ALASKA ORAL HEALTH PLAN

2012–2016

State of Alaska
Department of Health and Social Services

Acknowledgements

Sean Parnell
Governor, State of Alaska

William J. Streur
Commissioner, Department of Health and Social Services

Ward B. Hurlburt, M.D., MPH
Chief Medical Officer
Director, Division of Public Health

Stephanie Birch, RNC, MPH, MS, FNP
Section Chief of Women's, Children's and Family Health

Oral Health Program
Brad Whistler, DMD, Dental Official
Molly McGrath, CHES, Health Program Manager
Sharon Schlicht, RDH, MPH, Health Program Manager
Clint J. Farr, MS, Public Health Specialist

Alaska Dental Action Coalition
Delisa Culpepper, MPH, Chair
Chief Operating Officer, Alaska Mental Health Trust Authority

July 2012

Suggested Citation:
Whistler, BJ. Alaska Oral Health Plan: 2012-2016. Juneau, AK: Section of Women's, Children's and Family Health, Division of Public Health, Alaska Department of Health and Social Services, 2012.

Funding for the State Oral Health Plan was provided by the Centers for Disease Control and Prevention through the Chronic Disease Prevention and Health Promotion Programs Cooperative Agreement (5U58DP001578). The contents of this plan are solely the responsibility of the authors and do not necessarily represent the official views of the CDC.

Table of Contents

Contributors

The goals and recommendations of the Alaska Oral Health Plan are designed to improve the oral health status of Alaskans. The development of this plan would not have been possible without the involvement of the individuals and organizations participating in the Alaska Dental Action Coalition (ADAC).

ADAC Vision Statement:

Optimizing Oral Health for All Alaskans

Value Statements:

1. Prevention and education are priorities in improving the oral health of Alaskans.
2. Oral health services should be available, accessible, timely, culturally competent and valued.
3. Oral health should be recognized as part of total health and well-being.
4. Responsibility for creating an environment to maximize oral health is shared by every Alaskan.
5. Every adult takes responsibility for their own oral health and each family takes responsibility for their dependents' oral health.

ADAC Membership:

- Alaska Commission on Aging
- Alaska Dental Society
- Alaska Department of Education and Early Development - State Head Start Collaboration Office
- Alaska Department of Environmental Conservation - Division of Environmental Health
- Alaska Department of Health and Social Services
  - Division of Health Care Services
  - Division of Public Assistance, WIC Program
  - Division of Public Health
    - Section of Chronic Disease Prevention and Health Promotion
    - Section of Health Planning and Systems Development
    - Section of Public Health Nursing
    - Section of Women's, Children's and Family Health
  - Governor's Council on Disabilities and Special Education
  - Office of Children's Services
- Alaska Mental Health Board
- Alaska Mental Health Trust Authority
- Alaska Native Tribal Health Consortium
  - Dental Consultant & DENTEX Dental Health Aide Training Program
  - Division of Environmental Health and Engineering
- Alaska Primary Care Association
- Alaska Public Health Association
- Alaska State Dental Hygienists' Association
- All Alaska Pediatric Partnership
- American Association of Retired Persons, Alaska Chapter
- Anchorage Neighborhood Health Center
- Centers for Disease Control and Prevention, Arctic Investigations Program
- Denali Commission
- Head Start Grantees
  - Rural Alaska Community Action Program
  - Kid's Corp, Inc.
- Rasmuson Foundation
- Southcentral Foundation Dental Clinic
- Stone Soup Group
- United Way of Anchorage
- University of Alaska Anchorage, School of Allied Health Sciences - Dental Hygiene and Dental Assisting Programs

Introduction

The mouth is vital to everyday life. It serves to nourish our bodies as we take in water and nutrients. It is how we communicate our thoughts, our mood and our dreams. Oral health is an essential and integral component of overall health throughout life. Oral health includes more than just healthy teeth – it includes the whole mouth, including the teeth, gums, hard and soft palate, lining of the mouth and throat, tongue, lips, salivary glands, chewing muscles, and upper and lower jaws. It also is more than being free of tooth decay and gum disease. Oral health also means being free of chronic oral pain conditions, oral cancer and other conditions that affect the mouth and throat. Optimal oral health includes the surgical correction and treatment of birth defects such as cleft lip and palate. Oral health includes the ability to carry on the most basic human functions such as chewing, swallowing, speaking, smiling, kissing and singing.

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

In the Surgeon General's report on "Oral Health in America" former Surgeon General David Satcher referred to a "silent epidemic" of oral disease restricting activities in school, work and home and often diminishing the quality of life. The report noted those who suffer the worst oral health are found among the poor of all ages, with poor children and poor older Americans particularly vulnerable. 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. Water fluoridation and dental sealants were noted as two interventions that have reduced dental decay. The report noted the ongoing need to reduce oral health disparities.[1] In the United States, 25 percent of children and adolescents experience 80 percent of all dental decay occurring in permanent teeth.[2] Five to 10 percent of preschool-age children have early childhood caries – this rate is higher among families with low incomes and some racial/ethnic minorities.[3]

Improving access to dental care is an increasing issue of national attention. It is estimated about 130 million Americans lack coverage for dental care.[4] In 2008, 4.6 million children went without needed dental care because their families lacked dental coverage. In 2006, it was estimated almost two-thirds of retirees did not have dental coverage, in part because Medicare does not cover routine dental services. The U.S. Health Resources and Services Administration estimate 33 million Americans reside in areas where there aren't enough dentists.[5] For low-income children, Medicaid is a major coverage source for dental care, however many dentists do not participate in the program. Common stated dental concerns are lower reimbursement under Medicaid and failed dental appointments.

In 2007, the average annual cost of dental care for individuals that visited the dentist was $600. Dental insurance can alleviate some of that expense, but even those individuals with coverage pay an average of about 30 percent of their dental costs out-of-pocket.[5] National expenditure information finds dental expenses are second only to prescription drugs in out-of-pocket expenditures in the U.S, totaling an estimated $30.7 billion in 2008.[6]

Increasing costs, dental access concerns and problems with the number and distribution of dentists are leading to changes in dental practice and/or dental workforce. The past

decade has seen federal funding to expand development of community health centers to provide services, including dental services, to underserved populations. National and state programs have been developed and/or expanded to provide incentives for dental practice in underserved areas. There has been increased attention on collaboration with physicians, nurses and physician assistants to address the oral health concerns of young children. Use of medical providers is being promoted assist provision of preventive services and early detection of children at risk for dental decay so they can be referred to dentists. These dynamics are also leading to changes in supervision for dental hygienist practice and the early development of alternative dental providers. Many of these concerns and policy issues are also being discussed or addressed in Alaska.

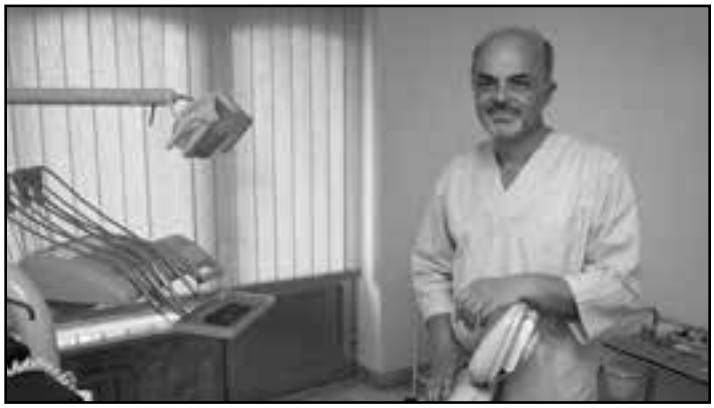
The Alaska Oral Health Plan contains two major sections. The first section of the document includes information on:

- status and burden of oral disease in Alaska;
- community water fluoridation;
- disparities in oral health;
- dental workforce;
- infection control guidelines; and
- the Alaska Oral Health Program and Alaska Dental Action Coalition.

The second section of the documents highlights the goals, strategies and recommendations as developed by the Alaska Dental Action Coalition and stakeholders to:

- address the oral health of Alaskans;
- address oral health disparities;
- provide access to evidence-based prevention approaches;
- address dental workforce issues; and
- improve access to dental care.

The goals, strategies and recommendations were identified by the Alaska Dental Action Coalition (ADAC) and interested stakeholders. The top five priorities were established at the September 2011 facilitated coalition meeting utilizing a priority-setting process developed by the Children's Dental Health Project. A follow-up survey of coalition members and discussion at the January 2012 ADAC meeting established the remaining priorities. The action plan that follows the listed priorities was developed with input from coalition committee members and stakeholders. Development of recommendations and suggested actions typically involved a review of surveillance information and oral disease, dental access and/or dental workforce data as outlined in those sections of this document.



National and Alaska Health Objectives: 2010 & Year 2020

Healthy People 2010

One component of the national plan for oral health is a set of measurable and achievable objectives on key indicators of oral disease burden, oral health promotion and oral disease prevention. In November 2000, a set of oral health indicators was developed for inclusion in the national health objectives for the year 2010 in the document entitled, *Healthy People 2010*. The Alaska Department of Health and Social Services developed a state companion plan that included oral health objectives in April 2002 - *Healthy Alaskans 2010: Targets and Strategies for Improved Health*. Both the national and state strategies are aimed at

- Increasing the quality and years of healthy life; and
- Eliminating health disparities.

Included in *Healthy People 2010* are objectives for improving oral health (See Table 1). They represent the ideas and expertise of a diverse range of individuals and organizations concerned about the nation's health. Table 1 also reflects Alaska data, when available, for comparison with national baselines. Alaska indicators for caries experience, untreated caries and dental sealant utilization of Alaskan third-graders represent statewide data developed by the Oral Health Program's dental assessments – this data was not available at the time of publication of *Healthy Alaskans 2010*.

Healthy People 2020

In December 2010, the U.S. Department of Health and Human Services (USDHHS) launched *Healthy People 2020*. Four overarching goals for this plan are to:

- Attain high-quality, longer lives free of preventable disease, disability, injury, and premature death;
- Achieve health equity, eliminate disparities, and improve the health of all groups;
- Create social and physical environments that promote good health for all; and
- Promote quality of life, healthy development, and healthy behaviors across all life stages.

Oral health has been selected by USDHHS as one of the leading health indicators for the *Healthy People 2020* process – noting the growing body of evidence that has linked oral disease, particularly periodontal disease, to several other chronic diseases. The indicator for oral health for the leading indicator is:

- Persons aged 2 years and older who used the oral health care system in the past 12 months (OH-7 listed on Table 2).

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

Healthy People 2010 Objective		Target	U.S. Status	Alaska Baseline	Alaska Status
21-1:	Dental caries experience				
	Young children, aged 2-4	11%	18%	DNA	DNA
	Children, aged 6-8	42%	52%	65% (2004)	62% (2010/2011)
	Adolescents, age 15	51%	61%	DNA	DNA
21-2:	Untreated caries				
	Young children, aged 2-4	9%	16%	DNA	DNA
	Children, aged 6-8	21%	29%	28% (2004)	24% (2010/2011)
	Adolescents, age 15	15%	20%	DNA	DNA
	Adults, aged 35-44	15%	27%	DNA	DNA
21-3:	Adults with no tooth loss, ages 35-44	42%	31%	60% (2002 – MT)	70% (2010 – MT)
21-4:	Edentulous (toothless) older adults, ages 65-74	20%	26%	24% (2002)	16% (2010 – MT)
21-5:	Periodontal diseases, adults aged 35-44				
	Gingivitis	41%	48%	DNA	DNA
	Destructive periodontal disease	14%	22%	DNA	DNA
3-6:	Oral and pharyngeal cancer death rate (per 100,000 persons)	2.7	3.0	3.7 (1996-2003)	2.0 (2008-2010) MT
21-6:	Oral and pharyngeal cancer detected at earliest stage	50%	35%	29% (1996-2000)	24% (2005-2009)
21-7:	Oral cancer exam in past 23 months, age 40+	20%	13%	DNA	35% (2008&2010) MT
21-8:	Dental sealants				
	Children, age 8 (1st molars)	50%	23%	52% (2004, - MT)	47% (2010/2011)
	Adolescents, age 15 (1st and 2nd molars)	50%	15%	DNA	DNA
21-9:	Population served by fluoridated water systems	75%	62%	64% (2006)	45% (2011)
21-10:	Dental visit within past 12 months				
	Children, age 2+	56%	44%	DNA	DNA
	Adults, age 18+	56%	44%	66% (2002 – MT)	68% (2010 – MT)
5-15:	Annual dental exam for persons with diabetes, aged 2 and older	75%	58%	DNA	DNA
21-11:	Dental visit in the past 12 months				
	Adults in long-term care	25%	19%	DNA	DNA
21-12:	Preventive dental care in the past 12 months				
	low-income children and adolescents, age 0-18	57%	20%	29% (FFY2000)	41% (FFY2010)
21-13:	School-based health centers with oral health component, K-12	DNA	DNA	DNA	DNA
21-14:	Community based health centers and local health departments with oral health component	75%	34%	DNA	DNA
21-15:	States with system for recording and referring infants with cleft lip and palate	100%	23%	100% (met target)	100% (met target)
21-16:	States with an oral health surveillance system	100%	DNA	100% (met target)	100% (met target)
21-17:	State and local dental programs that serve 250,000 or more with a dental health program directed by a dental professional with public health training	100%	DNA	50% (2002)	50% (2010)

Notes: DNA – Data Not Available MT – Met U.S. Target for the National Objective

1. Data sources for national and state data for this table are provided in Appendix 1
2. National data for 6-8 year old children (age 8 for dental sealants) is NHANES 1988-1994; Alaska data is for third-grade children
3. Edentulous older Alaskans from BRFSS is for adults aged 65 and older
4. National oral and pharyngeal mortality rate is from the National Vital Statistics System – Alaska data from the Alaska Bureau of Vital Statistics and includes out-of-state deaths of Alaska residents (all data is age adjusted to U.S. standard 2000 population)
5. National oral and pharyngeal cancer detected at the earliest stage is from SEER, 1990-1995
6. Objective 21-7: Baseline information related to this objective is from an oral cancer exam question on the 2008 and 2010 Alaska Behavioral Risk Factor Surveillance System (BRFSS) – Alaska data is based on reported oral cancer exam in the past year
7. Objective 21-9: Percentages are the population with fluoridated community water systems of the population with access to community water systems (not percentage of total state/national population).
8. National data for 21-12 (preventive dental care for low-income children and adolescents) is from the Medical Expenditure Panel Survey (MEPS); Alaska data is from Medicaid/SCHIP dental utilization reports for children aged 1-20 (CMS 416 report); FFY2010 and subsequent reports only include children with at least 90 days of continuous eligibility for dental utilization reporting.
9. Objective 21-13: Most village schools in Alaska have school-based or school-linked medical and dental programs operated by the Tribal health programs – this infrastructure is somewhat different from school-based health centers discussed in Healthy People 2010.
10. Objective 21-14: Municipality of Anchorage offers some support to the Anchorage Neighborhood Health Center which has a dental program and the North Slope Borough has dental services. Community health centers have included or expanded into dental services. The State Oral Health Program is working with the Alaska Primary Care Office to develop an Alaska baseline indicator; however it is not available at the time of publication of this plan.
11. Objective 21-17: The State Oral Health Program has a dental officer with public health training. The Municipality of Anchorage (MOA) is the only other jurisdiction in Alaska serving 250,000 or more in population. The MOA does not currently have an oral health program directed by a dental professional with public health training.

TABLE 2. *Healthy People 2020* Oral Health Indicators, Target Levels and Current Status in the United States and Alaska

Healthy People 2020 Objective		Target	U.S. Status	Alaska Baseline
OH-1:	Dental caries experience			(2010/2011)
	Young children, aged 3-5	30.0%	33.3%	41%
	Children, aged 6-9	49.0%	54.4%	62%
	Adolescents, aged 13-15	48.3%	53.7%	DNA
OH-2:	Untreated caries			(2010/2011)
	Young children, ages 3-5	21.4%	23.8%	21% (MT)
	Children, aged 6-9	25.9%	28.8%	24% (MT)
	Adolescents, aged 13-15	15.3%	17.0%	DNA
OH-3:	Adults with untreated caries			
	Aged 35-44	25.0%	27.8%	DNA
	Aged 65-74 (coronal caries)	15.4%	17.1%	DNA
	Aged 75 and older (root surface caries)	34.1%	37.9%	DNA
OH-4:	Adults aged 45-64 that have ever had a permanent tooth extracted			(2010)
	because of caries or periodontal disease	68.8%	76.4%	47.8% (MT)
	Adults aged 65-74 who have lost all of their natural teeth	21.6%	24.0%	16% (MT)
OH-5:	Adults aged 45-74 years with moderate or severe periodontitis	11.4%	12.7%	DNA
C-6:	Oral and pharyngeal cancer death rates (per 100,000 persons)	2.3	2.5	2.0 (2008-2010) MT
OH-6:	Proportion of oral and pharyngeal cancers diagnosed at the localized stage (stage 1)	35.8%	32.5%	24% (2005-2009)
OH-7:	Children, adolescents and adults who use the oral health care system each year	49.0%	44.5%	DNA except adults – 68% (2010)
D-8:	Annual dental exam for persons with diabetes, aged 2 and older	61.2%	55.6%	DNA except adults – 63% (2008 & 2010)
OH-8:	Low-income children and adolescents aged 2-18 years at or below 200% of federal poverty level who received a preventive dental service in the past year	29.4%	26.7%	FFY2010 41% (MT)
OH-9:	School-based health centers w/oral health component	29.4%	26.7%	DNA
	School based health centers w/oral health component that includes:			
	dental sealants	26.5%	24.1%	DNA
	dental care	11.1%	10.1%	DNA
	topical fluoride	32.1%	29.2%	DNA
OH-10:	FQHCs that have an oral health care program	83%	75%	DNA
	Local health departments that have an oral health prevention or care program	28.4%	25.8%	100% (MT)
OH-11:	FQHC patients who receive oral health services at FQHCs each year	33.3%	17.5%	DNA
OH-12:	Children and adolescents who have received dental sealants on one or more molar teeth			
	Children aged 3-5 years – primary molar teeth	1.5%	1.4%	DNA
	Children aged 6-9 years – permanent first molar teeth	28.1%	25.5%	47% (2010/2011)
	Adolescents aged 13-15 years – permanent second molar teeth	21.9%	19.9%	DNA
OH-13:	U.S./State population served by community water systems that received optimally fluoridated water	79.6%	72.4%	45% (2011)
OH-14:	Adults who receive preventive interventions in dental offices:			
	Information on tobacco use – reducing tobacco and/or smoking cessation in the past year		DNA	DNA
	Oral and pharyngeal cancer screening in the past year		DNA	DNA
	Tested or referred for glycemic control in the past year		DNA	DNA
OH-15:	States and District of Columbia w/system for recording cleft lips and cleft palates		DNA	Yes – MT
	States and District of Columbia w/system for referral for cleft lips and cleft palates to rehabilitative teams		DNA	Yes – MT
OH-16:	States and District of Columbia w/oral and craniofacial health surveillance system	51	32	Yes – MT
OH-17:	States and District of Columbia and local jurisdictions of 250,000 or more persons with a dental public health program directed by a dental professional with public health training	25.7%	23.4%	50%
	Indian Health Service Areas and Tribal health programs that serve 30,000 or more persons with a dental public health program directed by a dental professional with public health training	12	11	1-ANTHC (MT)

Notes: DNA – Data Not Available MT – Met U.S. Target for the National Objective

1. Data sources for national and state data for this table are provided in Appendix 1
2. Objective targets are based on a 10% improvement except for OH-11 (90% improvement for target) and OH-16 (total coverage target)
3. National data for 3-5 & 6-8 year old children is NHANES 1999-2004; Alaska data is for kindergarten and third-grade children
4. OH-4: Edentulous older Alaskans from BRFSS is for adults aged 65 and older
5. C-6: National oral and pharyngeal mortality rate is from the National Vital Statistics System 2007 data ; Alaska data from the Alaska Bureau of Vital Statistics - includes out-of-state deaths of Alaska residents (all data is age adjusted to U.S. standard 2000 population)
6. OH-6: National oral and pharyngeal cancer detected at the earliest stage is from SEER, 2007
7. OH-7: Data on adults aged 18 and older available from BRFSS
8. D-8: Data available on adults aged 18 and older reporting diabetes and any dental visit (2008 & 2010 combined BRFSS data)
9. OH-8: National data for preventive dental care for low-income children and adolescents aged 2-18 years at 200% FPL is from the Medical Expenditure Panel Survey (MEPS); Alaska data is from Medicaid/SCHIP dental utilization reports for children aged 1-20 (CMS 416 report); FFY2010 and subsequent reports only include children with at least 90 days of continuous eligibility for dental utilization reporting; and Alaska is currently at 175% FPL family income for Medicaid/CHIP eligibility.
10. OH-9: Most village schools in Alaska have school-based or school-linked medical and dental programs operated by the Tribal health programs – this infrastructure is somewhat different from school-based health centers discussed in *Healthy People 2010 & 2020*.
11. OH-10: Anchorage and the North Slope Borough are the only two sites with local health powers in Alaska – both have dental programs. Additionally, most village communities in Alaska are served by the Native health corporation programs including dental services. Tribal programs with community health center funding have on-site or itinerant dental services. Most non-Tribal community health centers (FQHCs) have dental programs however the inventory of dental programs in FQHCs needs to be updated to calculate a percentage for this HP2020 indicator.
12. OH-12: Data only available for third-grade children in Alaska – 47% of third-graders with a sealant on at least one permanent first molar meets the HP2020 target but has fallen below the *HP2010* and MCH Block Grant targets of 50% or greater.
13. OH-13: Percentages are the population with fluoridated community water systems of the population with access to community water systems (not percentage of total state/national population).
14. OH-15 & OH-16: Alaska Section of Women's, Children's and Family Health maintains a state birth defects registry that includes craniofacial data and children with oral clefts are contacted and referred to specialty teams (Specialty Clinics)
15. OH-17: The State Oral Health Program has a dental officer with public health training. The Municipality of Anchorage (MOA) is the only other jurisdiction in Alaska serving 250,000 or more in population. The MOA does not currently have an oral health program directed by a dental professional with public health training. Municipality of Anchorage offers some support to the Anchorage Neighborhood Health Center which has a dental program and the North Slope Borough has dental services. ANTHC is the coordinating agency for Tribal health programs in Alaska – dental coordination is currently shared by two dentists with public health training/experience.

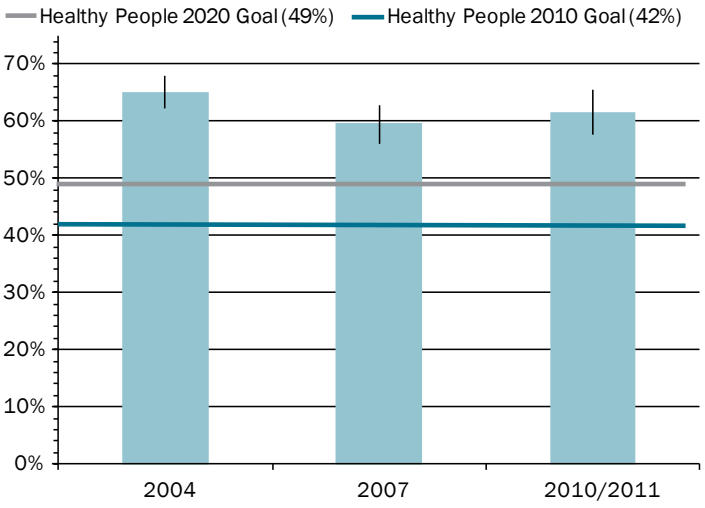
Child and Adolescent Oral Health

Dental Decay

Dental decay (caries) remains the most common chronic disease of childhood – five-times more common than asthma and seven-times more common than hay fever.[1] It is estimated 52 million school hours are missed annually by children with oral health problems.[7] Other consequences of extensive tooth decay include pain, affect on learning and/or behavior management problems. Loss of teeth, especially front teeth, can affect speech development. Additionally, extensive decay results in expensive dental care – early childhood caries may require hospital-based dental care under general anesthesia. Children with decayed or missing teeth may also suffer embarrassment and problems with self-esteem.

Nationally over 50 percent of 6- to 9- year old children have at least one cavity or filling.[8] Alaska's caries experience rates (evidence of any past or present dental decay) are higher than the national baseline of 54%, with 62 percent of Alaskan third-grade children with caries experience at the time of the 2010/2011 dental assessments. Higher dental decay rates were seen in third-graders from racial/ethnic minority groups. High dental decay rates in Alaska Native children have been noted in previous Indian Health Service dental assessments. The third-grade dental assessments in Alaska have consistently found similar caries experience rates in third-grade Asian and Native Hawaiian/Pacific Islander racial/ethnic groups albeit small numbers of children from these racial/ethnic groups in each of the dental assessment projects. Figure 1 illustrates caries experience rates seen with the third-grade Basic Screening Survey (BSS) dental assessment projects. Figure 2 provides caries experience by racial/ethnic groups in the 2010/2011 BSS.[9, 10, 11]

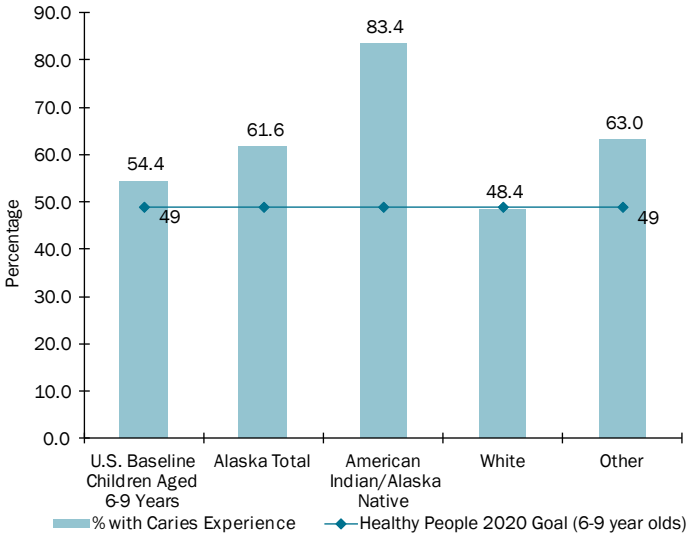
Figure 1. Percent of Third-Graders with Caries Experience



Source: Alaska Basic Screening Survey

The BSS collects dental assessment data through visual dental assessment without use of films and is distinguished from other dental assessments utilized in studies that score decay on individual teeth or tooth surfaces. Additionally, it should be noted that national data for *Healthy People 2010* used children aged 2-4 and aged 6-8 from the 1988-1994 National Health and Nutrition Examination Surveys (NHANES) while *Healthy People 2020* baselines and objective targets use children aged 3-5 and aged 6-9 due to smaller samples utilized in more recent NHANES surveys. Alaska data used for comparison is from kindergarten and third grade children.

