

# Michigan Oral Health Plan

*Michigan Department  
of Community Health*



**Jennifer M. Granholm, Governor**  
**Janet Olszewski, Director**

The authors of the Michigan State Oral Health Plan invite you to comment on the plan and how you might use the information it provides by taking a brief online survey. Please visit the following weblink to complete the survey <https://www.surveymonkey.com/s/396R5TD>

## ACKNOWLEDGEMENTS

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Bureau of Family, Maternal, and Child Health - *Director Alethia Carr*

Division of Family and Community Health - *Director Brenda Fink*

Acting Oral Health Director – *Orlene Christie*

Michigan Oral Health Coalition – *Karlene Ketola*

**With special acknowledgement and support in preparation of this document:**

**Violanda Grigorescu, MD, MSPH**

**Sheila Vandebush, PhD**

**Lynda Horsley B.H.A.**

**Niveda Kalluru B.D.S.**

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STATE OF MICHIGAN

DEPARTMENT OF COMMUNITY HEALTH

LANSING

JENNIFER M. GRANHOLM  
GOVERNOR

JANET OLSZEWSKI  
DIRECTOR

Dear Colleague,

Oral health plays a significant role in general health and well-being throughout the lifespan. Yet, “a silent epidemic” of oral disease is affecting our most vulnerable citizens – children, the elderly, people with special needs, and adults who lack access to affordable dental care. Dental disease has been associated with such chronic diseases as diabetes, stroke and heart disease. Further, recent reports correlate increased risk for poor birth and pregnancy outcomes such as preterm, low birth weight and gestational diabetes to dental disease.

Strides have been made in Michigan to improve access to oral health preventive measures such as community water fluoridation, fluoride varnish for ages 0 to 5, and school-based/school-linked dental sealant programs. The gains made in increasing access through the expansion of Healthy Kids Dental and the growth of community dental clinics are offset by the recent loss of adult dental Medicaid benefits. To develop and maintain an oral health infrastructure that will increase sustainable access to oral health requires a collaborative effort.

The Michigan Oral Health Plan was developed in collaboration with the Michigan Oral Health Coalition and numerous stakeholders across the state. The plan is a key resource to advocate for oral health, provide goals and objectives to increase access, and evaluate progress towards meeting both national and state objectives. The plan identifies measurable strategies that can be implemented to improve oral health, identifies opportunities for research efforts relative to oral health, encourages development of preventive and restorative oral health programs to reduce disparities, provides a vital resource of information for lawmakers, and empowers local advocacy groups to pursue policies to improve oral health. Strategies in the plan are intended to guide and to direct a strong and solid statewide movement in support of achieving accessible and affordable oral health for all Michigan residents.

The Michigan Department of Community Health recognizes that achieving the goals of the plan is not possible without the active participation of many partners. Through a multi-disciplinary approach, reflected in the plan’s goals, I encourage individuals, communities, organizations, institutions, medical and dental providers, and other advocates for oral health to adopt the Michigan Oral Health Plan and actively engage in collaboration to improve the oral health of all Michigan citizens.

Sincerely,

Janet Olszewski  
Director



Dear Colleagues,

These are interesting times in deed for the state of Michigan. We can celebrate many achievements since the first State Oral Health Plan was published in 2006. But we can hardly celebrate for long in 2009 when we consider the fact that adults with Medicaid benefits in our state are left to suffer without comprehensive dental care.

Much has been done to build an oral health infrastructure within the state of Michigan, and yet, there is much to be done. We at the Michigan Oral Health Coalition feel undaunted by the task ahead; rather we are energized to work even harder to achieve the goals set forth by this renewed oral health plan. The Coalition is happy to join with the many collaborative partners that formulated this plan and wish to thank the Centers for Disease Control and Prevention and Michigan Department of Community Health for making it possible.

We encourage you as you read through the plan and familiarize yourself with its goals and rationales, to ask yourself how you and your organization can help make the plan a reality. This plan was not meant to sit on the shelf, but rather, it is meant to be a vital and changing course of direction for us as partners in oral health.

The Canadian Dental Association defines oral health as “a state of the oral and related tissues and structures that contributes positively to physical, mental, and social well-being and the enjoyment of life’s possibilities, by allowing the individual to speak, eat, and socialize unhindered by pain, discomfort, or embarrassment.”

This is what we want for all Michigan residents.

Sincerely,

A handwritten signature in cursive script that reads "Patricia Ulrich".

Patti Ulrich  
2009-2010 Chair  
Michigan Oral Health Coalition

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## Demographic Profile of Michigan

**Population:** 10,003,422 is the estimated Michigan Population as of 2008 (U.S. Census Bureau, 2009) The population grew by 0.7% between 2000 and 2008.

**Race and Ethnicity:** The majority of the population is (82%) white. Persons of Hispanic origin, represent 4.1% of the population. Black persons represent 14.7%, and Asians represent 2.6% (U.S. Census Bureau, 2009).

**Languages:** Among people at least five years old living in Michigan in 2006-2008, 9% spoke a language other than English at home. Of those speaking a language other than English at home, 34% spoke Spanish and 66% spoke some other language; 38% reported that they did not speak English “very well” (U.S. Census Bureau, 2009).

**Family Income and Education:** In 2006-2008, 88% of people 25 years and over had at least graduated from high school and 25% had a bachelor’s degree or higher. Twelve percent were dropouts; they were not enrolled in school and had not graduated from high school (U.S. Census Bureau, 2009).

The median income of households in Michigan was \$49,694. 78% of the households received earnings and 21% received retirement income other than Social Security. 28% of the households received Social Security (U.S. Census Bureau, 2009).

**Health and Dental Insurance:** 70.9% of Michigan residents have dental insurance. 15.6% had no dental care access during the past 12 months due to cost (MI BRFS, 2008). The Center for Healthcare Research and Transformation reported with the most current data from 2004 that Michigan spends less per capita spending on health care ranking 36<sup>th</sup> in the country at \$5,058 compared to the national average of \$5,283.

## Executive Summary

The Michigan Disease Burden Document and the State Oral Health Plan have been key documents for the evaluation of oral health in Michigan. The 2006 State Oral Health Plan and Disease Burden Documents were major milestones in the history of the Michigan Oral Health Program as they accomplished three chief goals for the program. Firstly, they brought to light the current status of oral disease prevailing in the state across different age groups, ethnicities as well as geographic areas. Secondly, it helped demonstrate a collaborative partnership among diverse stakeholders to improve oral health in Michigan. Lastly, but most importantly, it paved the way to help recognize what more needs to be done to improve oral health among the people of Michigan.

In 2009, the State Oral Health Plan (SOHP) was three years old and on schedule for evaluation. Evaluation was utilized to ascertain if the previous goals of the SOHP had been met, determine emergent oral health issues that should be addressed, and provide stakeholders with an opportunity to generate recommendations. A SOHP Evaluation Committee was formed with members representing the dental schools, community dental centers, the Michigan Oral Health Coalition, Head Start, organized dentistry and dental hygiene associations, the Michigan Department of Community Health (MDCH) Oral Health Program, and other stakeholders with the assistance of an external evaluator.

This revised State Oral Health Plan document is structured to provide the reader with the updated prevalence of oral disease in the State of Michigan. It is followed by the Oral Health Plan which introduces the action steps adopted by the Michigan Department of Community Health in alliance with its various partner organizations to meet these needs. It provides in-detail insight into:

1. Prevalence and risk factors of oral disease in Michigan.
2. Disparity issues
3. Access to care in Michigan (insurance, workforce)
4. Michigan's strategic plan to contain oral disease
5. Different programs implemented by the state
6. Michigan's goals and identified areas of improvement
7. Michigan's plan of action to improve oral health access

Research shows that Michigan still needs considerable efforts to achieve standardized goals set forth by *Healthy People 2010*. It is a common consensus that collaborative efforts with other state departments and partners like Michigan Oral Health Coalition; Michigan Dental Association, Michigan Hygiene Association, the Michigan Primary Care Association, Delta Dental, Local Public Health Agencies and a myriad of other stakeholders helps create a wide network of resources that can improve the oral health of Michigan's citizens.

## Healthy People 2010 Oral Health Indicators, Target Levels, and Current Status in the United States and Michigan

Healthy People 2010 Objective	Target	U.S. Status	Michigan Status
21-1 Dental caries experience Young children, ages 2-4 Children, ages 6-8 Adolescents, age 15	11% 42% 51%	24% 53% 56%	DNA 58% DNA
21-2 Untreated caries Young children, ages 2-4 Children, ages 6-8 Adolescents, age 15 Adults, age 35-44	9% 21% 15% 15%	19% 29% 18% 28%	DNA 25% DNA DNA
21-3 Adults with no tooth loss, ages 35-44	42%	38%	66%
21-4 Edentulous (toothless) older adults, ages 65-74	20%	24%	17%
21-5 Periodontal diseases, adults ages 35-44 Gingivitis Destructive periodontal diseases	41% 14%	48% 16%	DNA DNA
3-6 Oral cancer mortality rates (per 100,000 persons)	2.7	3.0	2.5
21-6 Oral cancer detected at earliest stages	50%	35%	40%
21-7 Oral cancer exam in past 12 months, age 40+	20%	13%	DNA
21-8 Dental sealants Children, age 8 (1 <sup>st</sup> molars Adolescents, age 14 (1 <sup>st</sup> & 2 <sup>nd</sup> molars)	50% 50%	32% 21%	23% DNA
21-9 Population served by fluoridated water systems	75%	69%	91%
21-10 Dental visit within the past 12 months Children, age 2+ Adults, ages 18+	56% 56%	45% 42%	81% 77%
21-11 Dental visit in past 12 months, adults in long-term care	25%	31%	DNA
21-12 Preventive dental care in past 12 months, low-income children and adolescents, age 0-18	57%	20%	28%
21-13 School-based health centers with oral health component Dental sealants (NEW) Dental care (NEW)	15% 11%	DNA	DNA
21-14 Community based health centers and local health departments with oral health component	75%	70%	38%
21-15 States with system for recording and referring infants with cleft lip and palate	100%	32%	100%
21-16 States with an oral health surveillance system	100%	DNA	100%
21-17 State and local dental programs directed by public health professionals (NEW)  Indian Health Service and Tribal dental programs directed by public health professionals (NEW)	41  9	51  10	DNA  DNA

NEW indicates revision to the objective from the 2010 Midcourse Review

## II. PREVALENCE & RISK FACTORS OF ORAL DISEASE IN MICHIGAN

### Lack of Dental Visits

A routine dental exam is a continuation assessment of your oral health which help reveal risks of tooth decay, unusual growth patterns, or poor oral hygiene that can be treated at its early stages when the damage is small. Population-based prevention and home oral health care are important; however it is also crucial to visit a dental professional on a regular basis. Taking care of your mouth is a huge part of taking care of your overall health.

Lack of regular professional dental care can lead to untreated tooth decay and gum disease. Untreated oral health issues will place an individual with an increased risk of other health problems. Lack of dental care visits may also cause an increase of more complicated dental procedures, such as extractions and root canals. Adults who are edentulous (total tooth loss) are less likely to have a routine dental visit. Routine dental visits are important, even for those who are edentulous, so that oral cancer screenings can be performed. If an edentulous person wears removable appliances, such as a denture, it is important to have the denture examined for proper fit. Ill-fitting dentures can cause tissue disruption within the oral cavity. If one has ill-fitting dentures they will be less likely to wear their denture and may have a decreased nutritional intake.

Due to the changing demographics in Michigan, it is important to note the importance that the elderly have routine dental visits. Many prescription medications contain sugar or cause xerostomia (dry mouth) which can cause rapid and devastating dental decay.

As shown in Table 2, one-fourth of adults report not visiting the dentist in the past year (MI BRFS 2008). Nearly an equal amount report having their teeth cleaned in the past year. According to an American Dental Association task force studying demographics in the U.S. population by 2030, the number of people over 65 years of age will double. This population is expected to have at least one chronic health condition that limits the ability to maintain oral health (Crozier, 2006).

