

# Oral Health

## Fast Facts

- Most adults (82%) had visited a dentist in the past year.
- Adults less likely to have seen a dentist in the past year were more likely to have incomes less than \$35,000 (74%) and/or be 75 years of age or older (66%) and /or live on Camano Island.
- 64% of adult respondents have some form of dental insurance.
- Nearly two-thirds of Smile Survey students screened (62%) were caries-free. This is an increase from 1994 when 50% were caries-free.
- The Smile Survey found sealants in 64% of high school students screened and 55% of second and third graders. This is an increase from 1994 when 55% of high school students and 41% of second and third grade students had sealants.
- 23 (21.4 FTEs) dentists and 21 dental hygienists were licensed to practice in Island County in 1998. Island County also had no endodontists practicing in 2003.

**64% of adult respondents have some form of dental insurance.**

## Identified Issues

- **18% of adults surveyed by the BRFSS had not seen a dentist for their children in the last year, 22% of those did not see a dentist due to cost.**
- **A total of 10.4% of parents wanted dental care for their children in the last two years but were unable to get it, primarily due to lack of insurance or the cost.**

## Background and Introduction

There has been remarkable progress in the reduction of dental caries in the United States over the past 30 years. Use of sealants (on the occlusal surfaces) and fluoride varnishes (on the lateral surfaces) on children's teeth decreases the likelihood of developing caries. The use of fluoride in public water supplies, in toothpaste, and in professional dental products, as well as improvements in oral hygiene and increased access to dental care have played major roles in this dramatic improvement. Nevertheless, dental caries remains a significant problem.

Oral infections have been identified as a potential source of serious eye, throat, respiratory, digestive, and heart conditions of a bacterial nature. There is evidence to suggest that periodontal disease increases an individual's risk for cerebrovascular disease, heart disease, and pre-term labor. Children and senior citizens may suffer impaired nutrition as a result of dental pain or dysfunction.

Oral diseases are progressive and cumulative and become more complex over time. These diseases can affect a person's ability to eat, the foods they choose, and general health, how they look, and the way they communicate. In addition, oral diseases can affect economic productivity and compromise a person's ability to work at home, at school, or on the job. Dental disease is not self-limiting. The longer treatment is delayed, the more extensive and costly it becomes. A preventive and noninvasive sealant application costs \$22 per tooth, but that same tooth allowed to deteriorate over time might incur restorative treatment in the form of a filling at the cost of \$56. Left to decay further, the same tooth may require a crown costing \$309 and then perhaps a root canal at a cost of \$216 (costs are based on 2001 Medicaid reimbursement fees). Currently many children and adults who are Medicaid-eligible are unable to access the needed care and treatment.

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Among young children, the oral health of the mother is a significant risk factor in the likelihood of a child's developing dental caries. Health of the primary teeth affects the health of the later permanent teeth. More specifically, a child with dental decay in primary teeth is at much higher risk of developing decay in permanent teeth. Other factors specific to an individual that can affect susceptibility to tooth decay include levels of cariogenic bacteria, salivary flow rate, salivary buffering capacity, diet and sugar consumption, individual immune factors, and fluoride exposure. Smoking and diabetes increase an individual's risk of advanced periodontal disease, which leads to an increased number of exposed root surfaces that are at risk for developing decay.

## Data And Findings

### *National and State*

Dental caries is a transmissible, infectious disease. Based on a survey of Washington infants and toddlers in 1999, 14% ( $\pm 2.2\%$ ) of children between one and two years of age had caries<sup>1</sup>. A national survey in 1988 – 1991 found that nearly 20% of children between the ages of two and four had detectable caries, and by the age of 17 almost 80% of young people had experienced a cavity<sup>2,3</sup>. In addition, more than two-third of adults' age 35 – 44 years nationwide had lost at least one permanent tooth due to dental caries, and older adults suffered from the problem of root caries<sup>4</sup>.



