aged 1 to 21 years received fluoride treatments and 80.7% of children aged 5 to 15 years had sealants applied.

**Figure XXVII-D [2]. Types of Dental Services Provided to Individuals Receiving Dental Services in 2004 from Migrant/Seasonal Agricultural Worker Health Program Section 330 Grantees**



HRSA Bureau of Primary Health Care Section 330 Grantees Uniform Data System,  
New York Rollup Report, Calendar Year 2004.

### School-Based Health Services

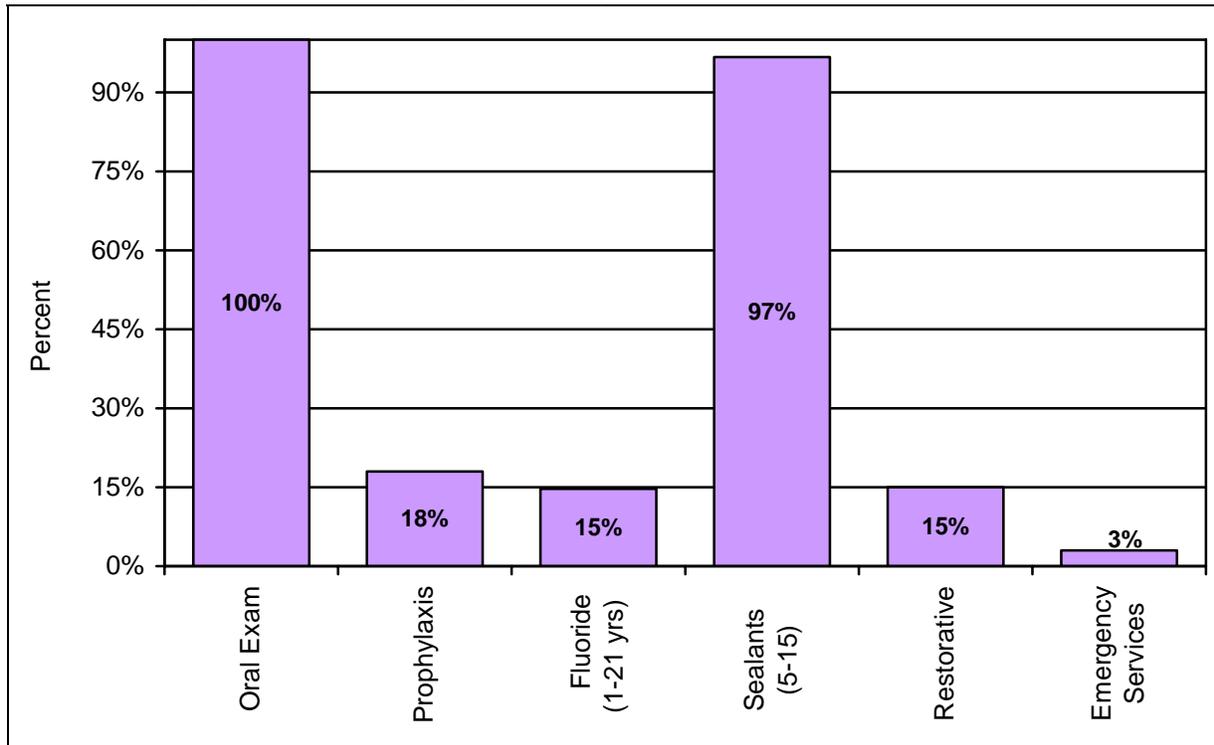
Nine community health centers (7 in New York City and 2 in Upstate New York) received HRSA funding through the Bureau of Primary Health Care in 2004 for school-based health services. Section 330 grantees provided services to 17,388 children and adolescents:

- 24% were 5-7 years of age,
- 22% were between 8-10 years of age,
- 21% were 13-15 years of age,
- 13% were 16-18 years of age,
- 12% were 11-12 years of age
- 6% were under 5 years of age,
- 54% were Hispanic/Latino,

- 19% were Black/African American,
- 4% were White,
- 3% were Asian/Pacific Islanders,
- 88% had reported incomes 100% and below the Federal Poverty Level,
- 44% were uninsured,
- 39% were Medicaid-eligible,
- 10% had private insurance, and
- 7% were receiving Child Health Plus B.

A total of 565 (3%) children received dental services during 2004. Of those receiving dental services, all received an oral examination, 18% received prophylactic services, 15% had restorative services, 3% received emergency services, and one child (0.2%) had a tooth extraction (**Figure XXVII-E**). Taking into account age limitations on the receipt of fluoride treatments and application of dental sealants, 14.7% of children aged 1 to 21 years received fluoride treatments and 96.7% of children aged 5 to 15 years had sealants applied.

**Figure XXVII-E. Types of Dental Services Provided to Children Receiving Dental Services in 2004 from School-Based Health Services Section 330 Grantees**

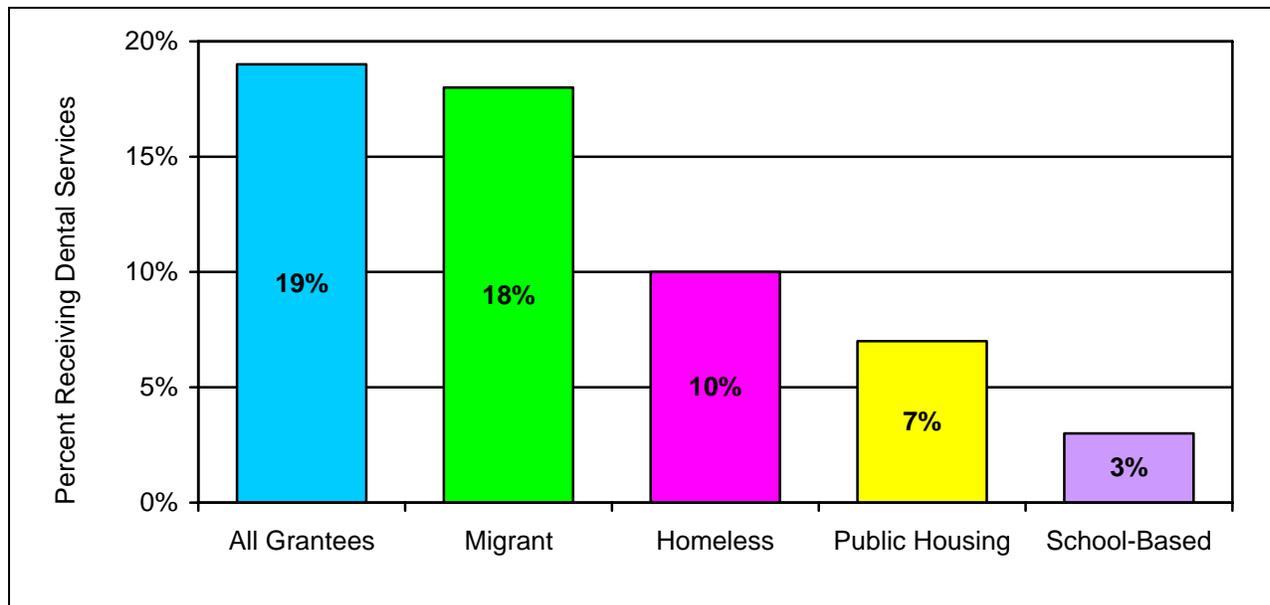


HRSA Bureau of Primary Health Care Section 330 Grantees Uniform Data System,  
New York Rollup Report, Calendar Year 2004.

HRSA Bureau of Primary Health Care Section 330 grantees have been successful in reaching and providing health-related services to high risk, high need populations throughout New York State, with over 1 million individuals receiving services during 2004. Dental services, although provided by 49 of 50 grantees either directly or through referral, have not been as widely utilized by program recipients as other types of program services. Overall, 19% of individuals receiving services through Section 330 grantees also received dental services, with a higher percentage

of migrants/seasonal agricultural farm workers and homeless individuals utilizing dental services (Figure XXVIII) than other populations served.

**Figure XXVIII. Percentage of All Individuals Receiving Services from Section 330 Grantees in 2004 Also Receiving Dental Services**



HRSA Bureau of Primary Health Care Section 330 Grantees Uniform Data System, New York Rollup Report, Calendar Year 2004.

### American Indian Health Program

Under Public Health Law Section 201(1)(s) (<http://www.health.state.ny.us/regulations/>), the New York State Department of Health is directed to "administer to the medical and health needs of ambulant sick and needy Indians on reservations". The American Indian Health Program provides access to primary medical care, dental care and preventive health services for approximately 15,000 Native Americans living on reservations. Health care is provided to enrolled members of nine recognized American Indian Nations in New York State through contracts with three hospitals and one community health center. The program covers payment for prescription drugs, durable medical equipment, laboratory services and contracts with Indian Nations for on-site primary care services.

### Comprehensive Prenatal-Perinatal Services Network

The Perinatal Networks are primarily community-based organizations sponsored by the Department of Health whose mission is to organize the service system at the local level to improve perinatal health. The Networks work with a consortium of local health and human service providers to identify and address gaps in local perinatal services. The networks also sponsor programs targeted to specific at-risk members of the community, and respond to provider needs for education on special topics, such as screening for substance abuse among pregnant women, smoking cessation or cultural sensitivity training. Each of the 15 Perinatal Networks targets a region, ranging in size from several Health Districts in New York City to large multi-county regions in rural Upstate areas. Over the past decade, Perinatal Networks have become involved in a range of initiatives, including dental care for pregnant women. Several

Networks include information on dental health during pregnancy, periodontal disease and birth outcomes, and prevention of early childhood caries in their newsletters and on their websites. Other Networks either have or are in the process of establishing oral health subcommittees to address the oral health needs of pregnant women and young children in their catchment area and in applying for grant funding for innovative dental health education and service delivery programs.

### **Rural Health Networks**

The Rural Health Network Development Program creates collaborations through providers, non-profits, and local government to overcome service gaps. These collaborative efforts have led to many innovative and effective interventions such as, development of community health information systems, disease management models, education and prevention programs, emergency medical systems, access to primary and dental care, and the recruitment and retention of health professionals.

## **F. BUREAU OF DENTAL HEALTH, NEW YORK STATE DEPARTMENT OF HEALTH PROGRAMS AND INITIATIVES**

The Bureau of Dental Health, New York State Department of Health is responsible for implementing and monitoring statewide dental health programs aimed at preventing, controlling and reducing dental diseases and other dental conditions and promoting healthy behaviors. These dental health programs are designed to:

- Assess and monitor the oral health status of children and adults;
- Provide guidance on policy development and planning to support oral health-related community efforts;
- Mobilize community partnerships to design and implement programs directed toward the prevention and control of oral diseases and conditions;
- Inform and educate the public about oral health, including healthy lifestyles, health plans, and the availability of care;
- Ensure the capacity and promote the competency of public health dentists and general practitioners and dental hygienists;
- Evaluate the effectiveness, accessibility and quality of population-based dental services;
- Promote research and demonstration programs to develop innovative solutions to oral health problems; and
- Provide access to orthodontic care for children with physically handicapping malocclusions.

The programs and initiatives funded by the Bureau of Dental Health fall within three broad categories:

1. Preventive Services and Dental Care,
2. Dental Health Education, and
3. Research and Epidemiology.

## **i. Preventive Services and Dental Care Programs**

### **Preventive Dentistry for High-Risk Underserved Populations**

The Preventive Dentistry for High-Risk Underserved Populations Program addresses the problems of excessive dental disease among children residing in communities with a high proportion of persons living below 185% of the federal poverty level. A total of 25 projects have been established at local health departments, dental schools, health centers, hospitals, diagnostic and treatment centers, rural health networks, and in school-based health centers to provide a point of entry into the dental health care delivery system for underserved children and pregnant women. Services include dental screenings, the application of dental sealants, referrals, and other primary preventive dental services for an estimated 260,000 children and 1,500 pregnant women across the State.

Program activities include:

- Establishment of partnerships involving parents, consumers, providers and public agencies to identify and address oral health problems, identify community needs, and mobilize resources to promote fluoridation, dental sealants and other disease prevention interventions.
- Early childhood caries prevention through school-based dental sealant programs and school-linked dental programs.
- Improving the oral health of pregnant women and mothers through implementation of innovative service delivery programs in areas of high need. In conjunction with prenatal clinic visits, pregnant women can receive dental examinations and treatment services, as well as oral health education.
- The prevention and control of dental diseases and other adverse oral health conditions through the expanded use of preventive services, including fluoride and dental sealants.
- Development of linkages to ensure access to quality systems of care; developing and disseminating community health services resource directories; and providing screenings, referrals and follow-up services in schools, Head Start Centers, WIC clinics and at other sites.

