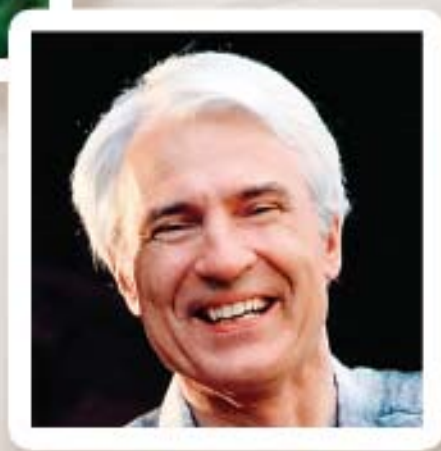


# Oral Health in North Dakota

## Burden of Disease and Plan for the Future



NORTH DAKOTA  
DEPARTMENT *of* HEALTH

2006



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September 29, 2006

Dear Partner:

We are pleased to provide the enclosed copy of *Oral Health in North Dakota: Burden of Disease and Plan for the Future*. This publication is made up of two reports – *Burden of Disease* and *Plan for the Future*. Combining these two documents provides an overview of the disease of oral health in North Dakota and summarizes the plan that has been developed to enhance and improve the oral health of North Dakotans.

Many individuals provided expertise into the development of this document. We would like to say a special thank you and recognize the following individuals for preparing *Oral Health in North Dakota: Burden of Disease*.

*Deb Arnold, North Dakota Department of Health*  
*Maija Beyer, North Dakota Department of Health*  
*Dr. Stephen Pickard, North Dakota Department of Health*  
*Dr. Abe E. Sahnoun, Consultant*

We would also like to recognize the many members of the North Dakota Oral Health Coalition that provided their time and expertise on the development of *Oral Health in North Dakota: Plan for the Future*. A listing of Coalition members is located on page 67 of this document. We would like to extend a special thank you and recognize the following individuals for preparing *Oral Health in North Dakota: Plan for the Future*.

*Maija Beyer, North Dakota Department of Health*  
*Sue Waechter, Cornerstone Consulting*  
*Kimberlie Yineman, North Dakota Department of Health*

We hope the information provided in this document will be useful to our partners as we continue our efforts to improve and promote oral health for all North Dakotans.

Sincerely,

Kim Senn, Director  
Division of Family Health

# Oral Health in North Dakota

## Burden of Disease and Plan for the Future

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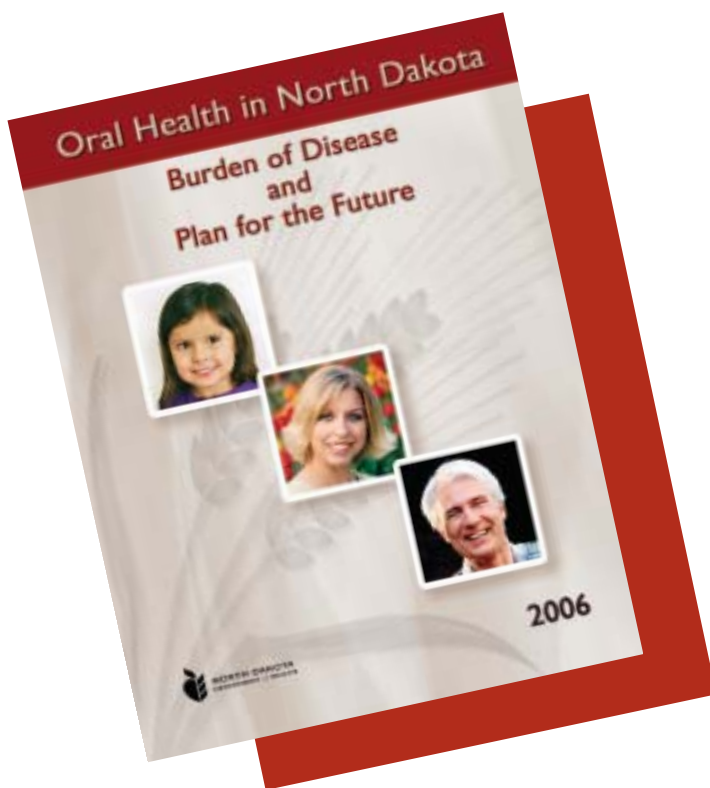
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## PREFACE

The *Oral Health in North Dakota* publication is made up of two reports – *Burden of Disease* (beginning on Page 1) and *Plan for the Future* (beginning on Page 43). This combined format provides an overview of the burden of oral disease in North Dakota and summarizes the plan that has been developed to enhance and improve the oral health of North Dakotans.







# BURDEN OF DISEASE



Burden of Disease



## INTRODUCTION

The mouth is our primary connection to the world: it is how we take in water and nutrients to sustain life, our primary means of communication, the most visible sign of our mood, and a major part of how we appear to others. Oral health is an essential and integral component of overall health throughout life and is much more than just healthy teeth. “Oral” refers to the whole mouth: the teeth, gums, hard and soft palate, linings of the mouth and throat, tongue, lips, salivary glands, chewing muscles, and upper and lower jaws. Good oral health not only means being free of tooth decay and gum disease, but also means being free of chronic oral pain conditions, oral cancer, birth defects such as cleft lip and palate and other conditions that affect the mouth and throat. Good oral health also includes the ability to carry on the most basic human functions, such as chewing, swallowing, speaking, smiling, kissing and singing.

The mouth is an integral part of human anatomy and plays a major role in our overall physiology. Thus, oral health is intimately related to the health of the rest of the body. For example, mounting evidence suggests that infections in the mouth, such as periodontal (gum) diseases, may increase the risk of heart disease, may put pregnant women at greater risk of premature delivery and may complicate control of blood sugar for people living with diabetes. Conversely, changes in the mouth often are the first signs of problems elsewhere in the body, such as infectious diseases, immune disorders, nutritional deficiencies and cancer.

This report summarizes the most current information available about the oral disease burden of people in North Dakota. It also highlights groups in our state that are at highest risk of oral health problems and discusses strategies to prevent these conditions and provide access to dental care. Comparisons are made with national data whenever possible and to the *Healthy People 2010* goals when appropriate. For some conditions, national data, but not state data, are available at this time.

This report is the first summary of oral health data that has been compiled for several years. Many of the indicators have been tracked in the past, but never presented in a document of this magnitude. This report will continue to evolve over the years and will serve as a baseline for the future.

It is hoped that this information will help raise awareness of the need for monitoring the oral health burden in North Dakota, guide efforts to prevent and treat oral diseases and enhance the quality of life of North Dakota’s residents.





## EXECUTIVE SUMMARY

*Oral Health in North Dakota: Burden of Disease* summarizes the oral health status of North Dakotans. Data collected in this report is in line with the *Healthy People 2010* Objectives for Oral Health and the North Dakota Oral Health Surveillance System. The state's surveillance system will continue to track the indicators presented in this report, as well as add new indicators when new oral health issues and trends emerge.

North Dakota's population of 642,200 is primarily white – 593,181 or 93.4 percent of the citizens fall into this category. Minority populations comprise 49,019 or 6.6 percent of North Dakotans. Native Americans are the most significant minority group in North Dakota, accounting for 31,329 individuals.

### Prevalence of Disease and Unmet Needs

Cleft lip and cleft palate are the most common and visible congenital anomalies affecting newborns. North Dakota birth records from 1996 to 2003 indicate that 84 cases of cleft lip, with or without cleft palate, occurred. Seventy cases occurred in white newborns. According to the North Dakota Department of Human Services, Division of Children with Special Health Care Services (CSHS), almost every child had his or her palate repaired in the first year of life. Parents of a few children who had additional special needs chose not to have their child's palate repaired or delayed the repair for a year or two.

Dental caries is not uniformly distributed in the United States or in North Dakota. Some groups are more likely to experience the disease and are less likely to receive treatment. Caries experience and untreated decay are monitored by North Dakota as consistent with the National Oral Health Surveillance System (NOHSS), which allows comparisons with other states and the nation.

During the 2004-2005 school year, the North Dakota Department of Health (NDDoH) conducted a statewide Oral Health Survey of third-grade children enrolled in public, state or Bureau of Indian Affairs elementary schools in the state. This survey found that 56 percent had cavities and/or fillings (decay experience) – substantially higher than the *Healthy People 2010* objective of 42 percent. Seventeen percent had untreated dental decay (cavities) compared to the *Healthy People 2010* objective of 21 percent. Compared to white non-Hispanic children, a significantly higher proportion of minority children have decay experience, untreated decay and urgent dental needs.

Data from the 2004 North Dakota Behavioral Risk Factor Surveillance System (BRFSS) survey showed that 32 percent of all adults had not visited a dentist, dental hygienist or dental clinic within the past year. Women (72 percent) were more likely to have visited a dentist for any reason within the past year than were men (65 percent).



Analyses of the North Dakota death certificates between 1996 and 2003 showed 155 deaths by oral cavity and pharynx cancer. Among these, 145 deaths occurred among whites and 10 occurred among Native Americans. Ninety-nine deaths occurred among males and 56 occurred among women. Analyses of the North Dakota Cancer Registry between 1996 and 2003 found that the age-adjusted North Dakota cancer-incidence rates have been decreasing since 1998.

Native Americans are the most significant minority in North Dakota. Native Americans living on a reservation have access to Indian Health Services (IHS) as well as Tribal Health Services (THS) for their dental health-care services. There has been continued collaboration between the five tribes in North Dakota and the NDDoH in addressing health issues. The most difficult population of Native Americans to reach are those residing in the major cities of North Dakota. They have more limited access to IHS and THS for dental health-care services and are less likely to be able to afford unsubsidized care.

Many women live in poverty, are not insured or are the sole heads of their households. For these women, obtaining needed oral health-care may be difficult. Although many statistical indicators show women to have better oral health status than men (Redford 1993; U.S. Department of Health and Human Services [USDHHS] 2000), a higher proportion of women than men have oral-facial pain, including pain from oral sores, jaw joints, face/cheek and burning mouth syndrome.

Although Medicaid is a public insurance program aimed at low-income individuals, a significantly higher proportion of women with Medicaid coverage did not go to the dentist during their pregnancy than did non-Medicaid covered women (68.6 percent vs. 51.7 percent, respectively). Reasons may include issues related to access to care (e.g., lack of providers or distance).

The oral health problems of individuals with disabilities are complex. These problems may be due to underlying congenital anomalies as well as to the inability to receive the personal and professional health care needed to maintain oral health. More than 54 million people are defined as disabled under the Americans with Disabilities Act, including almost one million children younger than 6 and 4.5 million children between the ages of 6 and 16.

Thirty-seven percent of individuals with a disability indicated on the 2004 BRFSS survey that they had not visited a dentist or dental hygienist within the last year, as compared to 28 percent of individuals with no disability.