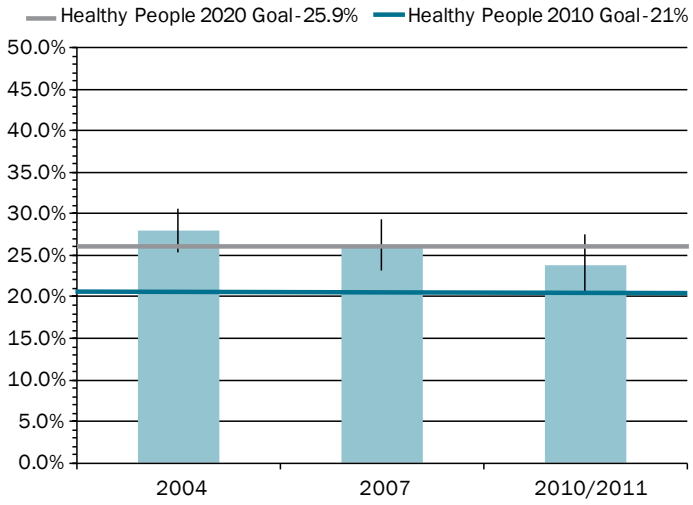
Figure 2. Alaska Third-Graders with Caries Experience: Percent with Caries Experience by Race/ Ethnicity,n=628



Source: Alaska Basic Screening Survey 2011/2011

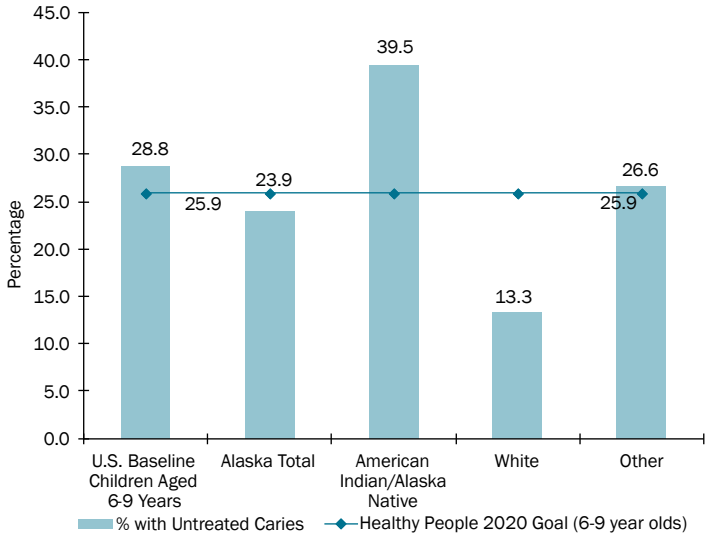
Alaska third-graders had less untreated decay at the time of the 2010/2011 dental assessments, 24%, as compared with the national baseline for 6-9 year olds at 29%. Figure 3 illustrates percentages of third-graders with untreated dental decay from the Alaska Basic Screening Surveys.[9,10 &11] As seen with caries experience, children from racial/ethnic minority groups were more likely to have untreated dental decay. (See Figure 4).[11] Untreated decay was found in 40% of Alaska Native children and 27% of children from other racial/ethnic minority groups.

Figure 3. Percent of Alaska Third Graders with Untreated Caries



Source: Alaska Basic Screening Survey

Figure 4. Alaska Third-Graders — Percent with Untreated Caries by Race/Ethnicity, n=628



Source: Alaska Basic Screening Survey, 2010/2011

Dental decay rates in young Alaska children are also of concern - illustrated in Figure 5 is the caries experience in kindergarten children and caries of upper front primary teeth (early childhood caries indicator) for children enrolled in Head Start (Figure 6).[12, 13] Advanced dental decay in young children often results in dental treatment in hospital settings so restorative dental and extractions can be accomplished in one visit with the least emotional trauma to the young child. In these cases, treatment involves not only the cost of the dental care provided but hospital and anesthesia fees.

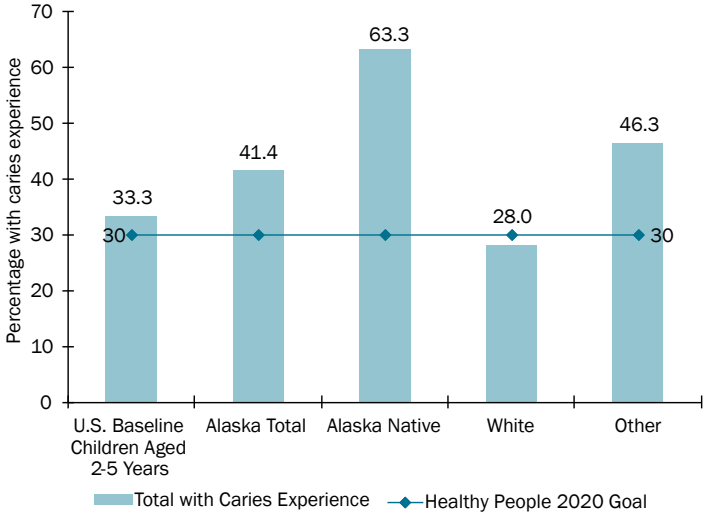
Earlier detection of caries in these children offers an opportunity for parent education, including improving the oral hygiene of the toddler, and preventative services (e.g., topical fluorides and education of parents on brushing to treat the dental “infection”). More frequent dental screening in affected children may be warranted so oral hygiene and the progression of the disease can be monitored. Risks for development of early childhood caries include active caries in the mother with transmission of the bacteria to the infant, lack of parent education about the oral health needs of the child, and inappropriate use of baby bottles and/or sippy cups. The bacteria that cause dental plaque and acid production, resulting in tooth decay, are typically passed from mother/ caregiver to child. Therefore, the caregiver’s oral health is an influencing factor on early childhood caries.[14] Inappropriate feeding practices that increase risk of early childhood caries include bottle feeding with juice or soda, or providing a bottle for overnight use by the infant with any liquid other than water (including milk) – due to the risks with these feeding practices, forms of early childhood caries were formerly known as baby bottle tooth decay.

Recent national dental assessment information indicates dental decay in preschool age children is increasing. Data from the National Health and Nutrition Examination Survey (NHANES) indicates that caries in primary teeth is increasing in 2-5 year olds; from 24% in the 1988-1994 NHANES to 28% in 1999-2004 NHANES. Decayed and filled primary teeth (dft) also increased from 1.39 dft in the 1988-1994 assessments to 1.58 dft in 1999-2004. The rate of untreated decay remained stable at 23%.[15]

Factors reducing risk of dental decay include:

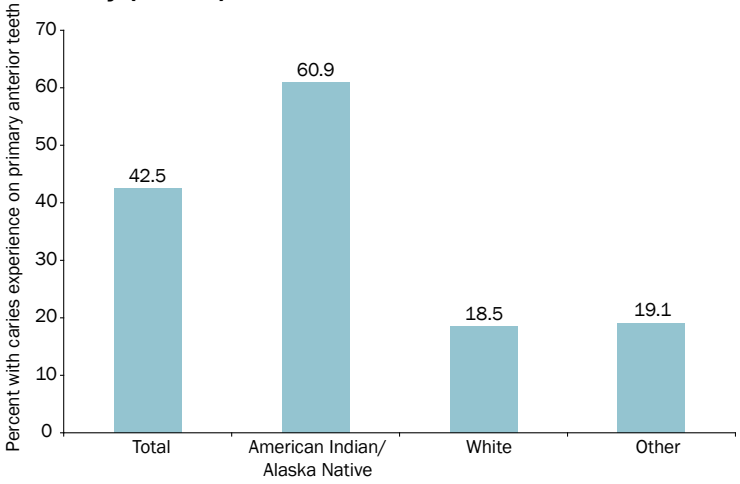
- Brushing with fluoridated toothpaste ideally at least after breakfast and before bedtime with parents assisting children age 8 and under;
- Nutrition and feeding practices that don't promote development of dental decay (e.g., limiting frequency of soda and sugared beverages);
- Access to fluoridated drinking water or use of fluoride supplements in areas without fluoridated water;
- Use of other topical fluorides in children at risk for development of dental decay (e.g., low-income children, racial/ethnic minorities and children with special health care needs);
- Use of dental sealants to seal the pits and fissures of teeth that may be susceptible to decay – especially on permanent first molars; and
- Saliva flow and buffering capacity of saliva (note: many medications reduce saliva flow).

Figure 5. Alaska Kindergarteners — Caries Experience, Percent with Caries Experience by Race/Ethnicity, n=648



Source: Alaska Basic Screening Survey, 2010/2011

Figure 6. Percent of Alaska Head Start Children with Caries Experience on Primary Anterior Teeth by Race/ Ethnicity (n=570)



Source: Basic Screening Survey, 2005

Dental caries is cumulative, thus higher among adolescents in permanent teeth than in children when permanent teeth first begin to erupt. Effective personal measures – for example, tooth brushing with fluoride toothpastes – need to be applied throughout adolescence as the individual becomes more independent in their oral hygiene and dietary habits. Adolescents may over-consume sugar-laden beverages such as fruit juices, sodas and sport drinks, placing them at increased risk for new or recurrent dental decay. Regular dental visits provide an opportunity to assess oral hygiene and dietary practices and to place sealants on vulnerable permanent teeth that erupt during this life stage (including permanent second molars around age 12 years).[16]

Nationally, the prevalence of dental caries experience in permanent teeth of adolescents (persons aged 12-19) decreased from 68% in 1988-1994 to 59% in 1999-2004, however untreated dental decay remained about the same between these periods.[15] Alaska data on dental decay in adolescents is not available at this time.

Children with Special Health Care Needs

Children with special health care needs (CSHCN) are an at-risk group for caries and barriers to routine access to dental care. The 1994-1995 National Health Interview Survey on access to care and services utilized by CSHCN indicated the most common unmet health need was dental care.[17] CSHCN are at increased risk for oral infections, delayed tooth eruption, periodontal disease, enamel irregularities, and moderate-to-severe malocclusion.[18] Exposure to medications that decrease saliva flow, cause gingival hypertrophy and/or have a high sugar content can exacerbate oral health problems in

these children. Parent/caregiver and/or CSHCN difficulty in maintaining daily hygiene also increases risk of caries and periodontal disease.[3] Further, children and adolescents with compromised immunity or certain cardiac conditions may face additional complications related to oral disease.

General dentists often lack the experience and/or training to feel comfortable providing treatment to CSHCN. Pediatric dentists are the usual referral source for dental care; however many states lack adequate numbers of pediatric dentists. As CSHCN age into adolescence and/or adulthood the pediatric dental offices face increased logistical difficulties in treatment within a pediatric setting. The pediatric practices may continue to treat these older individuals, despite the difficulties, when the practices are unable to find general practitioners where they can refer these individuals.

Alaska lacks data on the oral health needs of CSHCN in the state. In a "CSHCN Oral Health Forum" held in February 2007, parents reported dental access issues including:

- Finding private dentists accepting Medicaid;
- Long wait times for appointments and difficulties coordinating with children's medical care;
- Not seeing the same dentist on subsequent appointments and having to spend the first appointment repeating the child's medical history; and
- Limited general dentists treating children with special health care needs – reliance on pediatric dentists for dental services for adolescents and young adults.

Forum participants felt the need for improved parent information on the oral health of CSHCN and that activities to improve children's Medicaid dental access would also benefit this population of at-risk children.

Dental Sealants

Dental sealants, a thin plastic coating applied to the pits and fissures of permanent teeth, along with community water fluoridation are the two most effective interventions to reduce dental decay in the population.

Alaska's dental sealant rate for third-grade children has been around 50% in each of the BSS dental assessment projects which met the Healthy People 2010 objective target for this indicator – the indicator is defined as at least one dental sealant on at least one permanent first molar. The Dental sealant utilization in third-graders showed a statistically significant increase from 2004 to the 2007 BSS. The 2010/2011 BSS for third-graders utilized a sample based on school selection proportional to size to reduce costs for the project – this sampling method along with difficulties receiving active parental consent in urban schools influenced the results of the BSS. However, the reduced percentage of third-graders with a dental sealant on at least one permanent first molar in the 2010/2011 (47%) was statistically significant and reflects a return closer to sealant utilization seen in the 2004 BSS. (See Figure 7).[11]

Alaska Native third-graders had a sealant utilization rate of 57% with the 2010/2011 BSS - the highest of any racial/ethnic group in the state, however that percentage falls well below the sealant utilization for Alaska Native third-graders in 2004 and 2007 (68% for both years). Children from non-Native racial/ethnic minority groups often lack the same access to this preventive service as white or Alaska Native children – sealant utilization was 38% for third-graders from these racial/ethnic groups in the 2010/2011 BSS. Sealant utilization was also below 50% for children reported as enrolled in Medicaid/Denali KidCare.[11]

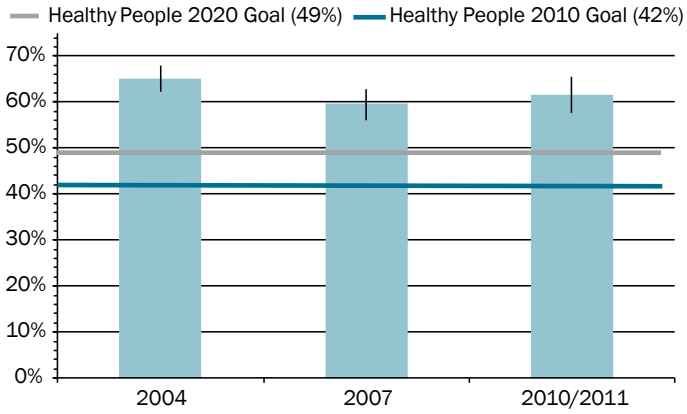
Alaska is well above the Healthy People 2020 objective target for 6-9 year olds of 28.1% of children in this age group with a dental sealant on at least one permanent first molar.

An inventory of schools with high percentages of children from low-income families conducted in 2009 by the Oral Health Program found most village elementary schools have access to school-based or school-linked dental services including sealants through Tribal dental programs. Schools with high percentages of children from low-income households that lack dental sealant programs include:

- Schools in rural, regional hub communities (e.g., Nome); and
- Schools in urban areas of the state with 50% or more of children eligible for the free and reduced school lunch program.

Dental sealants on permanent second molars are recommended as soon as these teeth erupt because these teeth are as susceptible to caries as the first permanent molars of younger children. Permanent second molars erupt in the mouth typically at 12-13 years.[16] Nationally, the prevalence of dental sealants on permanent teeth among adolescents (aged 12-19 years) has increased from 18% in 1988-1994 to 38% in 1999-2004.[15] Alaska data on sealant utilization on second molars for adolescents is not available.

Figure 7, Percent of Alaska 3rd Graders with a Dental Sealant on a Permanent Molar



Source: Alaska Basic Screening Survey

Orofacial Clefts

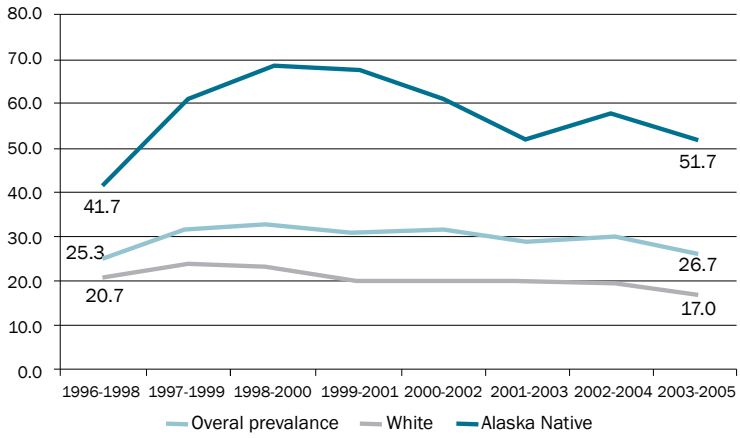
Orofacial clefts, cleft lip and/or cleft palate, are common birth defects affecting approximately 6,800 infants in the United States annually.[19] Cleft palate occurs when the roof of the mouth does not unite properly. Openings may involve either side of the palate and may extend into the nasal cavity. The cleft(s) may extend from the front of the mouth (hard palate) to the throat (soft palate), and they often include the lip. Cleft lip occurs when the two sides of the lip do not fuse completely. Cleft lip may vary greatly, from a mild notch in the lip to a severe opening up through the nose. A cleft may extend only partially from the lip towards the nose (incomplete) or go into the nasal cavity (complete). Lip clefts may occur on one side (unilateral) or both sides of the mouth (bilateral). Health problems associated with cleft palate include feeding difficulties; ear infections and hearing loss; speech and language delay; dental problems with alignment of teeth; and social effects. Orthodontic, oral surgery and prosthetic procedures are usually necessary with treatment of cleft palate.

Alaska rates of orofacial clefts were 29 per 10,000 live births during 1996-2005 and are higher than national reported data. Alaska prevalence of orofacial clefts for Alaska Native was is 55 per 10,000 live births as compared with 19.6 per 10,000 for White live births. An average of twenty-nine Alaskan children were affected each year for the 1996-2005 period. The orofacial cleft prevalence among Alaska Native children, at 47.1 per 10,000 live births, was higher than for non-Native children. Trends in prevalence of confirmed orofacial clefts during 1996-2005 period using a three-year moving average are illustrated in Figure 8.[20]

The etiology of cleft lip and/or cleft palate is not well understood. The majority of isolated clefts, those not associated with another birth disorder or syndrome, appear to be due to a combination of genetic and environmental factors. Evidence supports the view that multiple genetic factors play a role in risk for oral clefts and environmental factors that have been documented to increase risk include heavy alcohol consumption, smoking and certain prescription drugs (e.g., Dilantin and other anti-seizure medications).[21, 22]

Use of folic acid and avoiding tobacco products may reduce the prevalence of oral clefts. Oral cleft prevalence in several populations, including Alaska, has been associated with maternal tobacco use. Retrospective studies have suggested use of folic acid supplements may have a protective effect against cleft lip with or without cleft palate. (Wilcox, 2007 - 23) Abstaining from tobacco products, consuming a nutritious diet and adequate B vitamins, and taking folic acid supplements of 400 mcg daily are important for all women of childbearing age.

Figure 8. Prevalence of Oral Clefts in Alaska, Confirmed Oral Cleft Prevalence per 10,000 Live Births by Race Group and Three Year Moving Average



Source: Alaska Birth Defects Registry, 2011.

Oral Injuries

Oral injuries including fractures, loss of teeth and lacerations are another concern for children. Interventions that reduce the frequency of these injuries include use of safety restraints and/or car seats to reduce injuries in motor vehicle crashes. Additionally, children should be encouraged to use mouth-guards when participating in contact sports.

Falls are a major cause of trauma to teeth, primarily to incisors (front teeth). Unlike bone fractures, fractures of crowns of the teeth do not heal or repair, and affected teeth often have an uncertain prognosis. Problems may later develop due to damage of the tooth pulp. Family violence is another source of oral injuries - dental professionals are in a good position to detect and report abuse.[1]

Rates of oral injuries in Alaska are not known. Treatment of an oral injury typically occurs in dental offices or hospital emergency rooms and there is not a data collection system to collect this type of information at this time.

Mouth-guard use in school sports is dictated by policy at the school district level. Sports organizations and local recreational programs may also play a role in sports activities and safety requirements. Parents and coaches typically recognize the need for mouth-guards in sports like football and hockey. However, other contact sports like soccer and basketball can result in oral injury as feet and/or elbows may be in close proximity to an opponent's mouth during the course of a game.

Children's Access to Dental Care

Access to dental care offers additional avenues for education and preventive approaches, including placement of dental sealants and application of topical fluorides. Access to dental care also offers an early intervention approach to remove decay and place restorations before the pulp of the tooth is involved with the decay process. Without routine access children can be faced with more extensive and expensive restorative dental care. The Alaska Medicaid program offers dental coverage for enrolled children; however, dentist participation in the program is limited due to lower reimbursement rates, concerns with non-kept appointments and other factors.

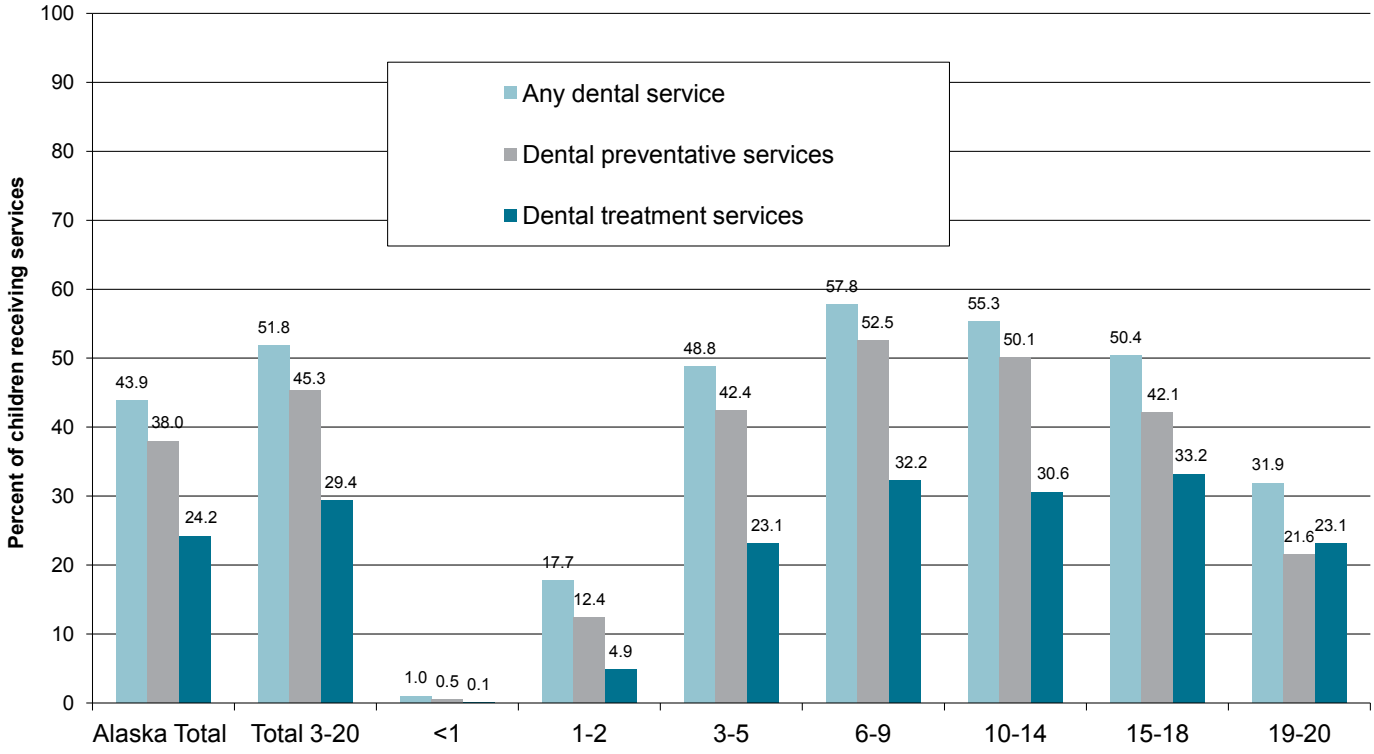
Currently, in the Medicaid program about 47% children receive any dental service during a given year - only 1 in 4 children receive a dental treatment service. Figure 9 illustrates the dental utilization for children enrolled in Medicaid by age group in federal fiscal year (FFY) 2011 (Source CMS 416 EPSDT utilization reports). Trends in child Medicaid dental utilization from FFY1999-2011 are illustrated in Figure 10. Child dental utilization in Medicaid increased with implementation of Denali KidCare in FFY1999 and then remained stable for the period from FFY2002-2009. The increased utilization in FFY2010-2011 is partly due to changes in reporting on the CMS 416 report which now looks at dental utilization for children continuously enrolled in Medicaid for at least 90 days instead of all children enrolled during the fiscal year.

Alaska's Early & Periodic Screening, Diagnosis and Treatment (EPSDT) program guidance for children enrolled in Medicaid is to refer children for a dental exam at age 3, or earlier if a problem is detected during screenings. Guidance from the American Academy of Pediatrics and American Academy of Pediatric Dentistry are for a dental referral with the eruption of the first tooth and no later than age 1. This earlier dental referral would be recommended for Alaska, especially given the extent of dental decay in young children. Discussions regarding the change in EPSDT guidance for the first dental visit are occurring at this time.

In July 2010, the Alaska Medicaid program adopted coverage for reimbursement of trained physicians, nurse practitioners and physician assistants for provision of oral evaluation to children under age 3 and fluoride varnish application. This policy offers the opportunity for medical and dental collaboration to reduce early childhood caries in young children but implementation of the services by medical providers is still in the very early stage of development.

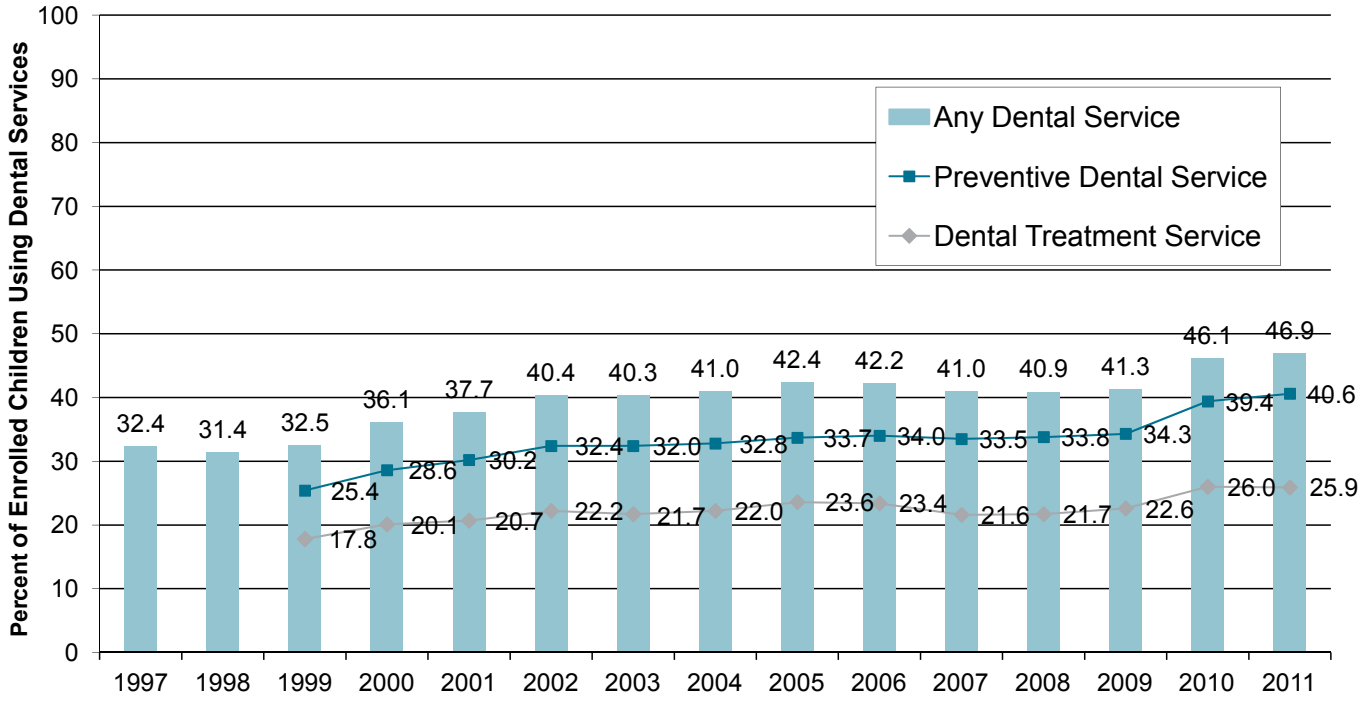
Dental access for adolescents is important to assess oral hygiene and dietary habits as well as provide dental treatment services. Medicaid dental utilization peaks at about 58% for children aged 6-9 years and then utilization begins to fall off for subsequent age groups – with dental access down to 32% for individuals aged 19-20 years. Data on dental access for Alaskan junior high and high school aged children is not available - the Youth Risk Behavior Survey may be utilized in the future to establish baseline data for adolescent dental access in Alaska.