A total of \$0.9 million per year in Maternal Child Health (MCH) Block Grant funds supports the Preventive Dentistry for High-Risk Underserved Populations Program. Additional funds were available for a special two-year campaign to foster program expansion and increase the number of sealants that the Preventive Dentistry contractors were able to apply. Starting in 2007, there will be a total of \$1.5 million available per year for five years for Preventive Dentistry Programs.

### **Fluoride Supplement Program**

The Fluoride Supplement Program targets children in fluoride-deficient areas of the State and consists of a School-Based Fluoride Mouth Rinse Program for elementary school children and a Preschool Preventive Tablet Program for three and four year old children in Head Start Centers and Migrant Childcare Centers. More than 115,000 children are currently participating in these programs. A total of \$189,000 in additional MCH Block Grant funds supports these two programs.

### **Innovative Dental Services Grants**

The Bureau of Dental Health, New York State Department of Health supports 7 programs to assess the effectiveness and feasibility of several different innovative interventions for

addressing oral health problems. Interventions include the use of mobile and portable systems, fixed facilities, and case management models. Collaborative approaches are used to improve community-based health promotion and disease prevention programs and professional services to ensure continued progress in oral health. A total of \$768,077 in innovative dental services grants supports the following activities:

- Establishment or expansion of innovative service delivery models for the provision of primary preventive care and dental care services to underserved populations in geographically isolated and health manpower shortage areas;
- Development of case management models to address the needs of difficult to reach populations; and
- Development of partnerships and local coalitions to support and sustain program activities.

In addition to the 7 programs funded by the Innovative Dental Services Grant, \$150,000 in separate MCH Block Grant funds was awarded to the Rochester Primary Care Network to establish a center at its facility for providing technical assistance to communities interested in developing innovative service delivery models and/or in improving the quality of existing programs.

### **Preventive Dentistry Program for Deaf/Handicapped Children**

The State Department of Health Preventive Dentistry Program for Deaf/Handicapped Children is operated under contract with New York City's Bellevue Hospital. The program provides health education and treatment services for deaf children receiving services at the Bellevue dental clinic and at nearby schools for the deaf in Manhattan. Through the program, deaf and hearing-impaired children are introduced to dental equipment and procedures, while their parents are taught basic preventive dental techniques and are given treatment plans for approval. During 2000, dental services were provided for more than 341 deaf patients at the Bellevue clinic and 271 deaf students participated in a preventive dental program established at PS 47, School for the Deaf. A hearing-impaired dental assistant employed by the Program provides services to the children. The Program is supported by \$40,000 in additional MCH Block Grant funds.

### **Comprehensive School-Based Dental Programs**

Oral Health Collaborative Systems Grants support school-based primary and preventive care services. School-based health centers are located within a school, with primary and preventive health services provided by a nearby Article 28 hospital, diagnostic and treatment center, or community health center. Eight comprehensive school-based health centers receive \$500,000 annually through the MCH Block Grant to provide dental services. During 2004, these centers screened 9,189 students, applied dental sealants for 2,185 students, and provided restorative services to 484 students.

There are also nine community health centers (7 in New York City and 2 in Upstate New York) that receive HRSA funding through the Bureau of Primary Health Care to provide school-based health services. Of the 17,388 children provided services through Section 330 programs in 2004, only 3% (565) received dental services (see Figure XXV-E). Of the children receiving dental services, all had an oral examination, 97% of 5 to 15 year olds had dental sealants applied, 18% of children received prophylactic services, 15% had fluoride treatments, 15% had restorative services, 3% received emergency services, and one child (0.2%) had a tooth extraction.

## **ii. Dental Health Education**

### **Dental Public Health Residency Program**

The Dental Public Health Residency Program is designed for dentists planning careers in dental public health and prepares them, via a broad range of didactic instruction and practical experience, for a practice in dental public health. The residency program is accredited by the Commission on Dental Accreditation, a specialized accrediting body recognized by the Council on Post Secondary Accreditation, and the United States Department of Education. The Program is currently affiliated with the School of Public Health, State University at New York, Albany; Montefiore Medical Center, Bronx; and Eastman Dental Center, University of Rochester. A total of \$120,000 in MCH Block Grant funds is used to support the Program.

## **iii. Research and Epidemiology**

### **Oral Health Initiative**

New York State's Oral Health Initiative is funded by the Centers for Disease Control and Prevention (CDC) and supports State oral disease prevention programs. Under a five-year, \$1 million grant from the CDC, in addition to supporting the improvement of basic oral health services for high risk and underserved populations, the establishment of linkages between the Bureau of Dental Health and local health departments and other coalitions, and the formation of a statewide coalition to promote the importance of oral health and to improve the oral health of all New Yorkers, funding also supports the development of a county-specific surveillance system to monitor trends in oral diseases and the use of dental services.

The New York State Oral Health Coalition identified research and surveillance as one of four priority areas to be addressed by the Coalition over the next three years. Consistent with the Coalition's Strategic Plan, a Research and Surveillance Standing Committee has recently been established to address the following issues:

- gaps in New York State's existing Oral Health Surveillance Program,
- identification of additional oral health indicators,
- collection and dissemination of data,
- identification of partners, and
- assessment of evaluation needs and how to address them.

The following tables (**Tables XIV-A, XIV-B, XIV-C**) summarize the types of oral health surveillance data currently available, gaps in data availability, and current efforts and/or plans to address many of the identified gaps.

**TABLE XIV-A: New York State Oral Health Surveillance System  
Availability of Data on Oral Health Status**

Item	Available	Comments
Dental caries experience in children aged 1 to 4 years	no	Programs funded under the Innovative Services and Preventive Dentistry grants will be required to report data on a quarterly basis using the Dental Forms Collection System (DFCS).
Dental caries experience in children aged 6 to 8 years	yes	Data currently collected on 3 <sup>rd</sup> grade students. Additional data will be available from funded contractors providing dental services to at risk children. Data to be reported using the DFCS.
Dental caries experience in adolescents (aged 15 years)	no	Plan to have funded contractors submit data using the DFCS.
Untreated dental caries in children aged 2 to 4 years	yes	Data available from annual Head Start Program Information Report (PIR) on the number of children in Head Start and Early Head Start with a completed oral health examination diagnosed as needing treatment. Additional data to be collected from funded contractors using the DFCS.
Untreated dental caries in children aged 6 to 8 years	yes	Data currently collected on 3 <sup>rd</sup> grade students. Additional data will be available from funded contractors providing dental services to at risk children. Data to be reported using the DFCS.
Untreated dental caries in adolescents	no	Plan to have funded contractors submit data using the DFCS.
Untreated dental caries in adults	no	
Dental problems during pregnancy	yes	Data available from PRAMS for low income women; does not specify nature of the problem.
Adults with no tooth loss	periodic	Data available from BRFSS.
Edentulous older adults	periodic	Data available from BRFSS.
Gingivitis	no	Plan to collect Medicaid claims and expenditure data for procedural code D4210.
Periodontal disease	no	Plan to collect Medicaid claims and expenditure data for procedural codes D4341 and D4910.
Craniofacial malformations	yes	Data available from NYS Malformation Registry for cleft lip, cleft palate, and cleft lip and palate.
Oro-facial injuries	no	
Oral and pharyngeal cancer incidence	yes	Data available from NYS Cancer Registry, including county-level data.
Oral and pharyngeal cancer mortality	yes	Data available from NYS Cancer Registry, including county-level data.
Oral and pharyngeal cancer detected at earliest stage	yes	Data available from NYS Cancer Registry, including county-level data.

Item	Available	Comments
Oral health status and needs of older adults	no	Exploring variety of mechanisms to conduct oral health surveillance of active and homebound elderly. Surveillance tool to be used is in draft form.
Oral health status and needs of diabetics	no	Limited data from BRFSS. Additional data may become available from elderly oral health surveillance.
Children under 6 years of age receiving dental treatment in hospital operating rooms	yes	Data available from SPARCS.

**TABLE XIV-B: New York State Oral Health Surveillance System  
Availability of Data on Prevention Activities**

Item	Available	Comments
Oral and pharyngeal cancer exam within past 12 months	no	
Dental sealants: Children, aged 8 years (1 <sup>st</sup> molars)	yes	Data currently collected on 3 <sup>rd</sup> grade students. Additional data will be available from funded contractors providing dental services to at risk children. Data to be reported using SEALS..
Dental sealants: Adolescents aged 14 years (1 <sup>st</sup> and 2 <sup>nd</sup> molars)	no	Plan to have funded contractors submit data using the DFCS. Data available from Medicaid on percent of recipients 5-15 years of age with sealants.
Population served by fluoridated water systems	yes	Data available from WFRS.
Adults: Dental visit in past 12 months	periodic	Data available from BRFSS.
Adults: Teeth cleaned in past 12 months	periodic	Data available from BRFSS.
Elderly: Use of oral health care system by residents in long term care facilities	no	Explore feasibility of adding oral health care items to nursing home inspections conducted by the Health Department.
Elderly: Dental visit in past 12 months	periodic	Data available from BRFSS. Exploring variety of mechanisms to conduct oral health surveillance of active and homebound elderly. Surveillance tool to be used is in draft form.
Elderly: Teeth cleaned in past 12 months	periodic	Data available from BRFSS.
Low-income children and adolescents receiving preventive dental care during past 12 months, aged 0-18 years	yes	Data available from Medicaid on annual dental visits and dental sealants.
Children < 21 with an annual Medicaid dental visit	yes	Data available from Medicaid and EPSDT Participation Report on annual dental visits.

Item	Available	Comments
Children < 21 with an annual Medicaid Managed Care dental visit	yes	Data on annual dental visits available from Medicaid and State Managed Care Plan Performance Report.
Children < 21 with an annual Child Health Plus B dental visit	yes	Data on annual dental visits available from Medicaid and State Managed Care Plan Performance Report.
Low-income adults receiving annual dental visit	yes	Periodically available from BRFSS; routinely available from Medicaid and from Bureau of Primary Health Care Section 330 Grantees Uniform Data System.
Low income pregnant women receiving dental care during pregnancy	yes	Data available on dental visit and dental counseling experience from PRAMS.

**TABLE XIV-C: New York State Oral Health Surveillance System  
Availability of Data on the New York State Dental Work Force**

Item	Available	Comments
Dental workforce: distribution	yes	Expand availability of data by including series of practice-related questions to license-recertification process.
Dental workforce: characteristics	no	Plan to include a series of questions to license-recertification process to obtain the data.
Number of oral health care providers serving people with special needs.	no	
Minority enrollment in schools of dentistry and dental hygiene programs reflect racial/ethnic distribution of the population	yes	Data available from State Dental Schools and U.S. Bureau of the Census.
Number of dentists actively participating in Medicaid Program	yes	Data available from Medicaid.
Medicaid expenditures for dental services	yes	Data available from Medicaid, NYS Personal Health Care Expenditure reports, National Health Expenditure Data reports, and Medical Expenditure Survey Panel.
Utilization of dental services by Medicaid recipients	yes	Data available from Medicaid, EPSDT Participation Report, and Medicaid and State Managed Care Plan Performance Report.

Grant monies from CDC will also be used by the Bureau of Dental Health to provide technical assistance and training to local agencies on oral health surveillance. One such training on the use of SEALS was held August 2006 for program staffs currently operating and/or planning to implement Sealant Programs. The training provided stakeholders with tools to improve evaluation capacity and the statewide tracking of sealants programs, updated participants on clinical materials and techniques, and enabled attendees to share experiences, best practices, and lessons learned.

The Bureau of Dental Health and Bureau of Water Supply Protection recently held a 6-hour training course for water treatment facility operators employed by public water systems that add fluoride. Information on the health benefits and regulatory aspects of community water fluoridation and the most current information regarding fluoride additives, equipment, analysis, safety, and operation were provided to water treatment facility operators and staffs from local departments of health. The Water Fluoridation Reporting System was also discussed and why the daily and monthly reporting of fluoride levels are so important to maintain the quality of the fluoridation program.

### **New York State Oral Cancer Control Partnership**

The New York State Oral Cancer Control Partnership is a three-year initiative funded by the National Institute of Dental and Craniofacial Research. This \$300,000 grant will be used to design and implement future interventions to prevent and reduce oral cancer mortality and morbidity. Several studies will be conducted to assess disease burden as well as knowledge, attitude and behavior, and practice patterns of health care providers. The first phase of the initiative is to (a) support an epidemiological assessment of the level of oral cancer within the State; (b) assess the level of knowledge of oral cancer risk factors among health professionals and the public, (c) document and assess practices in diagnosing oral cancers in health professionals, and (d) assess whether the public is receiving an oral cancer examination annually from a health care provider.