## Provision of Dental Services

Forty-nine percent of North Dakota’s population lives in Ward, Grand Forks, Cass and Burleigh counties, as does an overwhelming proportion of the state’s dentists. North Dakota is characterized by a chronic shortage of health professionals in rural areas. Forty-four of the state’s 53 counties have six or fewer practicing dentists. Of all the dentists currently practicing in North Dakota, 60 percent will retire within the next 15 years, according to the University of North Dakota Center for Rural Health’s 2005 survey of North Dakota dentists.

## Future Considerations

North Dakota has made progress in the oral health of its residents, but disparities remain among specific populations. North Dakota mirrors the nation in that oral disease remains pervasive among families with low socioeconomic status, people who have less education, the

elderly and those with disabilities. Oral diseases are preventable with access to preventive care, and, as new studies indicate, oral health status can impact general overall health.



It is hoped that readers of this report find the data useful as they continue their efforts to understand the factors influencing oral health in North Dakota.

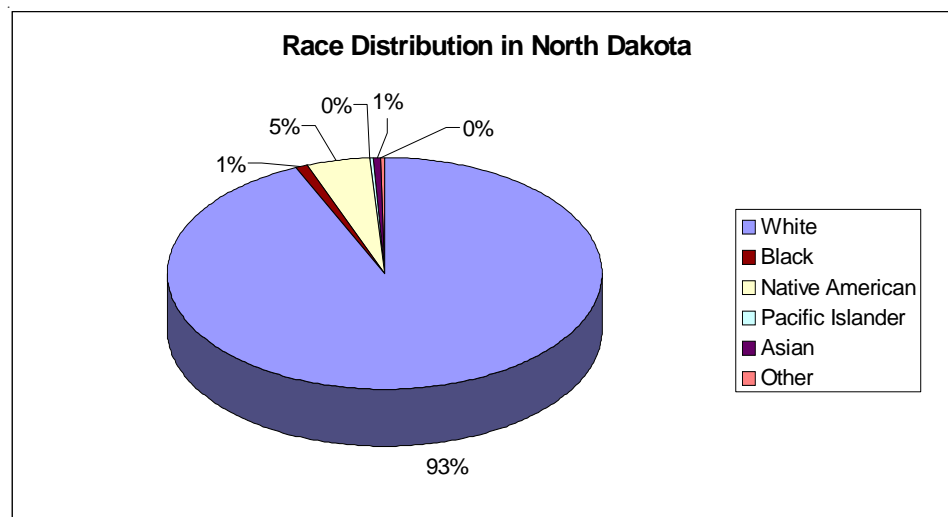


## DEMOGRAPHICS

North Dakota is a large state on the northern edge of the Great Plains. The state is 212 miles by 360 miles and occupies a landmass equivalent to that of New York, New Jersey, Massachusetts and Connecticut combined. It is 17th in the nation for size and 47th in the nation for population. The average population density in the United States is 79.6 people per square mile, compared to North Dakota's 9.3 persons per square mile. Nearly 68 percent of the state is considered frontier (population density fewer than six people per square mile). More than 21 percent of the North Dakota population resides in the 36 counties designated as frontier.

The state population of 642,200 is primarily white – 593,181 people, or 93.4 percent of the citizens, fall into this category. Minority populations comprise 49,019 or 6.6 percent of North Dakotans. Native Americans are the most significant minority group in North Dakota, accounting for 31,329 individuals, or 4.9 percent.

**Figure 1**



*Source: North Dakota Census, 2000*

Although oral diseases are preventable and treatable, lack of continuous insurance coverage is a problem for many children and adults. Nationally, as much as 36 percent of children lack dental insurance coverage. For every person without health insurance coverage, there are as many as 2.3 persons without dental health insurance coverage.



# NATIONAL AND STATE OBJECTIVES ON ORAL HEALTH

Title XIX funds are available to Medicaid-eligible recipients, who may seek oral health services through private dentists or federally qualified health-care centers. The Oral Health Program coordinates services with the Title XIX Program by providing Early and Periodic Screening Diagnosis and Treatment (EPSDT) screenings through local public health units using the program-supported oral health consultants.

*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 2000). Issued in May 2000, the *Report* further detailed how oral health is promoted, how oral diseases and conditions are prevented and managed, and what needs and opportunities exist to enhance oral health. The *Report's* message was that oral health is essential to general health and well-being and can be achieved. However, several barriers hinder the ability of some Americans to attain optimal oral health. The *Report* concluded with a framework for action, calling for a national oral health plan to improve quality of life and eliminate oral health disparities.

One component of an oral health plan is a set of measurable and achievable objectives on key indicators of oral disease burden, oral health promotion and oral disease prevention. One set of national indicators was developed in November 2000 as part of *Healthy People 2010*, a document that presents a comprehensive, nationwide health promotion and disease prevention agenda (USDHHS 2000). *Healthy People 2010* is designed to serve as a roadmap for improving the health of all people in the United States during the first decade of the 21st century. Included 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 *Report* was a wake-up call, spurring policymakers, community leaders, private industry, health professionals, the media and the public to affirm that oral health is essential to general health and well-being 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 targets for the nation, but most core public health functions of assessment, assurance and policy development occur at the state level. The *Call to Action* calls for the development of plans at the state and community levels, with attention to planning, evaluation and accountability (USDHHS 2003). The *Healthy People 2010* oral health objectives for the nation and the current status of each indicator for the United States and for North Dakota are summarized in Table 1.

**Table 1. Healthy People 2010 Oral Health Indicators, Target Levels and Current Status in the United States and North Dakota**

<i>Healthy People 2010 Objective (Objective Number and Description)</i>	<b>Target (%)</b>	<b>National<sup>a</sup> (%)</b>	<b>North Dakota Status<sup>i</sup> (%)</b>
<b>21-1) Dental caries (tooth decay) experience<sup>j</sup></b>			
a) Young children, ages 2–4 years	11	23	DNC
b) Children, ages 6–8 years	42	50	56
c) Adolescents, age 15 years	51	59	41
<b>21-2) Untreated caries (tooth decay)<sup>j</sup></b>			
a) Young children, ages 2–4 years	9	20	DNC
b) Children, ages 6–8 years	21	26	17
c) Adolescents, age 15 years	15	16	DNC
d) Adults, ages 35–44 years	15	26	DNC
<b>21-3) Adults with no tooth loss, ages 35–44 years</b>	42	39	65
<b>21-4) Edentulous (toothless) older adults, ages 65–74 years</b>	20	25 <sup>b</sup>	25
<b>21-5) Periodontal (gum) diseases, adults ages 35–44 years</b>			DNC
a) Gingivitis, ages 35–44 years	41	48 <sup>c</sup>	DNC
b) Destructive periodontal (gum) diseases, ages 35–44 years	14	20	DNC
<b>3-6) Oral and pharyngeal cancer death rates reduction (per 100,000 population)</b>	2.7	3.0 <sup>d, k, *</sup>	1.7
<b>21-6) Oral and pharyngeal cancers detected at earliest stages, all</b>	50	35 <sup>e</sup>	DNC
<b>21-7) Oral and pharyngeal cancer exam within past 12 months, ages 40+ years</b>	20	13 <sup>d</sup>	DNC



<b>21-8) Dental sealants</b>			
a) Children, age 8 years (1 <sup>st</sup> molars)	50	28	53
b) Adolescents (1 <sup>st</sup> and 2 <sup>nd</sup> molars) age 14 years	50	14	DNC
<b>21-9) Population served by fluoridated water systems, all</b>	75	68 <sup>b</sup>	96
<b>21-10) Dental visit within past 12 months</b>			
a) Children ages 2+ years	56	43 <sup>f</sup>	DNC
b) Adults ages 18+ years	56	44	70.6
<b>21-11) Use of oral health-care system by adult residents in long-term care facilities</b>	25	19 <sup>g</sup>	DNC
<b>21-12) Low-income children and adolescents receiving preventive dental care during past 12 months, ages 0–18 years</b>	57	31 <sup>f</sup>	25
<b>21-13) School-based health centers with oral health component, K–12</b> a) Dental sealants b) Dental care	--	DNC	DNC
<b>21-14) Community-based health centers and local health departments with oral health components, all</b>	75	61 <sup>b</sup>	DNC
<b>21-15) System for recording and referring infants and children with cleft lip and cleft palate, all</b>	51 (all states and D.C.)	23 states and D.C. <sup>g</sup>	Yes
<b>21-16) Oral health surveillance system, all</b>	51 (all states and D.C.)	0 states <sup>h</sup>	Yes
<b>21-17) Tribal, state and local dental programs with a public health trained director, all</b> a) state and local b) tribal and Indian Health Service	--	DNC	DNC



**Table 1 Sources:** U.S. Department of Health and Human Services. *Healthy People 2010, Progress Review, 2000*. Available at [www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls](http://www.cdc.gov/nchs/ppt/hpdata2010/focusareas/fa21.xls).

DNC = Data not collected

\* Age adjusted to the year 2000 standard population

<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> Data are for 1998

<sup>e</sup> Data are for 1996–2000

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

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

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

<sup>i</sup> North Dakota Cancer Registry, 2006

<sup>j</sup> North Dakota 2004-05 Third Grade Basic Screening Survey

<sup>k</sup> North Dakota Vital Records, 2006

**Note:** Teeth cleaning is a NOHSS indicator but is not included in *Healthy People 2010*. See part D, *Preventive Visits*, in the *Risk and Protective Factors Affecting Oral Diseases* section of this report.



# THE BURDEN OF ORAL DISEASES

## A. Prevalence of Disease and Unmet Needs

### I. Children

Cleft lip and cleft palate are the most common and visible congenital anomalies affecting newborns. Cleft lip and cleft palate are among the more common birth defects in the United States. These congenital defects occur in about one per 1,000 live births. North Dakota birth records from 1996 to 2003 indicate that 84 cases of cleft lip, with or without cleft palate, occurred. Seventy cases occurred in white newborns. According to the North Dakota Department of Human Services, Division of Children with Special Health Care Services (CSHS), almost every child had his or her palate repaired in the first year of life. Parents of a few children who had additional special needs chose not to have their child's palate repaired or delayed the repair for a year or two.

Nationally, dental caries (tooth decay) 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 in children is measured by assessing 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).

Dental caries is not uniformly distributed in the United States or in North Dakota. Some groups are more likely to experience the disease and are less likely to receive treatment.

Caries experience and untreated decay are monitored by North Dakota as consistent with the National Oral Health Surveillance System (NOHSS), which allows comparisons with other states and the nation.