Figure 9 – Trends in Children's Medicaid Dental Utilization, Medicaid - Percent of children receiving dental services by age & type of service, FFY2011



Source: AK MMIS CMS-416 – Annual EPSDT Participation Report 3/31/2011

Figure 10 – Percent of Children Enrolled in Medicaid (Aged 1-20) Using Medicaid Dental Services, by Federal Fiscal Year 1997-2011



Source: AK MMIS CMS-416 – Annual EPSDT Participation Report 3/31/2011

Adult and Senior Oral Health

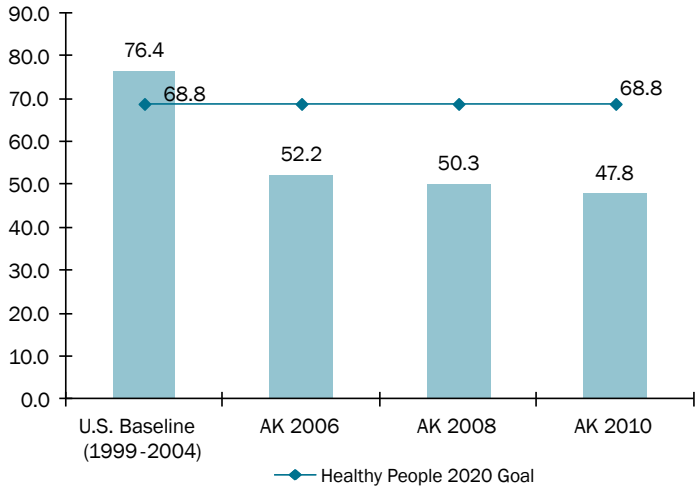
Dental Decay

Adults, including seniors, also experience dental decay. In adults, like children and adolescents, dental decay can develop on the crown of the tooth (enamel covered portion of the tooth). Adults also may develop dental decay on the root surfaces of the tooth with exposure of the roots through gum recession. Nationally, the prevalence of coronal dental decay declined from 30% in 1988-1994 to 26% in 1999-2004 in adults aged 20-64 years but remained unchanged in seniors (aged 65 years and older). Root caries for adults aged 20-64 years also declined from 19% in 1988-1994 to 14% in 1999-2004. Root caries for seniors with teeth decreased from 46% to 36% for the same respective periods.[15] Dental decay and untreated decay rates for Alaskan adults and seniors are not available.

Severe and/or recurrent dental decay can result in tooth loss. Further, development of periodontal disease increased with age and can also result in tooth loss. Loss of teeth can affect speech, physical appearance and social esteem. *Healthy People 2020* objectives related to tooth loss in adults include: adults aged 45-64 years with no loss of permanent teeth due to caries or periodontal disease; and adults aged 65-74 that have lost all of their permanent teeth (edentulous). Figure 11 illustrates trends in Alaska for adults aged 45-64 years with no tooth loss due to caries or periodontal disease. This indicator excludes loss of third-molars (wisdom teeth), teeth extracted for orthodontic treatment or as a result of trauma. Alaskan adults aged 45-64 that reported having lost one or more teeth due to caries or periodontal disease was 47.8% - meeting the Healthy People 2020 target for this indicator and well below the national baseline for this age group at 76.4%.[24]

Tooth loss due to caries and periodontal disease typically is a more severe outcome than dental decay experience or untreated dental decay. At this time Alaska must rely on self-reported tooth loss in the Behavioral Risk Factor Surveillance System (BRFSS) for assessment of adult and senior dental health as dental assessment information is not available. Medications and cancer treatments can also increase risk for development of dental decay as these can result in decreased saliva flow – this can affect adults and seniors that had not previously been at risk for development of dental decay.

Figure 11. Adults aged 45-64 that have ever lost a tooth due to caries or periodontal disease

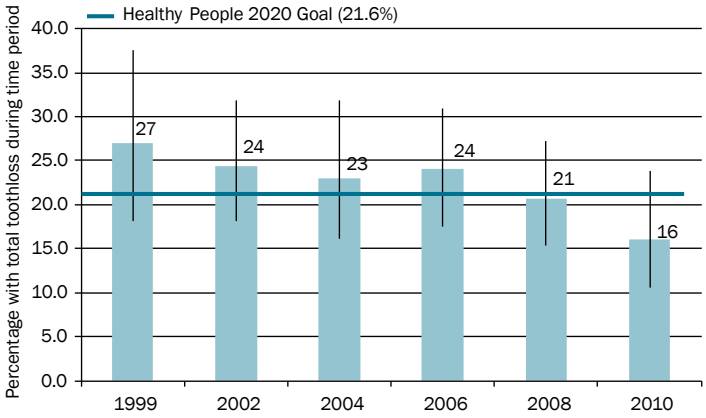


Source: Alaska Behavioral Risk Factor Surveillance System, 2006, 2008 & 2010

Risk of tooth loss increases with age. In 2010, only sixteen percent of Alaskan seniors reported having lost all their natural teeth (edentulous) due to caries or periodontal disease - see Figure 12.[24] The reported information for edentulous seniors is based on older Alaskans aged 65 and older due to the sample size in the Behavioral Risk Factor Surveillance System – the *Healthy People 2020* baseline (24.0%) and the objective target for this indicator (21.6%) are based on older Americans aged 65-74 years. The loss of all teeth at an advanced age can make it difficult to adapt to dentures and can contribute to poor nutrition.

With improved prevention, primarily use of fluorides, and routine dental access most seniors have all or most of their natural dentition. Nationally, the percentage of edentulous seniors has been decreasing – 34% in the 1988-1994 National Health and Nutrition Examination Survey (NHANES) to 27% in the 1999-2004 NHANES survey.[15] As with this national perspective, most older Alaskans have all or most of their permanent teeth. In 2010, thirty-three percent of Alaska seniors reported having all of their teeth and twenty-six percent had lost only 1-5 of their natural teeth.[24] While more seniors are retaining more of their permanent teeth, Medicare (which provides health coverage for most seniors) does not include coverage for routine dental care.

Figure 12. Alaskan Edentulous Adults Aged 65 and Older by Year



Source: Alaska Behavioral Risk Factor Surveillance System, 1999-2010

Pregnant Women

The bacteria associated with tooth decay are typically passed from mother to child.[25, 26] Children of mothers with high caries rates are at higher risk of tooth decay, including development of early childhood caries.[27] Additionally, studies have found associations between periodontal disease and adverse birth outcomes. While these issues speak to ensuring dental access for pregnant women, their access may be affected by lack of dental coverage and dental provider participation in the Medicaid program. Additionally, dentists may be reluctant to provide elective dental treatment during the pregnancy. Antimicrobials (e.g., chlorohexidine rinse) and xylitol gum have been used by some programs providing services to pregnant women as a means to reduce dental decay activity and/or delay transmission of the bacteria causing tooth decay to the infant.

In Alaska, the Pregnancy Risk Assessment Monitoring System (PRAMS) reported for 2008 that 27% of women reported a need to see a dentist during their pregnancy (dental treatment need); 44% reported going to a dentist during the pregnancy (any dental visit); and 36% reported a dental visit that included having their teeth cleaned during the pregnancy.[28]

Adult and Senior Dental Access

The 2010 BRFSS survey responses indicate 68% of all Alaskan adults and 65% of adults aged 65 and older had seen a dentist within the last year.[24] These rates, which indicate about 32% of adults lack routine access to dental care, have been relatively stable since these questions were first asked in BRFSS in 1995. While there is often more attention in dental decay in children, adults and seniors experience dental decay. Changes in medications, diet or treatment of cancer can result in increased caries activity.

Routine exams offer the opportunity to detect gingivitis and early periodontal disease which can be arrested with proper oral hygiene and scaling and root planing at dental visits to remove calculus from tooth root surfaces. Adults with dentures may not realize routine dental care is still important. Dental care is still needed to ensure proper fit of the dentures, which reduces loss of alveolar bone (the bone ridge of the jaws which supports the dentures). Further, these dental exams can detect and provide treatment for other diseases of the hard and soft tissues (e.g., candidiasis) and should include examination for oral and pharyngeal cancer.

In April 2007, an expansion of dental preventive and restorative services for adults enrolled in Medicaid was implemented in Alaska. These services offer the opportunity to increase preventive services and early intervention to reduce extraction of permanent teeth for adult Medicaid recipients and/or provide restorative care and denture services to adults needing those services. With provision of services to adult Medicaid recipients, pregnant women enrolled in Medicaid also receive the benefits of preventive dental care and maintenance of periodontal disease.

Periodontal Disease and Systemic Health

Periodontal disease, like dental decay, is an infection caused by bacteria in dental plaque. The basic division in periodontal diseases is between gingivitis (which affects the gums) and periodontitis (which may involve all of the soft tissue and bone supporting the teeth). Gingivitis and mild periodontitis is

common in all adults. The percentage of adults with moderate to severe periodontitis, in which destruction of supporting tissue can cause the tooth to loosen and fall out, increases with age.[1] Periodontal disease has been linked with general health including relationships with diabetes, cardiovascular disease and birth outcomes.

Periodontal disease has a two-way relationship with diabetes. Studies have shown that individuals with diabetes are more susceptible to periodontal disease and this risk is independent of whether it is Type I or Type II diabetes.[1] The likelihood of periodontal disease increases when diabetes is poorly controlled. Severe periodontal disease can increase blood sugar and increase risk of diabetes related complications. Periodontal diseases respond well to therapy when managed in individuals with well-controlled diabetes. The *Healthy People 2020* objectives recognize this relationship between diabetes and oral health, and set an objective target to increase to 61.2% the proportion of persons age two and older with diabetes that have at least an annual dental exam from the 2008 baseline of 55.6%. In Alaska, analysis of combined data from the 2008 and 2010 Behavioral Risk Factor Surveillance survey found 63% of adults aged 18 and older with non-gestational diabetes reported a dental visit in the past year.[29]

A consensus conference of oral health experts, sponsored by the U.S. Health Resources and Services Administration in 2006, found evidence of the association of maternal periodontal disease with increased risk of preterm birth and low birth-weight, especially in economically disadvantaged populations.[30] Additional research is being done to more fully explore the relationships of periodontal disease with birth outcomes.

Studies examining the relationship between dental infections and the risk for cardiovascular disease suggest the potential for oral microorganisms, such as those found with periodontitis, to be linked with heart disease.[31] One theory for this relationship is that bacteria enter the blood stream and attach to fatty plaques in the coronary arteries, contributing to clot formation. Another theory is that inflammation caused by periodontal disease increases plaque build-up in vessel walls. At this time there is not evidence to support periodontal disease as an independent risk for heart disease and stroke, though there are consistent findings showing a strong association. The relationship of periodontitis and cardiovascular disease continues to be investigated.

Oral Health and Other Systemic Connections

The mouth may also serve as an early indication for signs of osteoporosis (a degenerative disease associated with loss of bone mineral). Detection of oral bone loss through routine oral exams and magnetic resonance imaging may be diagnostic of early osteoporotic changes in skeletal bone.[1]

The link among poor nutrition with obesity, and compromised oral health offers areas for collaboration between programs addressing these issues. The focus on decreasing consumption of soda and as it relates to risk of dental decay and child obesity has been undertaken at the Alaska Native Medical Center in the “Stop the Pop” campaign. Some school districts have taken action to reduce the availability of soda and sugar-sweetened beverages in schools during school hours. Heavy soda and sugar-sweetened beverage consumption can lead to dental decay and tooth erosion. These beverages often not only contain sugar but are acidic – which promotes demineralization of teeth.

Tobacco Use

Use of tobacco has a devastating impact on the health and well-being of the public, including tobacco’s affect on oral health. Use of tobacco is a significant risk factor for development of periodontal disease and oral and pharyngeal cancer. The use of any form of tobacco – including cigarettes, cigars, pipes and smokeless tobacco – has been established as a cause of oral cancer and pharyngeal cancer.[32] Alcohol use can potentiate risk of oral cancer in individuals using tobacco - tobacco use with alcohol accounts for 75-90% of all oral and pharyngeal cancers in the United States.[33] One-half of the cases of periodontal disease can be attributed to cigarette use.[34] Maternal tobacco use during pregnancy may increase the risk of orofacial clefts. Additionally, chewing tobacco with the sugar content increases risk for development of root caries in older adults.

The goal of comprehensive tobacco control programs is to reduce disease, disability and death related to tobacco by:

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

Tobacco control programs which prevent or reduce tobacco use, impact oral health along with other tobacco-related health issues.

Dental appointments can assist with tobacco intervention services. Dental patients are receptive to health messages for oral health at periodic visits and tobacco use may provide visible evidence of effects in the mouth – which can be a strong motivation for tobacco users to quit. Additionally, dental providers can assist in provision of information on tobacco quit lines in the state. Alaska's Tobacco Quite Line is a free, phone-based counseling service for all Alaskans and can be accessed at 1.800.QUIT NOW (1-800-784-8669).

Tobacco use in Alaska has been decreasing overall. Evidence of decreased tobacco use in Alaska includes:

- Overall cigarette consumption in Alaska has been reduced by almost half from 1996 to 2010 – this drop translates to 436 million fewer cigarettes sold in Alaska in 2010 compared to 1996.[35]
- Reported adult use of cigarettes remained stable from 1991 (26%) through 2003 (26%) but has decreased since that time. In 2010, 20.6% of adults reported current cigarette smoking. The prevalence of smoking in Alaska has consistently been above the U.S. median prevalence since 1991.[37]
- Reported cigarette smoking among Alaska high school students is down from 37% in 1995 to 14.1% in 2011.[38]
- Reported use of smokeless tobacco (or "chew") is down from 15.6% of all high school students, and 24% of high school males, in 1995 to 8.4% of all high school students and 12.1% of high school males in 2011.[38]
- Reported tobacco use remains higher for Alaska Native high school students, however significant declines in reported use have occurred between 1995 and 2011 – from 62% of Alaska Native high school students reporting current smoking in 1995 to 26% in 2011 and 23% of Alaska Native students reporting current smokeless tobacco use in 1995 to 12% in 2011.[36]

Reported smokeless tobacco use by adults has remained stable the past 14 years – at 4.1% of adults in 1996 to 4.8% in 2010. Reported use by Alaska Native adults has increased from 11.0% in 1996 to 15.8% in 2010. Alaska Native cigarette smoking among adults has not changed significantly since 1996. A concerning new trend being observed is the reported increase in dual use of cigarettes and smokeless tobacco among men (up to 12% in 2009 as compared with 6% in 1996).[36]

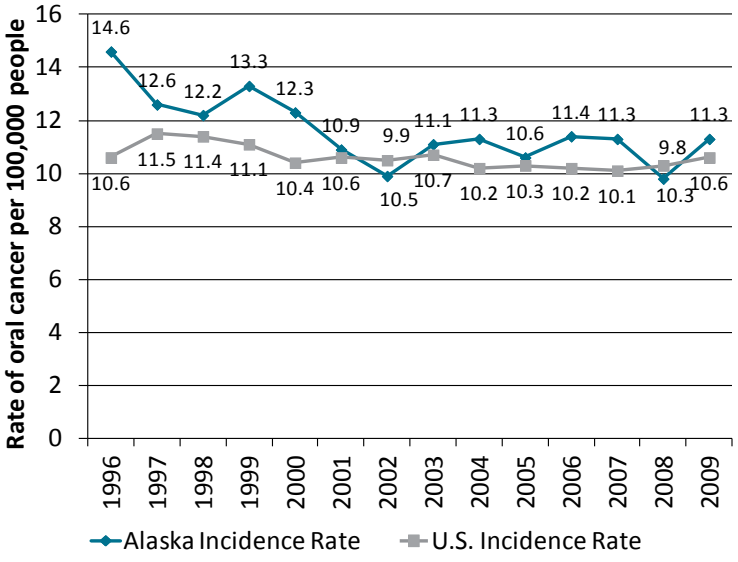
Nationally sales of loose leaf, plug/twist and dry snuff forms of smokeless tobacco have been decreasing the past two decades; however, moist snuff (finely cut or long cut tobacco) sales increased from 36.1 million pounds in 1986 to 84.0 million pounds in 2008.[39] Sales volume of smokeless tobacco, including moist snuff, is not reported in the Alaska tobacco excise tax program. Other issues faced in reducing use of tobacco in Alaska, especially among youth, are lower-priced tobacco products that lend to use for "roll-your-own" cigarettes.

Oral and Pharyngeal Cancer

Oral and pharyngeal cancer (cancer of the lip, tongue, pharynx and mouth) is the 8th most common cancer in U.S. males and 6th most common among Black males.[40] Each year there are more than 30,000 new cases of cancer of the oral cavity and pharynx and over 8,000 deaths related to cancer in these locations.[41] Survival rates for oral and pharyngeal cancer vary by site and by stage of diagnosis. The five year survival rate is significantly higher when detected at the localized stage. For example, oral cancer detected at the localized stage (stage I) has a five-year survival rate of 83%, whereas detected at the distant stage (stage IV) the five-year survival rate drops to 28% (1996-2003 combined data).[42]

Figure 13 illustrates the incidence of oral and pharyngeal cancer by year in Alaska as compared with U.S. incidence. Two distinct patterns are evident in the chart in that from 1996 through 2000 all incidence rates for Alaska were above 12 per 100,000; while all rates from 2001 through 2009 have been below 12 per 100,000.

Figure 13. Incidence of Oral Cavity and Pharynx Cancer in Alaska and U.S. by Year



Source: Alaska Cancer Registry (U.S. Surveillance, Epidemiology and End Results data - SEER)

The average incidence rates for oral and pharyngeal cancer Alaska as reported from the Alaska Cancer Registry for the period of 2005-2009 were:

- 10.9 per 100,000 – Alaska Total
- 13.6 per 100,000 – Alaska Native
- 10.9 per 100,000 – White
- 10.3 per 100,000 – U.S. Total (SEER)

The U.S. 2005-2009 average incidence rate of oral and pharyngeal cancer was 10.3 per 100,000 (SEER).

The death rate from oral and pharyngeal cancer for Alaskans is 2.0 per 100,000 (2008-2010 average) and is somewhat less than the U.S. death rate from these cancers at 2.5 per 100,000 (SEER, 2007). These death rates are age adjusted to U.S. standard 2000 population.[43]

As noted above tobacco use increases risk for development of oral and pharyngeal cancer. Alcohol is an independent risk factor and, when combined with tobacco use accounts for most cases of these cancers in the United States. Viruses and impairments in the immune system have also been implicated in development of oral cancer.[1] Exposure to sunlight without protection (use of lip sunscreen and hats recommended) increases risk of solar related cancer (e.g., cancer of the lip).

There is also a growing body of research indicating human papillomavirus (HPV) as a cause of oropharyngeal cancer (cancer in the middle part of the throat including the soft palate, base of the tongue and the tonsils.) HPV-related oropharyngeal cancer is most occur at the base of the tongue, tonsils and back of the throat; as compared with the most common sites for non-HPV cancer of the oral cavity being the floor of the mouth and lateral border of the tongue. Adults with HPV-related cancer are often younger and less likely to have a history of tobacco and alcohol use than adults with non-HPV oral and pharyngeal cancer.[44, 45]

Nationally, a focus area with oral and pharyngeal cancer is to increase detection at early, localized stages of the cancers with oral cancer exams beginning on all adults aged 40 years and over, although earlier exams are being assessed with increases in HPV-related oropharyngeal cancer. These efforts include training of dental and medical providers (as many at-risk adults lack routine dental care). Oral cancer detection is accomplished by a thorough examination of the head and neck and examination of the tongue and entire oral and pharyngeal mucosal tissues, lips, and palpation of the lymph nodes. An oral cancer exam question, descriptive of this procedure, was asked of adults in the Behavioral Risk Factor Surveillance System (BRFSS) survey in 2008 and 2010. Table 3 provides reported oral cancer exams for adults aged 40 years and older by racial/ethnic group and known risk factors for combined data from those two years.

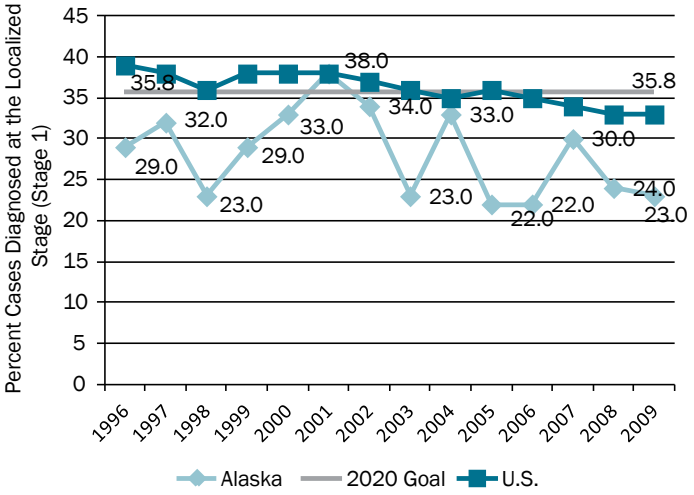
Table 3 – Percent Reported Cancer Exams for Adults Aged 40 Years and Older

ll adults aged 40 and older	34.8%
White	38.3%
Alaska Native	16.2%
Other/Unknown race/ethnicity	27.2%
Smokers	23.0%
Smokers that binge or heavy drink	18.1%

Source: BRFSS

Figure 14 illustrates the percent of oral and pharyngeal cancer detected at the earliest stage for Alaska and the United States, 1996-2001. The smaller number of Alaska cases creates more year-to-year variability in the data; however, the generally fewer cases of oral and pharyngeal cancer are diagnosed at the localized stage as compared with national data.

Figure 14. Percent of Oral and Pharyngeal Cancer Diagnosed at the Localized Stage, 1996-2000

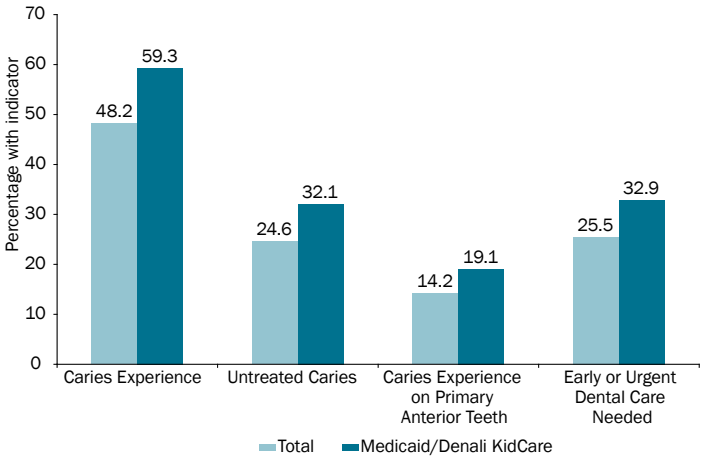


Source: Alaska Cancer Registry (SEER data)

Oral Health Disparities

Although there have been gains in oral health in the United States there remain disparities among lower-income groups, racial/ethnic minorities and individuals with disabilities. The situation in Alaska is similar with increased rates of dental decay in racial/ethnic minorities and children enrolled in the Medicaid/Denali KidCare program. Figure 15 illustrates the higher caries experience percentage for kindergarteners reported as enrolled in Medicaid/Denali KidCare in the 2010/2011 dental assessments – these children had a slightly lower percentage of untreated dental decay than for all kindergarteners.

Figure 15. Dental indicators for Kindergarteners: Total and Medicaid/Denali Kidcare, 2010/2011



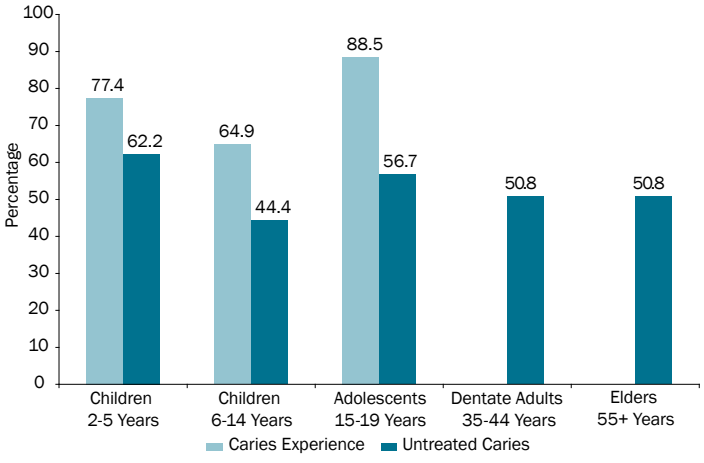
Source: Alaska Basic Screening Survey, 2010/2011

Higher rates of tooth loss reported in the Behavioral Risk Factor Surveillance System are associated with lower education level and lower socioeconomic status. The prevalence of smoking is twice as high among Alaska Native adults as non-Native Alaskans and Alaska Natives are three times more likely to use smokeless tobacco.[46] Tobacco use is a risk for development of oral cancer and periodontal disease. Alaska Natives have a higher incidence of oral cancer than other racial/ethnic groups in Alaska. Oral clefts are more prevalent in the Alaska Native population. Dental assessments of Alaska Native dental clinic users in 1999 found 37% of Native adults aged 35-44 years had destructive periodontal disease (as indicated by one or more sites with 5 mm or more in loss of tooth attachment). Destructive periodontal disease in Native adults increased with age with 69% of Native adult clinic users aged 55 years and older having destructive periodontal disease.[47]

Alaska Natives - Dental Decay

Historically a number of studies documented the low dental decay rates in the Alaska Native population in the first half of the 20th century. The traditional diet of Alaska Natives was rich in proteins and fats and very low in sugars and fermentable carbohydrates. Studies conducted in the 1920's documented the relationship between tooth decay and increased ingestion of refined sugar and carbohydrates in the Native population.[48] These changes in diet and lack of access to fluoridated public water in most villages, combined with limited access to dental providers in rural Alaska, are factors influencing the high rates of dental decay. The higher rates of dental decay in Native children have been discussed previously; however, the 1999 dental assessment of adult Native clinic users found high rates of dental decay and/or untreated dental decay across all Native age groups (See Figure 16).

Figure 16. Caries Indicators Among Alaska Native Dental Patients by Age



Source: 1999 Indian Health Service Dental Assessment of Alaska Native Dental Clinic Users

Frequent ingestion of soda has been identified by Tribal health programs as a factor contributing to increased dental decay in Alaska Natives. Frequent ingestion of soda contributes to dental decay through two mechanisms:

- Non-diet sodas are a major source of sugar; and
- Most sodas, like citrus drinks, have a relatively low pH (acidic)

These factors result in increased acid production by the bacteria causing dental decay as well as demineralization of teeth due to the low pH of these drinks.

The high dental decay rates have persisted over several generations which can create a social environment where dental visits are expected to be painful, teeth are expected to be lost and a lower value is placed on taking care of teeth (brushing and flossing). Changes in dental decay prevalence in the Alaska Native population cannot solely be accomplished by increasing capacity for dental treatment. There also needs to be a reduction in the frequency of ingestion of food and beverages that promote tooth decay. Along with improved diet, accessing dental services without waiting for emergent problems and proper home care can foster increased care of primary teeth and retention of permanent teeth. The Tribal health programs approaches, including implementation of the dental health aide program, are attempting to increase prevention of dental decay, education on oral hygiene, and treatment capacity offer hope of improvement in the oral health status of Alaska Natives.

Social Determinants of Health

There is increasing evidence and attention being paid to differences in health related to societal inequalities – this difference is often evident even among individuals of the same racial/ethnic groups. Social determinants of health include factors like education and health literacy. Health literacy includes the ability to understand health information and use the information to make good discussions on health and medical care. Generally the lower a person's socioeconomic position the worse their health. This association is seen often in risk behaviors such as tobacco use and also in health status – including oral health. Typically, lower socioeconomic status is associated with increased prevalence of dental decay and periodontal disease as illustrated in Basic Screening Survey results on dental decay in children and reported tooth loss in adults from the Behavioral Risk Factor Surveillance System. *Healthy People 2020* highlights the importance of social determinants of health by encouraging changing environments that promote health for all – optimal water fluoridation would be one example of supporting healthy environments.[8]

Community Water Fluoridation and Fluorides

Community Water Fluoridation

Community water fluoridation is recognized as one of the 10 greatest public health achievements of the 20th century in the United States for its role in reducing dental decay.[49] Community water fluoridation is the process of adjusting natural fluoride in a community's water supply to a level that reduces dental decay in the population served by the public water system. Fluoride in drinking water provides frequent exposure to small amounts of fluoride that decrease demineralization and promote re-mineralization of tooth enamel during exposure to acid production from oral bacteria with ingestion of food and/or beverages or other products with sugars (e.g., medications). Water fluoridation is most effective at preventing decay on the smooth surfaces of the teeth – with dental sealants being effective at reducing decay of the pits and fissures of permanent molars.