### **Improving Systems of Care**

A total of \$65,000 in HRSA funding is available annually. Part of the money has been used to implement a system to authorize school-based dental programs and allow them to bill for services rendered in school settings. School-based programs can utilize either a mobile van or portable dental equipment. Currently operating school-based dental programs will be required to submit applications for approval, and all new projects will need to be authorized before they provided services. There are presently 12 school-based dental programs in the State that have been approved under the new process. There are currently 22 grant-funded stand-alone school-based dental programs. These school-based dental programs are in addition to the 9 previously described HRSA-funded Section 330 School-Based Health Service Programs providing dental services at school-based health centers.

## VII. CONCLUSIONS

New York State has a strong commitment to expanding the availability of and access to quality, comprehensive, and continuous oral health care services for all New Yorkers; in reducing the burden of oral disease, especially among minority, low income, and special needs populations; and in eliminating disparities for vulnerable populations.

Compared to their respective national counterparts:

- more New York State adults have never lost a tooth as a result of caries or periodontal disease and fewer older adults have lost all of their natural teeth,
- more children and adults visited a dentist or dental clinic within the past year,
- more children and adults had their teeth cleaned in the last year,
- fewer adults are smoking and fewer high school students are smoking or using smokeless tobacco, and
- more New Yorkers are being diagnosed with oral cavity and pharyngeal cancers at an earlier stage and less are dying from these cancers.

Additionally, more New Yorkers now have access to dental services through Family Health Plus, Child Health Plus B, Medicaid, school-based oral health programs, community health centers, and through special programs targeting the homeless, migrant/seasonal agricultural workers, and residents of public housing sites.

Although New York State has made substantial gains over the past five decades in improving the oral health of its citizens, more remains to be done if disparities in oral health and the burden of oral disease are to be further reduced. Toward this end, New York State has established the following oral health goals:

- ☒ To promote oral health as a valued and integral part of general health across the life cycle.
- ☒ To address risk factors for oral diseases by targeting population groups and utilizing proven interventions.
- ☒ To address gaps in needed information on oral diseases and effective prevention strategies.
- ☒ To educate the public and dental and health care professionals about the importance of an annual oral cancer examination and the early detection and treatment of oral cancers as effective strategies for reducing morbidity and decreasing mortality.
- ☒ To expand services to vulnerable populations and to measure the subsequent success of those efforts in eliminating disparities in oral health.
- ☒ To expand the New York State Oral Health Surveillance System to provide more comprehensive and timely data, to collect data from additional sources, and to be able to assess the oral health needs of special population groups.

- ☒ To utilize data collected from the New York State Oral Health Surveillance System to monitor oral diseases, risk factors, access to programs and utilization of dental services, and workforce capacity and accessibility, and to assess progress towards the elimination of oral health disparities and burden of oral disease.
- ☒ To establish regional oral health networks and formalize a statewide coalition to promote oral health, identify prevention opportunities, address access to dental care in underserved communities throughout the State, and to make recommendations on laws and regulations that affect the provision of dental services, the financing of dental education, approaches to address disparities in oral health, and the strengthening of the dental health workforce.

*The New York State Oral Health Plan* provides strategic guidance to governmental agencies, health and dental professionals, dental health organizations and advocacy groups, businesses, and communities in eliminating disparities in oral health, reducing the burden of oral disease, and in achieving optimal oral health for all New Yorkers. Expansion of the New York State Oral Health Surveillance System will provide needed data on the incidence and prevalence of oral diseases, risk factors, and service availability and utilization in order to track trends, monitor the oral health status of specific subpopulation groups and vulnerable populations, evaluate the effectiveness of different intervention strategies, and measure statewide progress in the elimination of oral health disparities and reduction in the burden of oral disease.

*The Burden of Oral Disease in New York State* provides comprehensive baseline data on the oral health of New Yorkers, comparative data on the status of oral health among various populations and subpopulation groups, the amount of dental care already being provided, the effects of other actions which protect or damage oral health, and current disparities in oral health and the burden of oral disease. *The Burden of Oral Disease in New York State* is a fluid document, designed to be periodically updated as new information and data become available in order to measure the effectiveness of interventions in improving oral health, eliminating disparities, and reducing the burden of oral disease; support the development of new interventions; and facilitate the establishment of additional priorities for surveillance and future research.

The Bureau of Dental Health, New York State Department of Health, trusts that readers will find *The Burden of Oral Disease in New York State* a useful tool in helping them to achieve a greater understanding of oral health and the factors influencing the oral health of New Yorkers.

## VIII. REFERENCES

- Allied Dental Education in U.S. At-A-Glance*. American Dental Education Association, ADEA Institute for Policy and Advocacy, 2003.
- Amar S, Chung KM. *Influence of hormonal variation on the periodontium in women*. *Periodontol* 2000 1994;6:79-87.
- American Academy of Periodontology. *Position paper: Tobacco use and the periodontal patient*. *J Periodontol* 1999;70:1419-27.
- American Community Survey 2003 Data Profile: New York*. Table3. Selected Economic Characteristics. U.S. Census Bureau. <http://www.census.gov/acs>. Accessed 10/6/05.
- American Dental Association. *Distribution of dentists in the United States by Region and State, 1997*. Chicago, IL: American Dental Association Survey Center; 1999.
- American Dental Hygienists' Association. *Education and Career Information*. <http://www.adha.org/careerinfo/entry/ny.htm>. Accessed 10/24/05.
- Annual EPSDT Participation Report, January 20, 2005, New York FY: 2003*. <http://new.cms.hhs.gov/MedicaidEarlyPeriodicScrn/Downloads/FY2003EPSDTStateReport.pdf>. Accessed March 6, 2006.
- Beck JD, Offenbacher S, Williams R, Gibbs P, Garcia R. *Periodontics: a risk factor for coronary heart disease?* *Ann Periodontol* 1998;3(1):127-41.
- Blot WJ, McLaughlin JK, Winn DM, et al. *Smoking and drinking in relation to oral and pharyngeal cancer*. *Cancer Res* 1988;48(11):3282-7.
- Brown LJ, Wagner KS, Johns B. *Racial/ethnic variations of practicing dentists*. *J Am Dent Assoc* 2000; 131:1750-4.
- Bureau of Primary Health Care. *Community Health Centers: program information*. Available at: <http://www.bphc.hrsa.gov/programs/CHCPrograminfo.asp>. Accessed 01/13/05.
- Burt BA, Eklund BA. *Dentistry, dental practice, and the community*. 5th ed. Philadelphia: WB Saunders; 1999.
- Centers for Disease Control and Prevention. *Achievements in public health, 1900-1999: fluoridation of drinking water to prevent dental caries*. *MMWR* 1999;48(41):933-40.
- Centers for Disease Control and Prevention. *Annual smoking-attributable mortality, years of potential life lost, and economic costs - United States, 1995-1999*. *MMWR* 2002;51(14):300-3.
- Centers for Disease Control and Prevention, *Oral Health Resources: Synopses by State, New York State-2005*. <http://apps.nccd.cdc.gov/synopses/StateData>. Accessed 8/3/06.

Centers for Disease Control and Prevention. *Populations receiving optimally fluoridated public drinking water - United States, 2000*. MMWR 2002;51(7):144-7.

Centers for Disease Control and Prevention. *Preventing and controlling oral and pharyngeal cancer*. Recommendations from a national strategic planning conference. MMWR 1998; 47(No. RR-14):1-12.

Centers for Disease Control and Prevention. *Recommendations for using fluoride to prevent and control dental caries in the United States*. MMWR Recomm Rep 2001;50(RR-14):1-42.

Centers for Disease Control and Prevention. *Surveillance for Dental Caries, Dental Sealants, Tooth Retention, Edentulism, and Enamel Fluorosis – United States, 1988-1994 and 1999-2002*. In Surveillance Summaries, August 26, 2005. MMWR 2005;54(No. SS-3).

Centers for Disease Control and Prevention. Healthy Youth: YRBSS Youth on Line: Comprehensive Results. *New York All Years: Percentage of Students Who Smoked Cigarettes on One or More of the Past 30 Days (1997-2003)*. <http://apps.nccd.cdc.gov/yrbss/htm>. Accessed 10/19/05.

Centers for Disease Control and Prevention. Healthy Youth: YRBSS Youth on Line: Comprehensive Results. *New York All Years: Percentage of Students Who Used Chewing Tobacco or Snuff on One or More of the Past 30 Days (1997-2003)*. <http://apps.nccd.cdc.gov/yrbss/htm>. Accessed 10/19/05.

Centers for Disease Control and Prevention, School Health Policies and Program Study SHPPS 2000. *School Health Program Report Card: New York*. <http://www.cdc.gov/nccdphp/dash/shpps/summaries/index.htm>. Accessed 10/19/05.

Centers for Medicare and Medicaid Services, Center for Medicaid and State Operations, Revised 01/26/06. *Fiscal Year 2003 National MSIS Tables*. <http://www.cms.hhs.gov/MedicaidDataSourcesGenInfo/downloads/MSISTables2003.pdf>. Accessed 8/3/06.

Centers for Medicare and Medicaid Services. *National Health Expenditures, Selected Calendar Years 1980-2003*. [http://www.cms.hhs.gov/nationalhealthexpendituredata/downloads/nhe\\_tables.pdf](http://www.cms.hhs.gov/nationalhealthexpendituredata/downloads/nhe_tables.pdf). Accessed 12/14/05.

Centers for Medicare and Medicaid Services. *National Health Expenditure (NHE) amounts by type of expenditure and source of funds: calendar years 1965-2013*. Updated October 2004. Available at: <http://www.cms.hhs.gov/oralhealth/6.asp>

Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group, 2005. <http://www.cms.hhs.gov/statistics/nhe/definitions-sources-methods>. Accessed 12/14/05

Children's Dental Health Project Policy Brief: *Preserving the Financial Safety Net by Protecting Medicaid & SCHIP Dental Benefits*, May 2005.

Child Trends Data Bank. *Unmet Dental Needs*. <http://www.childtrendsdatbank.org>. Accessed 12/15/05.

Christen AG, McDonald JL, Christen JA. *The impact of tobacco use and cessation on nonmalignant and precancerous oral and dental diseases and conditions*. Indianapolis, IN: Indiana University School of Dentistry; 1991.

Cooke T. Unpublished oral cancer expenditure data. Bureau of Dental Health, New York State Department of Health, December 2005.

Dasanayake AP. *Poor periodontal health of the pregnant woman as a risk factor for low birth weight*. Ann Periodontol 1998;3:206-12.

Davenport ES, Williams CE, Sterne JA, Sivapathasundram V, Fearne JM, Curtis MA. *The East London study of maternal chronic periodontal disease and preterm low birth weight infants: study design and prevalence data*. Ann Periodontol 1998;3:213-21.

*Dental Hygiene: Focus on Advancing the Profession*, American Dental Hygienists' Association, June 2005.

Dental Visits Among Dentate Adults with Diabetes – United States, 1999 and 2004. MMWR, 2005; 54(46):1181-1183.

De Stefani E, Deneo-Pellegrini H, Mendilaharsu M, Ronco A. *Diet and risk of cancer of the upper aerodigestive tract--I. Foods*. Oral Oncol 1999;35(1):17-21.

Fiore MC, Bailey WC, Cohen SJ, et al. *Treating tobacco use and dependence. Clinical practice guideline*. Rockville, MD: US Department of Health and Human Services, Public Health Service; 2000. Available at: [http://www.surgeongeneral.gov/tobacco/treating\\_tobacco\\_use.pdf](http://www.surgeongeneral.gov/tobacco/treating_tobacco_use.pdf)

Gaffield ML, Gilbert BJ, Malvitz DM, Romaguera R. *Oral health during pregnancy: an analysis of information collected by the pregnancy risk assessment monitoring system*. J Am Dent Assoc 2001;132(7):1009-16.

Genco RJ. *Periodontal disease and risk for myocardial infarction and cardiovascular disease*. Cardiovasc Rev Rep 1998;19(3):34-40.

Griffin SO, Jones K, Tomar SL. *An economic evaluation of community water fluoridation*. J Public Health Dent 2001;61(2):78-86.