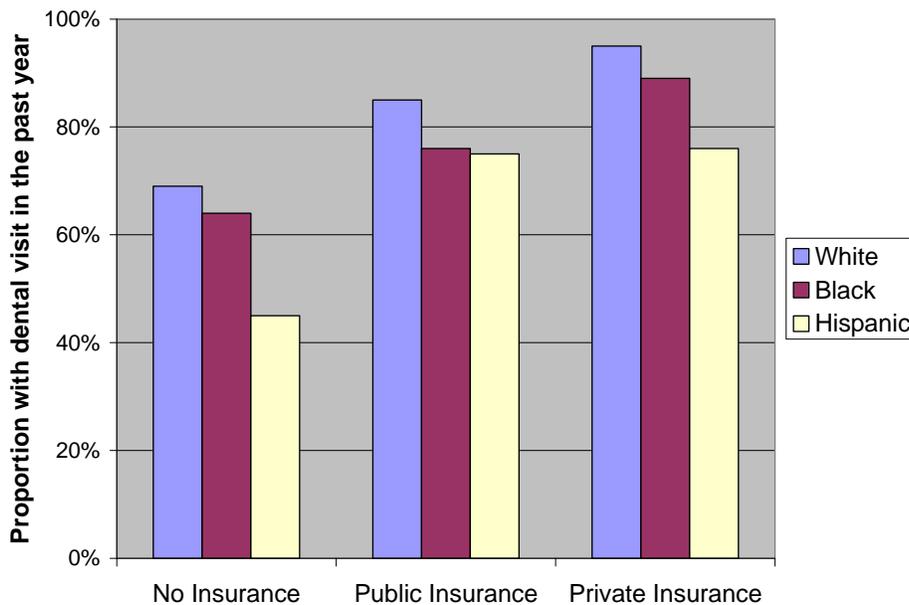
<b>Table 2: Proportion of Persons who have had No Dental Visit in Past Year, 2008 Michigan BRFS</b>		
	United States (%) (CDC BRFS Data)	Michigan (%)
Total	28.7	25.2
<b>Age</b>		
18-24	29.9	25.9
25-34	32.4	30.1
35-44	27.5	25.0
45-54	27.2	23.8
55-64	25.5	20.3
65-74	32.3 (65+)	24.9
75+		27.7
<b>Gender</b>		
Male	31.1	27.4
Female	27.1	23.2
<b>Race/ Ethnicity</b>		
White	26.5	22.6
Black	37.9	36.7
Other	29.5	34.9
Hispanic	38.9	26.0

Education		
Less than high school	50.8	48.0
High school graduate	35.6	32.1
Some college	29.2	24.7
College graduate	18	14.4

According to the *Count Your Smiles (CYS)*, a 2005 survey designed to address dental outcomes in Michigan that pertain to *Healthy People 2010* objectives, 3<sup>rd</sup> grade children who visited the dentist in the past year had significantly less untreated dental disease and fewer immediate dental needs than children who had not visited the dentist in the past year.

Children should have their first dental visit within six months of eruption of the first tooth and no later than 12 months of age. **At a minimum, every child should visit the dentist at least once per year.** Cost and lack of dental insurance were the two most frequently cited reasons for failure to obtain dental care. Compared to 91.7% of privately insured children who had a dental visit in the past year, only 66.6% of children without insurance and 80.0% of children on public insurance had visited the dentists in the past year.

**Figure 1:** Proportion of Michigan Third Grade Children with a Dental Visit in the Past Year, by Type of Insurance and Race/Ethnicity, Count Your Smiles 2005-06



## Dental Caries

Dental caries (tooth decay) is a common chronic disease among the general population. Dental caries is a disease in which acids produced by bacteria on the teeth lead to loss of minerals from the enamel and dentin, the hard substances of teeth. If the infection goes untreated, the infection can lead to severe pain, dental abscesses, loss of tooth structure, increased emergency room visits, mouth odor (halitosis), missed days at school and work, have negative effects on an individuals' self-esteem, and low employability.

## ***Early Childhood***

The prevalence of decay in children is measured through the assessment of caries experience (if they have ever had decay and now have fillings), untreated decay (active unfilled cavities), the loss of first permanent molars due to caries, and urgent care (reported pain or a significant dental infection that requires immediate care).

Early Childhood Caries (ECC) occurs in young children between birth and 71 months of age (typically infants, toddlers and pre school aged) when cavities develop in the primary teeth. Typical culprits in the development of ECC include passing harmful bacteria from the mother or caregiver with dental infection to the infant, a lack of parental education about the oral needs of the child, and inappropriate use of baby bottles and/or Sippy cups™. Inappropriate use is characterized by bottle feeding with juice or soda, or providing a bottle for overnight use that contains any liquid other than water, including milk and sugary beverages. Around the age of 6 months the baby's first tooth will appear making the child susceptible to decay. ECC experience happens in about 38% of children 1-2 years of age increasing to 56% in 2-3 year olds (MDCH, 2009). *Usually bottle feeding is stopped at 12<sup>th</sup> – 14<sup>th</sup> month of age.* Repeated inappropriate bottle and Sippy cup™ use can eventually lead to an early onset of rampant caries. Severe ECC requires extensive dental work, including hospital inpatient stays, multiple tooth extractions, and anesthesia. The best way to avoid ECC is by cleaning the child's gums immediately after bottle feeding. As soon as teeth begin to appear start brushing in addition to the gums twice daily using an age-appropriate sized toothbrush. Muskegon County Health Department reported their county spends on average of \$3,605 per case on ECC (Balcom, 2009).

While the immediate effects of ECC can be devastating, long-term effects can be equally damaging. If these primary teeth, which help guide permanent teeth into place, have been lost due to decay, then it can impact how the permanent teeth establish themselves within the mouth. Other factors like, thumb sucking and early loss of primary teeth can result in improper alignment of permanent teeth resulting in caries, inappropriate speech, poor nutrition and poor self esteem.

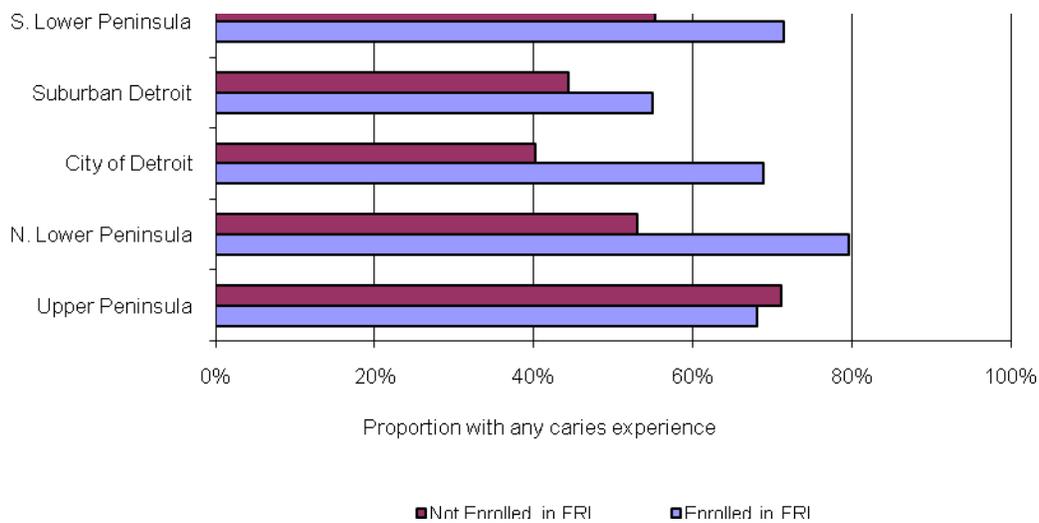
## ***Children and Adolescents***

The 2007 National Survey of Children's Health indicated that between the ages of 1-17 17.5% had an oral health problem within the last 6 months. Nationally, dental caries is the most common chronic disease of children age 6-11 years (25%) and adolescents aged 12-19 years (59%). It is four times more common than asthma among adolescents aged 14-17 years (15%) (CDC, 2009). The longer a child goes with an untreated cavity, the larger the cavity will grow, resulting in damage to permanent teeth, higher dental costs and loss of teeth.

The percent of children with excellent or very good oral health was at 73.3% compared to nationally 70.7% (CDC, 2007). According to Count Your Smiles (CYS), over half of third grade children in Michigan (58.0%) had experienced tooth decay. Prevalence of caries was higher in suburban Detroit with the highest rates occurring in the Upper Peninsula. Hispanic and Native American children, children not covered by private dental insurance, and free and reduced lunch participants all experience higher rates of caries.

Free and reduced lunch participants experience higher caries rates in each geographic region except in the Upper Peninsula. The resulting disparity varies in magnitude between the different regions. The largest socioeconomic disparities in caries experience occurred among children from Detroit and children from the Northern Lower Peninsula (Figure 2).

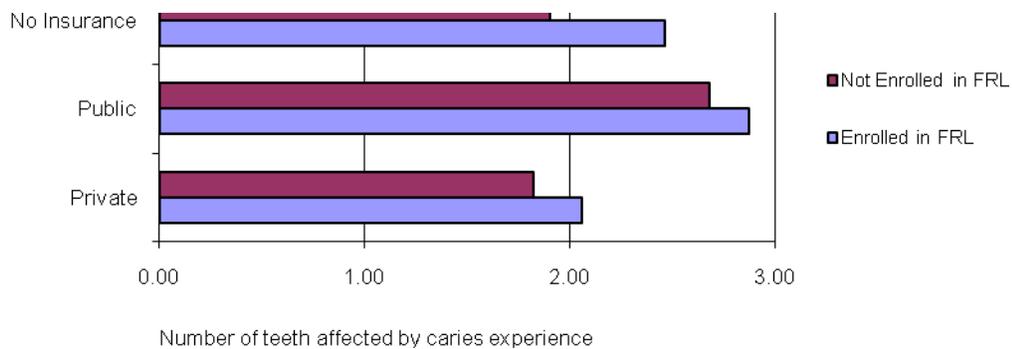
**Figure 2:** Proportion of Michigan Third Grade Children with Caries Experience, by Free and Reduced Lunch (FRL) Program Participation and Geographic Region, Count Your Smiles 2005-06



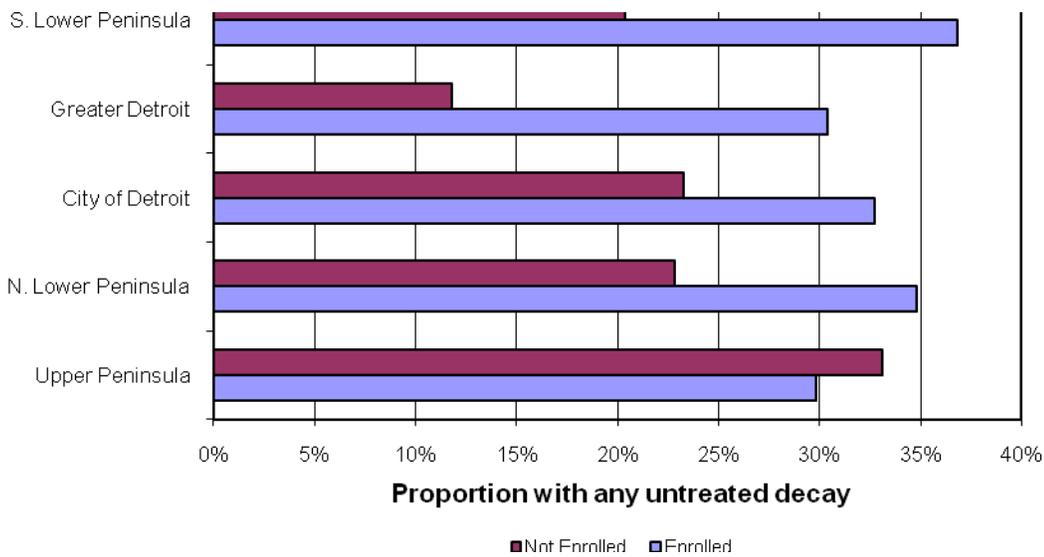
Children with any caries experience averaged 3.8 affected teeth per child. Among children with caries experience in primary teeth, 3.5 primary teeth on average had been affected.

Among children with caries experience in permanent teeth, an average of 1.8 permanent teeth had been affected. The average number of teeth affected by caries did not statistically vary by free and reduced lunch program participation within each insurance category (Figure 3).

**Figure 3:** Average Number of Teeth Affected by Caries Experience among Michigan 3<sup>rd</sup> Grade Children with any Caries Experience, by Type of Dental Insurance and Enrollment in the Free and Reduced Lunch Program, 2005-06



**Figure 4:** Average Number of Teeth Affected by Caries among 3<sup>rd</sup> Grade Michigan Children and among 3<sup>rd</sup> Grade Michigan children with Any Caries Experience, by Community Water Supply (CWS) Fluoridation Status, 2005-06



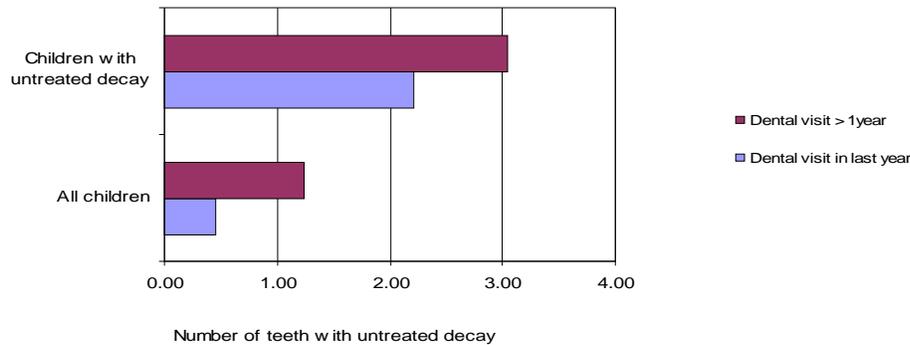
Children who attended school in communities with fluoridated community water supplies had fewer teeth affected by caries than children who attended school in communities with non-fluoridated community water supplies (Figure 4).