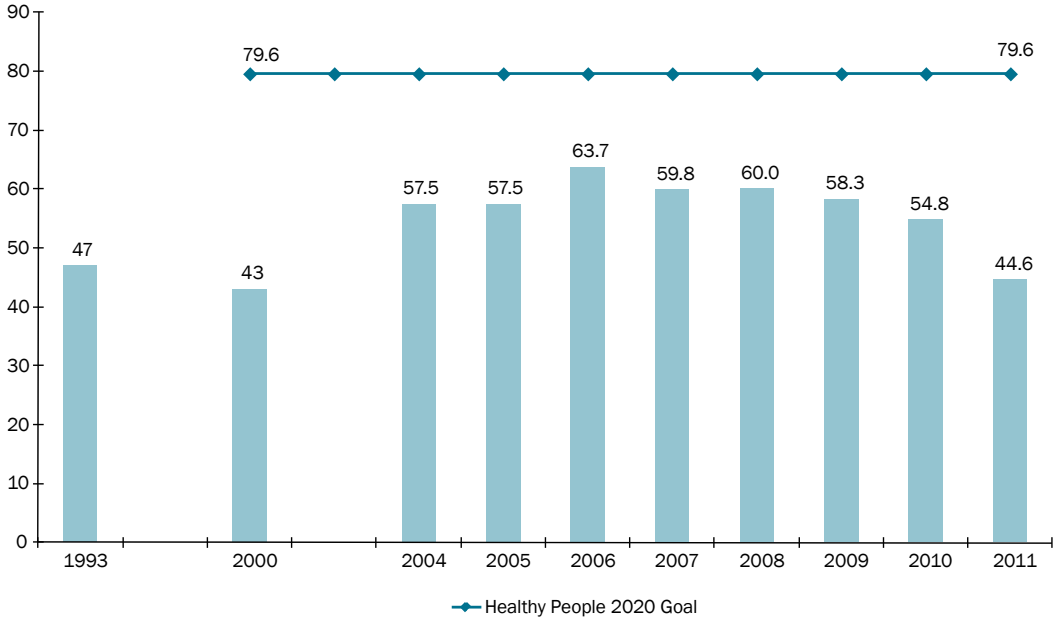
Water fluoridation reduces disparities in the population by preventing dental decay in individuals from different socioeconomic, racial and ethnic groups. It helps reduce the cost of dental care and dental insurance premiums; it also assists in retaining teeth throughout life.[1]

Recognizing the importance of community water fluoridation, *Healthy People 2020* objectives aim to increase the proportion of U.S. population served by community water systems with optimally fluoridated water to 79.6%. In the United States during 2010, approximately 204.3 million people (73.9% of the population served by public water systems) received optimally fluoridated water.[50] In Alaska in 2011, 45% of the population served by public water systems received optimally fluoridated water (See Figure 17).

Adjusting fluoride to optimal levels to reduce dental decay has been shown to be effective in Alaska. In 2008, an epidemiology investigation of factors influencing dental decay rates in rural Alaska Native children conducted by the CDC Arctic Investigations Program found:

- 4-5 year old children had an average of 2.6 times more decayed and filled primary teeth in non-fluoridated villages than in fluoridated villages; and
- children aged 12-15 years in non-fluoridated villages had more than double the number of decayed, missing and filled permanent teeth than children in that age group living in fluoridated villages.[51]

Figure 17. Proportion of Alaskans Served by Community Water Systems with Optimally Fluoridated Water



Source: Water Fluoridation Reporting System

While this study was not solely to assess community water fluoridation effectiveness and only 348 children aged 4-15 were examined, the findings are similar to larger studies in finding reduced dental decay when assessed at the tooth or tooth surface level.

The Alaska population with public water systems with fluoridated water declined in the 1990's as rural water systems that lacked appropriately certified water operators or adequate infrastructure were taken off-line for fluoridation. The increased population growth in urban areas of Alaska – most of which were fluoridated (e.g., Anchorage and Fairbanks) was the primary reason for the increased population served by fluoridated public water supplies from 2000 to 2006. Since 2006 several large water systems have discontinued adjusting fluoride in the public water system including the communities of Juneau, Fairbanks and most recently Palmer - community water fluoridation is a local option in Alaska and local efforts in opposition to fluoridation in these communities were successful in city council votes against continued fluoridation. Meeting appropriate certification levels and water operator turnover are the main issues restricting water fluoridation in village public water systems, although other infrastructure barriers exist (e.g., some villages still lack piped water systems).

The Oral Health Program, Alaska Native Tribal Health Consortium, Alaska Dental Action Coalition and Alaska Rural Water Association offer information and training to support optimal water fluoridation in communities currently fluoridating public water supplies and communities interested in implementing water fluoridation.

Topical Fluoride and Fluoride Supplements

Since frequent exposure to small amounts of fluoride each day best reduces the risk for dental decay in all age groups, all people should drink water with optimal fluoride and brush their teeth at least twice daily with fluoride toothpaste.[52] For communities that do not receive fluoridated water and persons at high risk for dental decay additional fluoride measures may be warranted. Community measures include fluoride mouth rinse programs, typically conducted in schools. Individual measures for at-risk populations include prescriptions for fluoride supplements and topically applied fluoride gels or varnishes.

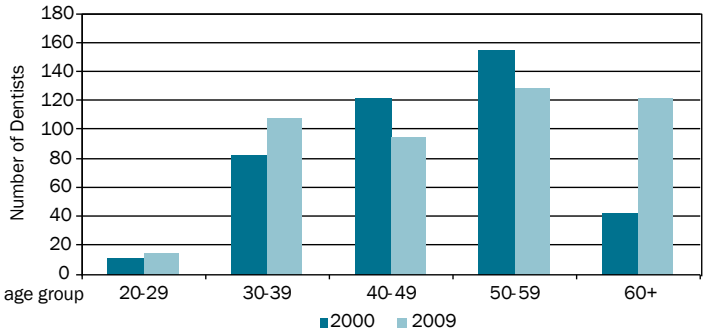
Dental Workforce

Dentists:

While individual circumstances may vary, dentists often now retire in their mid- to late-50's. A significant number of Alaska dentists aged 60 years and older will likely retire in the next few years. Analysis of the Alaska dental professional licensing files indicates 20 dentists aged 60 and older with active licenses in 2008 did not have an active license in 2009. This demographic trend in Alaska and nationally indicate that over the next decade the number of dentists retiring will be greater than the number of dental graduates to replace them, thus further restricting dental access. The workforce implications are especially significant for rural areas, for Medicaid recipients and the elderly.

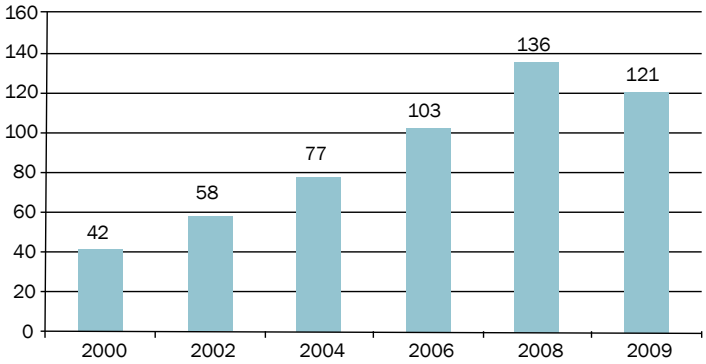
In 2000, just over 10% of Alaska dentists were aged 60 years or older - by 2009 the percentage in that age group was up to 26%. (See Figure 18). Anchorage, the community with the greatest number of dentists, has a similar percentage of dentists in that age group, at 30% in 2009. Figure 19 shows the trend by year for dentists aged 60 years and older from 2000-2009. The number of dentists with current, active licenses and Alaska addresses increased during this period from 411 in 2000 to 465 in 2009, however the age demographics are still concerning. Figure 20 illustrates the number of dentists and age demographics.[53]

Figure 18. Alaska Dentist Distribution by Age Group: 2000 and 2009



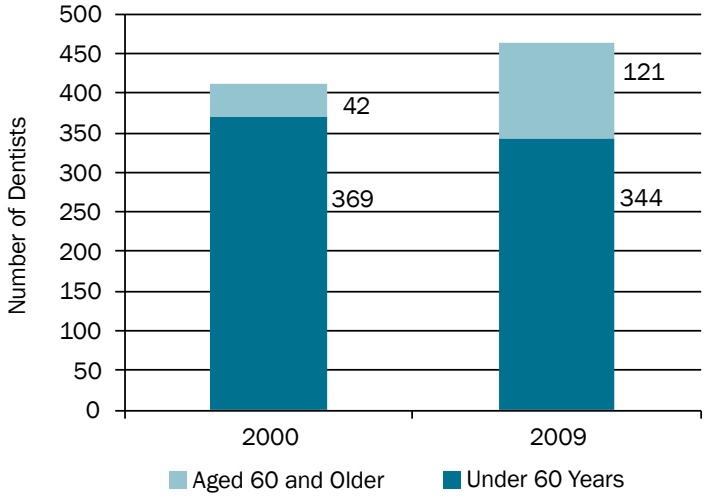
Source: Professional Licensing, Alaska Department of Commerce, Community & Economic Development

Figure 19. Number of Alaska Dentists Over Age 60, 2000-2009



Source: Professional Licensing, Alaska Department of Commerce, Community & Economic Development

Figure 20. Age Distribution Alaska Dentists 2000 & 2009



Source: Professional Licensing, Alaska Department of Commerce, Community & Economic Development

The Alaska Division of Corporations, Business and Professional Licensing reported 516 dentists with a current, active license and an Alaska address at the end of June 2011 or a ratio of 71.4 dentists per 100,000 individuals in Alaska based on Alaska Department of Labor population estimates for 2011. This is up from the 68.5 dentists per 100,000 in 2005. These ratios do not account for changes in hours worked (FTEs) which could be influenced in an aging workforce. The U.S. ratio of dentist per 100,000 in 2009 was just over 60 dentists per 100,000.[54, 55] Projections foresee a decline starting in 2015 with fewer dental graduates than retiring dentists. The ratio of dentists to population is expected to drop to 54:100,000 by 2030.[56]

While the dentist-population ratio for Alaska looks favorable, there is a problem of distribution with most dentists practicing in urban areas of the state. Much of rural and remote Alaska has received designation for dental-health professional shortage areas (dental-HPSA). The U.S. Health Resources and Services Administration estimates about 144,115 Alaskans living in these shortage areas and that it would take about 13 additional dentists to provide dental services in these areas of the state.[57] The recruitment of dentists in dental-HPSA regions has improved the past several years partially due to the recent national economic downturn.

The dentist-population ratio does not take into account actual full-time equivalent work hours and transportation time providing dental services in rural/remote areas of the state. As noted above, the main issue however, is the aging of the dentist workforce in the state.

From the Medicaid perspective, most Alaska dentists are enrolled in the Medicaid program. However, only 295 dentists were active in the program in state fiscal year 2010 at a level of $10,000 or more in paid Medicaid claims – an amount typically less than 3% of gross receipts for a private dental practice. Pediatric dentists are major providers of dental care for children enrolled in the Medicaid/Denali KidCare Program in Alaska and nationally. Table 4 provides information on dentist participation levels by paid Medicaid claim amount for dentists that were reimbursed at least $10,000 for Medicaid claims in SFY2010. Dental participation in Medicaid has increased since 2008, when the Medicaid program updated dental reimbursement rates that had previously been frozen at 1997 Medicaid dental payment levels.[58]

Table 4 – Dentist Medicaid Participation, SFY2010

Paid Claim Amount	Total Dentists	Tribal General Dentists (1)	Non-Tribal FQHC General Dentists	Specialists	Private General Dentists
$10,000 – 49,999	117	40	1	12	64
$50,000 – 99,999	53	25		6	22
$100,000 or more	125	27	6	28	64
Total	295	92	7	46	150

Notes:
1. Tribal general dentists includes staff dentists and dental contractors working for Tribal programs.
2. Dentists working in rural/remote areas on an itinerant basis but not under contract with Tribal programs are included in the private general dentist count.
3. List does not include out-of-state dentists treating children enrolled in the Alaska Medicaid Program that are out-of-state.

Dental Hygienists:

Professional licensing reported 492 dental hygienists with a current, active license and listing an Alaska address as of June 2011. The Alaska Department of Labor predicts a need of 575 dental hygienists by 2018.[59] Discussions with faculty of the University of Alaska Anchorage (UAA) and leadership in the Alaska State Dental Hygienists' Association in 2010 found general agreement Alaska can meet that future need with the education programs at the Anchorage and Fairbanks campuses of the university. However, as with dentists there is a problem of distribution with most dental hygienists living in urban areas and vacancies in rural/remote areas of the state.

In 2008, legislation passed in Alaska authorizing dental hygienist practice under collaborative agreements along with provisions for placing dental restorations. Collaborative practice would allow for experienced dental hygienists to practice without a dentist on site in settings outside the dental office – a model offering potential to provide preventive dental services and screening for unmet needs in schools, long-term care settings and/or through home visits with children, adolescents and adults with special health care needs. Regulations have been adopted, however at this time this dental hygienist practice model has not been utilized. Utilizing trained dental hygienists to place restorations is similar to expanded-functions utilized in other settings to increase efficiencies in the delivery of dental care.

Dental Health Aide Program:

Tribal programs in Alaska, faced with high rates of dental decay in their beneficiaries and dental vacancies, have developed the Dental Health Aide (DHA) Program. The DHA program priorities are to increase education and preventive services – along with provision of specified dental services in the four types of DHA providers. The DHA provider types and major functions are:

1. Primary Dental Health Aide (PDHA): The PDHAs provide dental education, nutritional counseling, and the application of topical fluorides. The PDHA II provides a greater range of services depending on their training track. These services include dental assisting, taking dental films, placing dental sealants, supporting clinical periodontic services, and placement of interim therapeutic restorations (ITR).
2. Expanded Function Dental Health Aides (EFDHA). EFDHA levels I and II will serve as expanded duty dental assistants in regional dental clinics.
3. Dental Health Aide Hygienist (DHAH): DHAH are licensed dental hygienists that with appropriate training can administer local anesthetic under general supervision.
4. Dental Health Aide Therapist (DHAT): The DHAT level requires two years of full-time training and a preceptorship. DHATs perform oral exams, cleanings, fluoride treatments, sealants, radiographs, restorations including stainless steel crowns, extractions and community prevention programs.

As of June 2012, there are over 50 Certified Dental Health Aides working throughout the state at 12 of Alaska's Tribal Health Organizations. As of January 2012, there were 25 Certified DHATs. Dental Health Aide education occurs throughout Alaska and is overseen by the Community Health Aide Certification Board. In 2007, the Alaska Native Tribal Health Consortium began educating DHATs (previously educated in New Zealand). The two-year program has training locations in both Anchorage and Bethel, Alaska.

The DHA program, especially the DHAT provider model, has been the focus of considerable attention since it was implemented. A number of evaluations of the DHAT program and providers have been conducted finding positive results. Besides the attention to restorative dental services provided by the DHATs, these providers have assisted in building support for community water fluoridation in several Alaska villages and are working along with the Alaska Tribal health organizations to educate on oral hygiene and dietary issues affecting the prevalence of dental decay in the Alaska Native population.

Other states faced with similar issues of limited access to dentists have:

- implemented state loan repayment programs to attract dental graduates to underserved areas;
- utilized increased roles for dental hygienists under general supervision;
- implemented programs to train medical providers on enhanced screening and topical fluoride application as part of well child exams for children under age 3;
- authorized use of foreign trained dentists in under-served settings; and/or
- discussed/developed alternative dental provider types.

Minnesota has implemented both a dental therapist and advanced dental hygienist practitioner model. Several other states are discussing development of these provider models. A model similar to Alaska's primary dental health aides (Community Dental Health Coordinators-CDHC) was developed by the American Dental Association. The CDHC model is focused on community-based education and prevention activities in communities with limited access to dental care.

Infection Control in the Dental Office

Dental health-care personnel (DHCP) and dental patients can be exposed to pathogenic microorganisms in dental settings through:

- Direct contact with blood, oral fluids, or other patient materials;
- Indirect contact with contaminated objects;
- Contact of the conjunctiva, nasal, or oral mucosa with droplets containing microorganisms from an infected person and propelled a short distance (e.g., by coughing, sneezing, or talking); and
- Inhalation of airborne microorganisms that can remain suspended in the air for long periods.

DHCP includes the dentist, dental hygienist, and dental assistant; and dental laboratory technicians (in-office and in commercial dental labs), administrative/clerical staff and others not directly involved in patient care but potentially exposed to infectious agents (e.g., housekeeping and maintenance workers).

The U.S. Centers for Disease Control and Prevention has published infection control guidelines for dental health-care settings to address these issues.[60] The University of Alaska Anchorage, Dental Assisting and Dental Hygiene Programs and the Alaska State Dental Hygienist Association use the CDC infection control guidelines in training of dental personnel in Alaska.

Alaska Dental Action Coalition

The Alaska Dental Action Coalition (ADAC) is a voluntary interagency partnership that formed under the cooperative agreement with Alaska from the U.S. Centers for Disease Control and Prevention, Division of Oral Health. ADAC merged with other oral health stakeholders following successful efforts to educate policymakers on the need for improvements in dental benefits for adults enrolled in the state Medicaid program. ADAC has three established committees that meet regularly (Prevention & Education, Provider Training and Education, and Fluorides). The strategies and recommendations identified in this plan reflect the input from ADAC and committee members.

Alaska Oral Health Program

The Alaska Oral Health Program was established under a cooperative agreement with the U.S. Centers for Disease Control and Prevention (CDC), Division of Oral Health in July 2002. Current funding from the CDC supports 2.5 full-time equivalent (FTE) positions in the Division of Public Health, Section of Women's, Children's and Family Health for a Dental Officer; Health Program Manager for management activities on community water fluoridation, oral health education and Coalition support; and a part-time Health Program Manager for development and/or evaluation of dental sealant programs, professional service contract management and assistance with management of federal grants.

The Oral Health Program has developed an oral health surveillance system to assess oral health needs in Alaska, identify disparities and monitor trends in oral disease over time. The information in this plan reflects the information collected through the surveillance system. Summary data from the dental assessments of Alaska children enrolled in Head Start (2005), kindergarten (2005, 2007 and 2010/2011) and third-grade (2004, 2007 and 2010/2011) are provided in Appendix II. Summaries from oral health questions on the Behavior Risk Factor Surveillance System (BRFSS) and dental utilization for children enrolled in Medicaid/Denali KidCare are provided in the Appendix III and IV respectively.

Major gaps in assessing oral health in Alaska currently include:

- Ongoing funding to conduct child dental assessments to monitor trends in dental decay and dental sealant utilization (next planned for the 2015/2016 school year);
- Dental decay and sealant utilization in adolescents and children/youth with special health care needs;
- Dental decay and periodontal disease in adults and seniors (including adults/seniors with disabilities);
- Dental related emergency room visits and general anesthesia cases for treatment of early childhood caries;
- Routine analysis of dental workforce demographics and Medicaid dentist participation;
- More detailed analysis of dental access for children enrolled in Medicaid including access to preventive dental services and dental sealants on permanent first and second molars;
- Oral cancer screening by dental and medical providers; and
- Oral injuries.

The Oral Health Program is utilizing dental assessment information to inform policymakers and the public about oral disease in Alaska, to identify oral health disparities and monitor disease trends. Assessment information will be utilized to implement appropriate interventions to reduce oral disease and injuries.

Goals, Strategies & Recommendations:

Priority Recommendations

1. By July 2013, the Department of Health and Social Services will implement a state loan repayment/ incentive program for dentists and dental hygienists for practice in underserved areas of the state.

Justification:

- In the past decade Alaska has seen an increase in Community Health Center dental programs, including those administered by Tribal programs, however most programs face difficulty recruiting and retaining dental providers;
- Rising dental education costs result in increased debt for dental graduates which can limit decisions to practice in rural areas and in programs treating underserved populations; and
- Private dental practices are concentrated in urban areas of the state – dentist retirements over the next decade could result in dental access issues in rural areas of the state.
- While there are national programs, including Indian Health Service and National Health Service Corps loan repayment, many states have state-funded loan repayment programs to assist with dental provider recruitment and retention for practice in underserved areas.
- Community health center dental programs would like to attract experienced dentists in addition to new graduates – experienced dentists may not have student loans, thus an incentive approach may be more advantageous for recruitment.
- Dental workforce assessment activities indicate Alaska's university dental hygienist programs are producing adequate numbers of dental hygienists for public/private dental practice, but recruitment to rural/ remote Alaska practice locations remain difficult.

2. By January 2015, the Department of Health and Social Services, will develop and implement at least two strategies aimed at reducing child consumption of soda and sugar-sweetened beverages.

Justification:

- Soda and sugar-sweetened beverage consumption is often reported by dental providers as a contributing cause to the high prevalence of dental decay in rural Alaska – a 2008 study of dental decay in rural Alaska Native children found reported consumption levels of soda to be associated with increased severity of dental decay.[61]
- The consumption of soda and sugar-sweetened beverages is strongly associated with obesity.[62]
- Children, adolescents and adults would benefit from increased consumption of water or low-fat milk – for reduction of dental decay consumption of optimally fluoridated water is an evidence-based approach to reducing the prevalence of dental decay.

3. By September 2014, the Oral Health Program will assist in the provision of at least three continuing dental education workshops on provision of dental treatment to special needs populations (e.g., children/ youth with special health care needs, adults with disabilities and/or geriatric dentistry.)

Justification:

- Dental decay is a frequent unmet health need for children/youth with special health care needs and families often face difficulties finding a dental home.
- Pediatric dental practices are a major source of dental care for children/youth with special health care needs but often report difficulty finding general practices in Alaska to refer patients to as the children age into adulthood.
- Older Americans face increased prevalence of decay due to medications, cancer treatment, changes in diet and/or gum recession with exposed tooth root surfaces – seniors living in assisted-living and skilled nursing facilities typically have higher unmet dental needs and less access to routine dental care.
- Training of dental providers on familiarity with health issues and techniques to address the oral health of special needs populations is an approach to increase access to dental care.

4. By July 2016, the Department of Health and Social Services, will implement Medicaid reimbursement and/or policies to encourage dental treatment of children/youth with special health care needs in the dental office – reduce the number of cases for treatment under general anesthesia for routine dental care.

Justification:

- Children/youth with special health care needs are more likely to undergo general anesthesia for medical and dental conditions than the general child population.
- Most dental care can be provided in the dental office, however the provision of service often takes longer with additional time for instruction, for the child's cooperation in performing the dental procedure and/or behavior management – the current reimbursement mechanism for providers often favor treatment under general anesthesia.

5. By January 2017, increase the percent of Alaskans on public water systems with access to optimally fluoridated water to 55%.

Justification:

- Community water fluoridation is a longstanding evidence-based public health approach to reducing the prevalence of dental decay – CDC recognized water fluoridation as one of the top ten public health accomplishments of the 20th century.
- Community water fluoridation studies indicate that, even with common use of fluoridated toothpaste, water fluoridation reduces dental decay in children and adults more than 23%.[63]
- Community water fluoridation is highly cost effective and provides benefits to the entire population including those without routine access to dental care.
- A 2008 study by the CDC Arctic Investigations Program found rural Alaska Native children living in fluoridated villages had less severe dental decay (e.g., 4-5 year old Alaska Native children living in non-fluoridated villages had an average of 2.6 times more decayed and filled teeth than children in that age group living in fluoridated villages.)[61]
- With several urban public water systems discontinuing fluoridation since 2008, the percent of population on public water systems with access to optimally fluoridated water has decreased from 60.0% in CY2008 to 44.5% in CY2011.

6. By July 2015, the Alaska Dental Action Coalition in collaboration with the Alaska State Dental Hygienists' Association will implement at least two pilot projects on provision of preventive dental services, dental screening and referral for dental treatment in long-term care settings.

Justification:

- Dental hygiene practice under collaborative agreements is authorized under A.S. 08.32.115 to allow for dental hygienist practice of qualified dental hygienists to practice in settings outside the dental office without the presence of the licensed dentist.
- Older adults may be at increased risk for development of dental decay due to changes in diet, medications and other factors decreasing saliva flow and/or exposed tooth root surfaces.
- Surveys from other states have indicated higher rates of untreated dental decay among older Americans in long-term care settings than those participating in congregate meal programs.
- A survey of Alaska long-term care facility administrators in 2010-2011 found broad support for provision of screenings and preventive dental services in these settings.

7. By September 2015, the DHSS Section of Health Planning and Systems Development and Oral Health Program, will develop methods to collect and report data on Alaska dental-related emergency room visits; and hospital and ambulatory surgery center general anesthesia cases for treatment of early childhood caries.

Justification:

- Individuals without dental coverage may seek care for oral health conditions at emergency rooms –care provided in this setting is often palliative addressing pain and infection but not the underlying oral health condition (e.g., untreated dental decay).
- Dental related emergency room visits are a source of hospital uncompensated care and an indicator of dental access issues.
- Children with severe early childhood caries are typically treated in the outpatient surgery setting under general anesthesia to complete treatment in one visit and reduce emotional trauma to the child in treating their dental needs.
- The 2008 investigation of dental decay in rural Alaska Native children found an average of $6,000 in charges per early childhood caries case – these include the dental, facility and anesthesia charges.
- Approaches to reducing the prevalence of early childhood caries (and the related expenditures) include:

addressing the caregiver's dental decay, application of topical fluorides and education on diet and feeding practices of the child.

8. By July 2014, the Oral Health Program and Section of Women's, Children's and Family Health should diversify funding for the program to improve program sustainability.

Justification:

- In SFY13, ninety percent of the Oral Health Program budget comes from one source – federal funding from the CDC Division of Oral Health.
- A review of state oral health program infrastructure review conducted by the Association of State and Territorial Dental Directors (ASTDD) found diversified funding of state programs was a factor in program sustainability.

9. Continue to support and expand preventative efforts to improve the oral health of all Alaskans through:

- Education of parents, caregivers and individuals on the personal role of preventing dental disease through proper feeding practices of infants, diet and oral hygiene (e.g., brushing with fluoridated toothpaste and flossing);
- Encouraging schools to adopt policies to restrict soda and sugared beverages and/or promote use of low-fat milk and water as healthier drink choices;
- Preventing and/or decreasing the use of tobacco products;
- Identify and support opportunities to expand access to dental sealants – e.g., Tribal and school-based dental sealant programs;
- Identify and support opportunities to increase medical and dental collaboration to reduce early childhood caries (e.g., training and conducting oral evaluation and fluoride varnish application by non-dental health professionals);
- Promoting use of car seats and/or safety restraints in automobiles and mouth-guard use when participating in contact sports to reduce oral injuries; and
- Awareness of the role of oral health as it relates to general health (e.g., diabetes).

Justification:

- Most oral disease is highly preventable with proper diet, oral hygiene, access to fluoride and dental sealants and avoiding tobacco products.
- Education efforts seek to inform individuals, increase public awareness and ultimately change behavior to improve and/or maintain oral health.