The Washington State Smile Survey is a dental health survey and screening conducted statewide in selected high-risk counties. The 2000 survey evaluated the oral health status of children based on the Year 2000 Oral Health Objectives. They measured the prevalence of baby bottle tooth decay, defined as decay on the buccal surfaces of the maxillary anterior teeth; the history of caries, defined as a cavity, a filling or a tooth missing because of an extraction; the prevalence of rampant decay, defined as seven or more teeth with a carious lesion; the need for treatment; and the presence of sealants in the child's permanent dentition.

Schools from various counties were randomly selected. Island County was not included in this survey. However, Island County Health Department conducted their

own Smile Surveys in 1994 and 2000. Results are discussed in the Local Children's Dental Health section of this module. Statewide in 1994, 57 % had dental caries and 42% had at least one sealant. In 2000, 32% of the children screened between the ages of two and four had caries. Twenty-five percent needed treatment including five percent who needed urgent care.

In 1994, 38% of children between the ages of two and four had experienced caries and 21% needed treatment. In 2000, 56% of six to eight year olds had experienced caries and 22% needed treatment. Sealants were found in 47%.

***A huge loss to the county was the closure of the North Whidbey Community Clinic in August 2003. They had offered dental care for low-to-moderate income clients, and treated approximately 400 to 600 clients per year.***

Dental caries is not evenly distributed in the population. Nationally, at least 60% of dental caries cases are in 20% of the population. Among children 80% of the disease occurs in about 25% of the pediatric population. Dental caries tends to be clustered in minority children, the economically low income, people older than 65, the chronically ill, and those who are institutionalized. In Washington, children of parents who do not speak english also have higher rates of dental caries than other children.

Dental caries costs of impact and burden are measurable. Nationally, more than 51 million school hours are lost each year to dental-related illness among children, and employed adults lose more than 164 million hours of work each year because of dental disease or dental visits.<sup>5</sup> During 1999, Medi-

icaid spent almost \$83 million providing dental services to children and adults in Washington; however, only one third of eligible children and adults received services and most did not receive comprehensive services.



Young children, often between the ages of two and five, might be affected by severe early childhood caries that requires hospitalization for treatment. The cost of this treatment is approximately \$4,500 per child.<sup>6</sup> Dental care is the most frequent cause for treatment in the operating rooms of Children's Hospital and Regional Medical Center in Seattle.

Fluoride has been shown to be an effective method of preventing caries in both children and adults, and a fluoridated water system is the most cost-effective method of providing fluoride. In Washington, 44% of people receive fluoridated water and another 5% receive naturally fluoridated water. In Island County, fluoridated water is available to persons utilizing the Oak Harbor, and Oak Harbor Naval Base water systems.

## Local Findings: Adult Dental Health

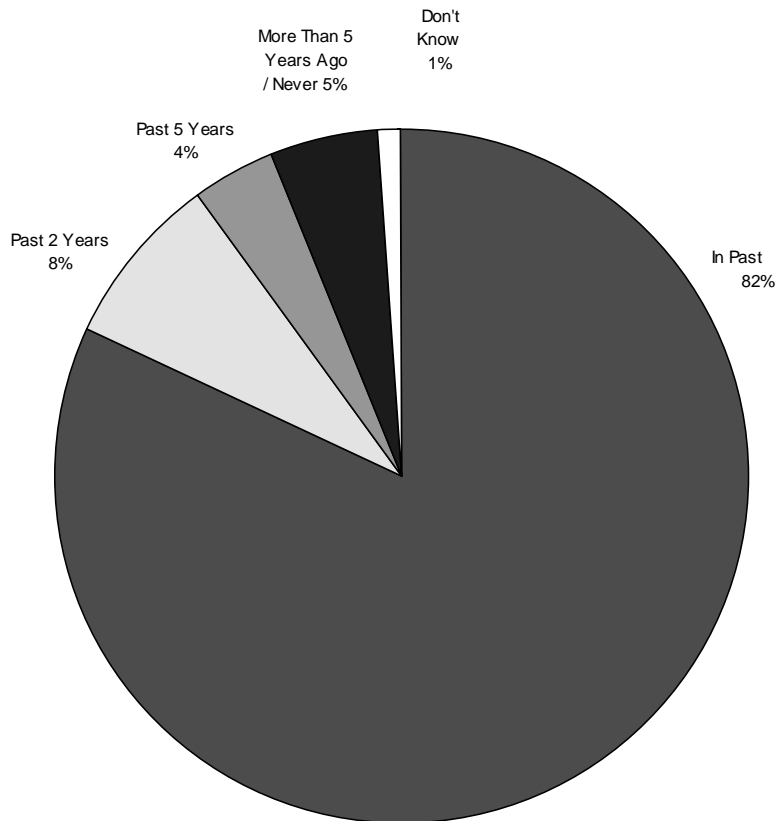
As part of the 2000 BRFSS, adult respondents were asked when they last visited a dentist or dental clinic. Most (82%) said they had visited a dentist or dental clinic in the past year; another 8% said they had visited one in the past two years. The proportion reporting a visit in the past