Head Start Program Information Report for the 2004-2005 Program Year. Health Services Report - State Level Summary and National Summary data, 12/1/05.

*Health Care Workforce in New York State, 2004: Trends in Supply and Demand for Health Workers*, Center for Health Workforce Studies, School of Public Health, University at Albany, May 2005

Health Resources and Services Administration Bureau of Health Professions. The New York State Health Workforce: Highlights from the Health Workforce Profile. <http://bhpr.hrsa.gov/healthworkforce/reports/statesummaries/newyork.htm>. Accessed 12/14/05.

Health Resources and Services Administration Bureau of Primary Health Care. *Section 330 Grantees Uniform Data System (UDS): New York Rollup Report, Calendar Year 2004 Data*. July 7, 2005.

Herrero R. *Chapter 7: Human papillomavirus and cancer of the upper aerodigestive tract*. J Natl Cancer Inst Monogr 2003; (31):47-51.

Institute for Urban Family Health, May 2004. *New York State Health Professionals in Health Professional Shortage Areas: A Report to the New York State Area Health Education Centers System*. <http://www.ahec.buffalo.edu>. Accessed 8/3/06.

International Agency for Research on Cancer (IARC). IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 89, *Smokeless tobacco and some related nitrosamines*. Lyon, France: World Health Organization, International Agency for Research on Cancer; 2005 (in preparation).

Johnson NW. *Oral Cancer*. London: FDI World Press, 1999.

Komaromy M, Grumbach K, Drake M, Vranizan K, Lurie N, Keane D, Bindman AB. *The role of black and Hispanic physicians in providing health care for underserved populations*. N Engl J Med 1996; 334(20):1305-10.

Kressin NR, De Souza MB. *Oral health education and health promotion*. In: Gluck GM, Morganstein WM (eds). *Jong's community dental health*, 5th ed. St. Louis, MO: Mosby; 2003:277-328.

Kumar JV, Altshul D, Cooke T, Green E. *Oral Health Status of 3<sup>rd</sup> Grade Children: New York State Oral Health Surveillance System*. Bureau of Dental Health, New York State Department of Health, July 15, 2005.

Kumar JV, Cooke T, Altshul D, Green E, Byrappagari D. *Oral Health Status of 3<sup>rd</sup> Grade Children in New York City: A Report from the New York State Oral Health Surveillance System*. Bureau of Dental Health, New York State Department of Health, July 1, 2004.

Levi F. *Cancer prevention: epidemiology and perspectives*. Eur J Cancer 1999;35(14):1912-24.

McLaughlin JK, Gridley G, Block G, et al. *Dietary factors in oral and pharyngeal cancer*. J Natl Cancer Inst 1988;80(15):1237-43.

Mealey BL. *Periodontal implications: medically compromised patients*. Ann Periodontol 1996;1(1):256-321.

Morse DE, Pendrys DG, Katz RV et al. *Food group intake and the risk of oral epithelial dysplasia in a United States population*. Cancer Causes Control 2000; 11(8): 713-20.

National Cancer Institute, SEER Surveillance Epidemiology and End Results, Cancer Stat Fact Sheets: Cancer of the Oral Cavity and Pharynx. <http://seer.cancer.gov/statfacts/html/oralcav.html>. Accessed 5/4/06.

National Center for Chronic Disease Prevention & Health Promotion, Behavioral Risk Factor Surveillance System, Prevalence Data, Alcohol Consumption: New York - 2004. <http://apps.nccd.cdc.gov/brfss.htm>. Accessed 10/13/05.

National Center for Chronic Disease Prevention & Health Promotion, Behavioral Risk Factor Surveillance System, Prevalence Data, Health Care Access/Coverage, New York, 2004, <http://apps.nccd.cdc.gov/brfss.htm>. Accessed 12/13/05.

National Center for Chronic Disease Prevention & Health Promotion, Behavioral Risk Factor Surveillance System, Prevalence Data, Oral Health, New York State, 2002, 2002 vs 1999, 2004. <http://apps.nccd.cdc.gov/brfss.htm>. Accessed 10/26/05

National Center for Chronic Disease Prevention & Health Promotion, Behavioral Risk Factor Surveillance System, Prevalence Data, Tobacco Use: New York - 2004. <http://apps.nccd.cdc.gov/brfss.htm>. Accessed 10/13/05.

National Center for Chronic Disease Prevention & Health Promotion, Behavioral Risk Factor Surveillance System, Trends Data, New York: Current Smokers. <http://apps.nccd.cdc.gov/brfss/trends.htm>. Accessed 10/19/05.

National Center for Chronic Disease Prevention & Health Promotion, *Oral Health Resources, Synopses by State: New York - 2004*. <http://www2.cdc.gov/nccdphp/doh/synopses/statedata/htm>. Accessed 10/13/05.

National Center for Health Statistics. *Health, United States, 2004, with chartbook on trends in the health of Americans*. Hyattsville, Maryland: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics; 2004. DHHS Publication No. 2004-1232. Available at: <http://www.cdc.gov/nchs/data/hus/hus04.pdf>

National Center for Health Statistics, Centers for Disease Control and Prevention, National Health and Nutrition Examination Survey (NHANES III), 1988-1994, *Smokeless Tobacco Lesions Among Adults Aged 18 and Older by Selected Demographic Characteristics*. [http://drc.nidcr.nih.gov/report/dqs\\_tables/dqs\\_12\\_1\\_2.htm](http://drc.nidcr.nih.gov/report/dqs_tables/dqs_12_1_2.htm). Accessed 10/20/05.

National Center for Health Statistics, Centers for Disease Control and Prevention, National Health Interview Surveys, *Adults Aged 40 and Older Reporting Having Had an Oral and Pharyngeal Cancer Examination (1992 and 1998)*. [http://drc.nidcr.nih.gov/report/dqs\\_tables/dqs\\_13\\_2\\_1.htm](http://drc.nidcr.nih.gov/report/dqs_tables/dqs_13_2_1.htm). Accessed 10/20/05.

National Survey of Children's Health, *New York State Profile, 2003*. <http://nschdata.org>. Accessed January 3, 2006.

New York State Dental Association. *Dental Hygiene Schools in New York State*. <http://www.nysdental.org>. Accessed 10/21/05.

New York State Dental Association. *Dental Schools in New York State*. <http://www.nysdental.org>. Accessed 10/21/05.

New York State Department of Health. *Behavioral Risk Factor Surveillance System: Oral Health Module Supplemental Questions, 2003*.

New York State Department of Health Office of Medicaid Management. *Calendar Year 2004 Medicaid Eligibility*. [http://www.health.state.ny.us/nysdoh/medstat/el2004/cy\\_04\\_el.htm](http://www.health.state.ny.us/nysdoh/medstat/el2004/cy_04_el.htm). Accessed 12/14/05.

New York State Department of Health, Office of Medicaid Management, Fiscal and Program Planning Data Mart, November 9, 2005.

New York State Department of Health Office of Medicaid Management. *Calendar Year 2004 Medicaid Eligibility*. [http://www.health.state.ny.us/nysdoh/medstat/el2004/cy\\_04\\_el.htm](http://www.health.state.ny.us/nysdoh/medstat/el2004/cy_04_el.htm). Accessed 12/14/05.

New York State Department of Health Office of Medicaid Management. *June 2005 Medicaid Eligibility*. [http://www.health.state.ny.us/nysdoh/medstat/el2005/Jun\\_05\\_el.htm](http://www.health.state.ny.us/nysdoh/medstat/el2005/Jun_05_el.htm). Accessed 10/27/05.

New York State Department of Health Office of Medicaid Management. *Medicaid Expenditure Report Prepaid Services Expenditures January-December 2004*. [http://www.health.state.ny.us/nysdoh/medstat/ex2004/prepaid\\_cy\\_04.htm](http://www.health.state.ny.us/nysdoh/medstat/ex2004/prepaid_cy_04.htm). Accessed 10/6/05.

New York State Department of Health Office of Medicaid Management. *Medicaid Expenditure Fee for Service Report January-December 2004*. [http://www.health.state.ny.us/nysdoh/medstat/ex2004/ffsl\\_cy\\_04.htm](http://www.health.state.ny.us/nysdoh/medstat/ex2004/ffsl_cy_04.htm). Accessed 10/6/05.

New York State Department of Health, *Pregnancy Risk Assessment and Monitoring System (PRAMS)*, 2002.

New York State Department of Health, *Pregnancy Risk Assessment and Monitoring System (PRAMS) 1996-1999 Surveillance Report*, March 2003.

New York State Department of Health, New York State Cancer Registry, 1998-2002.

New York State Department of Health, *Oral Health Plan for New York State*, August 2005.

New York State Department of Health, *Percent Uninsured for Medical Care by Age*, [http://www.health.state.ny.us/nysdoh/chac/cha/unins1\\_00.htm](http://www.health.state.ny.us/nysdoh/chac/cha/unins1_00.htm). Accessed 10/5/05.

New York State Department of Labor, Labor Market Information, *Occupational Outlook, 2002-2012*. <http://www.labor.state.ny.us/workforceindustrydata/demand.asp>. Accessed 10/21/05.

New York State Education Department. *Health, Dental and Mental Health Clinics Located on School Property*. September 2005. <http://www.vesid.nysed.gov/specialed/publications/policy/chap513.htm>. Accessed 10/26/05.

New York State Education Department, Office of the Professions. *NYS Dentistry License Statistics*. <http://www.op.nysed.gov/dentcounts.htm>. Accessed 10/6/05.

New York State Managed Care Plan Performance Report on Quality, Access to Care, and Consumer Satisfaction, New York State Department of Health, December 2005

O'Connell JM, Brunson D, Anselmo T, Sullivan PW. *Cost and Savings Associated with Community Water Fluoridation Programs in Colorado*, Preventing Chronic Disease: Public Health Research, Practice, and Policy, Volume 2: Special Issue, November 2005.

Offenbacher S, Jared HL, O'Reilly PG, Wells SR, Salvi GE, Lawrence HP, Socransky SS, Beck JD. *Potential pathogenic mechanisms of periodontitis associated pregnancy complications*. Ann Periodontol 1998;3(1):233-50.

Offenbacher S, Lief S, Boggess KA, Murtha AP, Madianos PN, Champagne CM, McKaig RG, Jared HL, Mauriello SM, Auten RL Jr, Herbert WN, Beck JD. *Maternal periodontitis and prematurity. Part I: Obstetric outcome of prematurity and growth restriction*. Ann Periodontol 2001;6(1):164-74.

*Percent of Population Below 100% and 200% of the Federal Poverty Level: New York State*. Current Population Survey. [http://www.health.state.ny.us/nysdoh/chac/cha/povlev1\\_00.htm](http://www.health.state.ny.us/nysdoh/chac/cha/povlev1_00.htm). Accessed 10/5/2005.

Peterson PE, Yamamoto T. *Improving the Oral Health of Older People: The Approach of the WHO Global Oral Health Programme*. World Health Organization. [http://www.who.int/oral\\_health/publications/CDOE05\\_vol33/en/print.html](http://www.who.int/oral_health/publications/CDOE05_vol33/en/print.html). Accessed 9/2/2005.

Phelan JA. *Viruses and neoplastic growth*. Dent Clin North Am 2003; 47(3):533-43.

Redford M. *Beyond pregnancy gingivitis: bringing a new focus to women's oral health*. J Dent Educ 1993;57(10):742-8.

Ries LAG, Eisner MP, Kosary CL, Hankey BF, Miller BA, Clegg L, Mariotto A, Feuer EJ, Edwards BK (eds). *SEER Cancer Statistics Review, 1975-2003*, National Cancer Institute. Bethesda, MD; 2006. Available at: <http://seer.cancer.gov/csr/1975-2003/>. Accessed 5/3/06.

Scannapieco FA, Bush RB, Paju S. *Periodontal disease as a risk factor for adverse pregnancy outcomes. A systematic review*. Ann Periodontol. 2003;8(1):70-8.

Scott G, Simile C. *Access to Dental Care Among Hispanic or Latino Subgroups: United States, 2000-03*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. In *Advanced Data from Vital and Health Statistics*, 354: May 12, 2005.

Shanks TG, Burns DM. *Disease consequences of cigar smoking*. In: National Cancer Institute. *Cigars: health effects and trends*. Smoking and Tobacco Control Monograph 9 edition. Bethesda, MD: US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Cancer Institute, 1998.

Silverman SJ Jr. *Oral cancer. 4th Edition*. Atlanta, GA: American Cancer Society, 1998.