Monitor Progress on Policy Changes Implemented in 2008-2012:

The 2008-2012 state oral health plan listed 9 priority recommendations from the Alaska Dental Action Coalition, Oral Health Program and key stakeholders. Some of the recommendations were fully adopted. Other recommendations had activities that indicated progress but there remains the need for ongoing support or actions needed to support the recommendations. Progress and/or next steps of major recommendations in the 2008-2012 state plan include:

- Providing preventive and routine restorative dental benefits to adults enrolled in Medicaid
    - Authorization for the services passed in the 2006 legislative session and signed into law in June 2006 and reauthorized in the 2009 legislative session

- Dental hygienist practice to allow endorsement for placing restorations; and to allow experienced dental hygienists to practice under a collaborative agreement with a dentist that would allow services to be provided outside the dental office
    - Legislation passed and became law in 2008 – regulations have been adopted for these services
    - Next steps include implementation of dental hygienist practice under collaborative agreements (see priority recommendation #6 above)

- Increasing dental Medicaid reimbursement
    - With legislative authorization the department increased Medicaid dental reimbursement in July 2008 and July 2009
    - In 2010, regulations were adopted providing for an annual review of dental reimbursement in relation to changes in the Anchorage consumer price index

- Provide Medicaid reimbursement for non-dental providers for application of fluoride varnish to reduce dental decay in young children; and develop a training program for enhanced dental screenings by non-dental providers and provide Medicaid reimbursement for these services
    - In July 2010, Medicaid authorized reimbursement of physicians, nurse practitioners and physician assistants with training on oral evaluation and fluoride varnish application to be reimbursed for those dental services
    - In April 2011, the Alaska Dental Society and Alaska Native Tribal Health Consortium conducted a continuing education workshop for dentists, dental hygienists and non-dental health professionals on early childhood caries prevention

– including conducting oral evaluation and application of fluoride varnish on young children
    - Information providing links to on-line training for oral evaluation and fluoride varnish application has been posted on the Medicaid fiscal agent website
    - Next steps include identifying opportunities for future continuing education workshops and/or provision of training in provider clinics along with monitoring the number of non-dental professionals providing these services

- Implement a state loan forgiveness program along with other methods to assist recruitment and retention of dentists and dental hygienists practicing in dental health professional shortage areas
    - Legislation (HB) passed in the 2012 legislative session for development of a state loan repayment program – (signed into law May 22, 2012)
    - Next steps – implementation of the state loan repayment/incentive program (see priority recommendation #1 above)

- Developing a method to track Medicaid non-kept dental appointments
    - The Oral Health Program, in collaboration with the Alaska Dental Society, conducted a voluntary reporting project on non-kept dental appointments in March-June 2010
    - The non-kept dental appointment project indicated the need for increased education on short-notice cancellations in addition to information regarding failing to show up to scheduled appointments – the information is being integrated into Medicaid enrollee communications
    - Next steps include exploring future opportunities for an administrative process for reporting by dental offices on non-kept appointments and procedures to address patients that repeatedly miss scheduled appointments

- Support optimal water fluoridation of public water systems
    - The department, Alaska Native Tribal Health Consortium (ANTHC), Alaska Dental Society and/or Alaska Dental Action Coalition had a number of activities/responses to address and/or educate community members on the value of community water fluoridation from 2008 through 2012

    - ANTHC has provided training on water fluoridation to water operators (2008-2010; planned for the fall/winter of 2012)
    - This recommendation remains an ongoing priority recommendation in the state oral health plan (see priority recommendation #5 above)

- Develop and implement a school-based dental sealant pilot program to determine the costs and feasibility of this evidence-based approach to reducing dental decay in children in Alaska
    - The Oral Health Program in collaboration with the Anchorage Neighborhood Health Center conducted a sealant pilot program at an Anchorage elementary school in February 2010 – March 2012
    - The pilot program found support for the program in the elementary school but returned parental consent forms limited the number of children that participated in the program
    - Next steps include conducting additional pilot programs, as feasible, and addressing funding issues for sustainability of the programs

- Other Alaska Dental Action Coalition accomplishments
    - With resources from the Rasmuson Foundation and Southcentral Foundation, an oral health education exhibit from Smithsonian Museums was brought to Juneau and Anchorage in 2010
    - A training with provision of continuing education on oral evaluation, fluoride varnish application and improving medical and dental collaboration to address early childhood caries was provided in April 2010 with support from the Alaska Dental Society and Alaska Native Tribal Health Consortium
    - Collaboration of the Alaska Dental Action Coalition with the University of Alaska Anchorage has offered free dental care to individuals in the Anchorage/Southcentral region in December 2011 and March 2012 - providing care to more than 140 individuals on each occasion (“Dental Days at UAA”)

Oral Health Action Plan:

Acronyms:

AAP – American Academy of Pediatrics
ADA – American Dental Association
ADAC – Alaska Dental Action Coalition
ADHA – American Dental Hygienists' Association
ADS – Alaska Dental Society
AMHTA – Alaska Mental Health Trust Authority
ANMC – Alaska Native Medical Center
ANTHC – Alaska Native Tribal Health Consortium
APCA – Alaska Primary Care Association
APCO – Alaska Primary Care Office
ARWA – Alaska Rural Water Association
ASDHA – Alaska State Dental Hygienists' Association
ASHNHA – Alaska State Hospital and Nursing Home Association
ATCA – Alaska Tobacco Control Alliance
BRFSS – Behavioral Risk Factor Surveillance System
BSS – Basic Screening Survey (visual dental assessments)
BVS – Bureau of Vital Statistics
CDC – U.S. Centers for Disease Control and Prevention
CDPHP – Section of Chronic Disease Prevention and Health Promotion
CHC – Community Health Center dental programs
CYSHCN – Children/Youth with Special Health Care Needs (also CSHCN)
DEED – Department of Education and Early Development
DHCS – Division of Health Care Services (Medicaid Program)
DHSS – Department of Health and Social Services
DPH – Division of Public Health
ECCS – Early Childhood Comprehensive Systems
EPSDT – Early & Periodic Screening, Diagnosis and Treatment
MCH – Section of Women's, Children's and Family Health
OHP – Oral Health Program
PCC – Primary Care Council
PHN – State Public Health Nursing
PRAMS – Pregnancy Risk Assessment Monitoring System
SCF – Southcentral Foundation
UAA – University of Alaska Anchorage, Dental Hygiene Program
WCFH – Section of Women's, Children's and Family Health
WIC – Women, Infant and Children Program (Nutrition Services)
WFRS – Water Fluoridation Reporting System
YRBS – Youth Risk Behavior Survey

Goal	Strategy	Responsible Organization(s)	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
Goal 1: Support educational activities to increase awareness on oral health and implications for general health including information on preventing oral disease and injuries, early intervention to reduce the health consequences of disease and maintaining oral health across the lifespan.	Assist other health programs with oral health education efforts including information on: • Importance of maternal oral health and pregnancy and/or early childhood caries • Other early childhood caries preventions (nutrition, feeding practices and fluorides) • Community water fluoridation and fluorides • Oral hygiene (brushing with fluoridated toothpaste and flossing) • Nutrition – foods and beverages promoting dental decay • Early and periodic dental visits • Dental sealants • Injury Prevention: Seat belt, car seat and mouth-guard use	ADAC & OHP	Program materials/Changes in knowledge and awareness – assess use of program and DHSS surveys for evaluation.	Ongoing

Goal	Strategy	Responsible Organization(s)	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
Goal 1 (continued):	• Signs of abuse and neglect (P.A.N.D.A.) • Tobacco avoidance • Importance of oral health with general health (links with chronic disease) • Oral cancer exams			
	Encourage incorporation of oral health information with school health curriculums and health education.	DEED, school districts, CDPHP & OHP	School district health curriculum/ Track changes.	As developed
	Develop or identify education materials for parental/caregiver recognition of early enamel caries, “white spot lesions”, in relation to early childhood caries and prevention efforts.	ADAC	Training program and/or educational materials/Change in knowledge and awareness.	As developed
	Develop or identify education materials for parental/caregiver use of topical fluoride varnish for early childhood caries prevention and/or use with children with special health care needs and adults with disabilities.	ADAC	Training program and/or educational materials/Change in knowledge and awareness.	As developed
	Develop an oral health section for “Parent Navigation Manual” for parents/caregivers of children/youth with special health care needs.	OHP & Stone Soup Group	Project completed/Key informant interviews with parents on usefulness, additions and/or clarifications – changes in knowledge and awareness.	2008/Ongoing
	Distribute oral health information for children and youth with special health care needs at outreach clinics.	CYSHCN Manager & OHP	As above w/”Parent Navigation Manual” information.	As developed
	Evaluate and section education materials for adults with disabilities and distribute the information through community living homes, health fairs and other events.	OHP, WCFH & AMHTA	Project completed/Key informant interviews and/or survey on usefulness, changes in knowledge and awareness.	As developed

Goal	Strategy	Responsible Organization(s)	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
Goal 1 (continued):	Collaborate with Maternal Child Health programs and Chronic Disease Prevention & Health Promotion Programs to increase awareness of risks and/or complications between oral disease and adverse birth outcomes, cardiovascular disease and diabetes. Also see Goal 7 - Partnerships	WCFH, CDPHP & OHP	Integration of educational messages for routine dental care and/or management of periodontal disease in WCFH & CDPHP program materials and plans; and/or joint public information campaigns. Document changes in public/target population awareness and/or access to dental care (BRFSS).	Ongoing
Goal 2: Expand and/or improve programs and interventions in communities and schools to reduce the oral disease burden in Alaska.	Support community water fluoridation with optimal levels of fluoride by:			
	Providing training to water operators;	ANTHC & ARWA	Training programs provided/ Training assessment results	2004/Ongoing
	Recognition of water operators and water systems with annual optimal fluoridation;	ADAC & ADS	ADAC Awards/Track optimal fluoridating systems annually	2004/Ongoing
	Providing information and support to water operators and/or communities requesting support with implementation or maintenance of community water fluoridation programs.	ANTHC, ARWA, ADAC and OHP	ADAC Fluoride Committee reports/Changes in fluoridating community water systems and optimal fluoridation.	Ongoing
	Report fluoridation status of community water systems to health providers – allow for providers to determine appropriateness of use of fluoride supplements to children.	OHP	WFRS Reports/Internal controls with review and entry of water operator report data.	2003/Ongoing
	Support development of school-based and/or school-linked dental sealant programs.	ANTHC, ADAC and OHP	Inventory of Tribal Dental Programs with sealant activities – sealant program pilot in an urban school developed/Changes in sealant utilization in populations at-risk for dental decay.	2010/Ongoing
	Support development of school-based fluoride rinse or fluoride varnish programs in communities without community water fluoridation.	ANTHC & OHP	Information requests from schools and communities/Programs following suggested protocols.	As developed
	Explore development of use of chlorohexidine rinse and/or xylitol gum use in pregnant women with active dental decay and limited access to dental care.	ANTHC, ADAC & WCFH	Interventions utilized in Tribal/ CHC programs.	As developed

Goal	Strategy	Responsible Organization(s)	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
Goal 3: Develop and maintain a statewide oral health surveillance system to assess needs, identify disparities and monitor trends in the oral health of Alaskans.	Proportion of children and adolescents with dental decay in primary and/or permanent teeth.	OHP	BSS:/Participation rate and screener calibration	2007, 2010 & every 5 years
	Proportion of children and adolescents with untreated dental decay in primary and/or permanent teeth.	OHP	BSS/Participation rate and screener calibration	2007, 2010 & every 5 years
	Explore use of Youth Risk Behavior Survey for data collection on middle school and high school student access to dental care and treated dental decay in permanent teeth.	YRBS Coordinator, CDPHP & OHP	YRBS/Response rate	2015/Odd numbered years
	Proportion of adults who have never had a permanent tooth extracted because of dental decay or periodontal disease.	BRFSS Coordinator & OHP	BRFSS/Response rate	Even numbered years
	Proportion of older adults (age 65 years and above) who have had all of their natural teeth extracted.	BRFSS Coordinator & OHP	BRFSS/Response rate	Even numbered years
	Investigate options to measure the prevalence of periodontal disease in adults.	OHP	Possible use of self-reported information in BRFSS with questions being examined by a CDC work group.	As conducted
	Oral and pharyngeal cancer death rate	BVS & CDPHP	Vital Statistics/Internal quality controls	Annual
	Proportion of oral and pharyngeal cancer detected at the earliest stage.	CDPHP	Cancer Registry/Internal quality controls	Annual
	Proportion of adults, age 40 years and older, with an oral cancer exam in the past 12 months.	BRFSS Coordinator, CDPHP & OHP	BRFSS:/Response rate	2008, 2010 & 2012 – then 2016 & 2018
	Proportion of children and adolescents who have received dental sealants on permanent molar teeth.	OHP	BSS:/Participation rate and screener calibration	2007, 2010 & every 5 years
	Proportion of population on community water systems with optimally fluoridated water.	OHP & ANTHC	WFRS/Internal monitoring & fluoride testing	2003/Annual

Goal	Strategy	Responsible Organization(s)	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
Goal 3 (continued):	Proportion of population with a dental visit in the past 12 months			
	Children (2 years and older)	DHCS, WCFH & OHP	Medicaid is the only source at this time	Annual
	Pregnant Women	WCFH	PRAMS/ Response rate	Annual
	All adults (18 years and older)	BRFSS Coordinator & OHP	BRFSS/ Response rate	Even numbered years
	Adults with diabetes	BRFSS Coordinator, CDPHP & OHP	BRFSS (2 years combined) – Response rate	2008/2010 – Ongoing
	Adults in long-term care	DPH & OHP	Explore use of Medicaid certification process	As conducted
	Proportion of children and adolescents from low-income families with a preventive dental visit in the past 12 months.	DHCS & OHP	Medicaid data/Internal controls on claims processing	Annual
	Community based health centers and local health departments with an oral health component.	APCO, APCA & OHP	Funded CHC with an oral health component	Annual
	Prevalence of oral clefts.	WCFH & OHP	Birth Defects Registry/Internal controls	Annual
	Explore strategies to measure the proportion of adults and seniors with untreated dental decay.	OHP	Explore screening alternatives	2014-2015/As conducted
	Explore strategies to measure the annual number of children's dental cases done in hospital and ambulatory surgery settings for treatment of early childhood caries.	ASHNHA, PCC, APCO, DHCS & OHP	Explore use of a hospital survey and/or Medicaid claims	2015/Annual after developed
	Explore strategies to measure hospital emergency room use for dental related health issues.	ASHNHA, PCC, APCO & OHP	Explore use of a hospital survey	2015/Annual after developed
	Explore strategies to measure dental decay, untreated dental decay and/or periodontal disease for children with special health care needs and adults with disabilities.	OHP, WCFH, CYSHCN workgroup – parents and/or caregivers	Explore screening alternatives	As conducted
Goal 4: Increase the sustainability of the statewide oral health surveillance system.	Develop resources and/or collaboration with other DHSS programs for periodic dental screenings (2010 & every five years thereafter).	DHSS, WCFH, CDPHP & OHP	Explore funding alternatives and/or integration with WCFH Block Grant needs assessment and/or Obesity Prevention activities.	Ongoing

Goal	Strategy	Responsible Organization(s)	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
Goal 3 (continued):	Prevalence of oral clefts.	WCFH & OHP	Birth Defects Registry/Internal controls	Annual
	Explore strategies to measure the proportion of adults and seniors with untreated dental decay.	OHP	Explore screening alternatives	2014-2015/As conducted
	Explore strategies to measure the annual number of children's dental cases done in hospital and ambulatory surgery settings for treatment of early childhood caries.	ASHNHA, PCC, APCO, DHCS & OHP	Explore use of a hospital survey and/or Medicaid claims	2015/Annual after developed
	Explore strategies to measure hospital emergency room use for dental related health issues.	ASHNHA, PCC, APCO & OHP	Explore use of a hospital survey	2015/Annual after developed
	Explore strategies to measure dental decay, untreated dental decay and/or periodontal disease for children with special health care needs and adults with disabilities.	OHP, WCFH, CYSHCN workgroup – parents and/or caregivers	Explore screening alternatives	As conducted
Goal 4: Increase the sustainability of the statewide oral health surveillance system.	Develop resources and/or collaboration with other DHSS programs for periodic dental screenings (2010 & every five years thereafter).	DHSS, WCFH, CDPHP & OHP	Explore funding alternatives and/or integration with WCFH Block Grant needs assessment and/or Obesity Prevention activities.	Ongoing
	Explore use of telemedicine equipment for collection of dental indicator data in rural and remote areas of the state.	ANTHC & OHP	Pilot test use of images from use of intra-oral cameras for use with dental assessments.	Ongoing
	Explore use of dental hygienists, PHN's and/or use of Head Start performance data to reduce costs of dental assessments.	UAA, PHN, Head Start & OHP	Explore use of other screeners besides dentists for dental assessments.	As developed
Goal 5: Provide information to policymakers, elected officials and the public to increase awareness and knowledge on oral disease and injury in Alaska, stimulate policy development and implement interventions to reduce oral disease and injuries – and reduce disparities.	Distribute the state oral health plan to key stakeholders.	DHSS, ADAC & OHP	Track distribution and requests for the plan.	2012-2014
	Develop a short version of the plan and/or fact sheets with major issues and recommendations.	DHSS, ADAC & OHP	Utilize DHSS communication staff to develop plan summary and/or fact sheets.	2012-2013
	Include oral health status information in other DHSS plans, legislative briefings and budget documents.	DHSS, CDPHP, WCFH and OHP	Track use of oral health status information in reports/briefings.	Ongoing

Goal	Strategy	Responsible Organization(s)	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
Goal 5 (continued):	Distribute data from Alaska oral disease burden document.	OHP	Burden document completed/Key informant interviews for knowledge and awareness of information.	2008 and annually thereafter
	Consider an oral health summit meeting to highlight oral health issues and discuss policies which could improve the oral health of Alaskans.	ADAC	Explore feasibility of a meeting to involve key stakeholder groups and policymakers to discuss oral health issues and policy development to address these issues.	As developed
	Support inclusion of dental coverage within expansions to child health coverage.	ADAC, DHSS & OHP	Monitor federal and state legislation/Benefit plans	As developed
	Maintain core oral health infrastructure in DHSS.	DHSS	Explore funding for sustainability of the OHP.	Ongoing
	Present at conferences and take input from those attending on local dental/oral health issues – including those faced by special needs populations. (e.g., Alaska Health Summit, Alaska Rural Health Conference and special education conferences)	OHP	Presentations Prepared	Ongoing
Goal 6: Increase access to dental care services – priority focus on populations at-risk for oral disease or complications of oral disease.	Continue enhanced dental services for adults enrolled in Medicaid	DHSS & ADAC	Services reauthorized by the legislature/ADAC review of education strategies.	2009/Ongoing
	Address major issues with private dental participation in Medicaid by addressing: Medicaid reimbursement Non-kept appointments	ADS, DHSS, DHCS & OHP	Medicaid policy changes/Increased dental participation in Medicaid.	2009 & annually thereafter
	Develop capacity to change EPSDT guidance to dental referral by age one.	DHCS & OHP	Providers seeing Medicaid children <2 years/Medicaid dental utilization reports.	2012-2013
	Support implementation of oral evaluation and fluoride varnish application by non-dental health professionals as part of EPSDT well child exams (encourage triage and development of community dental referral networks.)	DHCS & OHP	Medicaid reimbursement provided for procedures to physicians, nurse practitioners and physician assistants since 7/2010 – need to expand implementation of services.	2010/Ongoing

Goal	Strategy	Responsible Organization(s)	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
Goal 6 (continued):	Support implementation of dental hygiene practice under general supervision in underserved settings through collaboration agreements with dentists. Examples include: Schools with high percentages of low-income children; and To provide access to dental screening and preventive services to seniors in assisted-living and other long-term care settings.	ASDHA & ADAC	Collaborative practice implemented in law 2008-2010/ Number of dental hygienists utilizing collaborative agreements to increase access to preventive services.	2008 – annual assessments thereafter
	Support development of CHC programs in underserved areas of Alaska.	APCA, APCO, PCC and local organizations	CHC funding with dental components/CHC financial reports and changes in Medicaid dental access.	Ongoing
	Support development of CHC program models for practice outside the CHC facility-setting to expand access to underserved populations.	CHC, DHCS, APCA, APCO, PCC	Development of pilot programs/Individuals served by the pilot programs.	2013-2015/ Ongoing thereafter
	Support development of preventive dental services in schools with significant numbers of children from low-income families.	ADAC, APCA, CHC, PCC and OHP	Inventory schools with dental sealant programs/Assess sealant rates in at-risk populations.	2010-2012 pilot developed/ Ongoing to expand pilots and make programs sustainable
	Encourage dental hygiene student exposure to treatment of children with special health care needs and adults with disabilities.	ANTHC, SCF & UAA	Dental hygiene student participation in SCF clinics/ Changes in knowledge and awareness of students.	Ongoing
	Explore use of case management fees in health coverage plans to augment dental reimbursement for the additional time involved in providing dental treatment to children with special health care needs (CSHCN) in the dental office setting.	ADAC, WCFH, DHCS and OHP	Case management fees allowed in health coverage programs/Changes in access for CSHCN.	Ongoing
	Support events/activities to provide dental care to underserved populations (UAA Dental Days)	UAA, ASDHA, ADS and ADAC	Assess number of individuals served, types of services provided and referrals made/completed.	2011/Ongoing

Goal	Strategy	Responsible Organization(s)	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
Goal 7: Increase partnerships with other health programs to encourage integration of oral health and collaboration on strategies to improve overall health.	Assist programs serving pregnant women and children with oral health education efforts – nutrition, oral hygiene, fluorides and/or importance of mother's oral health related to pregnancy and risks of early childhood caries.	WCFH, ECCS, WIC, Head Start, PHN, ADAC & OHP	Program materials/Changes in knowledge and awareness – explore use of program/DHSS surveys.	Ongoing
	Support efforts to reduce soda and sugared beverage consumption by children and adolescents.	ANMC, ANTHC, ADAC, WIC, CDPHP, school districts & OHP	Program materials and initiatives/Changes in school district policies.	Ongoing
	Assist with provision of training on "Cavity Free Kids" curriculum to Head Start and/or preschool programs.	Head Start & OHP	Trainings/Implementation and/or maintenance of curriculum use in Head Start Programs.	Annually
	Integrate information on the importance of oral health in plans, publications and educational materials from Cardiovascular, Diabetes, Obesity and other Chronic Disease Programs.	DPH, CDPHP & OHP	Program plans and educational materials/Changes in knowledge and awareness and/or access to dental care – explore use of program/DHSS surveys.	Ongoing
	Leverage resources by sharing capacity for surveillance, data analysis and evaluation program capacity.	CDPHP, WCFH & OHP	Shared staffing and/or agreements /Increased program capacity.	Ongoing
	Collaborate with the Cancer Control & Prevention Program to: Support addition of a question to BRFSS on oral cancer exams; and Increase adult oral cancer exams (physicians and/or dentists)	BRFSS Coordinator, CDPHP & OHP CDPHP & OHP	BRFSS/Response rates Inventory trainings/Changes in knowledge and competencies.	2008, 2010 & 2012; 2016 & 2020 2014 and ongoing
	Support and participate in tobacco control and cessation activities by:	ATCA, DHSS, CDPHP & OHP	Legislation/Decreased consumption of tobacco products	As developed
	Supporting tax increases on tobacco products;	ATCA, CDPHP & OHP	Program plans and educational materials/Changes in knowledge and awareness.	As developed
	Integrating oral health issues with other health issues on reasons to avoid tobacco products;	Dept. of Revenue	Reporting implemented/Monitor trends in consumption.	2013 and ongoing
	Implement reporting requirements on smokeless tobacco in the Tobacco Excise Tax Program.	ATCA, CDPHP, ADS & OHP	Program materials/Changes in tobacco cessation referrals – track source that initiated the referral.	2009/Ongoing

Goal	Strategy	Responsible Organization(s)	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
Goal 7 (continued):	Support efforts to increase referrals for tobacco cessation from dentists and/or dental hygienists.	WCFH, ADS, AMHTA, ADAC and OHP	Presentations and training programs/Changes in knowledge, awareness and medical/dental practice.	2011/Ongoing
	Encourage and support efforts to increase collaboration between dental and medical providers in treatment of children with special health care needs and adults with disabilities.	DHSS, WCFH, APCO, APCA, PCC, CHC & OHP	Presentations, trainings and program materials/Changes in knowledge, awareness and skills/competencies.	As developed
	Increase knowledge and awareness on the importance of oral health with general health in the primary care community.			
Goal 8: Develop recruitment and retention programs for dental professionals to practice in dental health professional shortage areas of Alaska.	Implement state-supported recruitment funding and/or loan repayment for dental professionals to accept practice opportunities in dental underserved areas.	APCA, ANTHC, PCC, APCO & OHP	Programs implemented/Document changes in recruitment and retention of dental professionals.	2013 and ongoing
	Continue to support University of Alaska Dental Hygiene programs – supporting Alaskan student education as a means to develop oral health workforce and workforce recruitment/retention.	UAA, ADAC, APCA, APCO and OHP	Document graduate practice location(s).	Ongoing
Goal 9: Support initiatives to expand the dental workforce to address dental access of at-risk populations.	Support efforts to increase the number of pediatric dentists in Alaska - ANMC/SCF Pediatric Residency Program	ANTHC & OHP	Pediatric dentists with current, active Alaska licenses/increased dental access for young children in Alaska.	Ongoing
	Support development of general practice residencies which offer additional training on dental treatment of children with special health care needs and adults with disabilities.	ANTHC & ADAC	General practice residency opportunities available in Alaska.	Ongoing
	Provide Medicaid reimbursement for topical fluoride varnish procedures by physicians, physician assistants, nurses and other providers doing EPSDT well child exams.	DHCS & OHP	Reimbursement implemented/ Increase in topical fluoride and oral evaluation utilization in Medicaid (EPSDT).	2010/Ongoing
	Encourage use of training programs on dental screening/triage by medical providers.	DHCS & OHP	Number of providers billing Medicaid/ Changes in knowledge, skills and awareness.	2011 and ongoing

Goal	Strategy	Responsible Organization(s)	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
Goal 9 (continued):	Support new provider models, with appropriate quality assurance, that expand access to educations, preventive services and/or dental treatment services. (e.g., Tribal Dental Health Aide/Therapist Program and review of proposed models for Community Oral Health Practitioners and Dental Hygienist Practitioners).	ADA, ADHA, ANTHC & ADAC	Programs implemented/Document changes in access to preventive and/or restorative dental services, client acceptance/satisfaction, decreased untreated decay (intermediate outcome), reduce dental decay (long-term outcome).	Ongoing
Goal 10: Support dental provider training to address oral health issues.	Support training on recognition of abuse and neglect and reporting requirements – Prevent Abuse & Neglect through Dental Awareness (PANDA) training.	UAA, ADS & ADAC	Document training/changes in knowledge and awareness of participants; monitor changes in dental reporting of abuse & neglect.	Ongoing
	Support training opportunities for conducting oral cancer exams with dental and medical health care providers.	ADAC, ADS, ASDHA, APCA, APCO, PCC & OHP	Document training/changes in knowledge/skills of participants; monitor trends in adults reporting oral cancer exams (BRFSS); monitor changes in early detection of oral & pharyngeal cancer.	2013 and ongoing
	Support training opportunities for general dentists in provision of care in the dental office for exams and treatment for young children (<age 3 years), children with special health care needs and/or adults with disabilities.	UAA, SCF, ADAC, ADS, ASDHA, WCFH, AMHTA & OHP	Document training/changes in knowledge and/or skills of participants; monitor changes in dental access for the population groups.	2010/Ongoing
Goal 11: Assure implementation and use of the state oral health plan – Evaluation of the planning process and plan implementation.	Evaluate planning process for development of the state oral health plan.	ADAC & Stakeholders	Key informant interviews of ADAC members and stakeholders.	2013
	Evaluate implementation of the plan, including use by stakeholders in other organization plans.	ADAC, Stakeholders and OHP	Annual review of plan and implementation progress: ADAC survey and key informant interviews.	Annually
Goal 12: Encourage use of CDC infection control guidelines in training programs on infection control in Alaska.	Assess use of CDC infection control guidelines in training programs on infection control in Alaska.	UAA, ANTHC, ASDHA & OHP	CDC infection control guidelines utilized in training/Training program documentation of knowledge and awareness of infection control issues in those taking training.	Ongoing

Appendix I — References for Table 1:

Table 1, *Healthy People 2010* Oral Health Indicators, United States and Alaska

Healthy People 2010 Objective	U.S. Source for Data	Alaska Source for Data
21-1: Dental caries experience		
Young children, ages 2-4	1988/1994 NHANES	DNA
Children, ages 6-8	" " "	2004 BSS
Adolescents, age 15	" " "	DNA
21-2: Untreated caries		
Young children, ages 2-4	1988/1994 NHANES	DNA
Children, ages 6-8	" " "	2004 BSS
Adolescents, age 15	" " "	DNA
Adults, age 35-44	" " "	DNA
21-3: Adults with no tooth loss, ages 35-44	1988/1994 NHANES	BRFSS (2006)
21-4: Edentulous (toothless) older adults, ages 65-74	NHIS (1997)	BRFSS (2006)
21-5: Periodontal diseases, adults ages 35-44		
Gingivitis	1988/1994 NHANES	DNA
Destructive periodontal disease	" " "	DNA
3-6: Oropharyngeal cancer mortality rates (per 100,000 persons)	National Vital Statistics System (1998 age adjusted to 2000 standard population)	Alaska Bureau of Vital Statistics — 2001
21-6: Oropharyngeal cancer detected at the earliest stage	SEER	Alaska Cancer Registry, 2001
21-7: Oral cancer exam in the past 12 months, age 40+	20%	DNA
21-8: Dental sealants		
Children, age 8 (1st molars)	1988/1994 NHANES	2004 BSS
Adolescents, age 15 (1st and 2nd molars)	" " "	DNA
21-9: Proportion of population with optimally fluoridated water of population served by community water systems	CDC Fluoridation Census	WFRS (2006)
21-10: Dental visit within past 12 months		
Children, age 2+	MEPS (1996)	DNA
Adults, ages 18+	" "	BRFSS (2006)
5-15: Annual dental exam for persons with diabetes, aged 2 and older	NHIS (1996)	DNA
21-11: Dental visit in the past 12 months	National Nursing Home Survey	
Adults in long-term care	(1997)	DNA
21-12: Preventive dental care in the past 12 months		Medicaid/SCHIP
Low-income children and adolescents, age 0-18	MEPS (1996)	CMS 416 Report (FFY2005)
21-13: School-based health centers with oral health component, K-12	DNA	DNA
21-14: Community based health centers and local health departments with oral health component	HRSA BPHC (1997)	DNA
21-15: States with system for recording and referring infants with cleft lip and palate	ASTDD State Oral Health Program Synopsis Survey (1997)	Alaska Birth Defects Registry (2000-2002)
21-16: States with an oral health surveillance system	DNA	Alaska Oral Health Program (FY2006)
21-17: State and local dental programs that serve 250,000 or more with a dental health program directed by a dental professional with public health training	DNA	Alaska Oral Health Program (FY2006)

TABLE 2 - *Healthy People 2020* Oral Health Indicators, United States and Alaska

Healthy People 2020 Objective		U.S. Source for Data Baselines	Alaska Source for Data
OH-1:	Dental caries experience Young children, aged 3-5 Children, aged 6-9 Adolescents, aged 13-15	 1999-2004 NHANES “ “ “ “ “ “	 Kindergarten BSS 3rd grade BSS DNA
OH-2	Untreated caries Young children, ages 3-5 Children, aged 6-9 Adolescents, aged 13-15	 1999-2004 NHANES “ “ “ “ “ “	 Kindergarten BSS 3rd grade BSS DNA
OH-3:	Adults with untreated caries Aged 35-44 Aged 65-74 (coronal caries) Aged 75 and older (root surface caries)	1999-2004 NHANES	 DNA Older Alaskans BSS Older Alaskans BSS
OH-4:	Adults aged 45-64 that have ever had a permant tooth extracted because of caries or periodontal disease Adults aged 65-74 who have lost all of their natural teeth	1999-2004 NHANES “ “ “	BRFSS (even years) BRFSS (even years)
OH-5:	Adults aged 45-74 years with moderate or severe periodontitis	2001-2004 NHANES	DNA
C-6:	Oral and pharyngeal cancer death rates (per 100,000 persons)	National Vital Statistics System (2007 adjusted to standard 2000 pop.)	Alaska Bureau of Vital Statistics
OH-6:	Proportion of oral and pharyngeal cancers diagnosed at the localized stage (stage 1)	National Program of Cancer Registries – SEER (2007)	Alaska Cancer Registry
OH-7:	Children, adolescents and adults who use the oral health care system each year	MEPS (2007)	PRAMS, CUBS, YRBS & BRFSS
D-8:	Annual dental exam for persons with diabetes, aged 2 and older	National Health Interview Survey (2008)	DNA BRFSS-adults aged 18+
OH-8:	Low-income children and adolescents aged 2-18 years at or below 200% of federal poverty level who received a preventive dental service in the past year	MEPS (2007)	CMS 416 Report
OH-9:	School-based health centers w/oral health component School based health centers w/oral health component that includes: dental sealants dental care topical fluoride	 School-based Hlth Care Census (2007-2008) “ “ “ “ “ “	Oral Health Program OHP OHP OHP
OH-10:	Local health departments and Federally Qualified Health Centers (FQHCs) w/oral health component FQHC that have an oral health care program Local health departments that have an oral health prevention or care program	 Uniform Data System (2007) Association of State & Territorial Dental Directors – Survey (2008)	Alaska Primary Care Office Alaska -Primary Care Office
OH-11:	FQHC patients who receive oral health services at FQHCs each year	Uniform Data System (2007)	DNA
OH-12:	Children and adolescents who have received dental sealants on one or more molar teeth Children aged 3-5 years – primary molar teeth Children aged 6-9 years – permanent first molar teeth Adolescents aged 13-15 years – permanent second molar teeth	 1999-2004 NHANES “ “ “ “ “ “	 Kindergarten BSS 3rd grade BSS DNA
OH-13:	U.S./State population served by community water systems that received optimally fluoridated water	WFRS (2008)	WFRS

OH-14: Adults who receive preventive interventions in dental offices:		
Information on tobacco use – reducing tobacco and/or smoking cessation in the past year	NHANES potentially	DNA
Oral and pharyngeal cancer screening in the past year	NHANES potentially	DNA
Tested or referred for glycemic control in the past year	NHANES potentially	DNA
OH-15: States and District of Columbia w/system for recording cleft lips and cleft palates	Association of State and Territorial Dental Directors – Survey	Birth Defects Registry
States and District of Columbia w/system for referral for cleft lips and cleft palates to rehabilitative teams	ASTDD Survey	WCFH Specialty Clinics
OH-16: States and District of Columbia w/oral and craniofacial health surveillance system	ASTDD Survey (2009)	Birth Defects Registry
OH-17: States and District of Columbia and local jurisdictions of 250,000 or more persons with a dental public health program directed by a dental professional with public health training	ASTDD- State Synopsis Survey (2009)	Oral Health Program
Indian Health Service Areas and Tribal health programs that serve 30,000 or more persons with a dental public health program directed by a dental professional with public health training	Indian Health Service (2010)	Oral Health Program – Alaska Native Tribal Health Consortium

References and Notes for Appendix I

BRFSS — Behavioral Risk Factor Surveillance System
BSS — Basic Screening Survey dental assessments conducted by the Alaska Oral Health Program in 2004 and 2005
CMS — U.S. Department of Health and Human Services, Center for Medicare and Medicaid Services (federal Medicaid agency)
DNA — Data Not Available
HRSA BPHC — U.S. Health Resources and Services Administration, Bureau of Primary Health Care
MEPS — Medical Expenditure Panel Survey
NHANES — National Health and Nutrition Examination Survey
NHIS — National Health Interview Survey
SEER — Surveillance, Epidemiology, and End Results; National Institutes of Health, National Cancer Institute
WFRS — Water Fluoridation Reporting System — Alaska data is entered by the Alaska Oral Health Program to the CDC maintained system.

Notes:

1. National data for NHANES is: 2-4 year old children (1988-1994) – Alaska data is not available comparable to this age group; 3-5 year old children (1999-2004) – Alaska data is for kindergarten children; 6-8 year (1988-1994) or 6-9 year old children (1999-2004) - Alaska data is for third-grade children
2. Objective 21-7: Related baseline information was obtained on this objective through an oral cancer exam question on the 2008 & 2010 (combined) Alaska Behavioral Risk Factor Surveillance System (BRFSS) – BRFSS question asks about oral cancer exam in the past year
3. National data for 21-12 and OH-8 (preventive dental care for low-income children and adolescents) is from the Medical Expenditure Panel Survey (MEPS); Alaska data is from Medicaid/SCHIP dental utilization reports (CMS 416 report)
4. Objective 21-13and OH-9: Most village schools in Alaska have Tribal school-based or school-linked medical and dental programs – this infrastructure is different from school-based health centers discussed in *Healthy People 2010 & 2020*. The ASTDD State Oral Health Program Synopsis Survey is being utilized to collect national baseline data and trends.
5. Objective 21-14 and OH-10: The ASTDD State Oral Health Program Synopsis Survey is being utilized to collect national baseline data and trends. The Municipality of Anchorage provides support to the Anchorage Neighborhood Health Center which has a dental program and the North Slope Borough has dental services; and community health centers (CHC) have included or expanded into dental services. The State Oral Health Program and Alaska Primary Care Office (Section of Health Planning and Systems Development) update information annually on total CHC sites and grantees.
6. Objective 21-17 and OH-17: The ASTDD State Oral Health Program Synopsis Survey is being utilized to collect national baseline data and trends. With establishment of the State Oral Health Program and Dental Official position, the Municipality of Anchorage is the only other Alaska jurisdiction serving 250,000 or more in population that does not currently have an oral health program directed by a dental professional with public health training. The Alaska Native Tribal Health Consortium (ANTHC) would represent the Alaska Area Tribal region.

Appendix II

Alaska Dental Assessments – Basic Screening Survey

The Alaska Oral Health Program, through a professional services contract, conducted dental assessments on Alaskan third-grade children in 2004, 2007 and in the 2010/2011 school year and kindergarten children in 2005, 2007 and in the 2010/2011 school year. The dental assessments utilized the Basic Screening Survey (BSS) protocol developed by the Association of State and Territorial Dental Directors (ASTDD) and U.S. Centers for Disease Control and Prevention (CDC). The BSS utilizes a visual assessment of children's teeth without the use of films or a dental explorer (dental pick). The BSS assesses caries experience (treated or untreated tooth decay); untreated caries (untreated tooth decay); and dental sealant utilization (at least one dental sealant on at least one permanent first molar) for third-grade children. The BSS assessment includes caries experience, untreated caries and caries of primary upper front teeth (an indicator of early childhood caries) for kindergarteners.

The BSS utilizes a random selection of elementary schools. The largest sample of schools was with the 2004 BSS – dental assessments for third-graders. The 2004 BSS included ten elementary schools to provide regional data – the regions utilized were the five regions used with the Behavioral Risk Factor Surveillance System (Anchorage & Vicinity; Gulf Coast; Southeast; Rural Alaska; and Fairbanks & Vicinity). The number of schools and number of children in each of the BSS projects were as follows:

Third-Grade BSS		
2004	50 schools	1,206 children
2007	30 schools	826 children
2010/2011	25 schools	628 children
Kindergarten BSS		
2005	14 schools	463 children
2007	30 schools	807 children
2010/2011	25 schools	648 children

Additionally, in the fall/winter of 2005 dental assessments were conducted on 571 children enrolled in Head Start. The age range of children in the sample was 35-71 months. Children enrolled in Head Start are at higher risk for development of dental decay than the general population of children in this age range. The higher risk for children enrolled in Head Start is primarily to being from lower socioeconomic status. Utilization of Head Start Programs for the dental assessments is a convenience sample. A random sample of children in this age group was not attempted due to the logistics and costs that would be involved in trying to obtain a sample representing the general population in this age range. For this reason the Head Start dental assessment results are not compared with national *Healthy People 2010* objectives for 2-4 year olds.

For detailed information on the sample design of the dental assessments please contact the Alaska Oral Health Program.

Summaries of the dental assessment results are provided on the next two pages.

Alaska Basic Screening Surveys – 3rd Grade Dental Assessments

Indicator	2004 BSS (Mean – Confidence Interval)	2007 BSS (Mean – Confidence Interval)	2010/2011 BSS (Mean – Confidence Interval)
Caries Experience			
Total	65.1% (62.3, 67.8)	59.6% (56.1, 62.9)	61.6% (57.7, 65.4)
White	54.7% (50.5, 58.7)	53.2% (48.4, 57.9)	48.4% (42.4, 54.4)
American Indian/Alaska Native	87.3% (82.8, 90.9)	75.6% (67.3, 82.7)	83.4% (76.7, 88.9)
Other		64.1% (57.7, 70.1)	63.0% (55.8, 69.9)
Medicaid/Denali KidCare	76.2% (71.3, 80.6)	68.2% (61.6, 74.2)	71.3% (64.4, 77.5)
White	63.6% (53.4, 73.1)	62.3% (50.6, 73.1)	63.1% (50.2, 74.7)
American Indian/Alaska Native	91.4% (85.1, 95.6)	76.8% (63.6, 87.0)	88.3% (77.4, 95.2)
Untreated Caries			
Total	28.0% (25.3, 30.7)	26.2% (23.2, 29.3)	23.9% (20.6, 27.5)
White	18.6% (15.6, 22.1)	20.4% (16.8, 24.5)	13.3% (9.5, 17.8)
American Indian/Alaska Native	43.5% (37.6, 49.5)	39.4% (31.0, 48.3)	39.5% (31.8, 47.6)
Other		29.4% (23.8, 35.5)	26.6% (20.5, 33.4)
Medicaid/Denali KidCare	34.2% (29.2, 39.6)	31.3% (25.2, 37.8)	29.2% (23.0, 36.2)
White	15.2% (8.7, 23.8)	28.6% (18.8, 40.0)	13.8% (6.5, 24.7)
American Indian/Alaska Native	50.8% (41.8, 59.7)	44.6% (31.3, 58.5)	46.7% (33.7, 60.0)
Dental Sealants Present - Permanent Molar(s)			
Total	52.4% (49.5, 55.3)	55.3% (51.9, 58.7)	46.8% (42.9, 50.8)
White	51.0% (46.9, 55.2)	56.1% (51.3, 60.8)	47.0% (41.0, 53.0)
American Indian/Alaska Native	67.8% (62.1, 73.3)	67.7% (58.9, 75.6)	57.3% (49.2, 65.2)
Other		50.2% (43.7, 56.7)	38.0% (31.1, 45.3)
Medicaid/Denali KidCare	57.4% (52.0, 62.8)	57.2% (50.4, 63.8)	44.1% (37.0, 51.4)
White	44.4% (45.2, 65.5)	53.9% (42.1, 65.5)	47.7% (35.1, 60.5)
American Indian/Alaska Native	66.4% (57.5, 74.5)	66.1% (52.2, 78.2)	46.7% (33.7, 60.0)

Note: The Medicaid/Denali KidCare information is based on parent reported eligibility from the survey sent home for the parental consent to participate in the dental assessments.

Alaska Basic Screening Surveys – Kindergarten Dental Assessments

Indicator	2005 BSS (Mean – Confidence Interval)	2007 BSS (Mean – Confidence Interval)	2010/2011 BSS (Mean – Confidence Interval)
Caries Experience			
Total	48.2% (43.5, 52.8)	40.5% (37.1, 44.0)	41.4% (37.6, 45.3)
White	37.6% (32.1, 43.4)	31.1% (26.7, 35.8)	28.0% (22.9, 33.5)
American Indian/Alaska Native	75.7% (64.0, 85.2)	66.9% (58.2, 74.8)	63.3% (54.3, 71.6)
Other	60.2% (49.8, 70.0)	43.8% (37.5, 50.2)	46.3% (39.6, 53.0)
Medicaid/Denali KidCare	59.3% (50.7, 67.5)	54.5% (47.5, 61.4)	45.5% (38.5, 52.7)
White		37.8% (27.3, 49.2)	29.9% (19.3, 42.3)
American Indian/Alaska Native		81.8% (67.3, 91.8)	69.4% (54.6, 81.7)
Untreated Caries			
Total	24.6% (20.8, 28.9)	24.3% (21.4, 27.4)	21.3% (18.2, 24.7)
White	20.0% (15.6, 25.0)	19.3% (15.7, 23.5)	12.6% (9.0, 17.0)
American Indian/Alaska Native	37.1% (25.9, 49.5)	37.0% (28.9, 45.8)	29.7% (21.9, 38.4)
Other	29.6% (20.8, 39.7)	25.7% (20.4, 31.5)	27.8% (22.0, 34.1)

Alaska Basic Screening Surveys – Kindergarten Dental Assessments - Cont'd

Indicator	2005 BSS (Mean – Confidence Interval)	2007 BSS (Mean – Confidence Interval)	2010/2011 BSS (Mean – Confidence Interval)
Medicaid/Denali KidCare	32.1% (24.5, 40.6)	29.9% (23.8, 36.5)	20.5% (15.1, 26.8)
White		23.2% (14.6, 33.8)	11.9% (5.3, 22.2)
American Indian/Alaska Native		47.7% (32.5, 63.3)	26.5% (14.9, 41.1)
Caries Experience on Primary Maxillary Anterior Teeth			
Total	14.2% (11.2, 17.8)	12.5% (10.4, 15.0)	19.0% (16.1, 22.3)
White	10.2% (7.0, 14.2)	6.3% (4.2, 9.2)	9.6% (6.4, 13.5)
American Indian/Alaska Native	28.1% (17.6, 40.8)	26.9% (19.5, 35.4)	40.9% (32.3, 50.0)
Other	17.3% (10.4, 26.3)	16.4% (12.0, 21.6)	18.9% (14.1, 24.7)
Medicaid/Denali KidCare	19.1 (12.9, 26.7)	20.9% (15.6, 27.0)	22.6% (17.0, 29.1)
White		11.0% (5.1, 19.8)	10.4% (4.3, 20.3)
American Indian/Alaska Native		31.8% (18.6, 47.6)	52.1% (37.2, 66.7)

Note: The Medicaid/Denali KidCare information is based on parent reported eligibility from the survey sent home for the parental consent to participate in the dental assessments.

ALASKA – Oral Health Assessment, 2005 (Children Enrolled in Head Start)

Survey results listing the mean, confidence intervals and number of children in each category from the project for state totals, racial/ethnic groups and Medicaid enrolled children were as follows (2005 Head Start):

Caries Experience:			NHANES (1988-94)***
Total (n=571)	68.8%	(63.9, 73.2)*	18%
American Indian/Alaska Native (n=423)	84.2%	(80.2, 87.4)**	76% (IHS 1999)
White (n=54)	48.1%	(34.3, 62.2)**	15%
Other (n=94)	45.7%	(35.4, 56.3)**	
Medicaid/Denali KidCare (n=351)	73.4%	(67.2, 78.9)*	
Untreated Caries:			NHANES (1988-94)***
Total (n=571)	40.5%	(35.7, 45.5)*	16%
American Indian/Alaska Native (n=423)	50.8%	(46.0, 55.7)**	67% (IHS 1999)
White (n= 54)	24.1%	(13.5, 37.6)**	11%
Other (n= 94)	27.7%	(18.9, 37.8)**	
Medicaid/Denali KidCare (n=351)	42.5%	(36.0, 49.0)*	
Caries Experience on Primary Anterior Teeth:			
Total (n=570)	42.5%	(37.6, 47.7)*	
American Indian/Alaska Native (n=422)	60.9%	(56.0, 65.6)**	
White (n=54)	18.5%	(9.3, 31.4)**	
Other (n=94)	19.1%	(11.8, 28.6)**	
Medicaid/Denali KidCare (n=351)	49.8%	(43.2, 56.3)**	
Treatment Urgency – Early or Urgent Dental Care Needed:			
Total (n=571)	41.2%	(36.3, 46.2)*	
American Indian/Alaska Native (n=423)	52.0%	(47.1, 56.8)**	
White (n=54)	24.1%	(13.5, 37.6)**	
Other (n=94)	27.7%	(18.9, 37.8)**	
Medicaid/Denali KidCare (n=351)	43.6%	(37.2, 50.2)*	

* weighted data
** unweighted data
*** NHANES data is aged 2-4 years so not identical to this age group 3-5 years

Appendix III

Behavioral Risk Factor Surveillance System – Dental Data

Percentage of adults that visited a dentist or dental clinic in the past year for any reason – BRFSS includes adults aged 18 and older

Adult Group	1995 Ave.	95% CI	1999 Ave.	95% CI	2002 Ave.	95% CI	2004 Ave.	95% CI	2006 Ave.	95% CI	2008 Ave.	95% CI	2010 Ave.	95% CI
Total	73.1	69.7-76.2	70.2	67.3-72.9	65.5	62.7-68.2	68.3	65.7-70.9	66.0	63.2-68.7	65.3	62.3-68.1	68.3	65.0-71.5
White	74.5	70.6-78.0	71.8	68.5-75.0	68.9	65.6-72.0	69.5	66.4-72.4	67.9	64.7-70.9	66.8	63.4-70.0	69.4	65.5-73.1
Alaska Native	68	59.8-74.7	62	55.4-68.8	54.3	47.1-61.4	61.7	55.6-67.5	57	49.1-63.8	56.8	50.1-63.2	60	52.1-67.8
Other	69	55.1-80.0	69	58.3-78.7	59	50.5-67.6	69	60.5-77.0	66	56.6-74.8	66	54.9-75.8	70	59.5-78.7
Male	71.8	65.6-76.4	67.8	63.6-71.6	64.8	60.6-68.7	65.5	61.4-69.3	65.5	61.4-69.4	61.3	56.8-65.6	64.5	59.3-69.4
Female	74.6	70.1-78.5	72.6	68.8-76.5	66.3	62.4-70.0	71.4	68.0-74.6	66.4	62.6-70.1	69.6	65.8-73.1	72.5	68.5-76.2
Education Level:														
<High School	59	46.9-69.9	54	43.5-64.3	53	43.2-63.3	55	45.8-64.6	43	29.8-57.2	50	37.3-61.8	48	35.1-61.0
H.S. graduate/ GED	70	64.1-75.7	65.6	60.3-70.6	59.2	54.1-64.2	62.8	57.8-67.6	57.8	52.3-63.2	57.4	52.1-62.6	59.3	52.6-65.7
Some post H.S.	72	65.9-77.7	70.6	65.2-75.4	64.1	58.7-69.3	68.6	63.7-73.1	66.8	61.7-71.5	65.3	59.6-70.6	70.9	65.1-76.1
College graduate	81	75.1-86.5	81.1	76.0-85.3	77.0	71.7-81.5	77.8	73.5-81.5	78.1	74.1-81.7	78.8	74.5-82.6	78.7	73.0-83.5
Income Level:														
<$15,000	56	43.8-68.3	42	32.7-51.8	46	35.9-56.0	54	45.4-63.0	41	31.4-52.3	41	29.7-53.9	46	33.3-60.1
$15k-24,999	60	50.2-69.6	60	52.2-68.1	47	39.8-55.0	58	50.4-65.8	49	39.1-59.7	52	41.7-61.9	50	38.5-60.8
$25k-34,999	75	64.2-82.8	68	60.3-75.6	57	48.2-64.8	57	47.6-65.1	59	49.9-67.7	66	56.6-74.5	64	49.0-76.1
$35k-49,999	75	67.6-80.6	72	65.5-78.1	62	54.6-69.6	69	62.7-75.5	66	57.9-73.4	55	45.9-63.9	57	46.5-67.0
$50,000+	82.8	77.6-87.0	81.9	77.7-85.5	77.3	73.1-81.1	78.6	75.0-81.8	74.7	71.2-78.0	74.6	70.9-78.0	78.1	74.1-81.6
Age Group:														
18 – 24	69	57.5-78.8	72	61.8-80.2	71	61.5-78.2	73	64.3-79.8	68	57.9-76.2	58	45.4-70.5	64	47.1-77.9
25 – 34	70	63.2-76.4	67	60.9-72.2	59	52.1-65.7	66	59.7-72.3	64	57.6-70.7	67	60.9-73.2	74	66.0-80.0
35 – 44	77	71.7-82.4	69	63.5-74.1	66	61.8-73.6	67.1	61.1-72.5	66	60.6-71.9	72	66.8-77.1	63	55.1-70.6
45 – 54	79	72.2-84.9	76	69.6-81.4	68	61.8-73.6	74.2	69.2-78.6	67	61.4-72.1	63.7	57.9-69.2	70	63.6-74.9
55 – 64	62	48.6-73.3	72	62.9-79.8	69	60.9-75.9	64	57.2-70.1	69	62.1-75.7	66.3	60.5-71.6	69	62.8-74.8
65 and older	75	63.6-83.7	64	53.8-73.4	58	49.0-66.9	60	52.2-68.1	61	48.6-64.2	59	52.2-66.0	65	56.8-71.5
60 and older	68	57.3-77.8	68	59.2-74.9	61	53.3-68.4	60	53.8-66.5	66	63.0-68.6	61.6	56.0-66.9	65.2	59.2-70.8
White	72	58.5-81.7	73	63.9-80.9	67	58.3-74.5	64	56.2-70.3	64	56.4-70.4	66	59.3-71.3	68	61.6-74.5
Alaska Native	DSU		41	26.3-56.8	41	22.9-61.9	43	31.0-56.6	40	27.2-54.5	40	27.7-54.0	35	23.1-49.4

DSU – Data statistically unreliable

Blue = Use with caution – 20 or more range in 95% confidence interval

Percentage of adults with teeth cleaned by a dentist or dental hygienist in the past year – BRFSS includes adults aged 18 and older

Adult Group	1999 Ave.	95% CI	2002 Ave.	95% CI	2004 Ave.	95% CI	2006 Ave.	95% CI	2008 Ave.	95% CI	2010 Ave.	95% CI
Total	65.7	62.6-68.7	62.3	59.4-65.2	64.4	61.6-67.1	62.7	59.7-65.6	62.3	59.1-65.3	65.6	62.1-69.0
White	67.1	63.5-70.6	65.9	62.5-69.2	65.4	62.1-68.5	65.3	61.9-68.5	64.4	60.9-67.8	67.7	63.6-71.6
Alaska Native	58	50.3-65.0	49	42.0-56.7	55	48.3-61.4	49	40.3-57.2	50	42.2-57.1	58	49.3-66.0
Other	66	53.5-76.0	56	46.9-64.7	70	61.3-77.6	63	52.9-72.7	63	51.2-73.3	61	47.9-72.0
Male	63.1	58.6-67.4	61.6	57.3-65.8	60.2	56.0-64.3	61	56.8-65.7	58.3	53.6-62.8	62.8	57.2-68.0
Female	68.4	64.0-72.5	63.1	59.1-66.9	68.8	65.3-72.1	64.2	60.2-68.0	66.5	62.5-70.3	68.8	64.3-72.9
Education Level:												
<High School	53	41.0-64.4	49	37.7-60.4	53	42.6-63.6	43	28.0-59.7	46	32.3-59.8	45	30.3-59.0
H.S. graduate/ GED	57.4	51.5-63.1	54.9	49.5-60.1	55.4	50.2-60.6	54	48.1-59.7	53.2	47.5-58.7	54.6	47.3-61.7
Some post H.S.	66.6	60.9-71.8	61.7	56.2-67.0	66.1	61.1-70.7	64	58.9-69.5	60.9	54.8-66.6	67.9	61.8-73.5
College graduate	79.2	74.0-83.5	73.7	68.2-78.4	74.7	70.3-78.7	72.6	68.0-76.8	77.4	72.9-81.3	77.3	71.5-82.2
Income Level:												
<$15,000	38	28.2-48.0	40	29.1-51.3	44	34.1-54.3	33	22.2-45.1	30	18.2-44.9	45	30.3-60.1
$15k-24,999	59	50.5-67.1	43	35.6-51.1	52	43.8-60.5	45	34.5-56.6	50	38.5-60.5	40	29.1-51.9
$25k-34,999	62	52.6-70.1	53	44.6-61.9	53	44.1-61.8	55	45.2-64.3	61	50.1-70.3	50	34.0-66.0
$35k-49,999	62	54.6-69.1	59	50.9-66.0	65	57.9-71.3	63	54.4-71.1	50	41.3-59.5	57	46.1-67.6
$50,000+	77.9	73.1-82.1	74.3	69.9-78.3	75.4	71.6-78.9	71.1	67.3-74.6	72.9	69.1-76.3	75.3	71.2-79.0
Age Group:												
18 – 24	63	52.0-72.4	65	56.0-73.2	73	64.8-79.9	64	53.4-72.6	57	43.5-68.7	53	36.6-69.1
25 – 34	62	55.7-67.8	56	49.0-62.6	61	54.3-67.3	55	47.9-62.3	62	55.0-68.1	72	64.1-78.5
35 – 44	63.4	57.8-68.7	61.4	55.7-66.9	62.8	56.7-68.5	62	56.2-68.0	64	58.0-69.7	61	52.7-68.1
45 – 54	74	67.9-80.0	64.9	58.7-70.6	66.3	60.8-71.4	63	57.1-68.8	61.4	55.5-67.0	67	60.6-72.2
55 – 64	67	55.4-76.5	65	56.4-73.5	64	56.7-70.4	70	62.7-76.3	65.4	59.3-71.1	68	61.4-73.8
65 and older	69	56.0-79.3	64	52.4-74.1	56	46.8-65.2	62	52.7-70.9	67	58.7-73.6	66	57.4-73.5
60 and older	72	61.8-80.4	61	51.9-69.8	60	52.5-66.7	63	55.9-70.2	67	60.5-72.3	66	59.4-71.8
White	75	63.0-83.8	65	55.3-74.1	62	53.4-69.0	66	58.2-73.2	70	63.0-75.7	69	62.1-75.7
Alaska Native	DSU		DSU		DSU		DSU		47	31.2-63.7	DSU	