year is up significantly over 1996 (72%). Respondents whose income was more than \$35,000 per year were more likely than those earning less than \$35,000 per year to have visited a dentist or dental clinic during the past year (87% versus 74%). Respondents 75 years old or older were less likely than those younger to have visited so recently (66% versus 84%). Among respondents who did not visit a dentist in the past year, 40% said they had no reason to go; 21% mentioned cost barriers, and 18% had “other” reasons.

### **Adult Access to Dental Care**

Respondents who had visited a dentist at all were asked where they went, whether they had insurance coverage for some or all of their dental care and when they last had their teeth cleaned by either a dentist or dental hygienist. Four-fifths (80%) of respondents said they visited a private dentist. An additional 14% said they saw a dentist at a military or naval base. Most (78%) said their teeth had been cleaned in the last year. About two-thirds (64%) said they had some kind of insurance coverage to pay for their dental care.

### **Most Recent Routine Dental Checkup**



Source: IC BRFSS, 2000-2001

## Local Finding: Children's Dental Health

Island County Health Department conducted its own Smile Survey in 2000. An Island County survey was also conducted in 1994. Island County children in all four school districts participated, as did children participating in Head Start, ECEAP, and other childcare programs. Island County Health Department staff and volunteers, from January through April 2000, screened a total of 734 students. Students were in one of three age groups: three to five years, second and third grade students, and 14 to 16 years. About half of the children were female, 83% were white non-Hispanic, and English was the primary language for 99% of the children. Eight percent of the children were foreign-born while 48% were born in Washington. Of those who provided information on eligibility for the free and reduced lunch program (n=180), 19% were eligible. Nearly two-thirds of the students screened (62%) were caries-free. This is an increase from 1994 when 50% were caries-free. Sealants were found in 64% of high school students screened and 55% of second and third graders. This compares favorably to the 1994 Island County survey data where 55% of high school children and 41% of second and third grade children had this preventive coating.

***Island County Health Department initiated the Access to Baby and Child Dentistry (ABCD) program in 2001. This program is funded by the Washington Dental Service Foundation, Department of Social and Health Services (DSHS), and the Island County Health Department. ABCD assists Medicaid-eligible families in accessing dental care for children under the age of six. Nine dentists in Island County are participating in this program after attending a training program on dental care for the very young.***

### ***Preschool Children***

A total of 235 preschool children at a variety of preschools were screened. Head Start and ECEAP preschools require a dentist's visit prior to enrollment, private preschools do not. Of these children, 22% had a least one tooth with a history of caries and 3% had either rampant caries or a history of rampant caries. 11.5% percent of all young children needed treatment, including 11.1 % with untreated decay and three percent who needed urgent care because of pain or infection. Since radiographs (x-rays) were not taken, this is assumed to be an underestimation of the need for dental care, as small cavities between the teeth may not have been identified. Significant progress has been made since 1994 in Island County when 32% of preschoolers had caries experience and 18% needed treatment.

### ***Elementary School Children***

A total of 330 children in the second and third grades were screened. The children ranged in age from six to nine years with a mean age of 7.8 years. Approximately 50% of these children had a current or past history of dental disease in their primary and permanent teeth. A history of rampant caries (caries on seven or more teeth) was observed in 5.5% of the children. Slightly more than 16% needed treatment, including 15.2% with untreated decay and the almost two percent who needed urgent treatment because of pain or infection. Of those children with un-

treated decay (n=50), each child averaged two cavities (range = one to 10 cavities). Fifty-five percent of the students had a dental sealant on at least one permanent tooth (first molar). In 1994 in Island County, 47% of six to eight year olds had caries experience and 21% presented with untreated decay. Sealants were found in 41%.