*Surveillance for Dental Caries, Dental Sealants, Tooth Retention, Edentulism, and Enamel Fluorosis – United States, 1988-1994 and 1999-2002*. MMWR, 2005, 54:SS-3.

Taylor GW. *Bidirectional interrelationships between diabetes and periodontal diseases: an epidemiologic perspective*. Ann Periodontol 2001;6(1):99-112.

Tomar SL, Asma S. *Smoking-attributable periodontitis in the United States: findings from NHANES III*. J Periodontol 2000;71:743-51.

Tomar SL, Husten CG, Manley MW. *Do dentists and physicians advise tobacco users to quit?* J Am Dent Assoc 1996;127(2):259-65.

U.S. Department of Health and Human Services. *The health consequences of using smokeless tobacco: a report of the Advisory Committee to the Surgeon General*. Bethesda, MD: US Department of Health and Human Services, Public Health Service; 1986. NIH Publication No. 86-2874.

U.S. Department of Health and Human Services. *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services, National Institutes of Health, National Institute of Dental and Craniofacial Research; 2000a. NIH Publication No. 00-4713.

U.S. Department of Health and Human Services. *Oral Health. In: Healthy People 2010 (2<sup>nd</sup> ed). With Understanding and Improving Health and Objectives for Improving Health*. 2 vols. Washington, DC: U.S. Government Printing Office; 2000b.

U.S. Department of Health and Human Services. *National Call to Action to Promote Oral Health*. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Dental and Craniofacial Research; 2003. NIH Publication No. 03-5303.

US Department of Health and Human Services. *The health consequences of smoking: a report of the Surgeon General*. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2004a. Available at: <http://www.cdc.gov/tobacco/sgr/sgr2004/index.htm>.

US Department of Health and Human Services. *Healthy People 2010 progress review: oral health*. Washington, DC: US Department of Health and Human Services, Public Health Service; 2004b. Available at: <http://www.healthypeople.gov/data/2010prog/focus21/>

Weaver RG, Chmar JE, Haden NK, Valachovic RW. *Annual ADEA Survey of Dental School Senior: 2004 Graduating Class*. J Dent Educ 2005;69(5):595-619.

Weaver RG, Ramanna S, Haden NK, Valachovic RW. *Applicants to U.S. dental schools: an analysis of the 2002 entering class*. J Dent Educ 2004;68(8):880-900.

World Health Organization. *Important Target Groups*. [http://www.who.int/oral\\_health/action/groups/en/print.html](http://www.who.int/oral_health/action/groups/en/print.html). Accessed 9/2/05.

World Health Organization. *Oral Health: Policy Basis*. . [http://www.who.int/oral\\_health/policy/en/print.html](http://www.who.int/oral_health/policy/en/print.html). Accessed 9/2/05.

World Health Organization. *What is the Burden of Oral Disease?* [http://www.who.int/oral\\_health/disease\\_burden/global/en/print.html](http://www.who.int/oral_health/disease_burden/global/en/print.html). Accessed 9/2/05.

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# Community Water Fluoridation



"...one of the 10 great public health achievements of the twentieth century."<sup>1</sup>



## Oral Health in New York State: A Fact Sheet

### What is the public health issue?

Oral health is integral to general health.<sup>2</sup> Tooth decay, although preventable, is a chronic disease affecting all age groups. In fact, it is the most common chronic disease of childhood.<sup>2</sup> The burden of disease is far worse for those who have limited access to prevention and treatment services. Left untreated, tooth decay can cause pain and tooth loss. Among children, untreated decay has been associated with difficulty in eating, sleeping, learning, and proper nutrition.<sup>3</sup> Among adults, untreated decay and tooth loss can also have negative effects on an individual's self-esteem and employability.

#### In the U.S., tooth decay<sup>3</sup> affects:

- ✓ 1 in 4 elementary school children
- ✓ 2 out of 3 adolescents
- ✓ 9 out of 10 adults

### What is the impact of fluoridation?

Fluoride added to community drinking water at a concentration of 0.7 to 1.2 parts per million has repeatedly been shown to be a safe, inexpensive, and extremely effective method of preventing tooth decay.<sup>2</sup> Because community water fluoridation benefits everyone in the community, regardless of age and socioeconomic status, fluoridation provides protection against tooth decay in populations with limited access to prevention services. In fact, for every dollar spent on community water fluoridation, up to \$42 is saved in treatment costs for tooth decay.<sup>4</sup> The Task Force on Community Preventive Services recently conducted a systematic review of studies of community water fluoridation. The Task Force is a national, independent, nonfederal, multidisciplinary task force appointed by the director of the Centers for Disease Control and Prevention (CDC). It found that, in communities that initiated fluoridation, the decrease in childhood decay was almost 30 percent over 3–12 years of follow-up.<sup>3</sup>

#### Related U.S. Healthy People 2010 Objectives<sup>5</sup>

- ✓ Seventy-five percent of the population on public water will receive optimally fluoridated water.
  - In **New York State**, 73% of the population on public water receives fluoridated water.
- ✓ Reduce to 20%, the percentage of adults age 65+ years who have lost all their teeth.
  - In **New York State**, 17% of adults age 65+ years have lost all of their teeth.
- ✓ Reduce tooth decay experience in children under 9 years old to 42%.
  - In **New York State**, 54% of children have experienced tooth decay by third grade.
- ✓ Reduce untreated dental decay in 2-4 year olds to 9%.
  - In **New York State**, 18% of children in Head Start/Early Head Start have untreated dental caries.
- ✓ Reduce untreated dental decay in 6-8 year olds to 21%.
  - In **New York State**, 33% of children 6-8 years of age have untreated dental caries.

## How is New York State doing?

Based on surveys conducted between 2002 and 2004, 54% of **New York State** third-graders had experienced tooth decay, while 33% were found to have untreated dental caries at the time of the survey. In 2004, 44% of **New York State** adults between 35 and 44 years of age had lost at least one tooth to dental decay or as a result of periodontal disease and 17% of New Yorkers between 65 and 74 years of age had lost all of their permanent teeth.

More than 12 million New Yorkers receive fluoridated water, with 73% of the population on public water systems receiving optimally fluoridated water in 2004. The percent of the State's population on fluoridated water was 100% in New York City and 46% in Upstate New York. Counties with large proportions of the population not covered by fluoridation are Nassau, Suffolk, Rockland, Ulster, Albany, Oneida, and Tompkins.

## What is New York State doing?

The Bureau of Dental Health, New York State Department of Health administers and oversees the School-Based Supplemental Fluoride Program. The Program targets children in fluoride deficient areas residing in Upstate New York communities not presently covered by a fluoridated public water system and is comprised of a school-based Fluoride Mouth Rinse Program for elementary school children and a Preschool Fluoride Tablet Program for 3-5 year olds in Head Start Centers and migrant childcare centers. In 2004, 115,000 children participated in the fluoride mouth rinse program and 6,000 children received fluoride supplements as either tablets or drops.

The Bureau of Dental Health, in collaboration with the New York State Department of Health's Bureau of Water Supply Protection, monitors the quality of fluoridation services statewide. Additionally, technical assistance is provided to communities interested in implementing water fluoridation.

### Strategies for New York State's Future

- ✓ Actively promote fluoridation in large communities with populations greater than 10,000 and in counties with low fluoride penetration rates.
- ✓ Continue the supplemental fluoride program in communities where fluoridation is not available and identify and remove barriers for implementing fluoride supplement programs in additional areas of the State.
- ✓ Develop and use data from well-water testing programs.
- ✓ Ensure the quality of the fluoridation program by monitoring fluoride levels in community water supplies, conduct periodic inspections, and provide feedback to water plant operators.
- ✓ Continue the education program for water plant personnel and continue funding support for the School-Based Supplemental Fluoride Program.
- ✓ Educate and empower the public regarding the benefits of fluoridation.

## References

1. Centers for Disease Control and Prevention. Fluoridation of drinking water to prevent dental caries. *Morbidity and Mortality Weekly Report* 48 (1999): 933–40.
2. U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research. *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, 2000.
3. Truman BI, Gooch BF, Sulemana I, et al., and the Task Force on Community Preventive Services. Reviews of evidence on interventions to reduce dental caries, oral and pharyngeal cancers, and sports-related craniofacial injury. *American Journal of Preventive Medicine* 23 (2002, 1S): 1–84.
4. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. *Preventing Dental Caries*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2002. [http://www.cdc.gov/OralHealth/factsheets/dental\\_caries.htm](http://www.cdc.gov/OralHealth/factsheets/dental_caries.htm).
5. U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. *Healthy People 2010*. Washington, DC: U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2000. <http://www.health.gov/healthypeople>.
6. Burt BA, Eklund SA. *Dentistry, Dental Practice, and the Community* (5th ed.). Philadelphia: W.B. Saunders, 1999.
7. *Oral Health Plan for New York State*, New York State Department of Health, August 2005 and *The Burden of Oral Disease in New York State*, Bureau of Dental Health, New York State Department of Health, March 2005 [draft].

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*Adapted from a fact sheet developed by the Oral Health Program, Bureau of Health, Maine Department of Human Services, 2004, in cooperation with the Association of State and Territorial Dental Directors and funding from Division of Oral Health, Centers for Disease Control and Prevention (cooperative agreement # U58/CCU723036-01) and Maternal and Child Health Bureau, Health Resources and Services Administration (cooperative agreement # U44MC00177-04-02). Photo credits: Mother and son at left, Andrea Schroll, RDH, BS, CHES, Illinois Department of Public Health; grandmother, mother, and daughter, Getty Images; water, Comstock Images.*

## Dental Sealants



"...effective in the primary prevention of tooth decay."<sup>1</sup>



### Oral Health in New York State: A Fact Sheet

#### What is the public health issue?

Oral health is integral to general health.<sup>2</sup> Tooth decay, although preventable, is a chronic disease affecting all age groups. In fact, it is the most common chronic disease of childhood.<sup>2</sup> The burden of disease is far worse for those who have restricted access to prevention and treatment services. Tooth decay, left untreated, can cause pain and tooth loss. Untreated tooth decay is associated with difficulty in eating and with being underweight.<sup>3</sup> Untreated decay and tooth loss can have negative effects on an individual's self-esteem and employability.

#### In the U.S., tooth decay<sup>3</sup> affects:

- ✓ 18% of children aged 2–4 years
- ✓ 52% of children aged 6–8 years
- ✓ 61% of teenagers aged 15 years

#### What is the impact of dental sealants?

Dental sealants are a plastic material placed on the pits and fissures of the chewing surfaces of teeth; sealants cover up to 90 percent of the places where decay occurs in school children's teeth.<sup>4</sup> Sealants prevent tooth decay by creating a barrier between a tooth and decay-causing bacteria. Sealants also stop cavities from growing and can prevent the need for expensive fillings. Sealants are 100 percent effective if they are fully retained on the tooth.<sup>2</sup> According to the Surgeon General's 2000 report on oral health, sealants have been shown to reduce decay by more than 70 percent.<sup>1</sup> The combination of sealants and fluoride has the potential to nearly eliminate tooth decay in school age children.<sup>5</sup> Sealants are most cost-effective when provided to children who are at highest risk for tooth decay.<sup>6</sup>

#### Why are school-based dental sealant programs recommended?

In 2002, the Task Force on Community Preventive Services strongly recommended school sealant programs as an effective strategy to prevent tooth decay.<sup>3</sup> The Task Force is a national, independent, nonfederal, multidisciplinary task force appointed by the director of the Centers for Disease Control and Prevention (CDC). CDC estimates that if 50 percent of children at high risk participated in school sealant programs, over half of their tooth decay would be prevented and money would be saved on their treatment costs.<sup>4</sup> School-based sealant programs reduce oral health disparities in children.<sup>7</sup>

#### Healthy People 2010 Objectives<sup>8</sup>

- ✓ 50% of 8 year olds will have dental sealants on their first molars.
  - In **New York State**, 27% of 8 year olds had sealant on their first molars.
- ✓ Reduce caries experience in children below 9 years of age to 42%.
  - 54% of children in **New York State** have experienced tooth decay by 3<sup>rd</sup> grade.

## How is New York State doing?

Based on a survey of third grade students<sup>9</sup> conducted between 2002 and 2004:

- ✓ 27% of third-graders (age 8 years) had at least one dental sealant.
- ✓ A lower proportion of third graders eligible for free or reduced school lunch (17.8%) had dental sealants on their 1<sup>st</sup> molars compared to children from higher income families (41.1%).
- ✓ 54.1% of third graders had experienced tooth decay.
- ✓ 33.1% of third graders had untreated tooth decay.