DSU – Data statistically unreliable

Blue = Use with caution – 20 or more range in 95% confidence interval

Percentage of adults with no missing teeth due caries or periodontal disease – BRFSS includes adults aged 18 and older

Adult Group	1995 Ave.	95% CI	1999 Ave.	95% CI	2002 Ave.	95% CI	2004 Ave.	95% CI	2006 Ave.	95% CI	2008 Ave.	95% CI	2010 Ave.	95% CI
Total	55.4	51.8-59.0	58.2	55.1-61.2	57.0	54.0-59.9	57.0	54.2-59.8	60.5	57.5-63.3	60.7	57.8-63.5	62.3	58.8-65.6
White	58.3	54.1-62.3	61.4	57.7-64.9	62.1	58.7-65.3	60.1	56.8-63.3	62.9	59.6-66.2	65.6	62.5-68.7	65.5	61.6-69.2
Alaska Native	35.5	28.1-43.5	42	34.8-49.3	38.5	32.1-45.3	36.4	30.5-42.6	44	36.3-52.5	43	36.3-50.7	47	38.5-56.3
Other	60.0	45.6-72.9	58	47.3-68.7	50	41.7-58.9	64	55.1-72.6	66	55.9-74.0	51	39.7-62.0	58	45.4-69.3
Male	53.8	48.3-59.1	60.2	55.8-64.4	56.7	52.4-60.9	56.1	51.9-60.2	62.6	58.2-66.8	60.5	56.2-64.6	63.8	58.5-68.8
Female	57.3	52.2-62.2	56.0	51.6-60.2	57.3	53.3-61.2	58.0	54.4-61.6	58.2	54.2-62.0	60.9	56.9-64.7	60.6	56.1-64.9
Education Level:														
<High School	26	16.9-38.8	28	18.6-39.5	32	23.8-42.3	37	28.2-47.6	53	40.3-66.0	42	29.2-56.1	42	28.8-56.8
H.S. graduate/ GED	48	42.0-54.8	54.9	49.3-60.4	47.7	42.7-52.8	48.1	43.1-53.2	51.8	46.2-57.4	53.7	48.3-59.0	53.7	46.8-60.5
Some post H.S.	57	50.4-63.5	58.2	52.2-63.9	59.8	54.4-65.0	60.3	55.3-65.0	58.1	52.6-63.3	61.7	56.3-66.9	60.1	54.0-65.9
College graduate	69	62.2-75.3	72.1	66.7-77.0	70.4	65.0-75.3	67.9	62.8-72.7	72.5	67.8-76.8	72.5	67.9-76.7	75.9	70.1-80.9
Income Level:														
<$15,000	45	32.5-57.2	41	31.3-50.8	39	28.6-49.8	33	25.4-42.4	35	24.4-48.1	42	29.3-56.6	34	20.9-49.5
$15k-24,999	55	45.0-64.1	54	45.5-61.6	50	42.1-57.8	48	39.9-56.0	54	44.1-64.1	43	32.4-53.8	41	29.9-53.5
$25k-34,999	56	45.3-65.7	50	40.7-58.5	52	43.2-60.0	62	53.2-70.0	47	37.9-56.8	56	49.8-66.6	52	36.0-67.2
$35k-49,999	53	45.3-60.9	59	51.7-65.9	53	45.5-60.1	55	47.8-61.5	62	53.5-69.9	58	49.8-66.6	59	48.8-68.4
$50,000+	60.1	53.6-66.2	67.4	62.2-72.2	65.2	60.6-69.6	62.4	58.1-66.4	69.6	65.6-73.2	70.5	66.8-73.9	71.2	66.9-75.1
Age Group:														
18 – 24	85	75.4-91.4	85	77.7-90.2	84	76.2-89.5	81	73.4-87.5	86	78.7-90.9	87	75.9-92.9	74	55.4-86.2
25 – 34	73	66.2-78.4	76	70.6-80.9	71	63.8-77.1	73	66.1-78.1	78	72.3-83.4	74	67.8-79.8	79	71.2-84.5
35 – 44	58	50.9-64.9	59.8	54.3-65.1	60.3	54.6-65.7	61.3	55.2-67.1	67	61.3-72.4	66	59.6-71.7	70	62.4-76.9
45 – 54	36	28.3-44.7	50	41.5-58.1	50.1	44.0-56.3	51.1	45.4-56.7	53	46.6-59.0	57.5	51.8-63.0	60	53.2-65.8
55 – 64	20	11.4-33.4	29	19.3-40.5	34	26.1-42.0	36	30.0-43.1	40	32.6-48.3	38.1	32.3-44.3	43	36.0-49.5
65 and older	7	3.0-14.8	19	11.9-27.8	19	12.7-27.4	26	19.1-34.2	19	14.2-25.5	22.9	17.3-29.6	33	26.4-41.2
60 and older	7	3.8-12.8	26	17.4-36.5	21	14.9-29.0	26	20.5-32.4	28	22.2-35.2	28.3	23.3-34.0	35.8	30.0-42.2
White	8	4.1-15.0	30	19.5-42.6	26	18.6-36.0	28	22.3-35.6	27	21.1-34.3	32	26.2-38.7	66	61.6-69.3
Alaska Native	DSU		14	6.8-27.9	3	0.8-9.8	4	1.3-10.1	22	11.5-38.9	10	4.5-20.6	DSU	
45-64	31	24.8-38.1	41.6	34.9-48.6	44.7	39.8-49.7	45.7	41.4-50.0	47.8	42.9-52.7	49.7	45.5-53.9	52.2	47.5-56.9

DSU – Data statistically unreliable

Blue = Use with caution – 20 or more range in 95% confidence interval

Percentage of adults with 1-5 missing teeth due caries or periodontal disease – BRFSS includes adults aged 18 and older

Adult Group	1995 Ave.	95% CI	1999 Ave.	95% CI	2002 Ave.	95% CI	2004 Ave.	95% CI	2006 Ave.	95% CI	2008 Ave.	95% CI	2010 Ave.	95% CI
Total	31.7	28.3-35.2	27.7	25.0-30.5	27.7	25.1-30.5	27.3	24.9-29.9	26.1	23.6-28.7	26.1	23.6-28.7	25.9	22.9-29.1
White	29.8	26.1-33.7	25.9	22.8-29.3	25.2	22.3-28.4	25.2	22.4-28.2	24.4	21.6-27.4	23.1	20.5-25.9	24.3	21.0-27.9
Alaska Native	43.2	35.0-51.8	35	29.2-42.0	35.4	28.7-42.7	38.1	32.2-44.4	37	30.0-44.7	33	27.0-39.0	33	26.1-41.7
Other	31	19.5-46.5	30	20.7-40.7	33	24.8-41.7	28	20.3-37.0	22	15.8-30.8	37	26.6-47.9	28	17.7-41.2
Male	33.6	28.6-39.0	26.7	23.0-30.8	29.0	25.1-33.1	28.2	24.6-32.1	24.7	21.1-28.6	26.4	22.9-30.3	25.6	21.1-30.7
Female	29.5	25.1-34.3	28.7	24.9-32.8	26.3	22.9-30.1	26.4	23.3-29.8	27.6	24.2-31.2	25.8	22.4-29.4	26.2	22.5-30.2
Education Level:														
<High School	40	28.5-52.7	26	18.4-34.3	34	24.2-44.4	25	18.4-33.7	22	14.0-31.7	27	18.7-37.0	29	19.4-41.6
H.S. graduate/ GED	35	29.3-41.9	30.7	25.9-35.8	32.4	27.7-37.5	32.3	27.8-37.1	31.8	27.0-37.1	29.1	24.5-34.1	31.1	25.2-37.6
Some post H.S.	32	25.8-38.0	31.5	26.1-37.3	29.2	24.4-34.5	24.1	20.1-28.6	26.5	22.0-31.5	26.2	21.8-31.2	27.1	22.0-32.8
College graduate	25	19.6-32.1	19.6	15.4-24.5	19.6	15.6-24.4	26.7	22.2-31.7	20.9	17.1-25.3	22.4	18.4-26.9	19.4	14.7-25.2
Income Level:														
<$15,000	33	22.1-45.3	32	23.5-42.3	28	20.1-38.3	29	21.3-37.1	28	19.4-37.5	19	13.0-27.1	34	23.0-46.5
$15k-24,999	31	22.4-40.5	30	23.7-37.5	30	23.2-39.0	26	20.4-33.3	25	17.4-33.3	34	25.4-44.8	34	24.5-45.5
$25k-34,999	29	21.0-39.4	35	27.0-44.7	31	23.4-39.6	20	14.3-28.5	33	25.0-41.6	23	16.4-32.1	29	15.7-47.9
$35k-49,999	33	26.1-41.1	27	21.4-34.5	32	25.0-38.8	25	19.6-31.3	25	18.5-32.9	30	22.9-37.2	29	20.7-38.9
$50,000+	33.1	27.3-39.5	23.7	19.5-28.5	25.4	21.5-29.7	30.7	26.9-34.9	22.1	18.9-25.7	23.2	20.0-26.7	21.4	18.1-25.2
Age Group:														
18 – 24	15	8.6-24.6	14	9.2-21.3	15	9.2-22.3	15	9.6-22.3	14	8.8-20.9	11	5.6-20.8	25	12.7-43.7
25 – 34	24	18.3-30.2	20	15.3-25.0	27	20.4-33.7	25	19.5-31.3	17	13.0-23.1	21	16.1-26.8	18	12.8-25.0
35 – 44	38	31.3-45.2	31.8	26.9-37.2	31.7	26.6-37.3	29.0	23.9-34.8	28	23.3-34.0	26	20.9-32.2	24	17.7-30.8
45 – 54	44	35.9-53.2	35	27.8-42.2	32.0	26.5-38.1	31.9	26.8-37.4	32	26.1-37.6	30.6	25.5-36.2	29	23.8-35.6
55 – 64	32	21.7-45.0	40	30.1-51.4	31	23.4-39.2	33	26.8-39.5	35	27.9-43.1	37.4	31.6-43.5	37	30.8-43.9
65 and older	36	22.1-51.8	21	14.5-30.5	22	15.1-29.7	23	16.9-30.8	29	21.7-37.6	32.0	25.3-39.5	26	19.3-33.0
60 and older	40	27.9-53.1	23	16.4-31.3	26	20.0-33.9	28	22.8-34.9	28	22.2-35.0	34.0	28.6-39.9	28.3	22.9-34.5
White	41	27.7-55.4	25	17.2-35.2	30	22.3-39.1	29	22.9-36.5	31	24.0-38.5	34	28.2-41.0	24	21.0-27.9
Alaska Native	DSU		14	7.3-26.3	12	4.8-25.7	18	9.1-33.0	22	8.6-45.1	21	11.9-34.5	DSU	
45-64	41	33.6-47.8	36.9	30.9-43.2	31.6	27.1-36.5	32.2	28.3-36.5	33	28.6-37.8	33.3	29.4-37.4	32.7	28.5-37.3

DSU – Data statistically unreliable

Blue = Use with caution – 20 or more range in 95% confidence interval

Percentage of adults with 6 or more missing teeth due caries or periodontal disease – BRFSS includes adults aged 18 and older

Adult Group	1995 Ave.	95% CI	1999 Ave.	95% CI	2002 Ave.	95% CI	2004 Ave.	95% CI	2006 Ave.	95% CI	2008 Ave.	95% CI	2010 Ave.	95% CI
Total	8.6	6.8-10.8	10.1	8.5-12.0	11.3	9.6-13.2	11.3	9.6-13.2	9.6	8.1-11.3	9.2	7.7-10.9	8.2	6.7-9.9
White	8.2	6.2-10.7	9.1	7.3-11.3	9.6	7.8-11.7	10.9	9.0-13.2	9.6	7.9-11.7	7.7	6.3-9.5	6.6	5.2-8.4
Alaska Native	13.2	8.7-19.4	15	11.2-20.9	17.8	13.3-23.3	16.8	12.9-21.7	11	8.2-14.9	16	11.7-20.6	14	10.2-18.3
Other	5.9	2.1-15.7	10	5.3-17.7	13	8.0-20.4	6	3.3-10.1	8	3.9-14.1	11	5.4-19.5	12	6.6-21.2
Male	8.8	6.3-12.1	8.0	6.2-10.3	11.0	8.7-13.9	11.0	8.7-13.9	9.4	7.3-12.0	9.3	7.1-12.0	6.6	5.0-8.6
Female	8.4	6.2-11.4	12.4	9.8-15.7	11.5	9.3-14.1	11.6	9.4-14.2	9.8	7.8-12.2	9.1	7.3-11.2	10.0	7.7-12.8
Education Level:														
<High School	20	12.4-31.9	34	24.7-45.3	21	14.0-29.4	26	18.0-36.0	12	7.7-18.6	21	13.3-31.7	17	10.7-24.8
H.S. graduate/ GED	9	6.6-12.8	9.6	7.2-12.6	14.2	11.1-18.0	15.0	11.7-19.1	10.5	7.9-13.8	11.7	8.9-15.1	9.2	6.4-13.0
Some post H.S.	9	5.8-13.6	7.1	4.7-10.4	8.2	6.2-10.9	11.6	8.9-15.1	11.9	8.9-15.7	8.0	5.7-11.1	10.1	7.3-13.8
College graduate	4	2.2-8.2	7.1	4.5-10.9	8.6	5.8-12.8	2.9	1.8-4.7	6.0	4.1-8.7	4.4	2.9-6.4	4.1	2.6-6.3
Income Level:														
<$15,000	15	8.1-26.4	20	13.6-28.2	21	14.1-30.5	27	19.1-36.3	22	14.5-31.8	26	17.8-36.7	21	13.1-30.7
$15k-24,999	8	4.6-13.5	11	7.2-17.0	14	9.5-19.2	18	11.9-25.2	14	8.8-20.5	17	11.4-23.6	16	10.8-23.8
$25k-34,999	12	6.3-20.7	12	7.4-19.6	12	8.2-16.7	14	8.8-22.1	12	8.1-18.4	16	4.3-15.3	10	6.2-16.8
$35k-49,999	9	5.3-13.4	10	5.9-15.2	13	8.7-19.1	16	10.9-21.7	9	5.5-14.8	8	4.3-15.3	7	4.0-12.2
$50,000+	5.2	3.2-8.3	7.2	5.1-10.1	8.2	5.8-11.4	4.7	3.5-6.3	7.2	5.4-9.6	4.5	3.3-5.9	6.4	4.5-9.1
Age Group:														
18 – 24	0	****	1	0.1-5.6	1	0.3-4.2	4	1.3-10.0	<1	0.0-0.9	2	0.4-13.7	1	0.4-4.1
25 – 34	3	1.5-6.2	3	2.0-5.3	2	1.1-4.4	2	1.0-5.4	4	2.0-7.9	4	1.9-9.9	3	1.1-8.9
35 – 44	4	1.9-6.6	7.6	5.0-11.4	6.6	4.5-9.7	8.9	5.6-13.7	4	2.7-7.0	7	4.5-11.3	3	1.8-5.2
45 – 54	13	8.7-18.5	12	8.6-16.8	15.6	11.7-20.4	14.2	10.6-18.8	13	9.4-17.1	8.9	6.4-12.2	9	6.0-12.4
55 – 64	30	19.6-42.8	22	15.1-30.4	25	17.9-33.1	19	14.8-25.1	18	12.6-24.5	16.0	12.3-20.7	14	10.6-19.2
65 and older	32	19.8-48.4	33	23.1-45.3	35	26.5-44.7	28	21.0-35.9	28	21.4-36.1	24.4	19.1-30.6	25	18.4-32.7
60 and older	31	20.9-44.0	29	21.0-38.5	33	26.0-48.4	24	19.0-30.1	26	20.4-32.3	19.9	16.1-24.3	23.1	18.3-28.7
White	32	20.3-47.0	25	16.8-36.5	29	22.1-38.0	23	17.7-30.3	28	21.4-35.5	18	14.5-23.3	7	5.1-8.3
Alaska Native	DSU		35	20.4-52.8	44	24.3-65.0	32	19.9-47.4	23	13.7-36.6	30	18.5-44.0	DSU	
45-64	18	13.6-24.1	15.9	12.4-20.2	18.6	15.0-22.7	16.1	13.2-19.5	14.8	11.8-18.4	11.8	9.6-14.4	11.2	8.8-14.0

DSU – Data statistically unreliable

Blue = Use with caution – 20 or more range in 95% confidence interval

Percentage of adults missing all teeth due caries or periodontal disease – BRFSS includes adults aged 18 and older

Adult Group	1995 Ave.	95% CI	1999 Ave.	95% CI	2002 Ave.	95% CI	2004 Ave.	95% CI	2006 Ave.	95% CI	2008 Ave.	95% CI	2010 Ave.	95% CI
Total	4.3	3.0-6.1	4.1	3.1-5.4	4.1	3.3-5.1	4.4	3.4-5.6	3.9	3.0-5.0	4.0	3.2-5.0	3.7	2.6-5.2
White	3.9	2.4-6.2	3.7	2.5-5.3	3.2	2.3-4.3	3.8	2.8-5.2	3.0	2.2-4.3	3.5	2.7-4.7	3.6	2.3-5.6
Alaska Native	8.2	5.6-11.8	7	4.9-10.8	8.3	5.6-12.3	8.7	5.6-13.4	8	5.3-10.8	8	5.6-12.2	5	3.1-9.5
Other	2.6	0.5-12.7	2	0.8-5.3	4	2.0-7.9	2	0.9-4.6	5	2.0-10.2	2	0.9-4.6	2	0.9-5.3
Male	3.9	2.1-7.1	5.1	3.5-7.4	3.3	2.3-4.7	4.8	3.3-6.8	3.3	2.3-4.8	3.8	2.7-5.2	4.0	2.4-6.7
Female	4.8	3.2-7.2	2.9	2.0-4.3	4.9	3.6-6.6	3.9	2.8-5.4	4.5	3.2-6.2	4.3	3.2-5.8	3.3	2.2-4.9
Education Level:														
<High School	13	8.5-19.7	12	7.8-19.0	13	9.0-19.6	11	7.7-16.2	12	7.7-19.2	10	5.8-16.5	12	5.4-24.6
H.S. graduate/ GED	7	4.1-11.9	4.9	3.2-7.4	5.7	4.0-8.0	4.6	3.0-6.9	5.8	3.8-8.7	5.5	4.0-7.6	6.0	3.6-9.9
Some post H.S.	2	0.9-6.3	3.3	1.6-6.6	2.8	1.7-4.5	4.1	2.5-6.6	3.6	2.3-5.5	4.1	2.7-6.2	2.8	1.6-5.0
College graduate	1	0.3-4.3	1.2	0.5-2.9	1.3	0.5-3.3	2.5	1.1-5.5	0.6	0.3-1.3	0.8	0.4-1.5	0.6	0.3-1.4
Income Level:														
<$15,000	8	3.2-17.2	7	3.8-13.4	12	7.6-17.9	11	7.5-16.5	15	10.0-22.5	12	7.4-19.9	12	6.2-22.1
$15k-24,999	7	3.5-12.2	5	2.4-9.8	6	3.6-9.6	8	4.5-14.3	8	4.2-13.4	6	3.7-10.2	8	3.9-16.5
$25k-34,999	3	1.4-7.3	3	1.3-6.0	6	2.8-10.9	3	1.6-6.7	8	4.1-13.8	5	2.6-8.7	9	2.5-25.9
$35k-49,999	5	2.1-12.0	4	2.0-7.7	3	1.2-5.5	5	2.5-8.8	4	2.1-6.7	4	2.3-6.1	5	2.4-10.3
$50,000+	1.6	0.5-4.8	1.7	0.8-3.5	1.2	0.7-2.0	2.3	1.2-4.2	1.1	0.5-2.7	1.9	1.2-3.1	0.9	0.4-2.3
Age Group:														
18 – 24	0	****	0	****	<1	0.1-2.6	0	****	<1	0.0-1.9	0	****	0	****
25 – 34	<1	0.1-1.5	1	0.1-5.4	<1	0.1-2.0	<1	0.0-0.7	<1	0.0-0.9	<1	0.1-1.5	<1	0.0-1.1
35 – 44	<1	0.1-1.4	0.8	0.3-1.7	1.3	0.6-2.9	0.8	0.3-2.0	<1	0.0-0.5	<1	0.3-1.8	3	0.8-11.6
45 – 54	7	3.2-13.5	3	1.7-6.9	2.3	1.0-4.9	2.9	1.5-5.3	3	1.4-5.4	3.1	1.8-5.2	2	1.0-5.3
55 – 64	18	10.3-28.3	9	5.4-15.2	11	7.0-16.8	11	7.6-16.8	7	4.1-11.3	8.5	5.6-12.5	6	3.4-10.1
65 and older	25	13.3-42.4	27	18.2-37.5	24	18.2-31.9	23	16.1-31.8	24	17.6-30.9	20.7	15.4-27.3	16	10.6-23.9
60 and older	22	12.6-35.1	22	15.7-30.4	19	14.7-24.8	21	15.9-28.1	18	13.3-23.2	17.8	13.9-22.5	12.7	8.7-18.1
White	19	9.0-35.9	20	12.4-29.7	14	9.8-20.0	19	13.0-26.5	14	9.7-20.2	15	11.0-20.2	4	2.3-5.6
Alaska Native	DSU		36	23.5-51.4	42	25.1-60.8	46	29.7-63.2	33	20.9-47.1	39	26.2-54.2	DSU	
45-64	10	6.6-15.4	5.7	3.7-8.6	5.1	3.5-7.6	6.0	4.2-8.4	4.4	2.9-6.6	5.3	3.8-7.2	3.9	2.4-6.1

DSU – Data statistically unreliable

Blue = Use with caution – 20 or more range in 95% confidence interval

Reported oral cancer exams by adults aged 18 years and older – BRFSS 2008 and 2010 combined data

Adult Group	Percent with Oral Cancer Exams	Lower 95% Confidence Interval	Upper 95% Confidence Interval
All Adults - Aged 18 and older	**28.46%**	**26.34**	**30.68**
White Adults - Aged 18 and older	32.76%	30.21	35.42
Alaska Native Adults - Aged 18 and older	12.39%	9.07	16.68
Other/Unknown Race/Ethnicity	19.41%	14.03	26.22
Adults aged 40 and older	**34.81%**	**32.25**	**37.45**
White Adults - Aged 40 and older	38.34%	35.42	41.35
Alaska Native Adults - Aged 40 and older	16.16%	11.18	22.79
Other/Unknown Race/Ethnicity	27.18%	19.09	37.14
<$15,000	7.56%	4.60	12.17
$15,000 - 24,999	17.01%	11.62	24.22
$25,000 - 34,999	25.73%	18.40	34.74
$35,000 - 49,999	30.88%	23.89	38.87
$50,000 or more	44.49%	40.82	48.22
Education less than high school	18.29%	10.34	30.29
High school graduate	23.01%	18.89	27.71
Some college or technical school	36.81%	32.12	41.77
College graduate	45.86%	41.23	50.56
Smoke 100 cigarettes and currently smoke	22.99%	17.79	29.15
Smoke 100 cigarettes and currently smoke - White	27.48%	20.74	35.43
Smoke 100 cigarettes and currently smoke - Native	11.03%	7.02	16.92
Smoke or smokeless	22.44%	17.88	27.76
Smoke and binge or heavy drink	17.01%	11.23	24.94
Adults Aged 60 and Older	**33.93%**	**29.68**	**38.46**
White Adults - aged 60 and older	36.62%	31.76	41.76
Native Adults - aged 60 and older	14.63%	7.89	25.52
Other/Unknown Race/Ethnicity - aged 60 and older	28.23%	16.34	44.19

Note: BRFSS uses a descriptive question for an oral cancer exam: In the past year, have you had a doctor, dentist or dental hygienist check for oral cancer by pulling on your tongue, sometimes with a gauze wrapped around it, and feeling under the tongue and inside the cheeks?

Dental visits by adults with and without diabetes - combined 2008 and 2010 BRFSS data for adults aged 18 years and older.