Since 2002, 819 children were enrolled by the ABCD program and 87% made their first dental visit.

### ***High School Students***

A total of 169 high school students were screened. The students ranged in age from 14 to 19 years with a mean age of 15.5 years. About 43% of the students had caries experience in their permanent teeth. A history of rampant caries was observed in 11% of the students. Slightly more than 12% needed treatment, with only one percent needing urgent care because of pain or infection. Of those students with untreated decay (n=17), each averaged two caries (range = one to five caries). Sixty-four percent of the students had a dental sealant on at least one permanent tooth. In 1994 in Island County, 62% of the high school students screened had caries experience, 19% needed treatment, and 55% of them had at least one sealant.

### ***Children's Access to Dental Care***

Information on access to care was available for 249 students. Most, 86%, reported having dental insurance. Most students (81%) had been to the dentist within the last year while 6.4% reported that they had never been to the dentist. For those who had not been to the dentist in the last year, the primary reasons were "cost" (10%) and "no reason to go" (9%). Ten percent of the parents reported that there was a time during the past two years when they wanted dental care for their child but could not get it. The primary reasons for being unable to obtain care were "could not afford it" (9%), "no insurance" (7%), "dentist did not accept Medicaid" (2%), and "difficulty in getting appointment" (2%).

***The Whidbey Island Dental Health Coalition is comprised of community members from groups such as Head Start, ECEAP, WIC, school nurses, and local dentists. Their vision is "that dental health will be viewed as a priority and a positive experience, readily available to everyone". The goal of the coalition is to accomplish this by outreach services, education programs, and improved access to care. Some of the projects have been health fairs, library displays, dental emergency magnets, and free bicycles helmets.***

## Healthy People Objectives

- ◆ For adults 65 years or older, the Healthy People 2010 objective is to reduce the proportion who have had all their natural teeth extracted to 20%.
- ◆ For adults between 34 and 44 years old, the Healthy People 2010 objective is to increase the proportion that have never lost a tooth to 42%.
- ◆ For adolescents, the Healthy People 2000 objectives are to decrease the proportion of adolescents who have experienced dental caries in permanent or primary teeth to 60%, decrease the proportion of adolescents with untreated dental caries in permanent or primary teeth to 15%, and to increase the proportion of 14 year-olds with sealants to 50%.
- ◆ For six- to eight-year-old children, the Healthy People 2000 objectives are to decrease the proportion of children who have experienced dental caries in permanent or primary teeth to 35%, to decrease the proportion of children with untreated dental
- ◆ For preschool-aged children, the Healthy People 2010 objectives are to reduce the proportion of preschoolers with history of caries in their primary teeth to 11%, and to reduce untreated dental decay in primary teeth to nine percent.

## Effective Interventions

Dental caries are preventable in both children and adults. Several chemotherapeutic approaches with individual patients have been studied, with encouraging results. Chlorhexidine mouthwashes, fluoride varnishes, and gels have been used against caries-causing bacteria with some effectiveness.

Sugar substitutes such as sorbitol and xylitol have been promoted to modify high-sucrose diets and thereby lower bacterial production of damaging acids. Regular exposure to xylitol appears to modify the transmission of *mutans streptococci* from mother to child leading to significant reductions in the rates of decay in the child<sup>7</sup>.



Fluoride exposure reverses demineralization thereby preventing or reversing the caries process. Fluoride can be added to drinking water, toothpaste, topical gels, and varnishes, and mouthwashes or can be in supplements including fluoride lozenges. Sealants, when applied to newly erupted permanent molars, provide an effective barrier to the bacteria and by-products that decay the chewing surfaces of teeth.