One in four third grade children in Michigan (25.0%) have untreated dental disease. Untreated dental disease refers to caries experience (a cavity) that is visible, but has not been filled or treated. Children with untreated dental decay averaged 2.4 untreated teeth. Among children with untreated primary tooth decay, 2.3 primary teeth were untreated on average. Among children with untreated permanent tooth decay, 1.5 permanent teeth were untreated on average. Children who had visited the dentist in the past year had substantially less untreated decay than children who had not (Figure 5).

There are 142,000 Children in Michigan whom are uninsured. This puts Michigan at being the 15<sup>th</sup> highest state in the Nation. “The facts in Michigan are clear – the number of uninsured children in our state is on the rise. From 2006 to 2007, the percentage of uninsured children in Michigan rose from 4.7% to 6.2%; for the youngest in our state, the rate jumped from 4.6% to 7.8%,” said Rebecca Cienki, Director of Policy & Planning, MPCA. “For the numerous children in Michigan who count on MICHild as their health lifeline and for the 142,000 uninsured children in the state, support for continuing and expanding CHIP (Children’s Health Insurance Program) is critically important,” said Ron Pollack, Executive Director of Families USA. “It will determine whether children get the preventive care they need so that they can remain healthy, learn in school, and become productive citizens” (Families USA, 2008).

Count Your Smiles 2006 revealed that nearly one in ten (9.6%) Michigan children are in need of immediate dental care for signs or symptoms of pain, infection, or swelling. The need for routine dental care was found in 27.5% of children while 62.9% of children had no obvious dental problems.

**Figure 5:** Average Number of Teeth with Untreated Decay among Michigan 3<sup>rd</sup> Grade Children with Untreated Decay and All Michigan 3<sup>rd</sup> Grade Children, for Children With and Without a Dental Visit in the Past Year, 2005-06



Recent observations suggest that severe dental conditions similar to ECC occur in teenagers, which is known as *rampant caries*. However, due to the severe deterioration of the permanent teeth, this condition has more extreme consequences over a lifetime. Rampant caries is often the result of frequent consumption of sugar-laden beverages such as fruit juices, sodas, sports drinks, and high energy drinks. The resulting decay can present immediately, but the full impact may not be evident until early adulthood. Thus, limiting availability and exposure to sugar-laden beverages during the adolescence years will assist with the prevention of rampant caries, in adolescence and adulthood.

Patients with body piercing in the oral cavity may be at increased risk of developing considerable periodontal attachment loss involving their teeth. Damage from oral jewelry is seen with chipping of the enamel, cuspal fractures and deep-seated cracks extending to the pulp. DeMoor and colleagues stated that 80% of patients with tongue piercing had some structure loss (Brooks, Hooper, & Reynolds, 2003).

### ***Adults***

People are susceptible to dental caries (decay) throughout their lifetime. Like children and adolescents, adults also experience decay on the crown (enamel covered) portion of the tooth. But adults may also develop caries on the root surfaces of teeth as those surfaces become exposed to bacteria and carbohydrates as a result of gum recession. In the most recent national examination survey, 85% of U.S. adults had at least one tooth with decay or a filling on the crown (CDC, 2009). It is important to develop strategies for preventing and controlling dental caries in older adults as the population today is living longer and retaining more teeth. The natural aging process can lead to root surfaces becoming more exposed and an increased risk for tooth decay.

### ***The Elderly***

Oral diseases in the elderly have been shown to affect the quality of life. Research has noted links between oral health and general health and well being. However, oral health is often neglected among older adults. A 1987 Michigan study noted that 51% of older adults had not seen a dentist in more than a year which has since then decreased to 25% in 2008 however barriers remain existent (CDC, 2008). Barriers preventing care are affordability of care, lack of dental insurance and fear of visiting a dentist. Barriers to care in long-term care

facilities include shortage of dentists who will provide services to clients in the facility, lack of dental insurance, and the high cost of dentistry. In Michigan, according to the 2009 Geriatric Survey from the Michigan Department of Community Health Oral Health Program, transportation is the biggest barrier for access to care. Over half of vulnerable elderly patients (56.6%) are not covered by insurance that pays or partially pays for dental services, 31.2% were covered by private insurance and 12.2% were covered by public assistance (ADA, 2008).

<b>Table 3: Age 65+Lost All Natural Teeth, 2008 Michigan BRFSS</b>		
	<b>Michigan (%)</b>	<b>United States (%)</b>
Healthy People 2010 Target	20%	20%
Total	15.6	18.5
<b>By Race/Ethnicity</b>		
White	14.0	17.6
Black	27.3	27.3
Hispanic	DNA	16.4
Other	DNA	13.3
Multi Racial	DNA	14.7
<b>By Sex</b>		
Female	17.1	19.7
Male	13.6	17.5
<b>By Education Level</b>		
Less than high school	35.0	40.7
H.S. or G.E.D.	18.5	22.6
Some post H.S.	13.1	14.7
College graduate	4.1	6.1

DNA = Data Not Available

According to a study focusing on the oral health needs of older adults, only 8% of dentists accept Medicaid. Root canals and intravenous anesthesia are not routinely covered forcing the dentist to treat the patient with a less desirable treatment plan (extracting the tooth rather than a root canal and crown) (Area Agency on Aging 1-B, 2000).

### **Tooth Loss**

A full dentition is defined as having 28 natural teeth; this is excluding the third molars (wisdom teeth) and teeth removed for orthodontic treatment or as a result of trauma. Most persons can keep their teeth for life with adequate personal, professional, and population-based preventive practices.

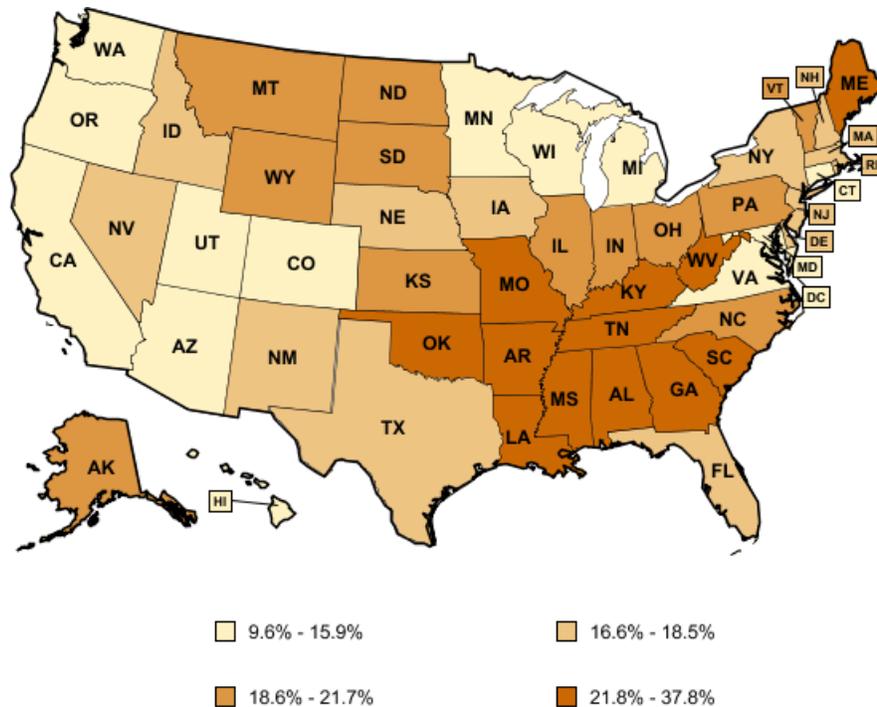
As teeth are lost, a person's ability to chew and speak decreases and interference with social functioning can occur. The most common reasons for tooth loss in adults are tooth decay and periodontal (gum) disease. Tooth loss can also result from infection, unintentional injury, and head and neck cancer treatment. In addition, certain orthodontic and prosthetic services sometimes require the removal of teeth.

Despite an overall trend toward a reduction in tooth loss in the U.S. population, not all groups have benefited to the same extent. Females tend to have more tooth loss than males of the same age group. African Americans are more likely than Whites to have tooth loss. Among all predisposing and enabling factors, low educational level often has been found to have the strongest and most consistent association with tooth loss as shown in Table 3.

According to the 2008 MI BRFSS, 31.7% of Michigan adults age 35-44 have lost at least one tooth due to caries, infection, or periodontal disease and a total of 13.1% of Michigan adults age 65-74 have lost all their teeth, or are edentulous. The individuals at most risk are those of lower educational levels and those of racial minorities, particularly African Americans.

As shown in figure 6, while Michigan compares favorably to the nation as a whole with only 15.6% of residents having all natural teeth extracted, the city of Detroit bears a greater proportion of adult tooth loss. Table 4 and 5 illustrates tooth loss between the city of Detroit and the state of Michigan. Detroit adults were more likely to have lost teeth, and at older ages were more likely to be edentulous.

**Figure 6:** Percent who have had all of their Natural Teeth Extracted, Michigan BRFSS 2008



<b>Table 4: Detroit Vs State of Michigan 2008 Michigan BRFS</b>		
	<b>Detroit %</b>	<b>Michigan %</b>
Adults age 65+ who have lost all their natural teeth	<b>21.3</b>	<b>15.6</b>
Adults that have had any permanent teeth extracted	<b>44.2</b>	<b>41.1</b>
Visited the dentist or dental clinic within the past year	<b>73.3</b>	<b>76.0</b>

<b>Table 5: Proportion of Adults, 18-74, who have Lost No Teeth and Proportion of Adults that have Lost All Natural Teeth, by Selected Demographic Characteristics, Michigan Vs. Detroit, BRFSS 2002-2006</b>				
	<b>No Teeth Extracted</b>		<b>Lost All Natural Teeth</b>	
	<b>Michigan %</b>	<b>Detroit %</b>	<b>Michigan %</b>	<b>Detroit %</b>
Healthy People 2010 Target	42%	42%	20%	20%
Total	60.5	42.9	3.5	6.0
<b>By Race/Ethnicity</b>				
White non-Hispanic	63.1	DNA	3.3	DNA
Black non-Hispanic	44.5	41.9	4.6	6.6
<b>By Gender</b>				
Female	60.1	43.5	4.1	8.7
Male	60.9	42.2	3.0	2.5
<b>By Age Group</b>				
35-44	67.7	50.7	1.0	0.0
45-54	52.4	8.5	3.4	13.2
55-64	36.8	15.6	8.7	12.4
65-74	23.7	DNA	13.9	DNA
<b>By Education Level</b>				
Less than high school	40.7	DNA	11.0	DNA
High school graduate	49.8	40.6	5.3	6.8
At least some college	68.1	44.1	1.8	5.1

### **Periodontal (Gum) Disease**

Gum disease in its earliest stages is gingivitis. Gingivitis is characterized by localized inflammation, swollen, and bleeding gums without loss of the bone that supports the teeth and is often caused by inadequate oral hygiene. The longer plaque and calculus (tarter) are on the teeth, the more harmful they become. Gingivitis can be reversed with professional dental treatment and good oral home care. Without removal of dental plaque from the teeth on a daily basis, gingivitis can advance to destructive periodontal disease.

Periodontitis (destructive periodontal disease) is an advanced form of gum disease in which the tissues and bone that support the teeth are damaged by extensive plaque build up. If left untreated, this condition may lead to gradual tooth loss. About 80% of American adults currently have some form of the disease (NIDCR 2009). Among adults, periodontitis is a leading cause of gingival bleeding, halitosis or bad breath, pain, infection, loose teeth, and tooth loss (*BMC Microbiology* 2010).

Cases of gingivitis likely will remain a substantial problem and may increase as tooth loss from dental caries declines or as a result of the use of some systemic medications. Smoking, hormonal changes in girls/women, diabetes, stress, medications, illnesses, and genetic susceptibility can make periodontal disease worse. Although not all cases of gingivitis progress to periodontal disease, all periodontal disease starts as gingivitis. Men are more likely to have periodontal disease than women. The major method available to prevent destructive periodontitis, therefore, is to prevent the precursor condition of gingivitis and its progression to periodontitis.

Evidence shows that oral health is essential to overall health in particularly gum disease within pregnant women. Women who are considering pregnancy or who are pregnant should have access to routine dental care.