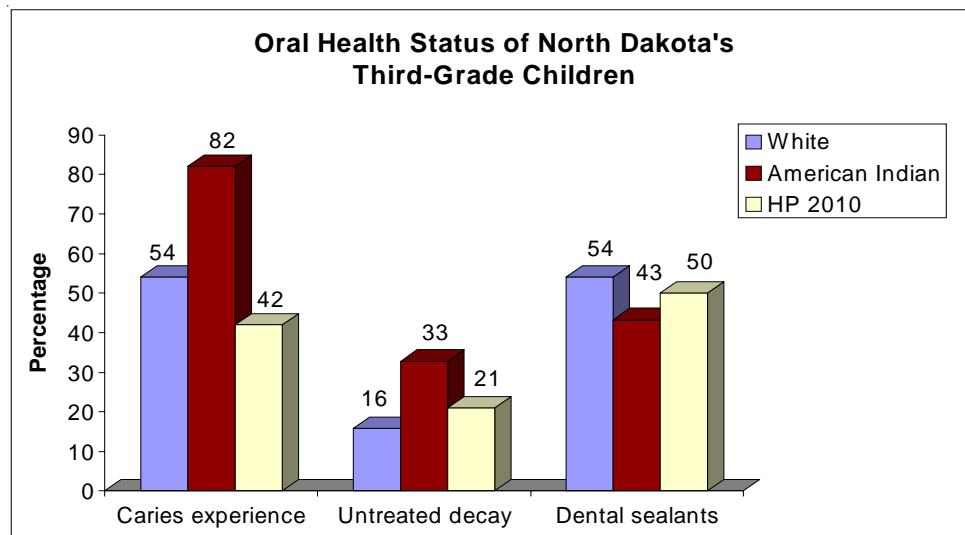
During the 2004-2005 school year, the North Dakota Department of Health conducted a statewide Oral Health Survey of third-grade children enrolled in public, state or Bureau of Indian Affairs elementary schools in the state. Within the 50 participating schools, 73 percent of the enrolled children were screened. This survey found that 56 percent had cavities and/or fillings (decay experience) – substantially higher than the *Healthy People 2010* objective of 42 percent. Seventeen percent had untreated dental decay (cavities), compared to the *Healthy People 2010* objective of 21 percent. Twenty-seven percent reported that they had not brushed their teeth that day, and 3 percent reported they did not have their own toothbrush.



Compared to white, non-Hispanic children in North Dakota, a significantly higher proportion of minority children have decay experience, untreated decay and urgent dental needs. At the time of the screening, 5 percent of minority children had decay so advanced that they had pain or an infection. Thirty-six percent of minority children had not brushed their teeth on the day of the screening, and 12 percent reported that they did not have their own toothbrush.

Figure 2 shows that North Dakota's Native American third-grade children experienced more dental caries (82 percent vs. 54 percent) than whites. They also had more untreated decay (33 percent vs. 16 percent) than whites. Furthermore, Native American third graders had less dental sealant use than whites.

**Figure 2**

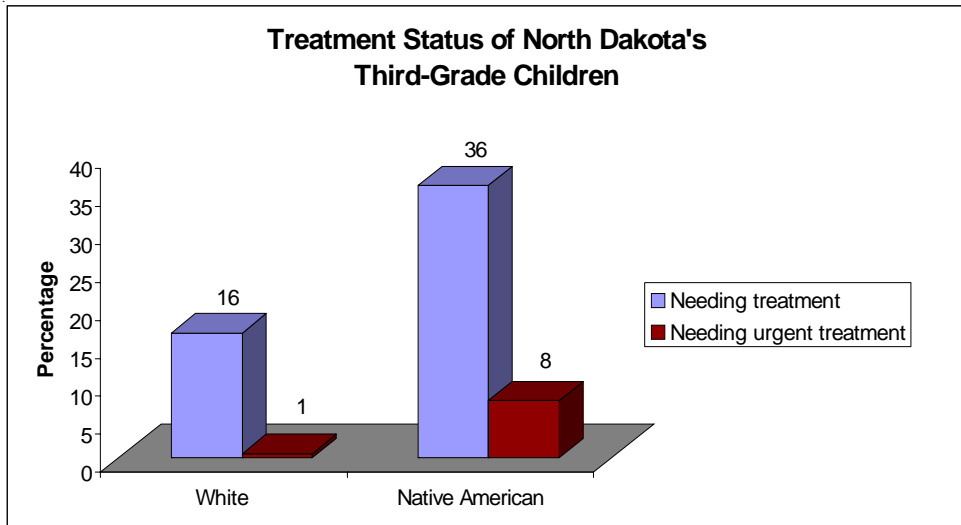


*Sources: Healthy People 2010, 2nd edition; U.S. Department of Health and Human Services, November 2000; North Dakota 2004-05 Third Grade Basic Screening Survey*



Figure 3 shows that North Dakota’s Native American third-grade children were significantly more likely to need treatment than whites, and more than 5 percent need urgent treatment.

**Figure 3**



*Source: Healthy People 2010, 2nd edition; U.S. Department of Health and Human Services, November 2000; North Dakota 2004-05 Third Grade Basic Screening Survey*

## 2. Adults

### a. Dental Caries

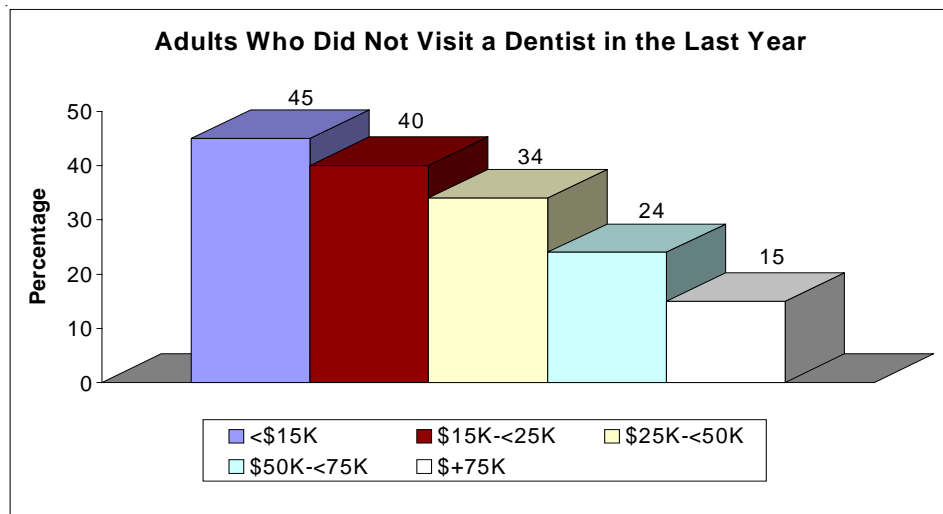
People are susceptible to dental caries throughout their lifetimes. Like children and adolescents, adults can experience new decay on the crown (enamel-covered) portion of the tooth. However, adults also can develop caries on the root surfaces of teeth as those surfaces become exposed to bacteria and carbohydrates because of gum recession. In the most recent national examination survey, 85 percent of United States adults had at least one tooth with decay or a filling on the crown. Root surface caries affect 50 percent of adults 75 or older (USDHHS 2000).



Data from the 2004 BRFSS showed that 32 percent of adults surveyed had not visited a dentist, dental hygienist or dental clinic within the past year. Men (35 percent) were less likely to have visited a dentist for any reason within the past year than were women (28 percent).

As with general health, oral health status tends to vary in the United States on the basis of socioeconomic factors. Income is known to impact the utilization of dental services. Data from the 2004 North Dakota BRFSS showed that adults with low income were less likely to have visited a dentist or a dental clinic for any reason within the past year, as shown in Figure 4.

**Figure 4**



*Source: 2004 Behavioral Risk Factor Surveillance System (BRFSS)*

## b. Tooth Loss

A full dentition is defined as having 28 natural teeth, exclusive of third molars (the wisdom teeth) and teeth removed for orthodontic treatment or because of trauma. Most people 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 also can result from infection, unintentional injury and head and neck cancer treatment. In addition, certain orthodontic and prosthetic services sometimes require the removal of teeth.

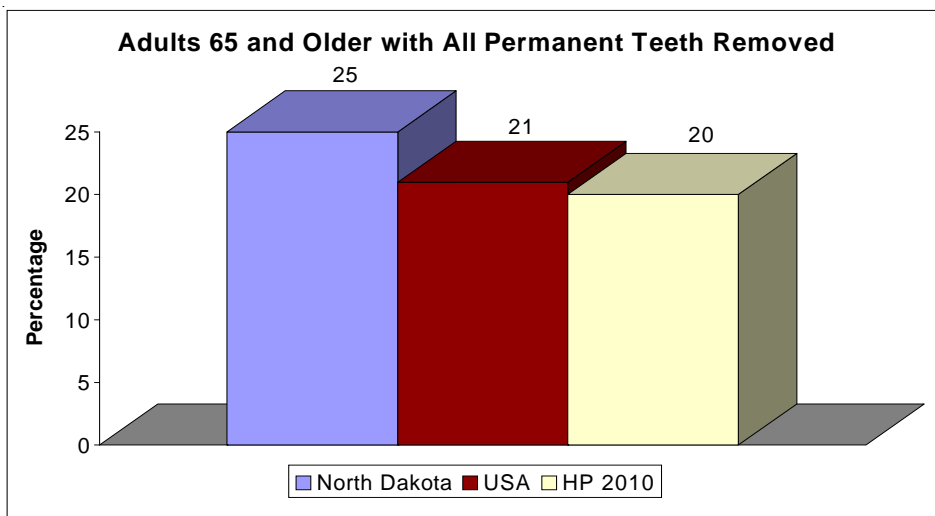


Despite an overall trend toward a reduction in tooth loss in the United States population, not all groups have benefited to the same extent. Women tend to have more tooth loss than men of the same age group. Among all predisposing and enabling factors, low educational level often has been found to have the strongest and most consistent association with tooth loss.

Data from the 2004 North Dakota BRFSS indicate that 25 percent of individuals 65 or older have had all their natural teeth extracted as compared with the national statistic of 21 percent.

Figure 5 shows a demographic breakdown of adults 65 and older that had all their teeth removed.

**Figure 5**



*Sources: Healthy People 2010, 2nd edition; U.S. Department of Health and Human Services, November 2000; 2004 Behavioral Risk Factor Surveillance System*

Overall, a higher percentage of Americans living below the poverty level are edentulous (have lost all their natural teeth) than are those living above the poverty level (USDHHS 2000). Among people 65 and older, 39 percent of those with less than a high school education were edentulous in 1997, compared with 13 percent of people with at least some college education (USDHHS 2000).



## c. Periodontal (Gum) Diseases

Gingivitis is characterized by localized inflammation, swelling and bleeding gums without a loss of the bone that supports the teeth. Gingivitis is usually reversible with good oral hygiene. Daily removal of dental plaque from the teeth 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).

North Dakota does not collect periodontal disease data. However, nationally, the prevalence of gingivitis is highest among Native Americans, Alaska Natives and adults with less than a high school education. Cases of gingivitis likely will remain a substantial problem and may increase as tooth loss from dental caries declines or because 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.

## d. Oral and Pharyngeal Cancer

Some 30,990 new cases of oral and pharyngeal cancers are expected to be diagnosed in the United States in 2006, and about 7,430 (24 percent) people are expected to die from the disease. Oral and pharyngeal cancers are the seventh most common cancers found among white males and the 14th most common among white females.