Indicator	Adults reporting non-gestational diabetes				Adults not reporting non-gestational diabetes			
	Percent	N	Lower 95%	Upper 95%	Percent	N	Lower 95%	Upper 95%
Any dental visit in the past year	63.44	320	55.09	71.05	67.01	4242	64.71	69.24
A teeth cleaning in the past year	67.51	262	58.73	75.21	63.79	3985	61.33	66.17

Appendix IV

Medicaid Dental Utilization

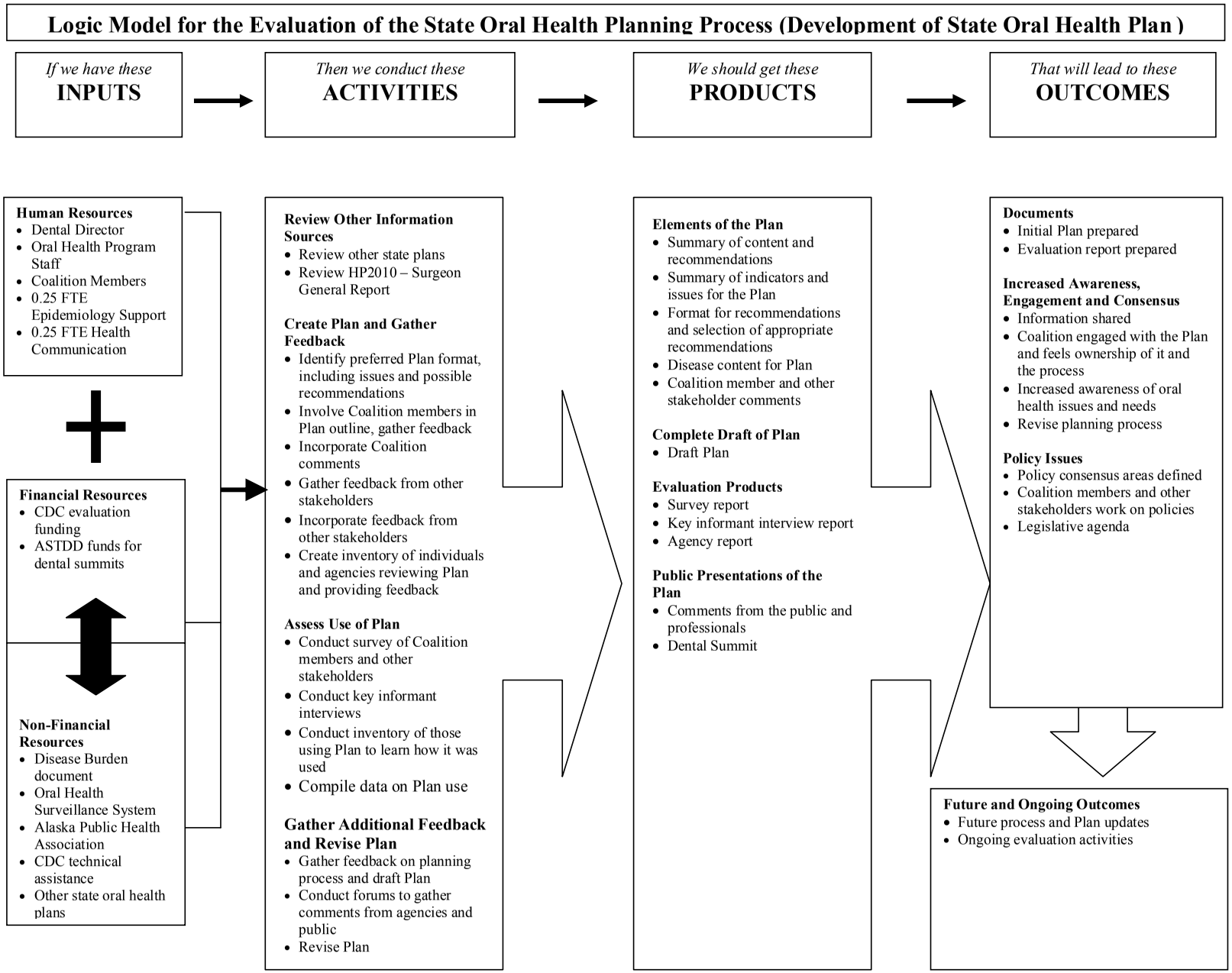
FFY	Dental Service	Total		Age 1-20		Age 3-20		< 01		1-2		3-5		6-9		10-14		15-18		19-20	
		Total	Percent	Age 1-20	Percent	Age 3-20	Percent	< 01	Percent	1-2	Percent	3-5	Percent	6-9	Percent	10-14	Percent	15-18	Percent	19-20	Percent
1991	Preventive	10,155	25.1%	10,129	29.1%																
1992	Preventive	12,172	26.0%	12,144	30.3%																
1993	Preventive	14,468	28.0%	14,433	32.2%																
1994	Preventive (1)	15,207	27.5%	15,180	31.4%																
1995	Preventive	15,508	27.7%	15,477	31.2%																
1996	Preventive	16,744	29.4%	16,695	33.1%																
1997	Preventive	16,633	28.8%	16,598	32.4%																
1998	Preventive	16,278	27.9%	16,231	31.4%																
	Any	19,637	30.0%	19,620	32.5%	19,034	36.9%	17	0.3%	586	6.7%	3,568	33.1%	5,950	42.3%	5,713	40.1%	2,986	34.0%	817	21.7%
1999	Preventive	15,354	23.5%	15,349	25.4%	15,002	29.0%	5	0.1%	347	4.0%	2,623	24.3%	4,941	35.1%	4,810	33.7%	2,175	24.7%	453	12.0%
	Treatment	10,777	16.5%	10,772	17.8%	10,595	20.5%	5	0.1%	177	2.0%	1,681	15.6%	3,285	23.4%	3,071	21.5%	1,973	22.4%	585	15.6%
	Any	25,251	33.5%	25,236	36.1%	24,471	40.8%	15	0.3%	765	7.8%	4,388	36.9%	7,328	46.9%	7,662	44.7%	4,184	37.5%	909	21.6%
2000	Preventive	19,992	26.5%	19,986	28.6%	19,568	32.6%	6	0.1%	418	4.2%	3,261	27.4%	6,145	39.4%	6,465	37.8%	3,169	28.4%	528	12.6%
	Treatment	14,045	18.6%	14,043	20.1%	13,790	23.0%	2	0.0%	253	2.6%	2,064	17.4%	4,126	26.4%	4,185	24.4%	2,757	24.7%	658	15.7%
	Any	28,487	35.2%	28,469	37.7%	27,496	42.5%	18	0.3%	973	9.1%	4,942	38.9%	7,971	49.9%	8,579	45.8%	4,952	39.2%	1,052	22.4%
2001	Preventive	22,754	28.1%	22,750	30.2%	22,241	34.3%	4	0.1%	509	4.8%	3,822	30.1%	6,788	42.5%	7,319	39.1%	3,729	29.5%	583	12.4%
	Treatment	15,607	19.3%	15,605	20.7%	15,307	23.6%	2	0.0%	298	2.8%	2,224	17.5%	4,470	28.0%	4,644	24.8%	3,213	25.4%	756	16.1%
	Any	31,651	37.7%	31,633	40.4%	30,515	45.4%	18	0.3%	1,118	10.1%	5,408	39.9%	8,461	51.6%	9,802	48.9%	5,758	43.1%	1,086	28.2%
2002	Preventive	25,374	30.2%	25,371	32.4%	24,725	36.8%	3	0.1%	646	5.8%	4,217	31.1%	7,194	43.9%	8,350	41.7%	4,350	32.5%	614	16.0%
	Treatment	17,428	20.8%	17,425	22.2%	17,092	25.4%	3	0.1%	333	3.0%	2,515	18.5%	4,629	28.2%	5,363	26.8%	3,812	28.5%	773	20.1%
	Any	32,876	37.7%	32,846	40.3%	31,719	45.0%	30	0.5%	1,127	10.2%	5,840	40.8%	8,652	51.9%	10,086	48.5%	6,107	42.2%	1,034	24.9%
2003	Preventive	26,453	30.3%	26,443	32.4%	25,788	36.6%	10	0.2%	655	5.9%	4,470	31.2%	7,436	44.6%	8,725	42.0%	4,587	31.7%	570	13.7%
	Treatment	17,663	20.2%	17,658	21.7%	17,321	24.6%	5	0.1%	337	3.0%	2,586	18.0%	4,715	28.3%	5,302	25.5%	3,977	27.5%	741	17.8%
	Any	33,867	38.3%	33,836	41.0%	32,593	45.7%	31	0.5%	1,243	11.1%	6,028	41.8%	8,729	52.0%	10,113	48.8%	6,594	43.5%	1,129	26.5%
2004	Preventive	27,047	30.6%	27,039	32.8%	26,344	36.9%	8	0.1%	695	6.2%	4,688	32.5%	7,458	44.4%	8,641	41.7%	4,944	32.6%	613	14.4%
	Treatment	18,315	20.7%	18,310	22.2%	17,946	25.2%	5	0.1%	364	3.2%	2,764	19.2%	4,722	28.1%	5,407	26.1%	4,245	28.0%	808	19.0%
	Any	35,253	39.5%	35,221	42.4%	33,975	47.2%	32	0.5%	1,246	11.1%	6,261	43.4%	9,110	53.6%	10,205	50.0%	7,174	46.1%	1,225	27.1%
2005	Preventive	28,037	31.4%	28,033	33.7%	27,353	38.0%	4	0.1%	680	6.1%	4,844	33.6%	7,728	45.5%	8,737	42.8%	5,349	34.3%	695	15.4%
	Treatment	19,653	22.0%	19,646	23.6%	19,274	26.8%	7	0.1%	372	3.3%	2,908	20.2%	5,045	29.7%	5,614	27.5%	4,804	30.8%	903	20.0%

Cont'd – Medicaid Dental Utilization

FFY	Dental Service	Total		Age 1-20		Age 3-20		< 01		1-2		3-5		6-9		10-14		15-18		19-20	
		Total	Percent	Age 1-20	Percent	Age 3-20	Percent	< 01	Percent	1-2	Percent	3-5	Percent	6-9	Percent	10-14	Percent	15-18	Percent	19-20	Percent
	Any	34,494	39.3%	34,448	42.2%	33,102	47.1%	46	0.7%	1,346	11.9%	6,059	43.3%	9,000	53.1%	9,671	50.4%	7,128	45.2%	1,244	27.9%
2006	Preventive	27,731	31.6%	27,728	34.0%	26,997	38.4%	3	0.0%	731	6.5%	4,725	33.8%	7,672	45.3%	8,366	43.6%	5,496	34.9%	738	16.5%
	Treatment	19,099	21.8%	19,095	23.4%	18,688	26.6%	4	0.1%	407	3.6%	2,779	19.9%	4,968	29.3%	5,355	27.9%	4,714	29.9%	872	19.5%
	Any	32,174	38.2%	32,146	41.0%	30,923	46.0%	28	0.5%	1,223	10.9%	5,669	42.0%	8,370	51.6%	9,088	50.6%	6,709	44.1%	1,087	25.7%
2007	Preventive	26,303	31.2%	26,296	33.5%	25,569	38.1%	7	0.1%	727	6.5%	4,559	33.8%	7,269	44.8%	7,882	43.9%	5,212	34.2%	647	15.3%
	Treatment	16,941	20.1%	16,940	21.6%	16,579	24.7%	1	0.0%	361	3.2%	2,545	18.8%	4,303	26.5%	4,748	26.4%	4,236	27.8%	747	17.6%
	Any	31,781	38.0%	31,739	40.9%	30,371	45.7%	42	0.7%	1,368	12.2%	5,594	41.8%	8,333	51.5%	8,808	49.8%	6,478	43.9%	1,158	26.5%
2008	Preventive	26,223	31.4%	26,205	33.8%	25,358	38.2%	18	0.3%	847	7.5%	4,573	34.2%	7,302	45.1%	7,708	43.5%	5,070	34.4%	705	16.2%
	Treatment	16,871	20.2%	16,866	21.7%	16,470	24.8%	5	0.1%	396	3.5%	2,543	19.0%	4,354	26.9%	4,608	26.0%	4,166	28.2%	799	18.3%
	Any	32,932	38.3%	32,892	41.3%	31,369	46.1%	40	0.6%	1,523	13.1%	5,867	42.0%	8,535	51.4%	8,967	49.4%	6,656	45.2%	1,344	28.9%
2009	Preventive	27,327	31.8%	27,309	34.3%	26,311	38.6%	18	0.3%	998	8.6%	4,884	34.9%	7,473	45.0%	7,859	43.3%	5,261	35.7%	834	17.9%
	Treatment	18,023	21.0%	18,020	22.6%	17,555	25.8%	3	0.0%	465	4.0%	2,734	19.6%	4,570	27.5%	4,903	27.0%	4,400	29.9%	948	20.4%
	Any	38,738	45.4%	38,676	48.3%	36,720	53.6%	62	1.2%	1,956	16.9%	7,211	49.7%	10,023	60.0%	10,440	56.7%	7,375	51.2%	1,671	36.8%
	Preventive	33,052	38.7%	33,016	41.2%	31,667	46.2%	36	0.7%	1,349	11.7%	6,142	42.3%	9,032	54.1%	9,401	51.1%	5,973	41.5%	1,119	24.7%
	Treatment	21,784	25.5%	21,780	27.2%	21,163	30.9%	4	0.1%	617	5.3%	3,474	23.9%	5,615	33.6%	5,897	32.0%	4,978	34.6%	1,199	26.4%
2010	Sealant	7,152	8.4%	7,152	8.9%	7,152	10.4%	0	0.0%	0	0.0%	0	0.0%	3,533	21.2%	3,619	19.7%	0	0.0%	0	0.0%
(2)	Diagnostic	35,699	41.8%	35,643	44.5%	33,774	49.3%	56	1.1%	1,869	16.1%	6,767	46.6%	9,296	55.7%	9,590	52.1%	6,628	46.1%	1,493	32.9%
	Non-Dental	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	Any Dental/OH	38,738	45.4%	38,676	48.3%	36,720	53.6%	62	1.2%	1,956	16.9%	7,211	49.7%	10,023	60.0%	10,440	56.7%	7,375	51.2%	1,671	36.8%
	Any	41,699	46.7%	41,638	49.5%	39,407	54.6%	61	1.2%	2,231	18.6%	7,889	51.3%	10,553	60.4%	11,346	57.8%	7,808	53.1%	1,811	36.5%
	Preventive	36,048	40.4%	36,016	42.8%	34,455	47.7%	32	0.6%	1,561	13.0%	6,856	44.6%	9,588	54.9%	10,261	52.3%	6,522	44.3%	1,228	24.7%
	Treatment	22,986	25.8%	22,978	27.3%	22,362	31.0%	8	0.2%	616	5.1%	3,741	24.3%	5,884	33.7%	6,278	32.0%	5,148	35.0%	1,311	26.4%
2011	Sealant	7,575	8.5%	7,575	9.0%		10.5%		0.0%		0.0%		0.0%	3,678	21.1%	3,897	19.9%		0.0%		0.0%
	Diagnostic	38,261	42.9%	38,211	45.4%	36,073	50.0%	50	1.0%	2,138	17.9%	7,455	48.4%	9,755	55.9%	10,322	52.6%	6,912	47.0%	1,619	32.6%
	Non-Dental	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	Any Dental/OH	41,699	46.7%	41,638	49.5%	39,407	54.6%	61	1.2%	2,231	18.6%	7,889	51.3%	10,553	60.4%	11,346	57.8%	7,808	53.1%	1,811	36.5%

(1) FFY1994 - FFY1998 416 reports tracked the dental indicator as a "dental assessment" while prior reports listed the indicator as a dental preventive service.
(2) Beginning in FFY2010 procedures were added to the CMS 416 report and for purposes of dental reporting only children enrolled for 90 continuous days were used in the report.

Appendix V


Logic Model for the Evaluation of the State Oral Health Planning Process (Development of State Oral Health Plan)
If we have these
INPUTS
Then we conduct these
ACTIVITIES
We should get these
PRODUCTS
That will lead to these
OUTCOMES
Human Resources
• Dental Director
• Oral Health Program Staff
• Coalition Members
• 0.25 FTE Epidemiology Support
• 0.25 FTE Health Communication
Financial Resources
• CDC evaluation funding
• ASTDD funds for dental summits
Non-Financial Resources
• Disease Burden document
• Oral Health Surveillance System
• Alaska Public Health Association
• CDC technical assistance
• Other state oral health plans
Review Other Information Sources
• Review other state plans
• Review HP2010 – Surgeon General Report
Create Plan and Gather Feedback
• Identify preferred Plan format, including issues and possible recommendations
• Involve Coalition members in Plan outline, gather feedback
• Incorporate Coalition comments
• Gather feedback from other stakeholders
• Incorporate feedback from other stakeholders
• Create inventory of individuals and agencies reviewing Plan and providing feedback
Assess Use of Plan
• Conduct survey of Coalition members and other stakeholders
• Conduct key informant interviews
• Conduct inventory of those using Plan to learn how it was used
• Compile data on Plan use
Gather Additional Feedback and Revise Plan
• Gather feedback on planning process and draft Plan
• Conduct forums to gather comments from agencies and public
• Revise Plan
Elements of the Plan
• Summary of content and recommendations
• Summary of indicators and issues for the Plan
• Format for recommendations and selection of appropriate recommendations
• Disease content for Plan
• Coalition member and other stakeholder comments
Complete Draft of Plan
• Draft Plan
Evaluation Products
• Survey report
• Key informant interview report
• Agency report
Public Presentations of the Plan
• Comments from the public and professionals
• Dental Summit
Documents
• Initial Plan prepared
• Evaluation report prepared
Increased Awareness, Engagement and Consensus
• Information shared
• Coalition engaged with the Plan and feels ownership of it and the process
• Increased awareness of oral health issues and needs
• Revise planning process
Policy Issues
• Policy consensus areas defined
• Coalition members and other stakeholders work on policies
• Legislative agenda
Future and Ongoing Outcomes
• Future process and Plan updates
• Ongoing evaluation activities

References

1 U.S. Department of Health and Human Services (USDHHS), *Oral Health in America: A Report of the Surgeon General,* USDHHS National Institute of Dental and Craniofacial Research, National Institutes of Medicine, 2000.

2 Kaste, LM, Selwitz, RH, Oldakowski, RJ, Brunelle JA, Winn DM, Brown, LJ, "Coronal caries in the primary and permanent dentition of children and adolescents 1-17 years of age, 1988-1991", *Journal of Dental Research,* 75(Special Issue):631-641, 1996.

3 Casamassimo P, *Bright Futures in Practice: Oral Health,* National Center for Education in Maternal and Child Health, Arlington, Virginia, 1996.

4 National Association of Dental Plans, *Dental benefits improve care,* 2009, at: http://www.nadp.org/Libraries/HCR_Documents/nadphcr-dental-benefitsimproveaccesstocare-3-28-09.sflb.ashx Accessed 6/14/12.

5 IOM (Institute of Medicine) and NRC (National Research Council), *Improving access to oral health care for vulnerable and underserved* populations, Washington, DC: The National Academy Press, 2011.

6 Bureau of Labor Statistics (2008) at: http://www.bls.gov/opub/ted/2010/ted_20100325_data.htm Accessed 6/9/2012.

7 Gift, HC, Relsine ST, Larach DC, "The social impact of dental problems and visits", *American Journal of Public Health*, 82(12):1663-1668, 1992.

8 U.S. Department of Health and Human Services (USDHHS), *Healthy People 2020*, December 2010 at: http://www.healthypeople.gov/2020/topicsobjectives2020/default.aspx.

9 Hardison, J.D., *Results of the 2004 Oral Health Survey of Alaskan Third Graders: Alaska Oral Health Basic Screening Survey*, contractor's report to the Oral Health Program, Alaska Department of Health and Social Services, 2005.

10 Hardison, J.D., *Results of the 2007 Oral Health Survey of Alaskan Third Graders: Alaska Oral Health Basic Screening Survey*, contractor's report to the Oral Health Program, Alaska Department of Health and Social Services, 2008.

11 Eberling, S., *Results of the 2010/2011 Oral Health Survey of Alaskan Third Graders: Alaska Oral Health Basic Screening Survey*, contractor's report to the Oral Health Program, Alaska Department of Health and Social Services, 2011.

12 Eberling S., *Results of the 2010/2011 Oral Health Survey of Alaskan Kindergarteners: Alaska Oral Health Basic Screening Survey*, contractor's report to the Oral Health Program, Alaska Department of Health and Social Services, 2011.

13 Hardison, J.D., *Results of the 2004 Oral Health Survey of Alaskan Head Start Children: Alaska Oral Health Basic Screening Survey*, contractor's report to the Oral Health Program, Alaska Department of Health and Social Services, 2006.

14 Berkowitz, RJ, "Causes, treatment and prevention of early childhood caries: a microbiologic perspective", *Journal of the Canadian Dental Association,* 69(5):304-307b, 2003.

15 Dye BA, Tan S, Smith V, Lewis BG, Barker LK, Thornton-Evans, G., et al., "Trends in oral health status: United States, 1988-1994 and 1999-2004", National Center for Health Statistics, 11(248), 2007.

16 U.S. Department of Health and Human Services (USDHHS), *Healthy People 2010*, 2nd edition, 2 volumes, Washington DC: U.S. Government Printing Office, November 2000.

17 Newacheck PW, McManus M, Fox HB, Hung YY, Halfon N, "Access to health care for children with special health care needs", *Pediatrics,* 102 (4 Part I):760-766, 2000.

18 Isman R, Isman B, "Access to oral health services in the U.S. 1997 and beyond", Chicago: Oral Health America, 1997.

19 U.S. Department of Health and Human Services, "Improved national prevalence estimates for 18 selected major birth defects – United States, 1999-2001", *MMWR*, Centers for Disease Control and Prevention, 54(51&52):1301-1305, January 6, 2006.

20 Alaska Birth Defects Registry, Schoellhorn, J, unpublished memorandum on Alaska oral clefts for 1996-2005, Alaska Department of Health and Social Services, Division of Public Health, Section of Women's, Children's and Family Health, MCH Epidemiology Unit, 2011.

21 Cleft Palate Foundation, "The genetics of cleft lip and palate: information for families, 2000 edition.

22 Columbia University, "Cleft lip and cleft palate", Department of Otolaryngology, from http://www.entcolumbia.org/cleft.html

23 Wilcox, J, et al., "Folic acid supplements and risk of facial clefts: national population based case-control study, *BMJ*, 224(7591):464, March 3, 2007.

24 Alaska Behavioral Risk Factor Surveillance System (BRFSS), unpublished data, CY2010 survey, Alaska Department of Health and Social Services, Division of Public Health, Section of Chronic Disease Prevention and Health Promotion, 2011.

25 Davey AL, Rogers AH, "Multiple types of bacterium *Streptococcus mutans* in the human mouth and their intra-family transmission", *Arch Oral Bio;*29:453-460, 1984.

26 Berkowitz RJ, Jones P, "Mouth-to-mouth transmission of the bacterium *Streptococcus mutans* by infants from their mothers", *Arch Oral Biol*, 30:377-379, 1985.

27 Berkowitz RJ, "Causes, treatment and prevention of early childhood caries: a microbiologic perspective", Journal of the Canadian Dental Association, 69(5):304-307b, May 2003.

28 Hester, K, internal memorandum on results of 2004-2008 PRAMS questions on dental access, Alaska Department of Health and Social Services, Division of Public Health, Section of Women's, Children's and Family Health, March 10, 2010.

29 Alaska Behavioral Risk Factor Surveillance System (BRFSS), unpublished data from an ad hoc report from R. Topol, Alaska Department of Health and Social Services, Section of Chronic Disease Prevention and Health Promotion, 2011.

30 Brown A, Zimmerman B, *Research to Policy and Practice Forum: Periodontal Health and Birth Outcomes – Summary of a Meeting of Maternal, Child, and Oral Health Experts,* Washington, DC: National Maternal and Child Oral Health Resource Center, 2007.

31 Association of State and Territorial Health Officials (ASTHO), "The oral health and chronic disease connection", available at: http://www.astho.org/templates/display_pub.php?pub_id=327, May 2002

32 U.S. Department of Health and Human Services (USDHHS), "The health consequences of smoking: a report of the Surgeon General", Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2004. Available at: http://www.cdc.gov/tobacco/sgr/sgr_2004/index.htm.

33 Blot WJ, McLaughlin JK, Winn DM, Austin DF, Greenberg RS, Preston-Martin S, Bernstein L, Shoenbert JB, Stemhagen A, Fraumeni JF Jr., "Smoking and drinking in relation to oral and pharyngeal cancer", *Cancer Research*, 48:3282-3287, 1988.

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

35 Alaska Department of Revenue, Tax Division; Orzechowski W, Walker RC. The Tax Burden on Tobacco, vol. 44. Arlington, VA: Orzechowski & Walker, 2009.

36 Alaska Department of Health and Social Services, *Alaska Tobacco Facts: 2012 Update*, Section of Chronic Disease Prevention and Health Promotion, Tobacco Prevention and Control Program, 2012 at: http://www.hss.state.ak.us/dph/chronic/tobacco/alaska_tobacco_facts.pdf

37 Alaska Department of Health and Social Services, *Health Risks in Alaska Among Adults: Alaska Behavioral Risk Factor Surveillance Survey 2002/2003 Annual Report*, Division of Public Health, 2006.

38 Alaska Youth Risk Behavior Surveillance System (YRBS), Alaska Youth Risk Behavior Survey 2011 – Traditional Schools, Alaska Department of Health and Social Services, Division of Public Health, Section of Chronic Disease Prevention and Health Promotion as found at: http://www.hss.state.ak.us/dph/chronic/school/pubs/2011AKTradHS_Graphs.pdf

39 Federal Trade Commission, Smokeless Tobacco Report for 2007 and 2008, Issued 2011, found at: http://www.ftc.gov/os/2011/07/110729smokelesstobaccoreport.pdf

40 Surveillance, Epidemiology and End Results (SEER) Program (www.seer.cancer.gov), SEER 18 Registries 2000-2009, November 2011.

41 Silverman, S, "Demographics and occurance of oral and pharyngeal cancers: the outcomes, trends, the challenge", *JADA*, 132(Supplement 1):7S-11S, November 2001.

42 National Institute of Dental and Craniofacial Research (NIDCR), "Oral cancer 5-year survival rates by race, gender, and stage of diagnosis", accessed on June 13,2012 at: http://www.nidcr.nih.gov/datastastistics/finddatabytopic/oralcancer/oralcancer5yearsurvivalrates.htm

43 Alaska Department of Health and Social Services (DHSS), *Alaska Comprehensive Cancer Control Plan: 2005-2010*, Division of Public Health, Chronic Disease Prevention and Health Promotion, Comprehensive Cancer Control Program, November 2006.

44 Toubjorn, R and Dalianis, T, "Orophayrngeal cancer epidemic and human papillomavirus", MMRW, 16(11) at: http://wwwnc.cdc.gov/eid/article/16/11/10-0452_article.htm accessed on June 5, 2012.

45 Gillison, ML, et al., "Incidence trends for human papillomavirus: related and unrelated oral squamous cell carcinomas in the United States", *Journal of Clinical* Oncology, 26(4):612-619, February 2008.

46 Alaska Department of Health and Social Services (DHSS), *Tobacco in the Great Land: A Portrait of Alaska's Leading Cause of Death*, Division of Public Health, Section of Epidemiology, February 2004.

47 Indian Health Service (IHS), *An Oral Health Survey of American Indian and Alaska Native Dental Patients: Findings, Regional Differences and National Comparisons*, U.S. Department of Health and Human Services, 1999 survey.

48 Alaska Department of Health and Social Services (DHSS), *Healthy Alaskans 2010: Targets and Strategies for Improved Health*, Division of Public Health, Data and Evaluation Unit, April 2002.

49 U.S. Centers for Disease Control and Prevention (CDC), "Achievements in public health, 1900-1999: fluoridation of drinking water to prevent dental caries", *MMWR*, 48(41):933-940, 1999.

50 U.S. Centers for Disease Control and Prevention (CDC), Statistical reports for the National Oral Health Surveillance System, found at http://www.cdc.gov/fluoridation/statistics/2010stats.htm, updated 2012.

51 U.S. Centers for Disease Control and Prevention (CDC), "Dental caries in rural Alaska Native children – Alaska, 2008, *MMWR*, 60(37):1275-1277, 2011.

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

53 Health Planning and Systems Development, analysis of unpublished data from dentist professional licensing files, Department of Health and Social Services, 2010.

54 American Dental Association (ADA), *2009 distribution of dentists in the U.S. by region and state*, at: http://www.ada.org/1444.aspx, Accessed 6/14/12.

55 U.S. Census Bureau, *Population estimates*, at: http://www.census.gov/popest/index.html, Accessed 6/14/12.

56 Mertz E, and Mouradian WE, "Addressing children's oral health in the new millennium: trends in the dental workforce," *Academy Pediatrics*, 9(6):433-439, 2009.

57 U.S. Health Resources and Services Administration (HRSA), http://datawarehouse.hrsa.gov/hpsadetail.aspx

58 Division of Health Care Services, unpublished dental Medicaid claims data for SFY2010, 2011.

59 Alaska Department of Labor, *Occupational forecasts*, at: http://live.laborstats.alaska.gov/occfcst/index.cfm , Accessed 6/15/12.

60 U.S. Centers for Disease Control and Prevention (CDC), "Guidelines for infection control in dental health-care settings – 2003", *MMWR*, 52(RR-17), December 2003.

61 Klejka J., et al. *Dental Caries in Rural Alaska Native Children - Alaska, 2008*, MMWR, CDC, 60(37): 1275-1278, September 2011.

62 Institution of Medicine, *Accelerating Progress in Obesity Prevention*, the National Academic Press, 2012.

63 Griffin, SO, et all., *Effeciveness of Flouride in Preventing Caries in Adults*, J Dent Res, 86(5):410-415, 2007.

Notes

Notes

Funding for the State Oral Health Plan was provided by the U.S. Centers for Disease Control and Prevention through the Chronic Disease Prevention and Health Promotion Programs Cooperative Agreement (U58/CCU022905). The contents of this plan are solely the responsibility of the authors and do not necessarily represent the official views of the CDC.

This publication was produced by the Alaska Department of Health and Social Services.
It was printed at a cost of $3.54 per copy in Anchorage, Alaska. This cost block is required by AS 44.99.210.