According to the American Academy of Periodontology, pregnant women with periodontal disease may be seven times more likely to have a pre-mature baby with low birth weight. Periodontal disease has also been implicated as a risk factor for heart attack or stroke. A recent study published in the February issue of the Journal of Periodontology has verified a positive association between periodontitis and an increased risk of developing preeclampsia (pregnancy complication). Preeclampsia is a hypertensive disorder that effects between five and eight percent of all pregnancies, and usually occurs during the late part of the second or early part of the third trimester

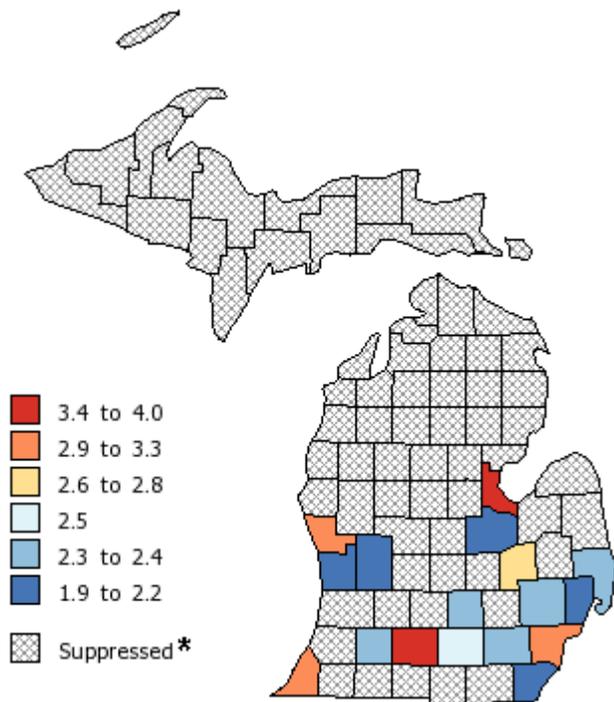
## **Oral Cancer**

Cancer of the oral cavity or pharynx (oral cancer) is the fourth most common cancer in black/African American males and the seventh most common cancer in white males in the United States (Ries et al. 2004). The incidence rate of oral cancer is comparable to that of cervical, stomach, and uterine cancer. An estimated 23,110 new cases of oral cancer and 5,370 deaths from these cancers occurred in the United States in 2009. Based on the rates based on cases diagnosed in 2002-2006, the age-adjusted incidence rate was 10.4 per 100,000 men and women per year. Nearly 96% of cases of oral cancer in the United States occur among persons aged 45 years and older with the median age at death being 68 years old (Horner et al. 2009).

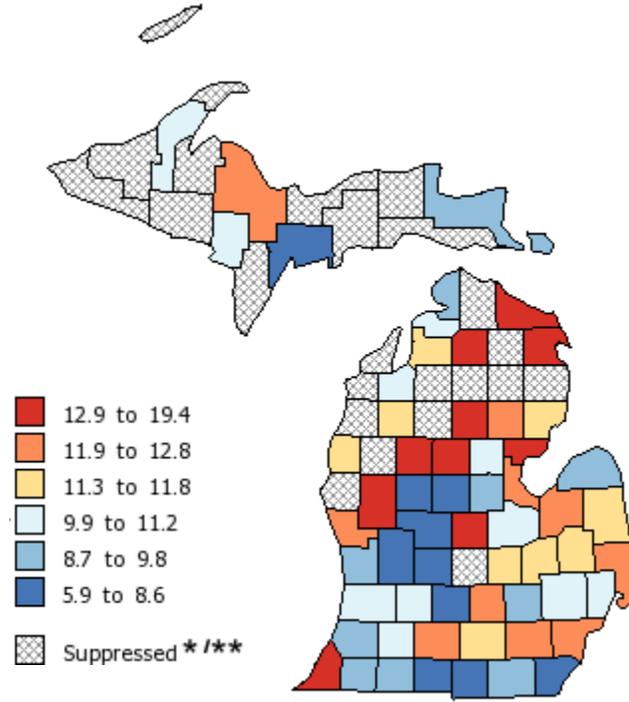
Oral cancer is more common after age 60. Known risk factors include use of tobacco products and alcohol. The risk of oral cancer is increased 6 to 28 times in current smokers. Alcohol consumption is an independent risk factor and, when combined with the use of tobacco products, accounts for most cases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

The Michigan Cancer Surveillance Program and the Metropolitan Detroit Surveillance System reported 10,581 new (incident) cases of invasive oral cancer in adults between 1991 and 2000 with 47% coming from Metropolitan Detroit. The average annual count of new cases of oral cancer from 2002-2006 was 1,163 new cases. The statewide age-adjusted incidence rate for oral cancer in 2002-2006 was 11.1 new cases per 100,000 persons, slightly more than the 10.6 new cases per 100,000 persons from 2003 (National Cancer Institute, 2009). However, the 1991-2000 incidence rates were 2.6 times higher in males than females (17.3 vs. 6.7) and 1.5 times higher in African American males than white males (25.0 vs. 16.2). Wayne County had an oral cancer incidence rate 1.24 times that of the rest of the state between 1991-2000. Figure 7 and 8 depicts the mortality rates and incidence rate for cancers of the oral cavity and pharynx for Michigan, by county (National Cancer Institute, 2009).

**Figure 7: Age-Adjusted Mortality Rates**  
 Oral Cavity & Pharynx in Michigan (per 100,000)  
 2002-06



**Figure 8: Age-Adjusted Incidence Rates for**  
 Oral Cavity & Pharynx in Michigan (per 100,000)  
 2002-06



National Cancer Institute: State Cancer Profiles

Survival rates for oral cancer have not improved substantially over the past 25 years despite significant progress in cancer treatments for other forms of cancer. More than 61% of persons diagnosed with oral cancer die within five years of diagnosis (Horner, et al., 2009), although survival varies widely by stage of disease when diagnosed.

Oral cancer is one of the most curable diseases when diagnosis is at an early stage (localized). Early detection and treatment is crucial for improving survival. The 5-year relative survival rate for persons with oral cancer diagnosed at a localized stage is 82.7%. In contrast, the 5-year survival rate is only 54.3% once the cancer has spread to regional lymph nodes at the time of diagnosis, and just 31.8% for persons with distant metastasis, and 53.4% for unstaged (Horner et al., 2009).

There were 2,635 oral cancer deaths in Michigan between 1991-2000 with 47.5% of those deaths coming from metropolitan Detroit. The age-adjusted oral cancer mortality rate in Michigan during this time was 2.9 cases per 100,000 individuals. In 2004, the age-adjusted oral cancer mortality rate fell to 2.7 cases per 100,000 individuals, representing 257 oral cancer deaths. (MDCH, 2007) Age-specific mortality was higher for males than females at all ages. African Americans were 1.5 times more likely to die than non African Americans (3.7 vs. 2.4). Wayne and Jackson counties both had mortality rates 1.28 times higher than the state. (MOCPN, 2003)

Cigarette smoking and alcohol are the major known risk factors for oral cancer in the United States, accounting for more than 75% of these cancers (Blot et al 1988). Using other forms of tobacco, including smokeless tobacco (USDHHS, 1986; IARC, 2005) and cigars (National Cancer Institute, 1998) also increases the risk for oral cancer.

Dietary factors, particularly low consumption of fruit, and some types of viral infections also have been implicated as risk factors for oral cancer (McLaughlin et al., 1998; De Stefani et al., 1999; Levi, 1999; Morse et al., 2000; Phelan, 2003; Herrero, 2003). Radiation from sun exposure is a risk factor for lip cancer (Silverman et al., 1998).

Based on available evidence that early diagnosis of oral cancer improves its prognosis, several *Healthy People 2010* objectives specifically address early detection of cancer:

Objective 21-6: “Increase the proportion of oral and pharyngeal cancers detected at the earliest stage” (USDHHS, 2000)

Objective 21-7: “Increase the proportion of adults who, in the past 12 months, report having had an examination to detect oral and pharyngeal cancer.” (USDHHS, 2000)

Table 6 presents data for Michigan and the United States on the proportion of oral cancer cases detected at the earliest stage (stage 1, localized). In Michigan, only 40% of those with oral cancer were diagnosed when the cancer was still localized.

Table 6: Proportion of Oral Cancer Cases Detected at the Earliest Stage, by Selected Demographic Characteristics, 1996-2000		
	Michigan	United States
Healthy People 2010 Target	50%	50%
Total	40%	35%
By Race/Ethnicity		
American Indian/Alaska Native	DNA	24%
Asian/Pacific Islander	DNA	27%
Black non-Hispanic	DNA	21%
Hispanic/Latino	DNA	35%
White non-Hispanic	DNA	38%
By Sex		
Female	DNA	40%
Male	DNA	33%

DNA = Data Not Available

## Special Populations

### *Pregnant Women*

Most pregnant women in America don't see their dentists for important oral health care as often as recommended. If mothers had untreated tooth decay, **their children had four times the risk of decay compared with children of other mothers** A survey of American children's oral health, conducted in the summer of 2009 on behalf of Delta Dental Plans Association, found that 25% of pregnant women didn't see the dentist at all during pregnancy, and 38% visited the dentist just once. According to the American Academy of Periodontology, approximately 50% of women get "pregnancy gingivitis," a disease that makes the gums sore and swollen. Pregnancy gingivitis usually starts around the second month of pregnancy and decreases during the

ninth month. If you already have **gingivitis**, it will most likely **get worse during pregnancy** especially without treatment

In some studies, pregnant women with gum disease have given birth to low-weight or pre-term babies, who are at risk for many serious diseases including chronic lung disease, brain injury, motor and sensory impairment, learning difficulties, and behavioral problems. Delta Dental commissioned the Children's Oral Health Survey to build greater knowledge about the state of children's oral health as the oral health of baby has a direct effect through the vertical transmission/colonization of the *S.mutans* from mother. The results suggest that caregivers recognize the importance of oral health care for infants, but don't always understand the techniques that promote oral health

Pregnancy Risk Assessment Monitoring Systems (PRAMS) indicated in 2006 that more than half (53.6%) of women did not have their teeth cleaned during their most recent pregnancy. During pregnancy, a woman may be particularly amenable to disease prevention and health promotion interventions that could enhance her own health or that of her infant (Gaffield, Gilbert, & Malvitz, 2001).

One in four Michigan women who delivered a live birth in 2004 reported a need for dental care. Only half of the pregnant women with a dental need sought care. Less than half of pregnant women reported being counseled about how to care for their teeth and gums during pregnancy. Nearly one in four pregnant women in 2004 was uninsured for dental services (Brooks, El Reda, Grigorescu, & Kirk, 2007).

Since cariogenic bacteria (especially *mutans streptococci*) are transmitted soon after an infant's first teeth erupt, decreasing the mother's *mutans* levels may decrease the child's risk of developing ECC. The American Dental Association recommends that parents, including expectant parents, be encouraged to visit a dentist to ensure their own oral health. Needed treatment can be provided throughout the women's pregnancy; the **ideal period** of dental treatment/visit for a pregnant woman is the **second trimester**, 14<sup>th</sup> to 20<sup>th</sup> week of pregnancy. By this period baby's organ formation is completed and there would be no risk of baby's exposure to harmful agents thus minimizing the occurrence of malformed organs.

**Figure 9:** Prevalence of having your Teeth Cleaned during Pregnancy, 2006 Michigan PRAMS



### Disparities

Oral health status along with general health tends to vary in United States on the basis of sociodemographic factors. Some social factors that can contribute to these differences are lifestyle behaviors such as tobacco use, frequency of alcohol use, and poor dietary choices. Just like they affect general health, these behaviors can affect oral. The economic factors that often relate to poor oral health include access to health services and an individual's ability to get and keep dental insurance. Several national surveys show that the proportion of the U.S. population that annually makes at least one dental visit and the average number of visits made vary significantly by age, race, dental status, level of education, and family income. The Center for Disease Control indicated some of the following oral health disparities in the United States:

- **Overall.** Non-Hispanic blacks, Hispanics, and American Indians and Alaska Natives generally have the poorest oral health of any racial and ethnic groups in the United States.
- **Children and Tooth Decay.** The greatest racial and ethnic disparity among children aged 2–4 years and aged 6–8 years is seen in Mexican American and black, non-Hispanic children.
- **Adults and Untreated Tooth Decay.** Blacks, non-Hispanics, and Mexican Americans aged 35–44 years experience untreated tooth decay nearly twice as much as white, non-Hispanics.
- **Tooth Decay and Education.** Adults aged 35–44 years with less than a high school education experience untreated tooth decay nearly three times that of adults with at least some college education.
  - In addition, adults aged 35–44 years with less than a high school education experience destructive periodontal (gum) disease nearly three times that of adults with a least some college education.
- **Adults and Oral Cancer.** The 5–year survival rate is lower for oral pharyngeal (throat) cancers among black men than whites (36% versus 61%).

## ***Racial and Ethnic Groups***

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

Racial disparities in oral health for Michigan mimic those nationally. Black non-Hispanics are more likely to have tooth loss and be edentulous than whites. African American males have both the highest incidence of oral cancer and the highest mortality due to oral cancer. African Americans are also less likely to have visited the dentist in the past year, have their teeth cleaned in the past year, and received sealants on their first molars. Hispanics and African Americans are less likely to have sealants on first molars than Whites. Hispanics also have the highest rate of inappropriate bottle use, putting their children at increased risk for early childhood caries. The State Varnish! Michigan program found in the year 07-08 that the prevalence of untreated decay is significantly higher in American Indian/ Alaska Native (69%) than White non-Hispanics (39%).