Survival rates for oral cancer in the United States have not improved substantially over the past 25 years. More than 40 percent of people diagnosed with oral cancer die within five years of diagnosis (Ries et al. 2004), although survival varies widely by stage of disease when diagnosed. The five-year relative survival rate for people with oral cancer diagnosed at a localized stage is 81 percent. In contrast, the five-year survival rate is only 51 percent once the cancer has spread to regional lymph nodes at the time of diagnosis and is just 29 percent for people with distant metastasis.

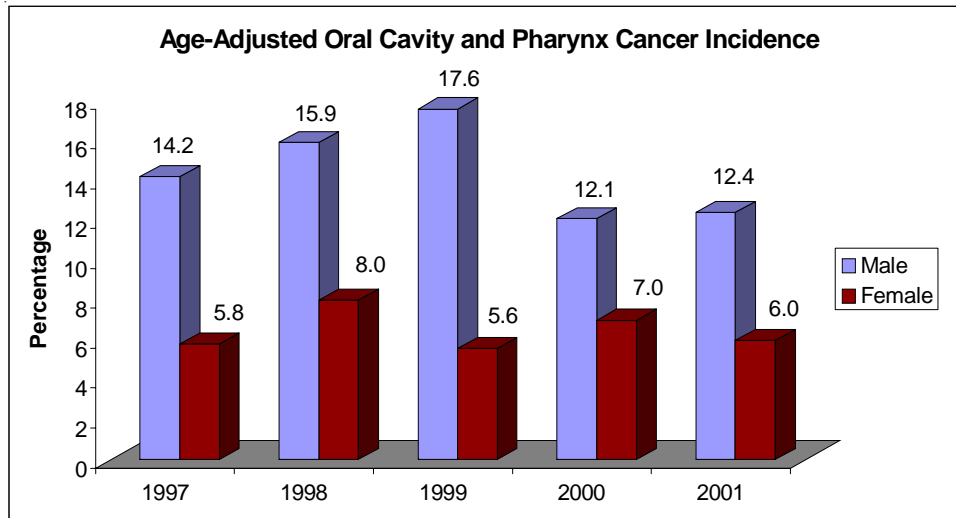


Cigarette smoking and alcohol are the major known risk factors for oral cancer in the United States, accounting for more than 75 percent of these cancers (Blot et al. 1988). The use of smokeless tobacco (USDHHS 1986; IARC 2005) and cigars (Shanks & Burns 1998) also increases the risk of oral cancer. Dietary factors, particularly low consumption of fruit, and some types of viral infections also have 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).

Early detection of oral cancers improves overall survival rates. Therefore, it is imperative for individuals to be screened annually by dental or other health-care professionals. This is an opportunity for collaboration between public and private health-care professionals. Initial strides have been made in this area through training provided to nurses in several public health units on techniques for screening the tongue and oral cavity for signs and symptoms of cancer.

Analyses of the North Dakota death certificates between 1996 and 2003 showed 155 deaths by oral cavity and pharynx cancer. Among these, 145 deaths occurred among whites and 10 occurred in Native Americans. Ninety-nine deaths occurred among males and 56 occurred in women. Analyses of the North Dakota Cancer Registry between 1996 and 2003 found that the age-adjusted North Dakota cancer-incidence rates have been decreasing since 1998. The incidence is higher in males than in females, as shown in the Figure 6.

**Figure 6**



*Source: North Dakota Cancer Registry, 1997-2001*



## **B. Disparities**

### **1. Racial and Ethnic Groups**

Although gains in oral health status have been achieved for the population as a whole, they have not been evenly distributed across subpopulations. Native Americans generally have the poorest oral health of any of the racial and ethnic groups in United States and North Dakota populations. As reported above, this group tends to be more likely to experience dental caries in some age groups, are less likely to have received treatment and have more extensive tooth loss.

Native Americans living on a reservation have access to Indian Health Services (IHS) and Tribal Health Services (THS) for their dental health-care services. There has been continued collaboration between the five tribes in North Dakota and the NDDoH in addressing health issues. The most difficult population of Native Americans to reach are those residing in the major cities of North Dakota. They have more limited access to IHS and THS for dental health-care services and are less likely to be able to afford unsubsidized care.

### **2. Women's Health**

Most oral diseases and conditions are complex and are 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 of oral diseases. Many women live in poverty, are not insured or are the sole heads of their households. For these women, obtaining needed oral health care may be difficult.

Although many statistical indicators show women to have better oral health than men (Redford 1993; USDHHS 2000), more women than men have oral-facial pain, including pain from oral sores, jaw joints, face/cheek and burning mouth syndrome.

Numerous studies have shown that pregnancy may impact women's oral health and that poor oral health may contribute to pre-term and low birthweight babies (Offenbacher et al. 2001). The 2002 North Dakota Pregnancy Risk Assessment Monitoring System survey found that the majority (57 percent) of women surveyed reported that they did not go to a dentist or dental clinic during their most recent pregnancy. Almost two-thirds (64 percent) of women said that a dental or a health-care worker had not talked with them about caring for their teeth and gums during their most recent pregnancy. Almost one-third (32 percent) of women indicated that they had not had their teeth cleaned by a dentist or dental hygienist in more than 12 months.



Women with higher education were more likely than those with less education to go to a dentist or dental clinic during their pregnancy (52 percent for 16 or more years of education vs. 37 percent for those with 12 years of education). Native American women were three times more likely not to visit a dentist or dental clinic during their pregnancy than were other women (75 percent vs. 25 percent, respectively). Women who lived in rural areas were less likely to visit a dentist or dental clinic during their pregnancy (61 percent vs. 40 percent). During pregnancy, a woman may be particularly amenable to disease prevention and health promotion interventions that could enhance her health or that of her fetus (Gaffield et al. 2001).

Although Medicaid is a public insurance program aimed at low-income individuals, a significantly higher proportion of women with Medicaid coverage did not go to the dentist during their pregnancy than did non-Medicaid covered women (69 percent vs. 52 percent, respectively). Reasons may include issues related to access to care (e.g., lack of providers or distance).

About two-thirds of white women reported that discussions about oral care with a dental or health-care worker did not take place (62 percent). Sixteen percent of Native American

women reported having had a dental or health-care worker talk with them about oral care. One-fifth of white women indicated needing to see a dentist for a problem during their pregnancy, while one-third of Native American women reported needing to see a dentist for a problem during their pregnancy.





### 3. 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 the inability to receive the personal and professional health care needed to maintain oral health. More than 54 million people are defined as disabled under the Americans with Disabilities Act, including almost one million children younger than 6 and 4.5 million children between the ages of 6 and 16.

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 need 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. Caries rates among people with disabilities vary widely, but overall, their caries rates are higher than those of people without disabilities (USDHHS 2000).

On the 2004 BRFSS survey, 37 percent of individuals with a disability indicated that they had not visited a dentist or dental hygienist within the last year, as compared to 28 percent of those individuals with no disability.



#### 4. Socioeconomic Disparities

People living in low-income families bear a disproportionate burden from 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 do children 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, 50 percent of children ages 2 to 11 living in poverty have one or more untreated decayed primary teeth, compared with 31 percent of children living above the poverty level (USDHHS 2000).

Adolescents ages 12 to 17 living in poverty in each racial/ethnic group have a higher percentage of untreated decay in the permanent teeth than does the corresponding adolescent group living above the poverty level. The pattern is similar in adults, with the proportion of untreated decayed teeth being higher among those living in poverty.



At every age, a higher proportion of those at the lowest income level have periodontitis. Adults with some college education (15 percent) have two to two-and-one half times less destructive periodontal disease than do adults with high school (28 percent) or with less than high school (35 percent) levels of education (USDHHS 2000). People living in rural areas also have a higher disease burden because of difficulties in accessing preventive and treatment services.



## C. Societal Impact of Oral Disease

### I. Social Impact

Oral health is related to well-being and 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 a 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; alterations in taste; and functional limitations of prosthetic replacements. 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. Perhaps due to social embarrassment or functional problems, people with oral conditions may avoid conversation, laughing, smiling or other nonverbal expressions that show their mouth and teeth.



## 2. Economic Impact

### a. Direct Costs of Oral Diseases

Expenditures for dental services in the United States in 2003 were \$74.3 billion, 4.4 percent of the total spent on health care that year (U.S. Centers for Medicare and Medicaid Services [CMS] 2004).

Research indicates that premiums and cost-sharing (out-of-pocket expenses) can have a significant and immediate impact on low-income individuals' coverage and access to care. Low-income families spend seven out of every 10 dollars on basic living expenses, including housing, transportation and food, leaving little income to cover other expenses, including health or dental care.

A large proportion of dental care is paid out-of-pocket by patients. Nationally in 2003, 44 percent of dental care was paid out-of-pocket, 49 percent was paid by private dental insurance and 7 percent was paid by federal or state government sources. In comparison, 10 percent of physician and clinical services were paid out-of-pocket, 50 percent were covered by private medical insurance and 33 percent were paid by government sources (CMS 2005).

### b. 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, United States schoolchildren missed a total of 1.6 million days of school because of acute dental conditions, which is more than three days for every 100 students (USDHHS 2000). Acute dental conditions were responsible for more than 2.4 million days of work lost 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.



### 3. Oral Disease and Other Health Conditions

Oral health and general health are integral to 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 of heart disease and stroke, premature births in some women, 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.

Complications of diabetes include susceptibility to periodontal disease and healing problems. It is important for individuals with diabetes to obtain regular oral health care. According to the 2002 North Dakota BRFSS, about 36 percent of individuals with diabetes did not visit a dentist or dental hygienist, compared to 29 percent of individuals without diabetes.





## RISK AND PROTECTIVE FACTORS AFFECTING ORAL DISEASES

The most common oral diseases and conditions can be prevented. Safe and effective measures are available to 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 (U.S. Centers for Disease Control and Prevention [CDC] 1999). It is an ideal public health method because it is effective, eminently safe and 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 2000).

Recognizing the importance of community water fluoridation, *Healthy People 2010* Objective 21-9 is "Increase the proportion of the U.S. population served by community water systems with optimally fluoridated water to 75 percent." In the United States during 2002, about 170 million people (67 percent of the population served by public water systems) received optimally fluoridated water (CDC 2004).