## What is New York State doing?

- ✓ **New York State** has 75 school-based or school-linked dental clinics and 70 school-based health centers with an oral health component. During 2004, 40,000 children had dental sealants applied to one or more molars.
- ✓ In **New York State**, 73% of communities have optimal levels of fluoride in their drinking water.
- ✓ Between 2002 and 2004, 73.4% of all New York State 3<sup>rd</sup> graders had a dental visit in the past year
- ✓ 60.9% of 3<sup>rd</sup> graders eligible for free or reduced school lunch had a dental visit in the prior year compared to 86.9% of higher income children.
- ✓ In 2003, 38% of children ages 4 through 21 years in Medicaid Managed Care Plans and 47% of children 4 to 18 years of age in Child Health Plus had an annual dental visit.
- ✓ The percentage of children having an annual dental visit increased by nearly 16% from 2003 to 2004 for children in Medicaid Managed Care plans and by almost 13% for children enrolled in Child Health Plus.

### Strategies for New York State's Future

- ✓ Continue to promote and fund school-based dental sealants and other population-based programs, such as water fluoridation.
- ✓ In August 2004, new legislation went into effect in **New York State** that would improve access to health services for preschool and school-aged children by allowing dental clinics to be located on school property.
- ✓ Require oral health screening as part of the school physical examination in appropriate grade levels.
- ✓ Promote dental sealants by providing sealant equipment and funding to selected providers in targeted areas where dental sealant utilization is low.
- ✓ Encourage Article 28 facilities to establish school-based dental health centers in schools and Head Start Centers to promote preventive dental services in high need areas.
- ✓ Provide funding through a competitive solicitation for programs targeting dental services to high risk children, including prevention and early treatment of early childhood caries, sealants, and improved access to primary and preventative dental care and medically-necessary orthodontic services for children in dentally underserved areas of the State and in areas where disparities in oral health outcomes exist.

## References

1. National Institutes of Health (NIH). Consensus Development Conference on Diagnosis and Management of Dental Caries Throughout Life. Bethesda, MD. March 26–28, 2001. Conference Papers. *Journal of Dental Education* 65 (2001): 935–1179.
2. U.S. Department of Health and Human Services. *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Institute of Dental and Craniofacial Research, 2000.
3. Truman BI, Gooch BF, Sulemana I, et al., and the Task Force on Community Preventive Services. Reviews of evidence on interventions to reduce dental caries, oral and pharyngeal cancers, and sports-related craniofacial injury. *American Journal of Preventive Medicine* 23 (2002, 1S): 1–84.
4. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. *Preventing Dental Caries*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2002. [http://www.cdc.gov/OralHealth/factsheets/dental\\_caries.htm](http://www.cdc.gov/OralHealth/factsheets/dental_caries.htm).
5. Kim S, Lehman AM, Siegal MD, Lemeshow S. Statistical model for assessing the impact of targeted, school-based dental sealant programs on sealant prevalence among third graders in Ohio. *Journal of Public Health Dentistry* 63 (Summer 2003): 195–199.
6. Burt BA, Eklund SA. *Dentistry, Dental Practice, and the Community* (5th ed.). Philadelphia: W.B. Saunders, 1999.
7. Weintraub JA, Stearns SC, Burt BA, Beltran E, Eklund SA. A retrospective analysis of the cost-effectiveness of dental sealants in a children's health center. *Social Science & Medicine* 36 (1993, 11): 1483–1493.
8. U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. *Healthy People 2010*. Washington DC: U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2000. <http://www.health.gov/healthypeople>.
9. *Oral Health Plan for New York State*, New York State Department of Health, August 2005 and *The Burden of Oral Disease in New York State*, Bureau of Dental Health, New York State Department of Health, March 2005 [draft].

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# Children's Oral Health in New York State

## *Percentage of 3<sup>rd</sup> grade children with dental caries and untreated dental decay and percent of children receiving preventive dental care services*



### Definition:

Children's oral health comprises a broad range of dental and oral disorders. Dental caries is a disease in which acids produced by bacteria on the teeth lead to loss of minerals from the enamel and dentin, the hard substances of teeth. Unchecked, dental caries can result in loss of tooth structure, inadequate tooth function, unsightly appearance, pain, infection, and tooth loss. The prevalence of decay in children is measured through the assessment of caries experience (if they have ever had decay and now have fillings), untreated decay (active unfilled cavities), and urgent care (reported pain or a significant dental infection that requires immediate care).

Caries experience and untreated decay are monitored by the New York State Oral Health Surveillance System, which includes data collected from annual oral health surveys of third grade children throughout the State. Dental screenings are conducted to obtain data related to dental caries and sealant use. A questionnaire is used to gather data on last dental visit, fluoride tablet use and dental insurance. The following data are derived from a 2002-2004 survey of 3<sup>rd</sup> grade children and include information on a randomly selected sample of children from 357 schools.

### Significance:

Dental caries in children is the single most prevalent chronic disease and is four times more common than childhood asthma and seven times more common than hay fever. Although dental caries is preventable, many children unnecessarily suffer the consequences because of poor oral care and the inability to access preventive and treatment services in a timely manner. Untreated dental disease in children can lead to chronic pain, medical complications, early tooth loss, impaired speech development, poor nutrition and resultant failure to thrive or impaired growth, inability to concentrate in school and missed school days, and reduced self-esteem.

Healthy People 2010 oral health targets for children are caries experience and untreated caries for 6 to 8 year olds of 42% and 21%, respectively, 50% prevalence of dental sealants, use of the oral health care system during the past year by 56% of children, and elimination in disparities in the oral health of children.

### Findings:

#### Third Grade Children

- ⇒ 54.1% of children experienced tooth decay.
- ⇒ 33.1% of children have untreated dental decay; a higher percentage of children in NYC (38%) have untreated dental caries.
- ⇒ Children from lower income groups in New York State, New York City, and in Rest of State experienced more caries (60%, 56%, and 66%, respectively) and more untreated dental decay (41%, 40%, and 42%, respectively) than their higher income counterparts.
- ⇒ Racial and ethnic minority children and children from lower socioeconomic groups experienced a greater burden of oral disease.
- ⇒ 73.4% of children had a dental visit in the past year; a lower proportion of lower-income children (60.9%) had visited a dentist in the last year compared to higher-income children (86.9%).
- ⇒ Fluoride tablets are prescribed to children living in areas where water is not fluoridated. New York City children receive fluoride from water. 26.9% of children in Upstate New York used fluoride tablets on a regular basis. A greater proportion of higher-income children (30.5%) regularly used fluoride tablets compared to lower-income children (17.7%).
- ⇒ 27% of children in New York State had a dental sealant on a permanent molar. The prevalence of dental sealants was lower among low income children (17.8%) compared to high income children (41.1%).
- ⇒ School-based programs provide dental sealants on site, while school-linked programs identify children in need of sealants and refer them to private offices or facilities for sealant placement. 68% of 3<sup>rd</sup> graders in Upstate New York in schools with a dental sealant program had dental sealants compared to 33% of 3<sup>rd</sup> graders in schools without a program.

## Children 0 to 21 Years of Age

- ⇒ 24.5% of children under age 21 enrolled in early and periodic screening, diagnostic and treatment (EPSDT) services in 2003 received an annual dental visit.
- ⇒ 45% of children aged 4 to 21, who were continuously enrolled in Medicaid for all of 2003, and 40% of children aged 4 to 21 continuously enrolled in Child Health Plus for all of 2003 visited a dentist during the year.

### Sources of Data:

New York State Oral Health Surveillance System, 2002-2004

New York City Oral Surveillance Program, 2002-2004  
*Oral Health Plan for New York State*, New York State Department of Health, 2005

### Notes:

- ▶ Upstate New York: Schools with 3<sup>rd</sup> grade students were stratified into lower and higher socioeconomic schools based on the percent of students in the free or reduced-price school lunch program.
- ▶ A sample of 331 schools, approximately 3 each from the two SES strata, was selected from 57 counties. NYC: Public and private schools from five boroughs formed 10 strata. A proportionate sample of 60 schools was obtained from these strata.

A total of 13,147 children from 59 NYC and 301 Upstate schools were included in the final analysis.

A total of 10,895 children agreed to participate in the clinical examination. Screenings were done in the schools by trained dental hygienists or dentists.

There were no school-based dental sealant programs in New York City sample.

Use of dental services (dental visit during the prior year) by Medicaid-eligible children and children enrolled in Child Health Plus was limited to 4 to 21 year olds with continuous enrollment during the year. Because children younger than 4 years of age and those without continuous enrollment have fewer opportunities to use dental services, it is customary to assess dental visits among 4 to 21 year old continuous enrollees.

- Actual percent of the specified population receiving dental services in any given period will vary depending on definition of eligibility during the periods.

Oral Health of New York State Children	
	NYS
Caries Experience-3 <sup>rd</sup> Graders	54%
Lower income children	60%
Higher income children	48%
Untreated Decay - 3 <sup>rd</sup> Graders	33%
Lower income children	41%
Higher income children	23%
Dental Visit in Last Year	
All 3 <sup>rd</sup> Graders	73%
Lower income children	61%
Higher income children	87%
0-21 Year Olds in EPSDT	24%
4-21 Year Olds: Continuously Enrolled	
Medicaid	45%
Child Health Plus	40%
Fluoride Tablets - 3 <sup>rd</sup> Graders	19%
Lower income children	10%
Higher income children	30%
Dental Sealant - 3 <sup>rd</sup> Graders	27%
Lower income children	18%
Higher income children	41%
Dental Sealant Program - 3 <sup>rd</sup> Graders	
With Program	68%
Without Program	33%

# Children's Oral Health in New York State and Access to Dental Care



## Significance:

Dental caries in children is the single most prevalent chronic disease and is four times more common than childhood asthma and seven times more common than hay fever. Dental caries is a disease in which acids produced by bacteria on the teeth lead to loss of minerals from the enamel and dentin, the hard substances of teeth. Unchecked, dental caries can result in loss of tooth structure, inadequate tooth function, unsightly appearance, pain, infection, and tooth loss. The prevalence of decay is measured through an assessment of caries experience (have ever had decay and now have fillings), untreated decay (active unfilled cavities), and urgent care (reported pain or a significant dental infection that requires immediate care).

Although dental caries is preventable, many children unnecessarily suffer the consequences because of poor oral care and the inability to access preventive and treatment services in a timely manner. Untreated dental disease in children can lead to chronic pain, medical complications, early tooth loss, impaired speech development, poor nutrition and resultant failure to thrive or impaired growth, inability to concentrate in school and missed school days, and reduced self-esteem.

## Preventive Care:

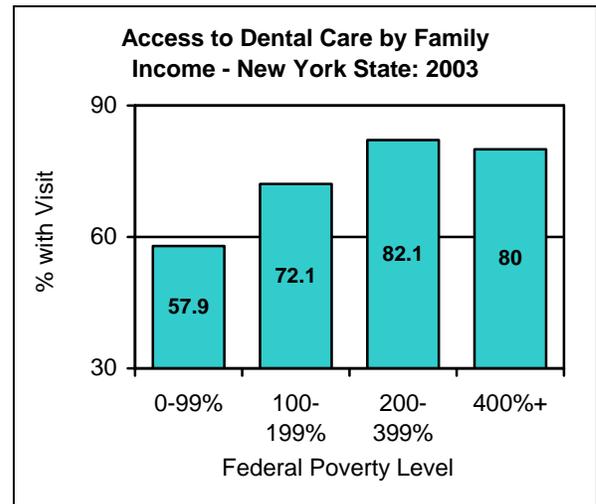
Maintaining good oral health takes repeated efforts on the part of individual, caregivers, and health care providers. Regular preventive dental care can reduce development of disease and facilitate early diagnosis and treatment. Measures of preventive care include annual visits to the dentist or dental clinic, the use of fluoride tablets and rinses, the application of dental sealants, and access to fluoridated water.

## Access to Dental Care:

The burden of oral disease is far worse for those who have restricted access to prevention and treatment services. Limited financial resources, lack of dental insurance coverage, and a limited availability of dental care providers all impact on access to care.

**Income:** Access to care, as measured by the percent of children receiving preventive dental care within the past 12 months was found to vary by income.

According to the 2003 National Survey of Children's Health, NYS children with family incomes below 200% of the Federal Poverty Level (FPL) were least likely to have received preventive dental care during the prior 12 months. During 2003, 32% of all New Yorkers lived under 200% of the FPL and 14% lived under 100% of the FPL. Nearly 21% of related children less than 5 years of age in NYS live below poverty, while 9.4% of all children less than 18 years of age are uninsured for medical care.