## ***Women's Health***

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

Many, but not all, statistical indicators show women to have better oral health status as compared to men (Redford, 1993; USDHHS, 2000a). Adult females are less likely than males at each age group to have severe periodontal disease. Both black and white females have a substantially lower incidence rate of oral and pharyngeal cancers compared to black and white males, respectively. However, a higher proportion of women than men have oral-facial pain, including pain from oral sores, jaw joints, face/cheek, and burning mouth syndrome.

In Michigan, women have been shown to have lower incidence rates of oral cancer. Women in Michigan have tooth loss rates similar to men. However, women in Detroit have higher rates of tooth loss than women across Michigan as shown in Table 5.

## ***Special Health Care Needs***

The oral health problems of individuals with disabilities are complex. These problems may be due to underlying congenital anomalies as well as the inability to receive the personal and professional health care needed to maintain oral health. There are more than 41.2 million individuals defined as disabled under the Americans with

Disabilities Act, including 6% of children 5 to 15, 12% of people 16 to 64, and 41% of adults 65 and older (U.S. Census Bureau, 2009).

People with disabilities frequently have serious dental problems and have difficulty accessing dental services. For persons with disabilities and medically compromised individuals, regular dental care is vital to health and function.

The Oral Health Needs Survey in 2009 reported approximately 11.9% of the population between the age group 15-59 and 38.2% of the population which is 65 years and older has at least one form of disability. The survey demonstrated a strong need for dental professionals across the state of Michigan to undertake treatments for persons with disabilities. Among the respondents in the survey only 3.89% of the dentists accepted all four insurances including Medicaid, Healthy Kids Dental, MI Child, and a sliding scale payment plan.

***People with Disabilities***

According to the 2008 Michigan Behavioral Risk Factor Survey those without a disability were more likely to have dental insurance than those who have a disability. Disabled patients are less likely to have accessed dental care in the past 12 months due to cost. According to the 2006 Behavioral Risk Factor Survey, disabled adults were more likely to be missing one or more teeth (61.8%) or all their teeth (10.2%) than adults without disabilities (36.9% and 3.4% respectively). Disabled adults had lower annual dental utilization (68.3%) than non-disabled adults (76.6%) (CDC, 2006).

<b>Table 7: Access to Oral Health Care According to Disability, 2008 Michigan BRFSS</b>		
	<b>Have Dental Insurance (%)</b>	<b>No Dental Care Access During Past 12 Months Due to Cost (%)</b>
<b>Has Disability</b>	66.4	23.0
<b>No disability</b>	72.4	13.0

***Adult Long-term Care***

Preliminary findings from a recent survey of nursing home facilities and alternative long-term care (ALTC) facilities such as assisted living facilities found that willingness of general dentists to treat residents at an alternative long-term facility was the greatest barrier to dental care for its residents. Nursing home facilities identified treatment at a dental office, treatment by specialty dentists and financial concerns as important barriers facing their residents (Smith, Ghezzi, Manz, & Markova, 2006).

***Socioeconomic Disparities***

Low-income families bear a disproportionate burden from oral diseases and conditions. Despite progress in reducing dental caries in the United States, individuals in families living below the poverty level experience more dental decay than those who are economically better off. Furthermore, the caries seen in these individuals is more likely to be untreated than caries in those living above the poverty level.

The US National Health and Nutrition Examination Survey 1999-2004 indicated that among youths ages 2-11 have an average of 1.6 decayed primary teeth, having more severe decay in the black and Hispanic subgroups

and those with lower incomes. Poor adolescents aged 12 to 17 in each racial/ethnic group have a higher percentage of untreated decayed permanent teeth than the corresponding non-poor adolescent group.

Adult populations show a similar pattern, with the proportion of untreated decayed teeth higher among the poor than the non-poor. At every age, a higher proportion of those at the lowest income level have periodontitis than those at higher income levels. Adults with some college (15%) have 2 to 2.5 times less destructive periodontal disease than those with high school (28%) and with less than a high school (35%) education (USDHHS, 2000b). Overall, a higher percentage of Americans living below the poverty level are edentulous than are those living above (USDHHS, 2000a). Among persons aged 65 years and older, 35% of persons with less than a high school education were edentulous (had lost all their natural teeth) in 2008, compared with 13.1% of persons with at least some college (MDCH, 2008). People living in rural areas also have a higher disease burden due primarily to difficulties in accessing preventive and treatment services.

People of low socioeconomic status in Michigan bear similar oral health burdens as their national counterparts. Those in poverty are less likely to have visited a dentist in the past year or have had their teeth cleaned. Those with high school educations or less are also less likely to visit a dentist either for treatment or preventive services. For both those at low-income and low-education levels, tooth loss appears at much higher rates. The 2008 BRFSS demonstrated that 46.9% of individuals with household incomes below \$20,000 had not visited a dentist in the previous year. In contrast, only 19.4% of individuals with household incomes between \$50,000 and \$74,999 had not visit the dentist within the previous year.

Free and reduced lunch schoolchildren in Michigan had higher rates of caries experience, untreated dental disease, immediate dental needs showing signs or symptoms of pain, swelling, or infection, and toothaches in the past six months when biting or chewing. Free and reduced lunch schoolchildren also had fewer annual dental visits, more often encountered barriers to receiving dental care, and were less likely to have sealants placed on first molar teeth (CYS, 2007).

## Facts about Disparities

In 2003, Hispanic parents were more likely to report inappropriate bottle use (76% vs. 27% in non-Hispanics), as were young parents (41% to 18% in parents age 30 – 39 years).

Adult caries, including root caries, are seen more frequently in American Indian, non-Hispanic blacks, and Hispanic populations. Adult caries are more prevalent among men and persons with less education.

Non-Hispanic blacks are more likely to be missing at least one tooth at age 35-44 and to be edentulous (without teeth) at age 65-74. Residents in the city of Detroit are also more likely to be missing teeth than residents across the rest of Michigan.

Diabetics are at increased risk for periodontal disease, at increased risk for tooth loss, and less likely to visit a dentist. However, in Michigan, the number of diabetics having lost six or more teeth has declined (52% in 1996 to 37% in 2004 to 34.7% in 2008) and the proportion of diabetics visiting the dentist has gone from 57% in 1996 to 68% in 2004 to 66.8% in 2008.

The oral cancer incidence rate was 2.42 times higher for males and 1.08 times higher for African Americans. The incidences in Arenac county was 1.79 times the state incidence rate.

## **Oral Health Related to Systemic Health**

“You are not a healthy person unless you have good oral health. Oral health is part of general health and it can affect your overall health and your quality of life” *Surgeon General C. Everett Koop 2000.*

It has been recognized that oral infections, especially periodontitis may affect the course and development in a wide range of systemic diseases such as cardiovascular disease, bacterial pneumonia, diabetes mellitus and low birth weight. Periodontitis as a major oral infection may affect host's susceptibility to systemic disease in three ways: shared risk factors; sub-gingival, biofilms acting as reservoirs for bacteria; and the periodontium acting as a reservoir of inflammatory mediators. This may result in metastatic spread of infection through bacteremia (presence of bacteria in bloodstream) causing secondary systemic effects in favorable conditions.

“Oral health is just as important as getting a regular physical. It's not just about getting teeth cleaned; it's about the overall health of the individual.”- *Jennifer Williams*

### ***Diabetes and Oral Health***

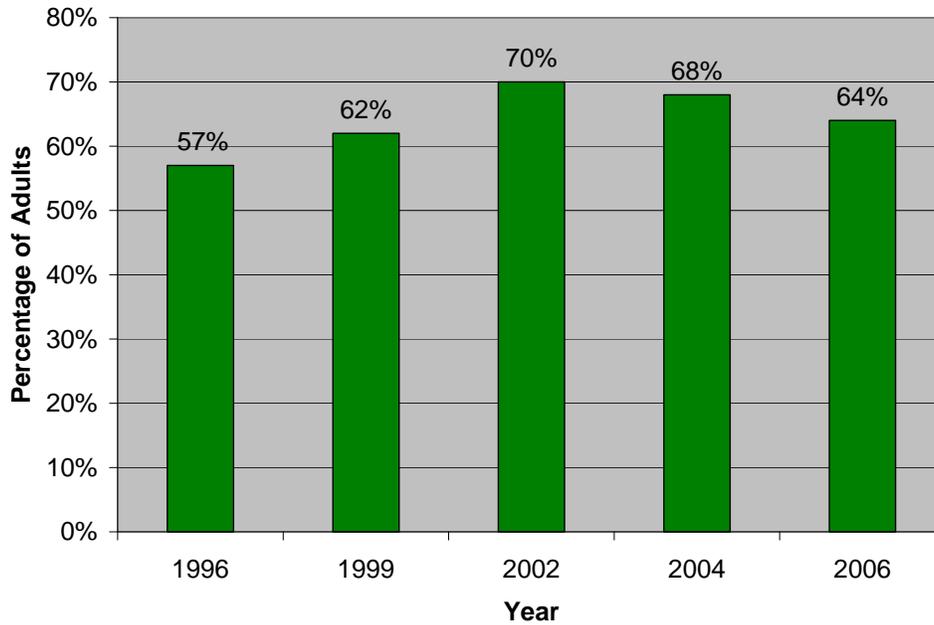
People with diabetes are at an increased risk for periodontal disease. It is crucial for them to keep their blood glucose under control. When they experience high glucose levels, blood vessels in the mouth can narrow causing the blood supply to lower in the gums increasing their chances of having problems with their teeth and gums.

Diabetes can aggravate gingival inflammation and periodontal disease, furthering the damage and destruction caused by infectious processes on the teeth and gums. As a result, persons with type 2 diabetes were more likely than those without diabetes to have lost 6 or more teeth.

People with diabetes are also prone to other mouth problems, like thrush, poor post-surgery healing, and dry mouth. Thrush is a white (sometimes red) patch that can appear on the gums or tongue which get sore and turn into ulcers. To avoid thrush, persons with diabetes must keep their blood glucose levels as close to normal as possible. If they have dentures it is best to take them out at night and avoiding smoking will help as well. A dry mouth in them can cause tooth decay, infections, and ulcers. Being a smoker makes these problems worse.

It is important for most diabetics to get a dental cleaning and exam three to four times a year and control blood glucose levels. People diagnosed with diabetes should immediately visit dentist when they notice either red swollen bleeding gums, pulled away gums from teeth, pus between teeth and gums or persistent bad breath/bad taste in the mouth. There has been an increase in Michigan residents with diabetes being more likely to visit a dentist than in the past (Figure 10). In addition, the percentage of persons with diabetes in Michigan having lost 6 or more teeth has declined from 52% in 1996 to 34.7% in 2008 (Table 8).

**Figure 10:** Proportion of Michigan adults with diabetes who visited a dentist in the past year, BRFSS 1996-2006.



**Table 8: Oral Health by Diabetes Status, 2008 Michigan BRFSS**

	No dental Visit in Past Year (%)	No Teeth Cleaning in Past Year (%)	6+ Teeth Missing (%)
<b>Ever Told Diabetes</b>	<b>33.2</b>	<b>28.8</b>	<b>34.7</b>
<b>Never Told Diabetes</b>	<b>24.3</b>	<b>24.9</b>	<b>11.8</b>

### *Cardiovascular Disease and Oral Health*

The National Health and Nutrition Examination Survey (NHANES) found that people with periodontal disease were much more likely to be diagnosed with heart disease than those without periodontal disease. While studies do not all yield the same results relating the link between periodontal disease and heart disease, most have detected a significant association between tooth loss and heart disease. Several theories exist to explain the link between periodontal disease and heart disease. One theory is that oral bacteria can affect the heart when they enter the blood stream, attaching to fatty plaques in the heart blood vessels and contributing to clot formation. Blood clots can obstruct normal blood flow leading to heart attacks. Another possibility is that the inflammations caused by periodontal disease increases plaque build up, which may contribute to swelling of the arteries. Researchers have found that people with periodontal disease are almost twice as likely to suffer from coronary artery disease as those without periodontal disease. As shown in Table 9, 41% in Michigan with cardiovascular disease reported 6 or more missing teeth, compared to 11.1% of people who have 6 or more missing teeth without cardiovascular disease. Tooth loss is often a result of severe periodontal disease, so the connection between the two may be indirect.