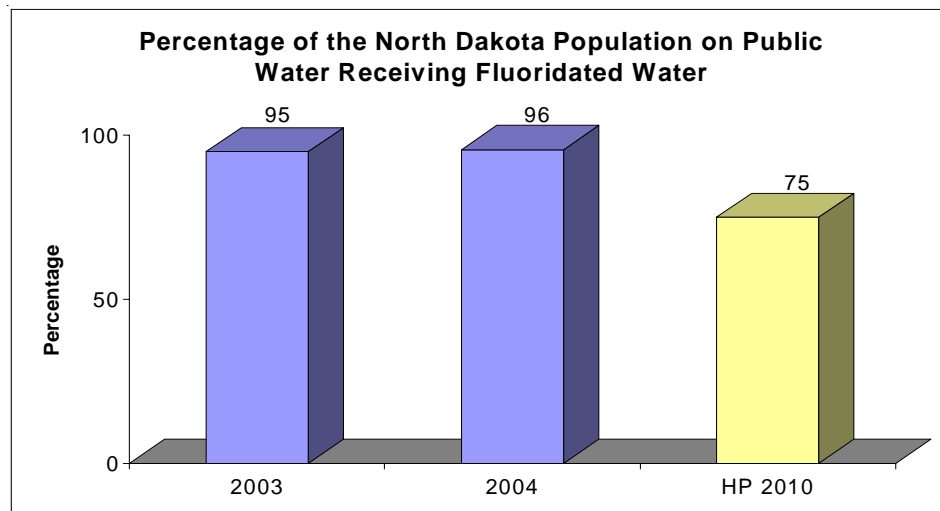
Not only does community water fluoridation effectively prevent dental caries, it is one of very few public health prevention measures that offer significant cost savings to almost all communities (Griffin et al. 2001). It has been estimated that about every \$1 invested in community water fluoridation saves about \$38 in averted costs. The cost per person of instituting and maintaining a water fluoridation program in a community decreases with increasing population size.

Most water supplies contain trace amounts of fluoride. Water systems are considered naturally fluoridated when the natural level of fluoride is greater than 0.7 parts per million (ppm). When a water system adjusts the level of fluoride to between 0.7 and 1.2 ppm, it is referred to as community water fluoridation.



Figure 7 shows the prevalence of the North Dakota population served by public water systems with fluoridated water. The prevalence is high when compared to the national statistics.

**Figure 7**



*Sources: Water Fluoridation Reporting System, CDC, 2003-2004; Healthy People 2010, 2nd edition; U.S. Department of Health and Human Services, November 2000*

## **B. Topical Fluorides and Fluoride Supplements**

Because frequent exposure to small amounts of fluoride each day will best reduce the risk of 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 people at high risk of dental caries, additional fluoride measures might be needed. Community measures include fluoride mouth rinse or tablet programs, which typically are conducted in schools. Individual measures include professionally applied topical fluoride gels or varnish for people at high risk of caries.

About 72 schools in North Dakota participate in the fluoride mouth rinse program coordinated through the NDDoH's Oral Health Program.

Fluoride varnish is not available in North Dakota settings, other than dental offices, and may only be applied by dentists or dental hygienists. Alternative delivery options for fluoride varnish delivery are being explored (e.g., public health clinics and non-dental health-care providers).



### C. Dental Sealants

Since the early 1970s, the incidence of 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-age 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. 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 2000).

Second permanent molars erupt into the mouth at about ages 12 to 13. 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.

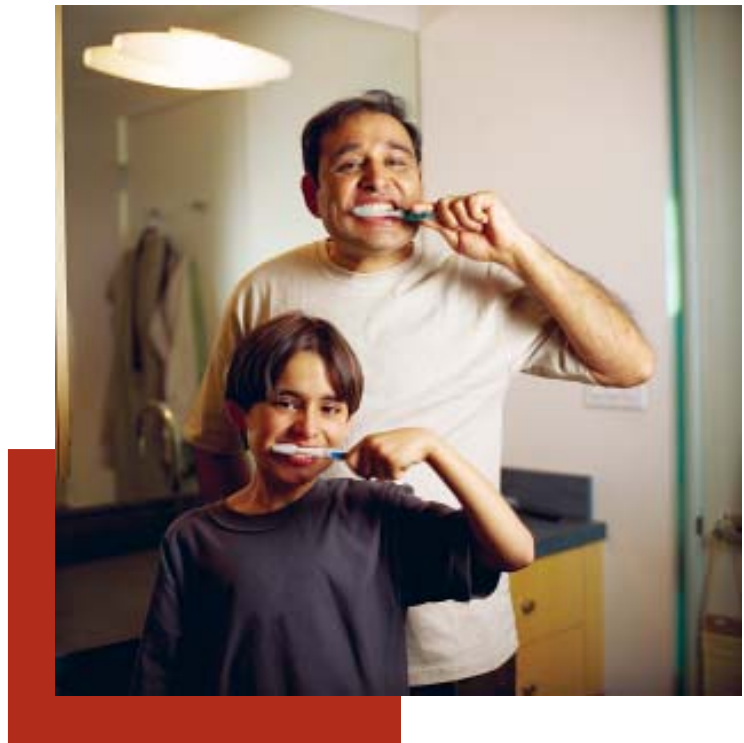


The *Healthy People 2010* target for the U.S. for dental sealants on molars is 50 percent for 8-year-olds and 14-year-olds. The prevalence of sealants varies by the education level of the head of household. The percentage of school-age children with dental sealants has risen in recent years as the public and private sectors increasingly use the procedure, dental insurance pays for dental sealants, and parents request sealants for their children. No increase, however, has occurred among children in low-income populations.



## 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 preventing 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, as shown in Table 2, is the percentage of 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.





**Table 2. Percentage of Adults Ages 18 and Older Who Had Their Teeth Cleaned Within the Past Year, 2002**

	Median % United States (%)	North Dakota <sup>a</sup> Status (%)
<b>Total</b>	69	67
<b>Age</b>		
18 – 24 years	70	74
25 – 34 years	66	69
35 – 44 years	69	73
45 – 54 years	71	75
55 – 64 years	73	69
65 + years	72	63
<b>Race</b>		
White	72	71
Black	62	N/A
Hispanic	65	N/A
Other	64	N/A
Multiracial	56	N/A
<b>Sex</b>		
Male	67	68
Female	72	73
<b>Education Level</b>		
Less than high school	47	53
High school or G.E.D.	65	67
Some post high school	72	72
College graduate	79	78
<b>Income</b>		
Less than \$15,000	49	58
\$15,000 – 24,999	56	60
\$25,000 – 34,999	65	67
\$35,000 – 49,999	72	74
\$50,000+	81	81

*Table 2 Sources: National Center for Chronic Disease Prevention and Health Promotion, Division of Adult and Community Health; Centers for Disease Control and Prevention; Behavioral Risk Factor Surveillance System Online Prevalence Data, 1995–2004, available at [www.cdc.gov/brfss](http://www.cdc.gov/brfss)*

<sup>a</sup> North Dakota 2002 Behavioral Risk Factor Surveillance System



## E. Screening for Oral Cancer

Oral cancer detection is accomplished by a thorough examination of the head and neck; an examination of the mouth including the tongue, the entire oral and pharyngeal mucosal tissues and the 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 an examination, definitive diagnostic tests, such as biopsies, are needed to make a firm diagnosis.

Oral cancer is more common after age 60. Known risk factors include the use of tobacco products and alcohol. The risk of oral cancer is increased six 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 without protection (a risk factor for lip cancer). Use of lip sunscreen and hats is recommended.

Recognizing the need for dental and medical providers to examine adults for oral and pharyngeal cancer, *Healthy People 2010* Objective 21-7 is “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 40 and older (13 percent) reported receiving an examination for oral and pharyngeal cancer, although the proportion varied by race/ethnicity.

An advisory group to the North Dakota Cancer Coalition, the Early Detection and Screening work group, identified activities for inclusion in the North Dakota Cancer Control Plan to encourage health professionals to routinely screen individuals for oral cancer regardless of risk factors.



## F. Tobacco Control

Tobacco use has a devastating effect 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. In addition, smoking causes more than \$150



billion in annual health-related economic losses (CDC 2002). The effects of tobacco use on the public's oral health are also 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 2004). The evidence is sufficient to consider smoking a causal factor for adult periodontitis (USDHHS 2004); 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 of a wide range of oral soft tissue changes (Christen et al. 1991; AAP 1999).

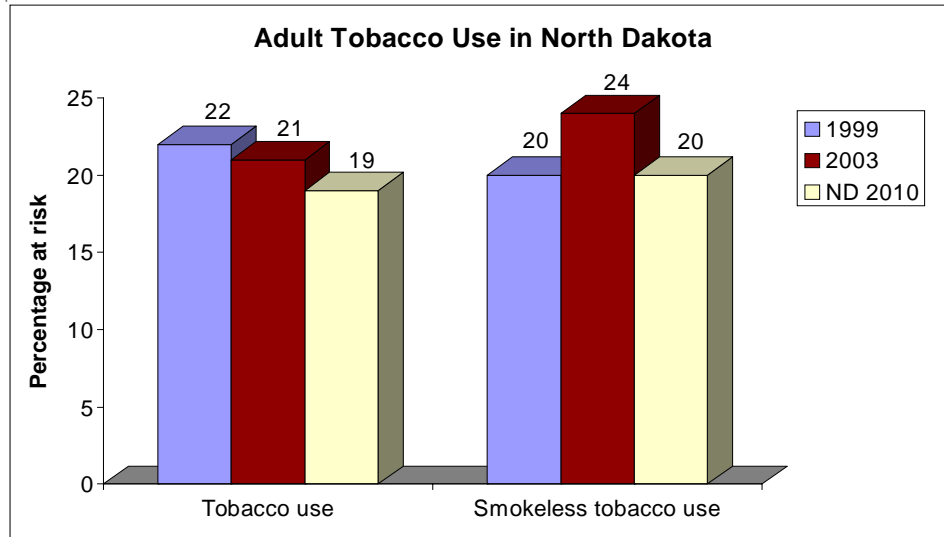
Comprehensive tobacco control would have a large impact on oral health status. The goal of comprehensive tobacco control programs is to reduce disease, disability and death related to tobacco use by:

- ◆ Preventing the initiation of tobacco use among young people.
- ◆ Promoting quitting among young people and adults.
- ◆ Eliminating nonsmokers' exposure to secondhand smoke.
- ◆ Identifying and eliminating tobacco-related disparities among specific populations.



Since 1999, the prevalence of adult smokers in North Dakota has been decreasing while smokeless tobacco use has increased, as shown in Figure 8.

**Figure 8**



*Sources: National and state data from Behavioral Risk Factor Surveillance System (BRFSS); Healthy People 2010, 2nd edition; U.S. Department of Health and Human Services, November 2000*

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). Dental patients are particularly receptive to health messages at periodic check-up visits, and the 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). However, national data from the early 1990s indicated that just 24 percent of smokers who had seen a dentist in the past year reported that their dentist advised them to quit, and only 18 percent of smokeless tobacco users reported that their dentist *ever* advised them to quit.



### 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 for 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.

The North Dakota Department of Health’s Oral Health Program works collaboratively with six dental hygienists as oral health consultants throughout the state. Their function is to provide oral health education and promotion to schools, local public health units and long-term care facilities. In addition, they provide technical assistance to schools participating in the school fluoride program.