Over the past 55 years, numerous studies have demonstrated that optimal fluoridation of water systems reduces caries rates in both children and adults. Depending on the size of the community, fluoridation costs an average of 20-50 cents per person

per year. For communities with populations greater than 20,000, every \$1 invested in community water fluoridation yields an annual savings of \$38 in dental treatment<sup>8</sup>. The National Institute of Dental and Craniofacial Research estimated that nearly \$40 billion was saved nationally on dental treatment costs in the 1980s because of improvements in oral health attributable to the widespread use of fluorides and increased use of preventive services by practitioners.

Although public education and promotion of preventive oral health activities are widespread, successful outcomes are more likely to occur with specific preventive interventions targeted to those at highest risk for developing caries.

These include: incorporating oral health into well baby care, screening one-year-old children to identify those at high-risk and ensure they are followed up with preventive regimens, providing fluoridated tooth paste for children over one year of age, providing topical fluorides for infants, young children, and older adults, applying sealants for second and sixth grade children in targeted schools, incorporating oral health into prenatal care, screening high-risk pregnant women and referring them for dental treatment to control levels of *mutans streptococci* that might be transmitted to their infants, providing chlorhexidine rinses and xylitol products to pregnant women to control levels of *mutans streptococci* that might be transmitted to their infants, providing dental care to low income families, and screening institutionalized adults to identify high-risk patients for follow-up with preventive regimens.

## Oral Health

### Local Resources

Oral Health is an important program supported by your Public Health Department, which focuses on the ABCD dental health program. This is a grant supported effort by the Washington Dental Service Foundation to increase access to preventative and restorative dental care for Medicaid-eligible children from birth to six years old, with emphasis on enrollment by age one. It is administered through the Island County Health Department's Personal Health Division.

Island County Health Department, Access to Baby and Child Dentistry ..... (360) 221-8487  
Island County Health Department, Oral Health Coordinator ..... (360) 679-7351 x7681  
Island County Health Department, Dental Consultant ..... (360) 221-8483  
North Whidbey Community Clinic (closed 8-1-03 may reopen) ..... (360) 679-5590

### Helpful Internet Sites

Citizen's Watch for Kids' website at [www.KidsOralHealth.org](http://www.KidsOralHealth.org). This site has oral health fact sheets.

Community Preventive Services, Oral Health at <http://www.thecommunityguide.org/oral/>

Improving Oral Health at [http://www.cdc.gov/nccdphp/bb\\_oralhealth/index.htm](http://www.cdc.gov/nccdphp/bb_oralhealth/index.htm)

Oral Health America at <http://www.oralhealthamerica.org>

Oral Health for Children 6 – 12 years at <http://www.aboutsmiles.com/6to12.htm>

State Issues, Oral Health at <http://www.stateaction.org/issues/healthcare/dental/index.cfm>

### Data Sources

<sup>1</sup> Smile Survey 2000. Washington State Department of Health, Maternal and Child Health, Olympia, WA. May 2001.

<sup>2</sup> Kaste LM, Selwitz RH, Oldakowski RJ, Brunelle JA, Winn DM, Brown LJ. Coronal caries in primary and permanent dentition of children and adolescents 1-17 years of age: United States, 1988-1991. J Dent Res 1996; 75 (Spec Iss): 631-41.

<sup>3</sup> National Institute of Dental Research. Oral health of United States children: 1986-87. Bethesda, MD; National Institutes of Health; 1989. NIH publication no. 89-2247.

<sup>4</sup> Winn DM, Brunelle JA, Selwitz RH, et al. Coronal and root caries in the dentition of adults in the United States, 1988-1991. J Dent Res 1996; 75 (Spec Iss): 642-51.

<sup>5</sup> U.S. Department of Health and Human Services. Oral health in America: a report of the Surgeon General. Rockville, MD: U.S.

<sup>6</sup> Medical Assistance Administration.

<sup>7</sup> Soderling E, Isokangas P, Pienihakkinen K, Tenovuuo J. Influence of maternal xylitol consumption on acquisition of mutans streptococci by infants. J Dent Res 2000; 79: 882-7.

<sup>8</sup> Griffin SO, Jones K, Tomar SL. An economic evaluation of community water fluoridation. J Public Health Dent 2001; 61: 78-86.