**Table 9: Oral Health by Cardiovascular Disease Status,  
2008 Michigan BRFSS**

<b>Demographic Characteristics</b>	<b>No dental Visit in Past Year</b>	<b>No Teeth Cleaning in Past Year</b>	<b>6+ Teeth Missing</b>
	<b>(%)</b>	<b>(%)</b>	<b>(%)</b>
<b>Total</b>	<b>25.2</b>	<b>25.3</b>	<b>13.8</b>
<b>Cardiovascular Disease</b>			
<b>Yes</b>	<b>34.7</b>	<b>31.8</b>	<b>41.0</b>
<b>No</b>	<b>22.0</b>	<b>24.6</b>	<b>11.1</b>

### ***Bacterial Pneumonia and Oral Health***

Pneumonia is an infection of lungs parenchyma caused by a wide variety of infectious agents, including bacteria, fungi, parasites, and viruses. Pneumonia can be a life-threatening infection, especially in the old and immune-compromised patients, and is a significant cause of morbidity and mortality in patients of all ages. Total pneumonia mortality in low-risk individuals over 65 years of age is 9 per 100,000 (0.009%), whereas in high-risk individuals who are likely to aspirate, the mortality can be almost 1,000 per 100,000 (1%) or higher. Pneumonias are of two types, community acquired and hospital acquired (nosocomial). These types differ in their causative agents. Approximately one in 10 cases of death from pneumonia in elderly nursing home residents may be prevented by improving oral hygiene (J Am, 2008). Most commonly, bacterial pneumonia results from aspiration of oropharyngeal bacteria into the lower respiratory tract, failure of host defense mechanisms to eliminate them, multiplication of the microorganisms, and subsequent tissue destruction. Dental plaque would seem to be a logical source of these bacteria, especially in patients with periodontal disease. Such patients harbor a large number of subgingival bacteria, particularly anaerobic species. Among the oral bacterial species implicated in pneumonia are *A. actinomycetemcomitans*, *Actinomyces israelii*, *Capnocytophaga* species, *Eikenella corrodens*, *Prevotella intermedia*, and *Streptococcus constellatus*.

### ***Low Birth Weight and Oral Health***

Oral infections also seem to increase the risk for or contribute to low birth weight in newborns. Low birth weight, defined as a birth weight of <2,500 g, is a major public health problem in both developed and developing countries. The incidence of preterm delivery and low birth weight has not decreased significantly over the last decade and remains at about 10% of all live births in the United States. Low birth weight in preterm infants remains a significant cause of perinatal morbidity and mortality. Evidence of increased rates of amniotic fluid infection and chorioamnion infection supports an association between low birth weight and infection during pregnancy. Compared to normal-birth-weight infants, low-birth-weight infants are more likely to die during the neonatal period and low-birth-weight survivors face neurodevelopment disturbances, respiratory problems and congenital anomalies. They also demonstrate more behavioral abnormalities as preschoolers and may have attention deficit hyperactivity disorder. As a remote gram-negative infection, periodontal disease may have the potential to affect pregnancy outcome. During pregnancy, the ratio of anaerobic gram-negative bacterial species to aerobic species increases in dental plaque in the second trimester. The gram-negative bacteria associated with progressive disease can produce a variety of bioactive molecules that can directly affect the host. If they escape into the general circulation and cross the placental barrier, they could augment the physiologic levels of labor inducing hormones in the amniotic fluid causing premature labor. Although increasing efforts have been made to diminish the effects of risk factors through preventive interventions during prenatal care, they have not reduced the frequency of preterm low-birth-weight infants.

## **Utilization of Dental Services**

Primary prevention of tooth decay or other oral disease conditions requires access and use of preventive services. Secondary prevention in oral health primarily relies on the treatment of tooth decay. Due to shortages of Medicaid dental providers, an access gap arises in the percentage of persons receiving services based on their type of insurance coverage. Adult dental Medicaid was reduced to emergency extractions only in 2003 and reinstated in 2005 to the 2003 fee structure. A budget crises in Michigan in 2009 again limited adult dental Medicaid to emergency services.

### ***General Population***

Regular dental visits provide an opportunity for the early diagnosis, prevention, and treatment of oral diseases and conditions for people of all ages, as well as for the assessment of self-care practices. Adults who do not receive regular professional care can develop oral diseases that eventually require complex treatment and may lead to tooth loss and health problems. There is significant different in health care access due to cost. Only 4.3% of persons reporting an income of \$75,000+ have not had a dental visit during the past 12 months due to cost compared the 37.6% who household income is under <\$20,000 could not afford dental care as shown in Table 10. Black non-Hispanics are more likely to have not had dental access due to cost than whites.

<b>Table 10: Access to Oral Health Care, 2008 Michigan BRFSS</b>		
	<b>Have Dental Insurance (%)</b>	<b>No Dental Care Access During Past 12 Months Due to Cost (%)</b>
<b>Total</b>	70.9	15.6
<b>Age</b>		
18-24	69.4	15.4
25-34	72.4	18.1
35-44	74.3	18.7
45-54	77.8	20.2
55-64	73.2	11.3
65-74	57.9	9.7
75+	55.0	6.3
<b>Gender</b>		
Male	71.0	14.6
Female	70.9	16.5
<b>Race/Ethnicity</b>		
White non-Hispanic	71.5	13.4
Black non-Hispanic	73.1	25.1
Other non-Hispanic	68.6	24.4
Hispanic	56.8	15.4
<b>Education</b>		
Less than high school	61.3	29.0
High school graduate	64.7	16.4
Some college	70.5	17.8
College graduate	79.0	10.0
<b>Household Income</b>		
< \$20,000	49.3	37.6
\$20,000-\$34,999	58.4	23.5

\$35,000-\$49,999	68.7	15.9
\$50,000-\$74,999	77.6	14.1
\$75,000+	88.1	4.3

### **Medicaid Dental Programs**

Medicaid is the primary source of health care for low-income families, elderly, and disabled people in the United States. This program became law in 1965 and is jointly funded by the Federal and State governments (including the District of Columbia and the Territories) to assist States in providing medical long-term care assistance to people who meet certain eligibility criteria. People who are not U.S. citizens can only get Medicaid to treat a life-threatening medical emergency. Eligibility is determined based on state and national criteria. Dental services are a required service for most Medicaid-eligible individuals under the age of 21, as a required component of the Early and Periodic Screening, Diagnostic and Treatment (EPSDT) benefit. Services must include at a minimum, relief of pain and infections, restoration of teeth and maintenance of dental health. Dental services may not be limited to emergency services for EPSDT recipients.

Since 1999, 1.6 million people in Michigan are currently enrolled in Michigan. A total of 912,000 Michigan's Medicaid enrollees are infants and children up to age 18, including disabled children. 70% of the Medicaid budget is for middle-class and low-income elderly and disabled. 29% of the Medicaid budget is for medical care for children and their mother, resulting in 44% of all births in Michigan being covered by Medicaid. Medicaid covers preventive, emergency, and some restorative and surgical services for children, but only emergency services for adults from a cut back in July of 2009. For each dollar cut in Medicaid funding, Michigan loses another \$1.52 in federal matching funds for FY 2009. Children enrolled in Michigan's Children's Special Health Care Services program are eligible for additional medically-related orthodontic, prosthodontic, or endodontic services.

**Table 11: Medicaid and Medicare Coverage,  
2008 Michigan BRFS**

Demographic Characteristics	Medicaid Only	Medicare Only	Both Medicaid and Medicare
	%	%	%
<b>Total</b>	4.6	18.2	2.8
<b>Age</b>			
18-24	12.5	5.4	0.6
25-34	5.8	2.6	1.3
35-44	4.5	2.1	1.6
45-54	3.2	4.2	2.0
55-64	2.3	8.8	2.5
65-74	2.2	83.8	7.9
75+	1.8	85.1	9.2
<b>Gender</b>			
Male	3.1	16.2	2.8
Female	6.0	19.9	2.9
<b>Race/Ethnicity</b>			
White non-Hispanic	3.2	18.8	2.4
Black non-Hispanic	11.0	16.1	4.7
Other non-Hispanic	9.5	14.3	3.6
Hispanic	5.6	12.9	4.4

Education			
Less than high school	17.3	30.1	6.5
High school graduate	5.2	24.5	3.8
Some college	4.5	14.2	3.0
College graduate	1.5	13.7	1.0
Household Income			
< \$20,000	17.1	27.4	8.8
\$20,000 - \$34,999	6.6	28.1	4.4
\$35,000 - \$49,999	3.4	18.9	1.3
\$50,000 - \$74,999	0.8	11.0	1.0
\$75,000 +	0.1	6.6	0.4

MiChild is a health coverage program using State funds as well as funds authorized under Title XXI of the Federal Social Security Act to furnish health care coverage to a targeted population. This population consists of individuals under age 19 who are not eligible for Medicaid, whose family income is above 150% and at or below 200% of the federal poverty level, and who do not have comprehensive health coverage. The state contracts with dental plans to provide covered dental services to MiChild beneficiaries on a per member per month capitation basis.

Dental utilization rates were similar across the state except in the city of Detroit where children had significantly fewer recent dental visits than the rest of Michigan. Racial and ethnic minorities had lower rates of dental utilization compared to Whites. Compared to 91.7% of privately insured children who had a dental visit in the past year, only 66.6% of children without insurance and 80.0% of children on public insurance had visited the dentist in the past year. Children enrolled in the free and reduced lunch program also had lower rates of utilization.

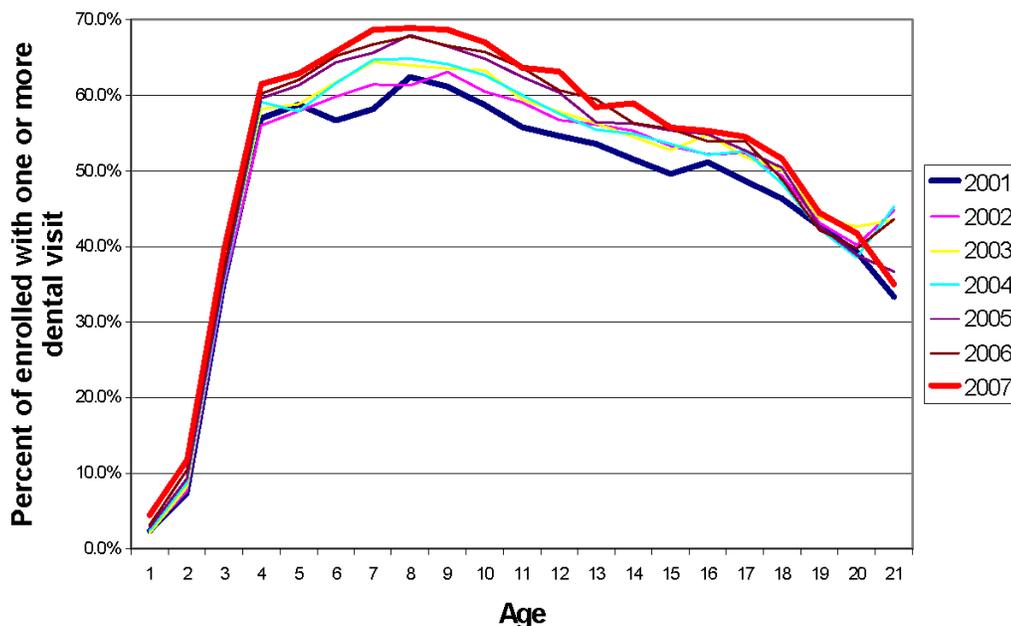
As with other health services, people can encounter difficulties when trying to access oral health services. Parents of 10.9% of Michigan third grade children reported difficulty when trying to obtain dental care for their child. Racial and ethnic minorities reported more difficulty when trying to obtain dental care, as did free and reduced lunch participants. Type of dental insurance was strongly associated with difficulty obtaining dental care. One in four uninsured children, 25.9%, had reported difficulties obtaining dental care compared to 13.2% of publicly insured children and just 5.6% of privately insured children.

Half of all parents who reported an inability to obtain dental care for their child cited a lack of dental insurance as a main reason. Type of dental insurance and the inability to afford dental care were also frequently cited. Many parents also reported that finding a dentist, difficulty getting an appointment, or inconvenient dental hours contributed to their inability to obtain dental care for their child.

In May 2000, the Michigan Department of Community Health instituted the Healthy Kids Dental (HKD) project. Healthy Kids Dental, a Medicaid funded program, initially covered 22 primarily rural counties, but was expanded in October 2000 to include an additional 15 counties. Expansions in 2006 added 22 counties in the Upper Peninsula and the Northern Lower Peninsula. Expansion in 2008 has expanded the number of counties to a total of 61 counties.