## PROVISION OF DENTAL SERVICES

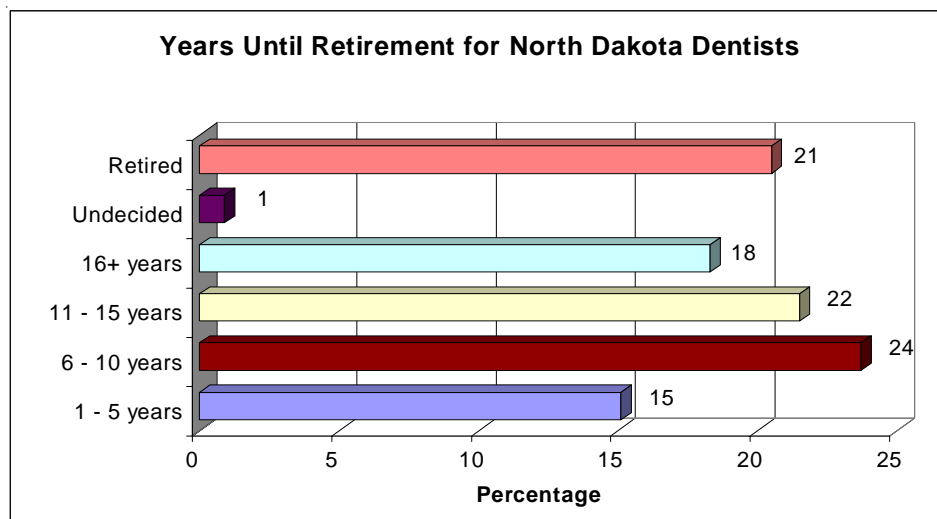
### A. Dental Workforce and Capacity

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.

Forty-nine percent of North Dakota’s population lives in Ward, Grand Forks, Cass and Burleigh counties, as does an overwhelming proportion of the state’s dentists. North Dakota is characterized by a chronic shortage of health professionals in rural areas. As the rural areas experience the greatest loss of population, the number of dentists practicing in communities of 2,500 or fewer people also has declined. Forty-four of the 53 counties have six or fewer practicing dentists. Only four counties have 16 or more dentists.

Sixty percent of dentists in North Dakota will retire within the next 15 years as shown in Figure 9.

**Figure 9**



*Source: Survey of North Dakota Dentists, January 2005, University of North Dakota Center for Rural Health*

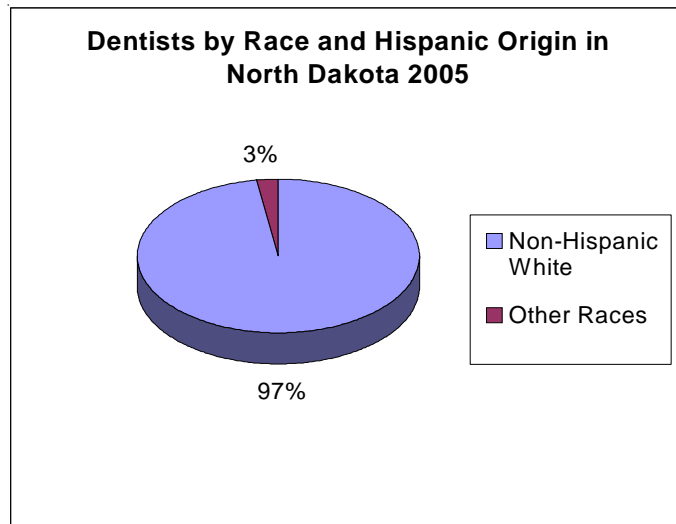


## B. Dental Workforce Diversity

One cause of oral health disparities is a 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 (USDHHS 2000).

Ninety-seven percent of dentists in North Dakota are non-Hispanic white compared to 87 percent nationally as shown in Figure 10.

**Figure 10**



*Source: Survey of North Dakota Dentists, January 2005, University of North Dakota Center for Rural Health*



## C. Public Dental Service Options

### 1. Dental Medicaid and State Children's Health Insurance Programs

Medicaid is the primary source of health care for low-income families, the 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 United States citizens can receive Medicaid only to treat a life-threatening medical emergency; eligibility is determined on the basis of state and national criteria. Dental services are a required service for most Medicaid-eligible individuals younger than 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 (U.S. Centers for Medicare and Medicaid, 2004).

Nationally, federal Medicaid expenditures for dental services totaled \$2.3 billion in 2003, or 3 percent of the \$74 billion spent on dental services nationally (CMS 2004).

### 2. 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 United States Migrant Health Program supports the delivery of migrant health services, serving more than 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 "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 2000). In 2002, 61 percent of local jurisdictions and health centers in the United States had an oral health component (USDHHS 2004). The *Healthy People 2010* target is 75 percent.

Resources in North Dakota are limited. In Fargo, resources include the Family Health Care Center and the Migrant Health Program. In Bismarck, Bridging the Dental Gap, a community dental clinic, was developed in response to the community's need for dental services for the underserved.



### D. Use of Dental Services

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, and 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.

The *Healthy People 2010* goal for the percentage of adults having visited the dentist in the previous year is 56 percent. The rate of

dental visits for North Dakota adults (18 or older) is high, at 70.3 percent. This mirrors the current national rate of 70.9 percent.

Progress has been made in the oral health of North Dakotans. However, disparities remain. Access to preventive care remains a problem for some segments of the population, specifically low-income, minority individuals. Individual knowledge of how oral health relates to general health is limited, and the mouth is frequently fragmented from the rest of the body. Workforce issues remain despite the state's legislation enacting a dental loan repayment program.



## CONCLUSION

While the information presented in this report is the most comprehensive to date, it is by no means complete. There is still more to learn about the oral health status and behaviors of North Dakotans, including:

- ◆ Percentage of children visiting the dentist by age one.
- ◆ Percentage of adults with periodontal disease.
- ◆ Oral cancer screenings by dental and other health professionals.
- ◆ Dental utilization data among individuals with disabilities.

It is hoped that readers of this report find the data useful as they continue their efforts to understand the factors influencing oral health in North Dakota.





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# PLAN FOR THE FUTURE



Plan for the Future



# INTRODUCTION

*Oral Health in America: A Report of the Surgeon General* defines oral health as more than healthy teeth. Oral health is a positive condition that is essential to general health and well-being. An individual who does not have the ability to perform certain essential functions to speak, taste, chew and swallow may have compromised ability to work, learn or function effectively within the community. While we have made substantial improvements in the nation's oral health over the past several decades, there continues to be a significant segment of the population for whom oral health remains elusive.

Oral diseases are a devastating problem among a significant percentage of North Dakota residents, affecting their overall health and ability to work and learn. While much oral disease is preventable, many in North Dakota lack access to the basic services that could help them avoid oral pain, infections, dental caries (tooth decay), tooth loss and other oral health problems.

Because of the far-reaching impact of these problems, the North Dakota Oral Health Coalition worked collaboratively to develop this plan, which will assist in identifying and prioritizing actions necessary to improve oral health for all North Dakotans.





## EXECUTIVE SUMMARY

*Oral Health in North Dakota: Plan for the Future* is a strategic plan to systematically enhance the oral health of the citizens of North Dakota. The plan is based on appropriate oral health needs, assessment and surveillance findings at the state and local levels and uses evidence-based interventions that have been shown to be effective through research. The plan is critical to establishing a vision for improving the oral health and well-being of the citizens of North Dakota by providing the linkages and coordination needed to set goals and objectives, develop policies, integrate interventions, target actions and efficiently use available resources at the state and local levels.

Because the success of any plan needs the input and support of numerous people, the North Dakota Oral Health Coalition was developed in 2005 representing a broad range of individuals and organizations. Collaborative planning included gathering information from state and community needs-assessment studies to identify needs and coordinate activities. In addition, the coalition reviewed a broad spectrum of national initiatives regarding oral health, including *Oral Health in America: A Report of the Surgeon General* (the *Report*) and *Healthy People 2010*.

Published in 2000, the *Report* provided state-of-the-science evidence on the growth and development of oral, dental and craniofacial tissues and organs; the diseases and conditions affecting them; and the integral relationship between oral health and general health. In addition, the report examined oral health status across the nation, evaluated how oral health can be promoted and maintained and identified opportunities for action designed to enhance oral health.

Published by the Office of Disease Prevention and Health Promotion, U.S. Department of Health and Human Services, *Healthy People 2010* is the “prevention agenda” for the nation. It includes a comprehensive set of disease prevention and health promotion objectives for the United States designed to identify and reduce preventable threats to health. *Healthy People 2010* includes oral health among its principal areas of focus and sets the following as its goal: Prevent and control oral and craniofacial diseases, conditions and injuries and improve access to related services.

Throughout the planning process, the coalition operated with a vision, mission and set of guiding principles regarding the prevention and promotion of oral health and the provision of dental care. It was acknowledged by the coalition that while there are common underlying issues and challenges across North Dakota, variations exist among communities in terms of unique needs and available resources. The resulting plan, therefore, not only identifies a “standard” level of oral health for all residents, but also articulates priorities for both statewide and community-level actions, identifies tools and resources to address oral health needs, coordinates and supports existing community-based systems and empowers individuals to access and utilize available resources.



While the *Oral Health in North Dakota Burden of Disease* portion of this report provides a comprehensive review of the oral health status of North Dakota residents, the *Plan for the Future* offers a vision and discussion of what actions will be necessary to bring oral health and its positive impact on total well-being to the residents of North Dakota.





# NORTH DAKOTA ORAL HEALTH INFRASTRUCTURE

In order for any plan to be implemented and have real impact, it must be supported by a collaborative partnership of stakeholders. The infrastructure for oral health in North Dakota is composed of the:

- ◆ North Dakota Department of Health’s Oral Health Program.
- ◆ *Healthy North Dakota* initiative.
- ◆ North Dakota Oral Health Coalition.

## North Dakota Department of Health’s (NDDoH) Oral Health Program

The state Oral Health Program is located within the NDDoH’s Community Health Section, Division of Family Health. The Oral Health Program is staffed with a full-time program director, four part-time, temporary staff that includes a program manager and three oral health consultants and a contracted public health dentist. In addition, three oral health consultants that are located within local public health units support the program.

The State Oral Health Program focuses program priorities in alignment with the Association of State and Territorial Dental Director’s Guidelines for State and Territorial Oral Health Programs. These priorities include assessment, policy development and assurance.

### Assessment

Includes assessing oral health status and needs so that problems can be identified and addressed; analyzing determinants of identified oral health needs, including resources; assessing the fluoridation status of water systems and other sources of fluoride; and implementing an oral health surveillance system to identify, investigate and monitor oral health problems and health hazards.

### Policy Development

Includes developing plans and policies through a collaborative process that supports local and state efforts to address oral health needs; providing leadership to address oral health problems by maintaining a strong oral health program within the NDDoH; and mobilizing partnerships between and among policymakers, professionals, organizations and others to identify and implement solutions to oral health problems (e.g., North Dakota Oral Health Coalition).

### Assurance

Includes informing and educating the public regarding oral health problems and solutions; promoting and supporting regulations that protect and improve oral health and ensure safety; linking people to needed oral health services; supporting services and implementation of programs that focus on prevention; providing training to ensure that the workforce has the expertise to effectively address oral health needs; and supporting innovative solutions to oral health problems.