According to national data from the 2003 Medical Expenditure Panel Survey, among children under 18 years of age who needed dental treatment, the inability to afford dental care was cited by nearly 56% of parents as the main reason children did not receive or were delayed in receiving needed dental care.

**Dental Coverage:** Lack of dental insurance coverage is another strong predictor of access to care. From the 2003 MEPS data, of the children who were unable to obtain or were delayed in receiving needed dental care because they could not afford it, 24.1% were uninsured, 30.5% were covered by a public benefit program, and 45.4% had private health insurance coverage.

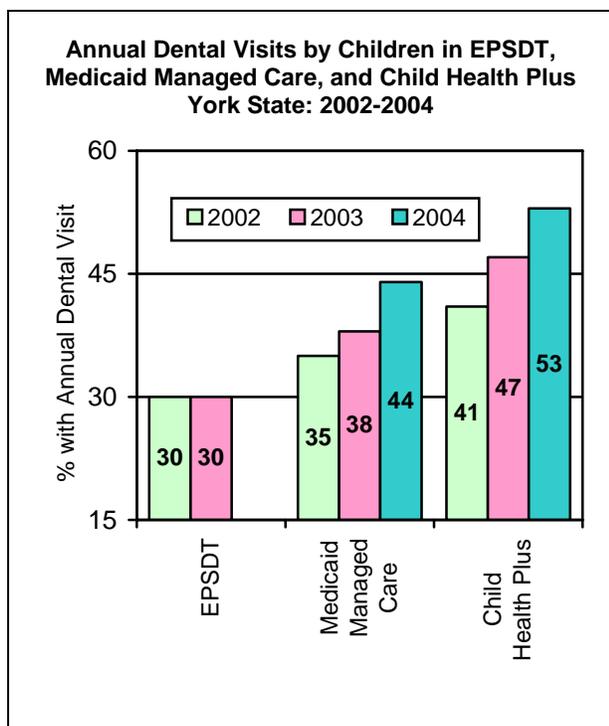
The New York State Medicaid Program provides dental services (preventive, routine and emergency care, endodontics, and prosthodontics) for low income and disabled children on a fee-for-service basis or as part of the benefit package of managed care

programs, with comprehensive dental services mandated through the Early and Periodic Screening, Diagnostic & Treatment Program.

The State Children's Health Insurance Program (Child Health Plus B) complements the Medicaid Program by providing health insurance coverage to children whose family income is above Medicaid eligibility standards (up to 200% of federal poverty level).

As of September 2005, a total of 1,705,382 children were enrolled in the Medicaid Program and 338,155 in Child Health Plus B. The number of children less than 19 years of age enrolled in Medicaid Managed Care Programs totaled 1,387,109 during 2003.

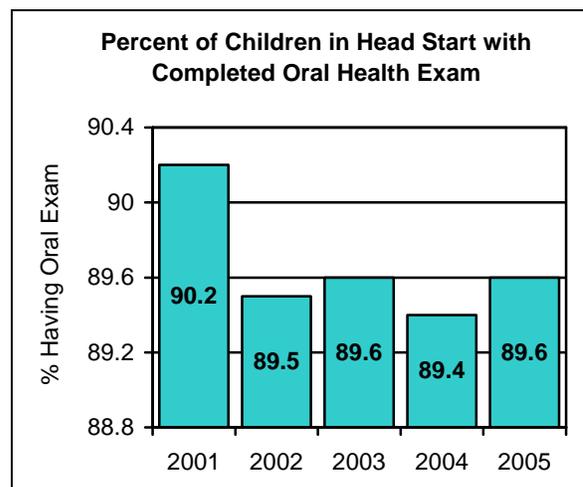
Children in Child Health Plus and Medicaid Managed Care Programs did better than their counterparts in the Medicaid EPSDT Program with respect to annual dental visits. During 2003, 47% of children 4-18 years of age in Child Health Plus, 38% of children ages 4-21 years in Medicaid Managed Care Plans, and 30% of children aged 3-20 years with Medicaid EPSDT had an annual dental visit. Annual dental visits have increased each year for children in Child Health Plus and Medicaid Managed Care, but have remained constant for children in EPSDT.



All children in Early Head Start/Head Start programs must have an oral health examination within 90 days of program entry, with program staff required to assist parents in obtaining a continuous source of dental care and insuring that all children receive any needed follow-up dental care and treatment.

Data on preventive dental services for children in 0-3 Programs (Early Head Start) are available for only

2005: nearly 77% had an oral health screening during a well-baby exam and 22% had a professional dental exam.



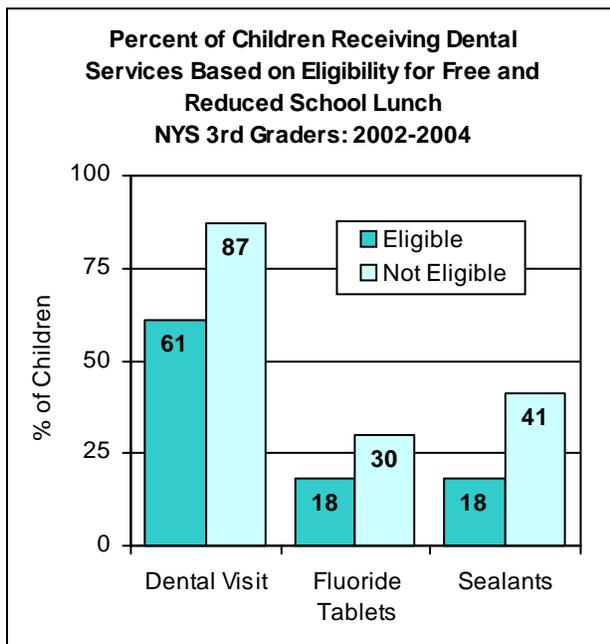
**Dental Work Force:** In 2005, there were 17,844 dentists registered to practice in the State, with NYS ranking 4<sup>th</sup> in the nation in the number of dentists per capita. The distribution of dentists, however, is not even across the State, with HRSA designating 1/3 of NYS cities and 2/3 of its rural areas as Dental Shortage Areas. Additionally, a lack of dentists willing to provide dental care to children covered by Medicaid and Child Health Plus further limits access to prevention and treatment services. The percent of registered dentists in the State participating in Medicaid has grown very little between 1991 and 2004, even with an increase in 2000 in reimbursement fees for dental services. In 1991, 23.5% of registered dentists in NYS submitted at least 1 Medicaid claim; during 2004, 25.7% had at least 1 Medicaid claim.

### Utilization of Dental Services

Nationally, 50.9% of children 2-17 years of age had at least one dental care visit during 2003, with a higher percentage of children 12-17 years of age (55.4%) utilizing dental services than children 2-11 years of age (29.6%). Among children with a dental care visit, younger children averaged 2.0 visits a year at a cost of \$327; older children averaged 3.4 visits at a cost of \$742. When excluding orthodontic care, the number of visits and costs for dental care decreases (1.7 visits and \$226 for 2-11 year olds and 1.8 visits and \$268 for 12-17 year olds). Children in low income families (up to 125% of FPL) were less likely to utilize dental services (35.8%) compared to children in families with incomes at or above 400% of the FPL (60.1%).

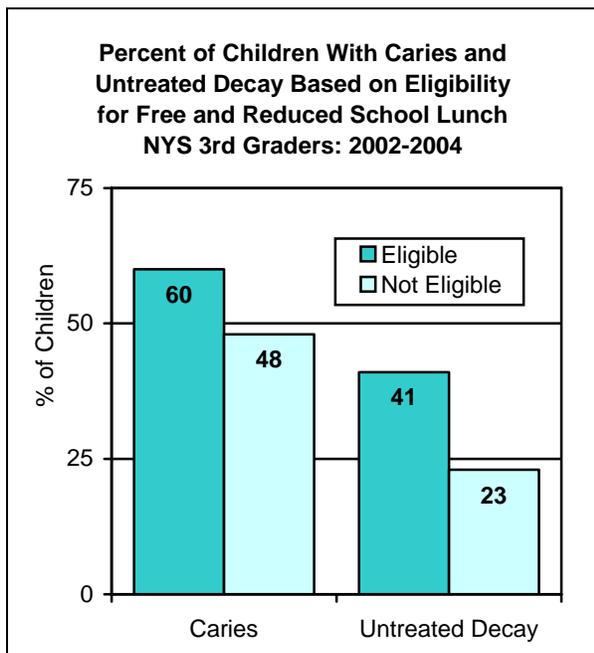
Children in NYS living in poverty and near poverty likewise had the lowest utilization of dental services. In 2000, only 21.2% of the 1.6 million children in NYS eligible for dental services through Medicaid received any dental care. The use of other preventive services, such as fluoride tablets and dental sealants is also

lower among children eligible for free or reduced school lunch.



### Oral Health Status of Children

Children living in lower socioeconomic families bear a greater burden of oral diseases and conditions. Statewide, low income 3<sup>rd</sup> graders experience more caries and untreated dental decay than their higher income counterparts.



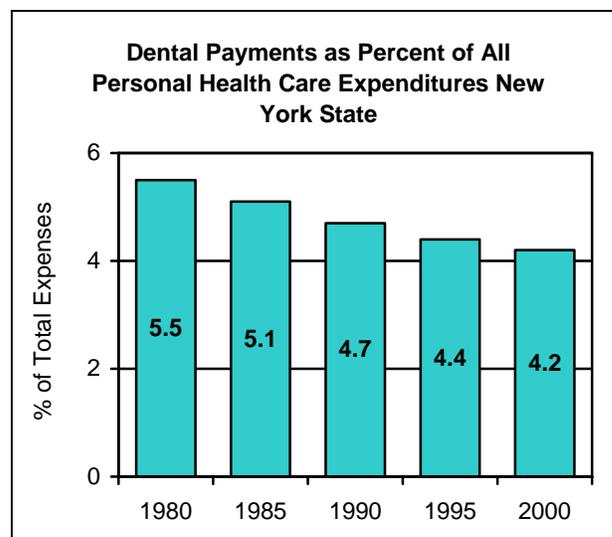
Additionally, approximately 18% of all preschoolers in Head Start with a completed oral health exam were

diagnosed as needing treatment. This number has remained unchanged over the last five years.

### Payment of Dental Services

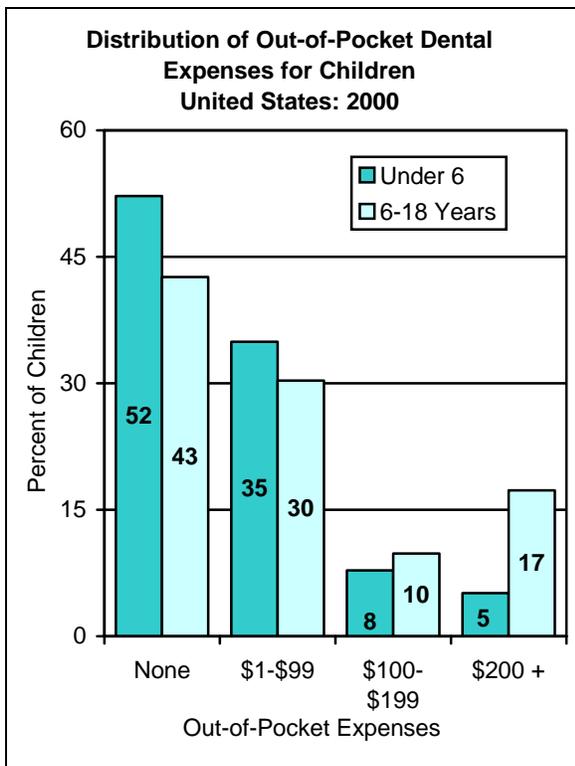
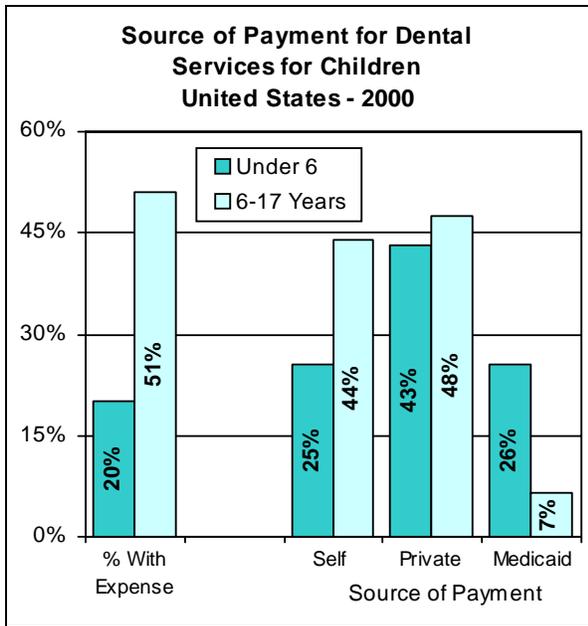
Nationally, the cost for dental services accounted for 4.6% of all private and public personal health care expenditures in 2003, with 44.3% of dental expenses paid out-of-pocket by patients, 49.1% paid by private dental insurance, and 6.6% covered by state and federal public benefit programs.