**Figure 12:** Michigan Healthy Kids Dental Utilization of Dental Care, 12 Month Enrollment in Calendar Year, by Age



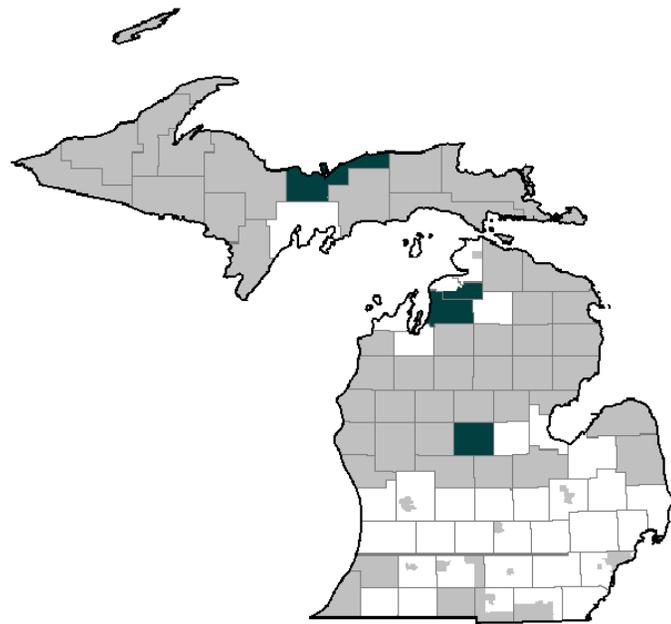
The child’s county of residence determines HKD eligibility, not the location of the dentist. This allows a HKD child to visit any participating dentist in the state. In the year prior to implementation of HKD, 32% of continuously-enrolled Medicaid children received dental care in these original 22 counties. Following the first year of HKD, that number had risen to 44%. (Eklund, 2003). About 280,000 children as of July 1<sup>st</sup>, 2008 are covered in the HKD program. Michigan currently expanded into two more counties, Genesee and Saginaw. “The expansion of Healthy Kids Dental into these two counties with major urban population centers is a clear testimony to the success of the program,” said Joanne Dowley, DDS, president of the Michigan Dental Association (MDA).

**Dental Workforce and Capacity**

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

Figure 13 shows county Health Provider Shortage Area (HPSA) designations as they relate to the provision of dental services in 2009. A HPSA designation may result from inadequate providers for the entire county as well as inadequate providers for certain demographic groups such as low-income persons or certain ethnic and racial populations. Of Michigan’s 83 counties, 15 have no dental health care HPSA designations currently listed with a “designated” status. That leaves 68 counties with a full county, partial county, or facility HPSA designation. Among those, 7 only have facility HPSA designations. That leaves 61 counties having either a partial county or a full county HPSA designation.

**Figure 13:** Health Provider Shortage Area Designations for the Provision of Dental Services, by County, 2009



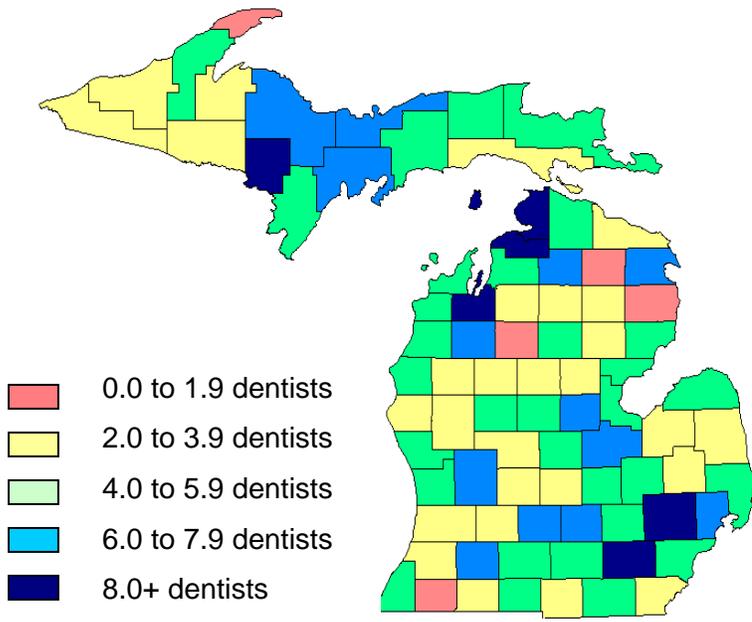
-  Geographic HPSA
-  Population Group HPSA
-  No HPSA Designation

Health Resources & Services Administration

### *Dentists*

There were 6,570 dentists licensed by Michigan and residing within the state in 2007. Figure 14 shows the dental provider density by county in Michigan.

**Figure 14:** Number of licensed dentists with a current Michigan address per 10,000 population, by county, 2007



Bureau of Licensing & Health Professions, 2007

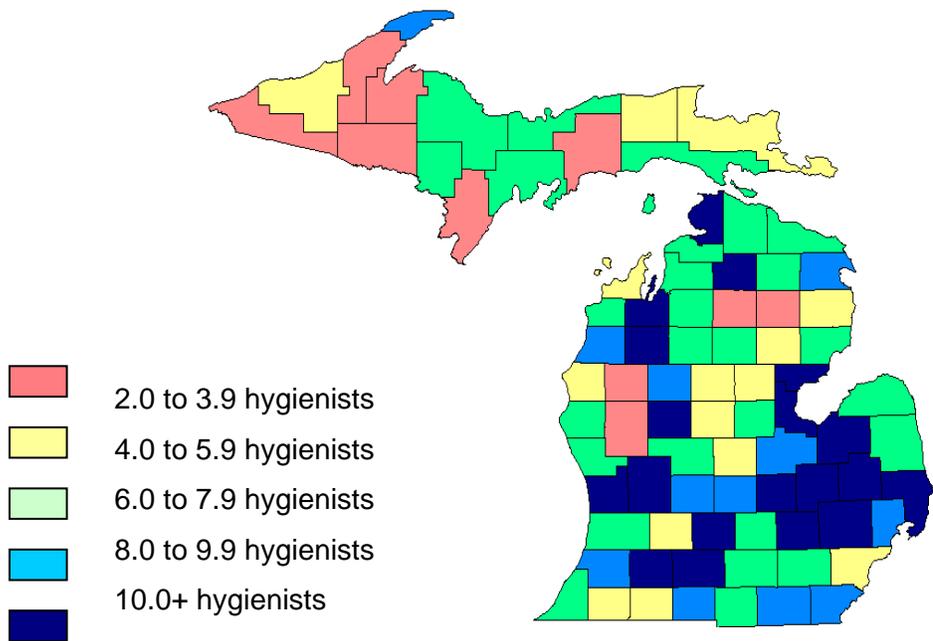
1,491 (22.7%) of the 6,570 dentists in 2006 had at least one claim for Medicaid, and just 690 (10.5%) could be considered critical access providers, or having Medicaid claims totaling \$10,000 or greater (The equivalent of three to four Medicaid child visits per week). Currently, only one county in Michigan lacks a dentist. However, twelve out of 83 counties have less than five dentists, and nine counties lack a dentist that accepts Medicaid (MDCH, 2007).

According to the MDCH Survey of Dentists in 2009, About 10% of dentists licensed in Michigan are working as a dentist, but not in Michigan. General dentistry is practiced by 85% of dentists. Nearly three out of four (80%) of dentists are willing to provide care for children three years of age or older. Only ten percent of dentists are accepting new Medicaid patients. Nearly half (48%) plan to continue practicing dentistry for only one to ten more years. Currently, 50% of practicing dentists are 55 years of age or older (MDCH, 2007).

### ***Dental Hygienists***

In 2009, there were 9,856 dental hygienists licensed in Michigan and residing within the state. Figure 15 represents the distribution of dental hygienists across Michigan in 2007. According to the MDCH Survey of Dental Hygienists in 2009, 12% were not working in a dental hygiene related area. Among those who were seeking employment in dental hygiene, 86% reported a difficulty finding dental hygiene positions. (MDCH, 2009).

**Figure 15:** Number of Licensed Dental Hygienists with a Current Michigan address per 10,000 Population, by County, 2007.



### ***Dental Educational Institutions***

Accredited dental education institutions in Michigan include two dental schools, twelve dental hygiene programs and six dental assisting programs. The University of Detroit Mercy has a Doctor of Dental Surgery (DDS) program and specialty graduate programs in endodontics, orthodontics, periodontics, and Advanced Education in General Dentistry (AEGD) programs. The University of Michigan offers a DDS program and specialty graduate programs in oral health sciences, prosthodontics, endodontics, restorative dentistry, orthodontics, pediatric dentistry, periodontics, and dental public health. The University of Detroit Mercy offers a baccalaureate degree completion program and the University of Michigan offers a graduate degree program for dental hygiene. The 6 dental assisting programs are a minimum of one year in length; however, many dental assistants are taught with on-the-job education.

### ***Dental Workforce Diversity***

One cause of oral health disparities is lack of access to oral health services among under-represented minorities. Increasing the number of dental professionals from under-represented racial and ethnic groups is viewed as an integral part of the solution to improving access to care (HP2010). Table 12 shows the race/ethnicity of dental care providers in Michigan derived from surveys of professionally active dentists conducted by the Michigan Department of Community Health Workforce Research Center (MDCH, 2007). About eight percent of dental hygienists reported an ability to speak a language in addition to English.

<b>Table 12: Proportion of Dentists and Dental Hygienists by Selected Demographic Factors in Michigan in 2006</b>		
	Dentists (%)	Dental Hygienists (%)
<b>By Race/Ethnicity</b>		
White non-Hispanic	85	95
Black non-Hispanic	2	2
Asian	6	1
Hispanic/Latino	2	1
Other	5	1
<b>By Gender</b>		
Male	81	<1
Female	19	99

### ***Community Health Centers***

Fifty one local agencies, including local health departments, primary care centers, migrant health clinics, and Indian Health Services (HIS) conduct public health dental programs. These centers include 20 Federally Qualified Health Centers, 13 local health departments with 27 clinics, and 4 Native American dental clinics.

As of April 2009, Michigan Community Dental Clinics Inc. (MCDC) operates 15 dental clinics on behalf of local health departments. MCDC will be opening 2 more within the next two months, and another two by the end of the year. MCDC has 57 dentists on staff, and 30 hygienists. About half of the dentists are part-time, the remainders are full-time employees; but the vast majority of the hygienists are employed full-time. In 2008, MCDC served over 45,000 individuals.

### **III. STRATEGIES FOR PREVENTING ORAL DISEASE**

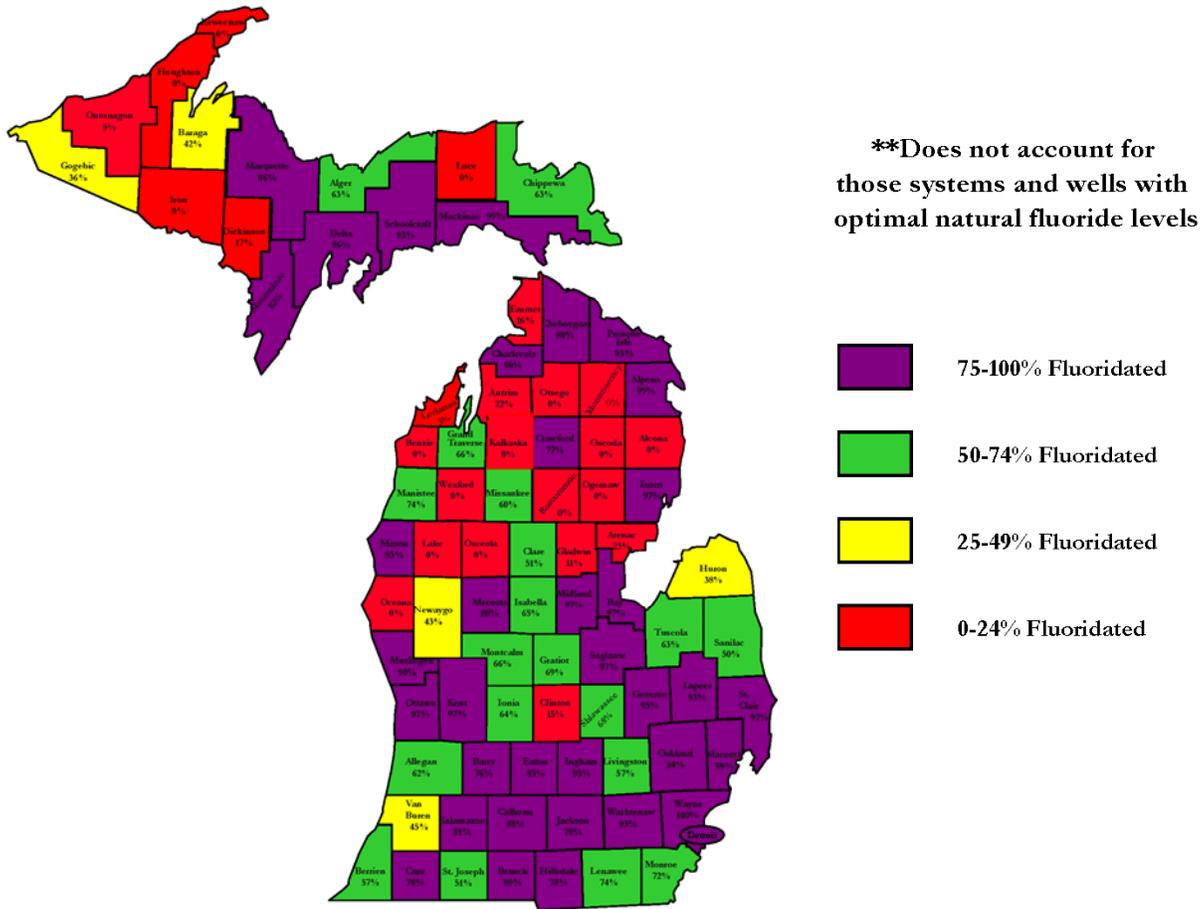
The most common oral diseases and conditions can be prevented. There are safe and effective measures that can reduce the incidence of oral disease, reduce disparities, and increase quality of life.