## Healthy North Dakota

In his January 2002 State of the State address, Governor John Hoeven announced a new public health initiative, *Healthy North Dakota*, challenging each North Dakotan to take control of his or her health and lifestyle.

The *Healthy North Dakota* Summit was held in Bismarck in August 2002. One hundred and thirty people representing more than 75 organizations met to define wellness and identify priorities for North Dakota. Oral health was one of the many priorities identified.

*Healthy North Dakota* works through an established framework supporting North Dakotans in their efforts to make healthy choices – in schools, workplaces, senior centers, homes and anywhere people live, learn, work and play. This work is further expanded through the networks, memberships and professional relationships each individual and organization brings to the table. The North Dakota Oral Health Coalition members are among more than 400 North Dakotans representing about 150 agencies, organizations and businesses from across the state that are providing leadership in identifying the strategies for building a *Healthy North Dakota*.





## The North Dakota Oral Health Coalition

Formed in 2005, the North Dakota Oral Health Coalition is a chartered, collaborative, statewide coalition composed of a variety of disciplines and stakeholders focused on the oral health of all North Dakotans. The work of the coalition focuses around its mission, vision and guiding principles.

### Mission

The North Dakota Oral Health Coalition develops and promotes innovative strategies to achieve optimal oral health for all North Dakotans.

### Vision

The North Dakota Oral Health Coalition promotes best practice standards to ensure oral health is an integral part of overall health.

### Guiding Principles

Accountability  
Respect  
Honesty  
Trust

Coalition members attend meetings on a monthly basis, rotating every other month between full coalition meetings and project team meetings. Each coalition member is encouraged to join a project team to be involved in the hands-on work of the *Oral Health in North Dakota: Plan for the Future*. Everyone is invited to become a member of the North Dakota Oral Health Coalition. If interested, please call 701.328.2356 or 800.472.2286 - press 1 (toll-free in North Dakota).



# NORTH DAKOTA STATE PLAN VISION PRIORITIES

Through the collaborative planning process of the North Dakota Oral Health Coalition, a list of vision priorities, goals and strategies was created. These priorities, goals and strategies are meant to assist North Dakotans in achieving and maintaining optimal oral health through access to an effective system of health services that promotes appropriate health behaviors.

- A** Oral and medical health is integrated into overall health.
- B** Consumers in North Dakota recognize the value of oral health.
- C** Communication, education and care are enhanced by the use of effective technology.
- D** The Oral Health Coalition is sustainable, diverse and recognized as an advocate in oral health.
- E** Creative dental coverage programs are available to the public.
- F** Education opportunities in the dental field are expanded.
- G** All North Dakota residents are aware of the benefits of fluoridation.
- H** Creative solutions exist to improve access to oral health care.





# VISIONS, GOALS AND STRATEGIES

## **A** Oral and medical health are integrated into overall health.

Many people consider oral signs and symptoms to be less important than indications of general illness. As a result, they may avoid or postpone needed care, thus exacerbating the problem. If we are to increase the nation's capacity to improve oral health and reduce health disparities, we need to enhance the public's understanding of the meaning of oral health and the relationship of the mouth to the rest of the body. Infections in the mouth such as periodontal (gum) diseases may increase the risk of heart disease, may put pregnant women at a greater risk of premature delivery and may complicate blood sugar for people with diabetes. Changes in the mouth often are the first signs of problems elsewhere in the body, such as infectious diseases, immune disorders, nutritional deficiencies and even cancer.

Thirty thousand new cases of oral and pharyngeal cancers are expected to be diagnosed in the United States this year. The survival rate has not improved in the last 25 years. More than 40 percent of people diagnosed with oral cancer die within five years of the diagnosis. Cigarette smoking, cigars, smokeless tobacco and alcohol are the major known risk factors for oral cancer.

Early detection of oral cancers improves overall survival rates. It is important for individuals to be screened annually by dental or other health care professionals. This is an opportunity for the collaboration between public and private health-care professionals.

North Dakota's Cancer Control Plan, a strategic five-year plan working toward lifting the burden of cancer in North Dakota, includes strategies to address screening and early detection of oral cancer. The North Dakota Cancer Control Plan can be viewed at [www.ndhealth.gov/compncancer/State%20Cancer%20Plan.htm](http://www.ndhealth.gov/compncancer/State%20Cancer%20Plan.htm).

## **Vision A** Goals and Strategies

1. Promote the use of the medical home concept.
  - Engage and empower families in establishing basic oral health, from the prenatal period on.
  - Support recommendations that by the age of 2, all children receive an oral assessment, and referral to a dentist as necessary.
2. Strengthen the integration of oral health in *Healthy North Dakota*.
  - Increase the public perception of the importance of good oral health as a component of overall health by developing an oral health awareness and education campaign.
  - Include oral health objectives in all public health promotion and prevention protocols and guidelines.



3. Facilitate oral health connectivity and buy-in among the North Dakota Medical Association, the North Dakota Dental Association, the North Dakota Dietetic Association, and others.
  - Increase medical perception about the importance of oral health as a component of overall health.
  - Increase early detection and reduce the incidence of oral and pharyngeal cancers.
  - Support efforts to reduce tobacco and alcohol use among North Dakota residents.
  - Increase awareness of the link between tobacco and alcohol use and oral pharyngeal cancers.
  - Coordinate efforts among oral health providers, school administrators, school nurses, school health educators, alcohol and tobacco prevention task forces, etc., to implement comprehensive educational programs regarding the dangers of tobacco and alcohol use.
  - Educate primary-care providers regarding the importance of early detection and treatment of oral and pharyngeal cancers.
  - Enlist oral health and primary-care providers to participate in alcohol and tobacco education and cessation programs
  - Provide continuing education to oral health and primary-care providers regarding effective approaches to reduce the use of alcohol and tobacco.
4. Identify strategies for disparate populations by participating in the Disparities workgroup for *Healthy North Dakota*.
  - Enhance the existing workforce to meet the diverse oral health needs of all North Dakota residents.
5. Eliminate separation between oral and medical health where possible (e.g., coverage).
  - Change perceptions regarding oral health and disease so that oral health becomes an accepted component of general health by developing a statewide oral health awareness and education plan.
  - Incorporate oral health assessment and education in annual physicals.
  - Provide educational guidelines for the prevention, identification and treatment of oral diseases to primary medical-care providers.
  - Provide oral assessment, health promotion and referrals as necessary to patients in all primary-care settings.
  - Include oral health objectives in all published health promotion and prevention protocol and guidelines.
  - Encourage the oral/medical integration concept.



6. Participate in *Healthy North Dakota* Third Party Payer work group.
7. Create a pilot with the University of North Dakota/Family Practice Center integrating oral and medical health as part of its curriculum.
  - Implement a care coordination model that uses education and prevention to improve oral health.
  - Provide information for university courses.
  - Contact the office of Articulation and Transfer through the North Dakota State University System to promote course competencies in classes offering oral health curriculum.
8. Collaborate with Blue Cross Blue Shield of North Dakota to combine/integrate oral and medical health.
  - Improve access to dental insurance among all sectors of the population.
  - Encourage North Dakota employers to offer dental insurance.
9. Share any models we create with other states and within North Dakota.
  - Create a clearinghouse to serve as a resource of information on existing oral health programs, technical support, funding, consultation and successful public health models.
  - Promote national collaborative efforts among agencies, organizations and individuals to address oral health needs.





## **B Consumers in North Dakota recognize the value of oral health.**

Education and health promotion play a major role in improving North Dakota's oral health. A common thread acknowledged by the Coalition is the belief that a significant number of people in North Dakota do not value oral health. Many people believe that the loss of teeth is a natural, unavoidable process, and that prevention, treatment, screening and early diagnosis is unnecessary. It will take an enormous public health education effort to begin to change this thinking.

### **Vision B Goals and Strategies**

1. Develop a public awareness campaign.
  - Health needs to be a priority.
  - Identify oral health champions (first lady, North Dakota Dental Association).
  - Develop a public education campaign.
  - Market and promote the value of oral health with the aid of a marketing consultant.
  - Develop slogans approved by the Coalition.
2. Develop learning modules for classrooms and clubs (all ages).
  - Create curriculum through school systems, public health and allied health.
  - Coordinate efforts among the North Dakota Department of Education, oral health providers, school administrators, school nurses and health educators.
  - Promote and support policies that eliminate unhealthy snacks and drinks from school vending machines.
  - Promote the use of the healthy school nutrition tool kit.
3. Create oral health work sites for service learning.
4. Promote oral health at career fairs.
5. Promote the idea of a dental home.
6. Integrate oral health education in all brochures, literature and presentations from *Healthy North Dakota* and other agencies and entities.
7. Gain consensus on recommendation of child's first dental visit (age 2).
8. Publish position statements that include testimonials, personal stories and promoted recommendations that already exist.



## **C** Communication, education and care are enhanced by the use of effective technology.

Science and technology can be highly effective in reducing the burden and progression of oral diseases in North Dakota. It is important to develop and maintain a comprehensive oral health surveillance system to identify, investigate and monitor oral health and oral health services. Critical data elements are needed for effective planning and program development. It is important to be able to establish linkages with selected dental schools, research institutes and oral health policy centers.

### **Vision C** Goals and Strategies

1. Utilize tele-dentistry.
2. Utilize video conferencing for meetings.
3. Enhance communication via electronic newsletters, list serves, websites and webcast streams.
  - Create a statewide clearinghouse to serve as a resource for information on existing oral health programs, technical support, funding consultation and successful public health models.
4. Utilize Town Square and [www.ndinfo.org](http://www.ndinfo.org).
5. Identify and promote distance-learning opportunities.
6. Collaborate with corporations to develop learning CDs/games.
7. Partner with school bus companies to include oral health education opportunities during bus commutes.
8. Monitor successes of different types of education.
  - Access and disseminate leading-edge information on oral health science.
9. Link online training with local dentists and dental clinics.
10. Assess oral health status of North Dakota residents.
  - Conduct a baseline assessment of all current models of oral health service delivery.
  - Establish school-based oral health surveys to assess trends in the oral health status of children in North Dakota schools.
  - Develop data collection and analysis capacities at the local level through training and technical support.



## **D The Oral Health Coalition is sustainable, diverse and recognized as an advocate in oral health.**

The Oral Health Coalition works in partnership to improve and further integrate the efforts between the public and private sectors to address and improve the oral health needs of the residents of North Dakota.

### **Vision D Goals and Strategies**

1. Continue to expand the membership of the Coalition.
  - Identify membership structure, criteria and benefits.
2. Promote the activities and mission of the Coalition.
3. Examine other states' best practices regarding Coalition sustainability.
4. Establish Coalition structure, leadership, committees and task forces.
  - Coalition members will be accountable for project team assignments.
5. Collaborate with other health and wellness initiatives/coalitions.
6. Create/review the branding of the Coalition.
  - Convene and maintain a subgroup of the Coalition to oversee the monitoring and implementation of *Oral Health in North Dakota: Plan for the Future*.
  - Identify funding sources to ensure ongoing support for implementation activities.
  - Review and revise *Oral Health in North Dakota: Plan for the Future* as necessary.
7. Create explicit operating principals to follow (“by-laws”).