In NYS, the cost for dental care, as a percent of total personal health care expenditures, has decreased from 5.5% in 1980 to 4.2% in 2000. Expenses for dental care for children under 18 years of age in NYS, however, account for around 25% of all health care expenditures for this age group.



The source of payment for dental care services varied by the age of the child, with Medicaid covering a greater percent of dental expenses for children less than 6 years of age (25.6%) compared to older children (6.5%).

Among children having a dental care visit during 2000, mean out-of-pocket expenses per child were markedly higher for children 6-18 years of age (\$267) compared to those under 6 (\$47). Additionally, a greater percent of older children (17.3%) had out-of-pocket expenses in excess of \$200 in contrast to children less than 6 years of age (5.1%).



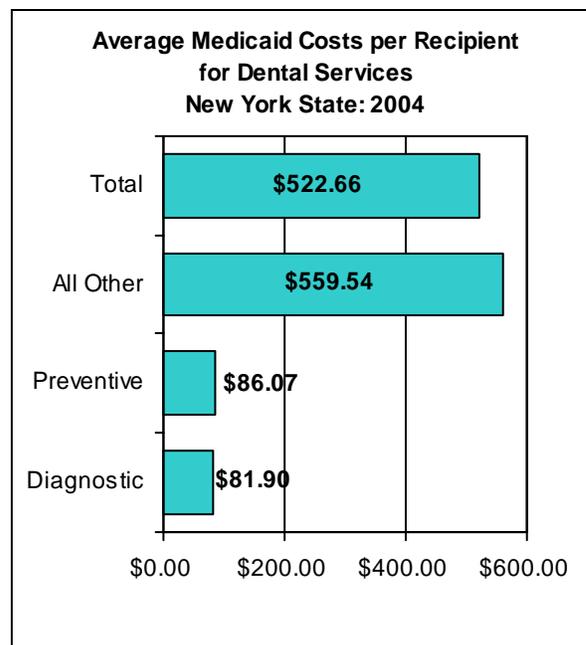
**Medicaid:** Dental services accounted for 4.4% of all health care expenditures paid by Medicaid nationally in 2003, and for 25.4% of all Medicaid expenditures for children less than 6 years of age.

In 2004, NYS total Medicaid expenditures approached \$35 billion, with approximately 1% of total Medicaid fee-for-service expenditures for dental services. An average of 4.05 million New Yorkers per month were

eligible for Medicaid in 2004, with 15% of all Medicaid-eligibles utilizing dental services. Age-specific utilization data are currently not available.

About 75¢ of every Medicaid dollar spent for dental services in 2004 was for treatment of dental caries, periodontal disease, and other more involved dental problems. Only 14¢ of every Medicaid dental-service dollar was for diagnostic services, and just 11¢ was for preventive services

Recipients averaged 2 prevention service claims, 3 diagnostic service claims, and 4.7 claims for other dental services during the year. Total costs per recipient for preventive services were from one-sixth to one-seventh the costs of services for the treatment of dental caries, periodontal disease, and other more complex dental problems.



**Other Coverage:** In 2004, 11% (\$65.5 million) of HRSA Bureau of Primary Health Care grants to the State were spent for the provision of dental services. Children under 18 years of age accounted for 36% of all individuals receiving grant-funded services during the year.

Of all individuals receiving grant-funded services, 19% were provided with dental care, with 2.61 dental encounters per dental user at a cost of \$129 per encounter. Of those receiving services, 36% had an oral examination, 37% had prophylactic treatment, 12% fluoride treatments, 6% sealants applied, 26% restorative services, 15% rehabilitative services, 9% tooth extractions, and 8% received emergency dental services.

## References

- American Community Survey 2003 Data Profile: New York. Table 3: Selected Economic Characteristics. US Census Bureau. <http://www.census.gov/acs>. Accessed 10/6/05.
- Annual EPSDT Participation Report, January 20, 2005, New York FY: 2003. <http://new.cms.hhs.gov/MedicaidEarlyPeriodicScrn/Downloads/FY2003EPSDTStateReport.pdf>. Accessed March 6, 2006.
- Brown E. *Children's Dental Visits and Expenses, United States, 2003*. Medical Expenditure Panel Survey, Statistical Brief # 117, March 2006.
- Centers for Medicare and Medicaid Services. *National Health Expenditures, Selected Calendar Years 1980-2003*. [http://www.cms.hhs.gov/nationalhealthexpendituredata/downloads/nhe\\_tables.pdf](http://www.cms.hhs.gov/nationalhealthexpendituredata/downloads/nhe_tables.pdf). Accessed 12/14/05.
- Centers for Medicare and Medicaid Services. *National Health Expenditure (NHE) amounts by type of expenditure and source of funds: calendar years 1965-2013*. Updated October 2004. Available at: <http://www.cms.hhs.gov/oralhealth/6.asp>
- Child Trends Data Bank. *Unmet Dental Needs*. <http://www.childtrendsdatabank.org>. Accessed 12/15/05.
- Chu M. *Children's Dental Care: Periodicity of Checkups and Access to Care, 2003*. Medical Expenditure Panel Survey, Statistical Brief # 113, January 2006.
- Head Start Program Information Report for the 2004-2005 Program Year. Health Services Report - State Level Summary and National Summary data, 12/1/05.
- Health Resources and Services Administration Bureau of Primary Health Care. *Section 330 Grantees Uniform Data System (UDS): New York Rollup Report, Calendar Year 2004 Data*. July 7, 2005.
- National Center for Chronic Disease Prevention & Health Promotion, Behavioral Risk Factor Surveillance System, New York, 2004, <http://apps.nccd.cdc.gov/brfss.htm>. Accessed 10/26/05 and 12/13/05.
- National Center for Health Statistics. *Health, United States, 2004, with chartbook on trends in the health of Americans*. Hyattsville, Maryland: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics; 2004. DHHS Publication No. 2004-1232.
- National Survey of Children's Health, *New York State Profile, 2003*. <http://nschdata.org>. Accessed January 3, 2006.
- New York State Department of Health Office of Medicaid Management. *Calendar Year 2004 Medicaid Eligibility*. [http://www.health.state.ny.us/nysdoh/medstat/el2004/cy\\_04\\_el.htm](http://www.health.state.ny.us/nysdoh/medstat/el2004/cy_04_el.htm). Accessed 12/14/05.
- New York State Department of Health Office of Medicaid Management, Fiscal and Program Planning Data Mart, November 9, 2005.
- New York State Department of Health Office of Medicaid Management. *June 2005 Medicaid Eligibility*. [http://www.health.state.ny.us/nysdoh/medstat/el2005/Jun\\_05\\_el.htm](http://www.health.state.ny.us/nysdoh/medstat/el2005/Jun_05_el.htm). Accessed 10/27/05.
- New York State Department of Health Office of Medicaid Management. *Medicaid Expenditure Fee for Service Report January-December 2004*. [http://www.health.state.ny.us/nysdoh/medstat/ex2004/ffsl\\_cy\\_04.htm](http://www.health.state.ny.us/nysdoh/medstat/ex2004/ffsl_cy_04.htm). Accessed 10/6/05.
- New York State Managed Care Plan Performance Report on Quality, Access to Care, and Consumer Satisfaction, New York State Department of Health, December 2005
- Oral Health Plan for New York State*, New York State Department of Health, 2005.
- Percent of Population Below 100% and 200% of the Federal Poverty Level: New York State*. Current Population Survey. [http://www.health.state.ny.us/nysdoh/chac/cha/povlev1\\_00.htm](http://www.health.state.ny.us/nysdoh/chac/cha/povlev1_00.htm). Accessed 10/5/2005.
- Portnof JE. *Medicaid Children: A Vulnerable Cohort*. NYSDJ, February 2004.
- U.S. Department of Health and Human Services, Administration for Children & Families, Head Start Bureau. Performance Standards, 1304.20 – Child Health and Development Services. <http://www.acf.hhs.gov/programs/hsb/performance/130420PS.htm>. Accessed 04/19/06.
- U.S. Department of Health and Human Services, Administration for Children & Families, Head Start Bureau. Subpart B – Early Childhood Development and Health Services. <http://www.acf.hhs.gov/programs/hsb/performance/1304bl.htm>. Accessed 04/19/06.
- U.S. Department of Health and Human Services. *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Institute of Dental and Craniofacial Research, 2000.
- U.S. Department of Health and Human Services. *National Call to Action to Promote Oral Health*. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Dental and Craniofacial Research; 2003. NIH Publication No. 03-5303.

# NEW YORK: USING COMMUNITY-BASED SURVEILLANCE TO PROMOTE ORAL HEALTH AND EXPAND SERVICES

## Public Health Problem

New York has a long and prominent record of oral health promotion and disease prevention. It was the 1<sup>st</sup> state to establish the scientific basis of fluoridation benefits and has been providing sealants to school children since 1986. As in other parts of the United States, there are profound disparities in oral health among children. Oral diseases are higher in low-income families and within different racial and ethnic communities. Collecting reliable and accurate data to identify the oral health status of children and need for services presents an enormous challenge to the New York State Department of Health (NYSDOH).

## Program Example

The Bureau of Dental Health, NYSDOH, under a collaborative agreement with the Centers for Disease Control and Prevention, established a surveillance system for monitoring children's oral health status, risk factors, and the availability and use of dental services. As part of the agreement, the NYSDOH and Dental Health Bureau assisted communities in conducting an oral health survey



of third grade students using a representative sample of schools from each county. Children were categorized into 2 socioeconomic strata based on participation in free or reduced-priced lunch programs. The survey included six indicators of oral health: history of tooth decay, untreated tooth decay, presence of dental sealants, dental visit in the last year, use of fluoride tablets, and presence of dental

insurance. Data obtained from the oral health surveillance system are used by counties to devise strategies to improve local services and to establish or expand innovative service delivery models to provide dental care to children identified as being most in need of prevention and treatment services.

Every 6 years, NYS counties are required to collect general health status data to use for the development of municipal health services plans. For the first time, oral health indicators are available for needs assessments. CDC funds, in combination with other sources, now make it possible for counties/regions to have access to information on disparities in oral health, which is available on the Department's Health Information Network Web Site. This development enables counties with diverse resources and populations to better design and evaluate programs tailored to their specific needs.

## Implications and Impact

Benefits of the surveillance and data system include:

- Municipal public health plans include oral health indicators as part of general health status in the assessment of community needs.
- The Commissioner of Health declared oral health a priority issue, leading to more collaboration and partnerships.



- The availability of funds for preventive dentistry programs and development of innovative service delivery models increased from \$0.9 to \$2.6 million.
- A significant policy change allows school-based sealant programs to directly bill Medicaid and other insurers.
- Data are being used to address the shortage of dental health professionals in specific areas, as well as raising awareness of oral health issues among policy makers.
- A technical assistance center was established to assist communities interested in developing innovative service delivery models and improving the quality of existing programs.
- Sealant programs, the expansion of school dental health programs, and fixed and mobile dental clinic sites have all increased awareness of oral health issues. As example, Tioga County used surveillance and Head Start Program data to obtain \$600,000 in funding from a Governor's grant to develop a mobile van/clinic for children in school settings.
- Data from PRAMS (Pregnancy Risk Assessment and Monitoring System) on the utilization of dental services by women during pregnancy served as the stimuli for development of Practice Guidelines for Oral Health during Pregnancy and Early Childhood.

### Sources:

I ♥ NY Smiles Oral Health Report, Volume 1, Issue 1, April 2003.

NYS Department of Health, *Oral Health Plan for New York State*, August 2005.

NYS Department of Health, *Oral Health Status of Third Grade Children: New York State Oral Health Surveillance System*, December 15, 2005.

Schuyler Center for Analysis and Advocacy, Children's Health Series, *Children's Oral Health*, November 2005.