## **E Creative dental coverage programs are available to the public.**

Oral health services to vulnerable and underserved populations are difficult due to lack of private and state funding. As of March 2003, only 14 states continue to provide reasonably comprehensive dental benefits to low-income adults through Medicaid. Low Medicaid payments for dental services continue to be a barrier to dentists participation in the program. The trend toward erosion of benefits is beginning to impact children as well.

Although gains in oral health status have been achieved for the population as a whole, they have not been evenly distributed across subpopulations. For example, minority populations are more likely to experience extensive tooth loss and have dental caries that they have not received treatment for.

Many women live in poverty, do not have insurance and are the heads of their households. These barriers may be difficult to overcome when seeking oral health care. The 2002 North Dakota Pregnancy Risk Assessment Monitoring System Survey found that 57 percent of women reported that they did not go to a dentist or dental clinic during their most recent pregnancy. Almost one-third (32 percent) of women indicated that they had not had their teeth cleaned by a dentist or dental hygienist in more than 12 months.

In addition, low-income families and individuals experience more dental diseases than their affluent counterparts. Dental decay among low-income families and individuals also are more likely to go untreated. Barriers faced by low-income families and individuals may include no dental insurance, limited or no access to a dentist, or having an income higher than what is allowable for Medicaid programs.

To combat these challenges, system-level improvements to treat high-risk populations such as children, the elderly, the uninsured, the developmentally disabled and the mentally ill must be created.



## Vision **E** Goals and Strategies

1. Participate in *Healthy North Dakota* Third Party Payer workgroup.
  - Advocate for funding for those organizations that provide oral health services to high-risk and underserved populations from North Dakota’s public and private funders.
  - Pursue federal and private foundation funding to augment state-funded oral health initiatives.
  - Encourage all community health centers to provide oral health services.
2. Explore a statewide mass enroll dental coverage for all North Dakota residents.
  - Enhance the competency of the oral health workforce to treat high-risk populations.
  - Develop a dental residency program within programs that focus on high-risk populations.
  - Develop continuing education programs for the oral health workforce that focus on unique issues of treating high-risk populations.
  - Build a care coordination and case management system especially for those at high risk.
  - Provide a link between individuals and all service providers.
  - Support reimbursement for care coordination.
  - Provide oral health services at sites used by high risk populations, such as adult/child day-care centers.
3. Explore partnerships of small businesses to obtain dental coverage.
  - Encourage North Dakota employers to offer dental insurance by increasing the awareness of the importance of good oral health to productivity.
4. Explore a three-share program (get agreement by all North Dakota dentists).
  - Encourage private dentists and hygienists to provide services.
  - Encourage North Dakota hospitals to play a major role in supporting oral health.
  - Advocate that all North Dakota hospitals participate in establishing financing and maintaining oral health services in their communities.
  - Encourage North Dakota hospitals to prioritize oral health services in allocation of community benefit dollars.
  - Advocate that all North Dakota hospitals develop and maintain a dental on-call system through their emergency departments.
5. Investigate other states’ oral health delivery models.



6. Explore models of how dental professionals are paid.
  - Determine core of services.
  - Approach dentists in other regions.
  - Consider integrating other models.
7. Clarify what the North Dakota access problem is.
8. Define what coverage is already available that we could more effectively promote.
  - Maintain and increase participation in current programs.
  - Use primary-medical care practitioners to provide oral assessment and preventive services.
  - Establish training and protocols for basic oral examination for primary-care medical providers.
9. Explore alternative providers of dental services, which would lead to an increase in Medicaid providers.
  - Streamline procedures for dental provider participation in Medicaid.
  - Pursue an increase in Medicaid reimbursement rates for dental and hygiene services to encourage more provider participation in the Medicaid program.
  - Establish coding for Medicaid reimbursement for primary-care providers to deliver oral health procedural services.
  - Expand Medicaid to cover non-emergency oral health services for adults.
10. Define/expand roles in dental health.
  - Develop a new professional category of an oral health educator.



## **F** Education opportunities in the dental field are expanded.

The number of dentists is projected to begin to decline over the next five years, as the number of dentists graduating from dental schools is less than those retiring from active practice. Because there are no dental schools in North Dakota, recruitment remains a challenge, especially in rural areas, since dentists commonly locate their practices in more populated areas. This shortage translates into long waiting periods for treatment regardless of the source of payment.

Registered dental hygienists are also in short supply in rural areas. Hygienists are able to provide an array of key preventative services, including fluoride treatments and sealants, but some of these services must be provided under direct supervision of a dentist.

Dental assistants require no formal training except for certification to expose radiographs. Some states have expanded the functions of the dental assistant to enhance the productivity of the dentist. This may provide a cost-effective approach to addressing the impending reduction of dentist-to-population ratios.

In addition to the traditional oral health workforce, the potential for utilizing “non dental” providers to perform certain oral health functions may be beneficial. Pediatricians, family practice physicians, physician assistants, advance practice nurses and registered nurses could provide oral screenings and apply fluoride varnish, if these activities are supported by policy development.

It is important to maximize the capacity of the oral health workforce to address the needs of the North Dakota population. The establishment of a task force comprised of appropriate leaders and policymakers is essential to monitor and address the changing needs of the population. Conducting periodic evaluations of the workforce is necessary to address the evolving needs and demands of the populations, as population needs must be met in a timely and effective manner.





## Vision **F** Goals and Strategies

1. Collaborate with higher education to implement dental assistant and dental hygiene programs.
  - Expand the number of dental hygienists and assistants in North Dakota working in both private office settings and public health.
  - Create the capacity to use expanded functions for both dental assistants and dental hygienists.
  - Pursue state and private foundation support for recruitment and training of public health hygienists.
  - Provide criteria for finding qualified instructors.
  - Offer endorsement and provide data to the accreditation process.
  - Write grants and investigate site visits.
  - Develop and promote career counseling at all North Dakota high schools to encourage students to pursue careers in oral health.
2. Encourage education and standards for provider/preceptors.
  - Continue to fund positions for North Dakota students at out-of-state dental schools.
  - Provide loan repayment to dentists willing to serve North Dakota's indigent and high-risk populations and people living in rural areas.
3. Investigate how students can staff mobile vans and free clinics.
4. Invite dental students from out-of-state dental schools as interns into North Dakota.
  - Establish training programs at established dental practices.



**G All North Dakota residents are aware of the benefits of fluoridation, sealants and dental disease prevention.**

Prevention, health promotion and education clearly represent the most cost-effective means of improving the oral health of North Dakotans. Maximizing the benefits of fluoride and sealants is not only cost effective, but simple.

The importance of fluoridation as a preventive measure is widely recognized and long standing. Community water fluoridation has demonstrated that all residents in an area could be served with fluoridated water regardless of socioeconomic status. Water fluoridation is cost-effective, averaging \$1 per year per person. Currently, 96 percent of North Dakota communities are fluoridated.

The application of dental sealants on school-aged children has also been proven effective in the prevention of some types of dental caries. Sealants are a protective coating applied to permanent molars and premolars, which fill in the pits and fissures of the teeth. It is most effective to apply sealants as soon as the teeth erupt.





## Vision **G** Goals and Strategies

1. Ensure that all municipal water systems are fluoridated.
  - Develop a statewide community action campaign to achieve fluoridation of public water supplies.
2. Determine which municipalities are not fluoridated.
3. Promote fluoridation to nonfluoridated communities and/or rural water.
  - Obtain information and research benefits.
  - Simplify access to and reporting of well-water testing for fluoride.
4. Collaborate with communities to obtain funding for expansion of fluoridation.
5. Collaborate with communities to obtain funding for replacement of aging fluoridation equipment.
6. Encourage best practices for fluoride delivery (mouth rinse, fluoride varnish).
  - Support the prescribing of fluoride by primary medical providers and school-based fluoride programs in communities where residents do not have access to fluoridated public water supplies.
  - Simplify the process for prescribing and using systemic and topical fluoride by primary-care physicians.
7. Pursue a school-based sealant program through the use of volunteer dentists and hygienists.
  - Engage hygienists, assistants and volunteer dentists to implement school-based sealant program.
8. Reduce the incidence of oral health and facial injuries.
  - Recommend the requirement of the use of facemasks and mouth guards in all school and other sports programs.
  - Coordinate efforts among school personnel, coaches and recreation programs regarding the importance of injury prevention.



## **H** Creative solutions exist for improving access to oral health care.

Not all North Dakota residents have achieved the same level of oral health and well-being. This represents a major challenge, one that demands the best efforts of public and private agencies and individuals.

### **Vision H** Goals and Strategies

1. Educate communities on oral health clinic and coalition successes that have occurred throughout the state to encourage replication.
2. Provide support by writing letters, providing finances and encouraging policymakers' perception of the importance of oral health.
3. Inform policymakers at local, state and federal levels of health promotion and disease prevention programs, care-delivery systems and reimbursement schedules.
4. Explore possibilities in Dickinson for free/reduced dental care.
5. Invite the other active, local North Dakota oral health coalitions to become active in the North Dakota Oral Health Coalition.
6. Collaborate with existing community health centers to expand dental access (e.g., grant writing, letters of support).
7. Support efforts exploring funding of the mobile program (e.g., Ronald McDonald House Charities to bring Ronald McDonald Care Mobile programs to North Dakota).
8. Investigate the promotion of Canadian-trained dentists to come to North Dakota.
9. Explore the development of health savings account-type of dental coverage programs or promotion of the use of medical spending accounts.



- 10.** Disseminate the results of the dental provider survey (University of North Dakota).
- Explore improving incentives for dentists (e.g., vacation, reduced home loans) and then share the ideas with all communities.
  - Collaborate with legislators to determine if the legislature will add slots in dental schools (Arizona, Iowa).
  - Monitor what interim legislative committees are doing in higher education.
  - Investigate the University of Minnesota Veteran Administration externship program for dental graduates for applicability in North Dakota.
  - Investigate state/private health partnership, including dental care for long-term care residents.
  - Determine the need for long-term care oral health access.





## CONCLUSION

The past half century has seen the meaning of oral health evolve from a narrow focus on teeth and gingiva to the recognition that the mouth is the center of vital tissues and functions that are critical to total health and well-being across the life span. The mouth serves as a mirror of health or disease, as a sentinel or early warning system, as an accessible model for the study of other tissues and organs, and as a potential source of pathology affecting other systems and organs.

All North Dakota residents can benefit from the development of an oral health plan that aims to improve quality of life and eliminate health disparities by facilitating collaborations among individuals, health-care providers, communities and policymakers at all levels of society and by taking advantage of existing initiatives. Everyone has a role in improving and promoting oral health. Together we can work to broaden public understanding of the importance of oral health and its relevance to general health and well-being by ensuring that existing and future preventive, diagnostic and treatment measures for oral diseases and disorders are made available to all North Dakotans.





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