#### **Community Water Fluoridation**

Grand Rapids, Michigan was the birthplace of community water fluoridation for the world, and this preventive practice has since been recognized as one of the 10 great achievements in public health of the 20<sup>th</sup> century (CDC, 1999a). Community water fluoridation is the process of adjusting the natural fluoride concentration of a community's water supply to a level that is best for the prevention of dental caries. In the United States, community water fluoridation has been the basis for the primary prevention of dental caries for 60 years (CDC, 1999a).

There are currently 1405 public water systems in Michigan ranging from populations of 25 in small mobile home parks to large cities such as Detroit servicing 900,000 people. 378 systems add fluoride or purchase fluoridated water, while 1027 do not. 39 of these systems have sufficient natural levels of fluoride so adjusting is unnecessary. Funding is available in 2010 for communities wishing to purchase equipment to use to initiate a fluoridation program.

**Figure 16: Percentage of Persons Served by Michigan Community Fluoridated Water Systems by County**



Recognizing the importance of community water fluoridation, *Healthy People 2010* Objective 21-9 aim to “Increase the proportion of the U.S. population served by community water systems with optimally fluoridated water to 75%.” In the United States during 2002, approximately 162 million people (67% of the population served by public water systems) received optimally fluoridated water (CDC, 2004). 71% of Michigan residents are served by community water supplies. In Michigan, approximately 7.03 million people received optimally fluoridated water in 2009, representing 92% of the population served by public water systems.

Not only does community water fluoridation effectively prevent dental caries, it is one of very few public health prevention measures that offer significant cost saving in almost all communities (Griffin, Jones, & Tomar, 2001). About every \$1 invested in community water fluoridation saves \$40-50 in averted costs. The cost per person of instituting and maintaining a water fluoridation program in a community decreases with increasing population size. Many areas of Michigan are rural areas with families having private wells. Most of these wells have below optimal levels of fluoride for oral health. MDCH and MOHC will plan a community awareness campaign to educate the rural public on testing their private wells for fluoride.

While Michigan exceeds the level of fluoridation set forth by HP2010, there are geographic disparities in community water fluoridation. Fluoridation is at its highest in the Southern Lower Peninsula and the Eastern Upper Peninsula. Conversely, fluoridation is relatively low in the Northern Lower Peninsula and the Western Upper Peninsula (Figure 16). Individual private wells can obtain fluoride levels by contacting county health departments or submitting test sample.

## **Topical Fluorides and Fluoride Supplements**

Because frequent exposure to small amounts of fluoride each day best reduces the risk for dental caries in all age groups, all people should drink water with an optimal fluoride concentration and brush their teeth twice daily with fluoride toothpaste (CDC, 2009). For communities that do not receive fluoridated water and persons at high risk for dental caries, additional fluoride measures might be needed. Community measures include fluoride mouth rinse or tablet programs, typically conducted in schools. Individual measures include professionally applied topical fluoride gels or varnishes for persons at high risk for caries.

Participation in Michigan's fluoride mouth rinse program is completely voluntary and supported by local health departments and individual school systems. The State Oral Health program currently does not fund this program. The number of school children participating in this program has declined from 20,444 in the 2000-2001 school year to roughly 14,000 in the 2004-05 school year due to decreases in the number of participating schools. The estimated current number of school children participating has increased for the 08-09 school year to 10,747 children based on information provided by health departments and school systems.

## **Fluoride Varnish**

Application of fluoride varnish on a very young population can significantly reduce dental disease. National and international studies demonstrate a 40-63% reduction in dental caries with the application of fluoride varnish. If fluoride varnish is applied when teeth first erupt and it is applied four times a year there is up to 63% reduction in dental caries. The Michigan Department of Community Health Oral Health Program in collaboration with Delta Dental (funding agency) administered the Varnish! Michigan program to Head Start and Early Head Start children in Michigan. The program utilizes providers through local public health departments, dental schools, PA 161 dental hygienists and community dental clinics. MDCH encourages medical professionals to do oral screenings and apply fluoride varnish to high risk 0-2 yr olds and connect them to a dental home. The medical professionals can bill Medicaid for applying fluoride varnish at well baby checks after assessing for risk of decay and an oral screening. (MDCH, 2009).

Early intervention is necessary to reduce the prevalence of oral disease among high risk infants and children before oral disease causes dental decay, pain and suffering.

## VARNISH! Michigan 07-08 Findings....

Among the 7391 children, 7% were determined in need of urgent dental care during the study period, 9.5% had at least one carious lesion. Of children screened repeatedly (n=1,534), 5.5% had caries detected only after the first screen.

Hispanic/Latino children and multi-racial children were determined to be at less risk of caries at the first screen compared to Whites.

Children age three to five years and those of Hispanic/Latino ethnicity had a greater likelihood of caries relative to younger children and those of White race respectively.

New carries likelihood did not vary significantly by age, although children of Hispanic/Latino ethnicity or of Black race were at greater risk compared to Whites after adjustment.

Whites were significantly more likely to obtain a repeat varnish application. The likelihood of needing urgent treatment was greater in older relative to younger children. Treatment urgency did not vary by race/ethnicity.

**Table 13: Demographic Associations Between Demographic Characteristics and Occurrence of Caries and Likelihood of Repeat Varnish Applications 2007-2008**

	N	%	Caries Present OR (Adjusted)	New Caries OR (Adjusted)	Repeat Varnish Application OR (Adjusted)
Age					
0-2	546	7.4			
3-5	6152	83.2	11.407	1.325	0.637
Race					
White	1862	26.5			
Black/African American	1297	18.4	0.921	1.73	.451
Hispanic/Latino	423	6.0	1.568	2.678	0.768
Other	3458	49.1	0.598	0.754	0.233

### Dental Sealants

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

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

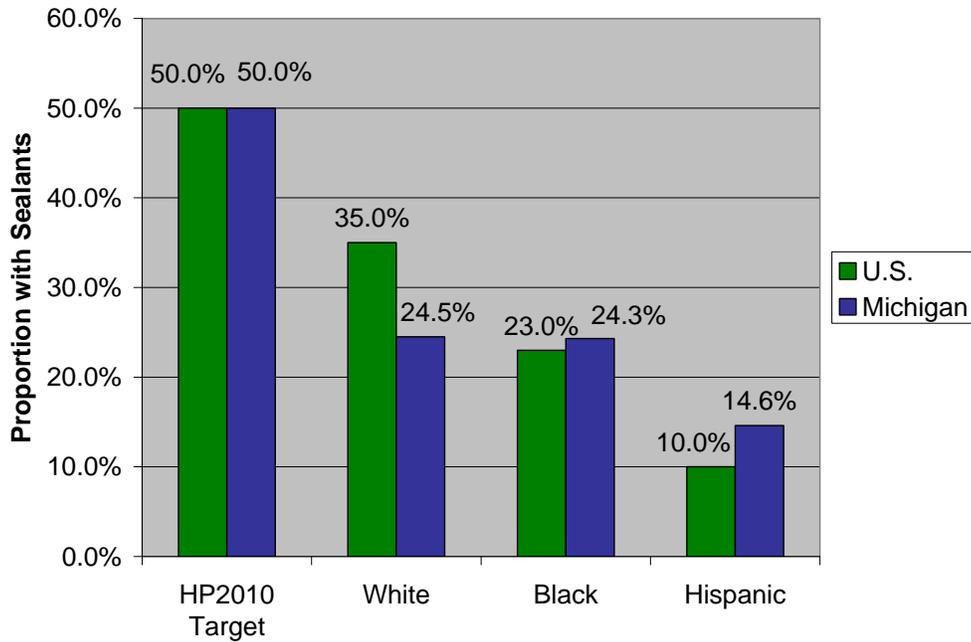
Second permanent molars erupt into the mouth at about age 12 to 13 years. Pit-and-fissure surfaces of these teeth are as susceptible to dental caries as the first permanent molars of younger children. Therefore, young teenagers need dental sealants shortly after the eruption of their second permanent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

<b>Table 14: Percentage of Children in the U.S. with Dental Sealants on Molar Teeth, by Age and Selected Characteristics, NHANES 1999-2004</b>		
	Age 8 years	Third Grade
	United States (%)	Michigan (%)
Healthy People 2010 Target	50	50
Total	32	23
<b>By Race/Ethnicity</b>		
American Indian/Alaska Native	55	DNA
Native Hawaiian/Pacific Islander	20	DNA
Black non-Hispanic	23	24
White non-Hispanic	38	25
Hispanic	19	15
<b>Sex</b>		
Male	32	25
Female	32	22
<b>By Poverty Level</b>		
Less than 100% FPL	21	DNA
100%-199% FPL	25	DNA
Greater than 200% FPL	42	DNA

DNA= Data Not Available

The *Healthy People 2010* target for dental sealants on molars is 50% for 8-year-olds and 14-year-olds. Nationally, dental sealants are less prevalent among 14-year-olds than among 8-year-olds. African Americans and Mexican Americans are less likely than White non-Hispanics to have sealants (Figure 17).

Figure 17: Proportion of Michigan and US Children, Age 8 to 9, with Sealants Applied to First Molars by Race in 2005-2006



Despite high annual dental utilization, just 23.3% of Michigan third grade children had sealants present on their first molars. Sealant rates were similar across most racial and ethnic groups but lowest among Hispanic children (14.6%). Uninsured children had lower sealant rates, 16.8%, compared to publicly insured, 26.7%, or privately insured, 24.3%. (MDCH, 2006)

<b>Table 15: Percentage of Adolescent Children in the US and Michigan with Dental Sealants on Molar Teeth, Age 14 years, by Selected Characteristics, NHANES 1999-2004</b>		
	United States (%)	Michigan (%)
Healthy People 2010 Target	50	50
Total	21	DNA
<b>By Race/Ethnicity</b>		
American Indian/Alaska Native	42	DNA
Black non-Hispanic	10	DNA
White non-Hispanic	23	DNA
Mexican American	18	DNA
<b>Sex</b>		
Male	24	DNA
Female	18	DNA
<b>By Poverty Level</b>		
Less than 100% FPL	13	DNA
100%-199% FPL	16	DNA
Greater than 200% FPL	25	DNA

DNA= Data Not Available

Children experiencing difficulties getting dental care did not have a lower prevalence of sealants compared to other children. However, children who visited the dentist in the past year had a higher prevalence of sealants

compared to children who had not visited the dentist in the past year. Community water fluoridation remains the primary source of evidence-based caries prevention. Still, nearly one in ten children, 9.4%, neither have sealants present on first molars nor attend school in an optimally fluoridated community. The Michigan Department of Community Health Oral Health Program implemented the SEAL! Michigan program in 2007 to increase the number of dental sealants in Michigan’s children. Since this time, the school-based, school-linked dental sealant program provides dental sealants to approximately 8,000 second, third, and sixth grade children in schools with a high percentage of participation in the Free and Reduced School Lunch Program.

**Preventive Visits**

Maintaining good oral health requires ongoing efforts from the individual, caregivers, and health care providers. Daily oral hygiene routines and healthy lifestyle behaviors play an important role in prevention of oral diseases. Regular preventive dental care can reduce the development of disease and facilitate early diagnosis and treatment. Table 16 describes teeth cleaning among adults in both Michigan and the United States.

<b>Table 16: Percentage of Adults who had their Teeth Cleaned within the Past Year, Ages 18 or Higher, Michigan BRFSS 2008</b>		
	United States (%)	Michigan (%)
Total	68.4	74.3

**Tobacco Control**

Tobacco is the nation’s leading preventable cause of premature mortality. Use of tobacco has a devastating impact on the health and well-being of the public. An estimated 443,000 Americans die each year as a direct result of cigarette smoking, or second hand smoke (CDC, 2009). The annual health care costs in Michigan that are directly caused by smoking is \$3.40 billion. This does not account for health care costs from exposure to secondhand smoke, smoking-caused fires, spit tobacco use, or cigar and pipe smoking. (Tobacco Free Kids, 2010) The use of any form of tobacco – including cigarettes, cigars, pipes, and smokeless tobacco – has been established as a major cause of oral and pharyngeal cancer.

In accumulation with the health risks from tobacco, smokers are 4 times more likely to develop gum disease compared to non-smokers. The sugar in spit tobacco increases the risk of tooth decay. Continuous use of smokeless tobacco results in gingival recession, periodontitis and gradual tooth loss. (USDHHS, 2004a). The evidence is sufficient to consider smoking a causal factor for adult periodontitis (USDHHS, 2004a); one-half of the cases of periodontal disease in this country may be attributable to cigarette smoking (Tomar & Asma, 2000). Tobacco use substantially worsens the prognosis of periodontal therapy and dental implants, impairs oral wound healing, and increases the risk for oral soft tissue changes (Christen et al., 1991; AAP, 1999).

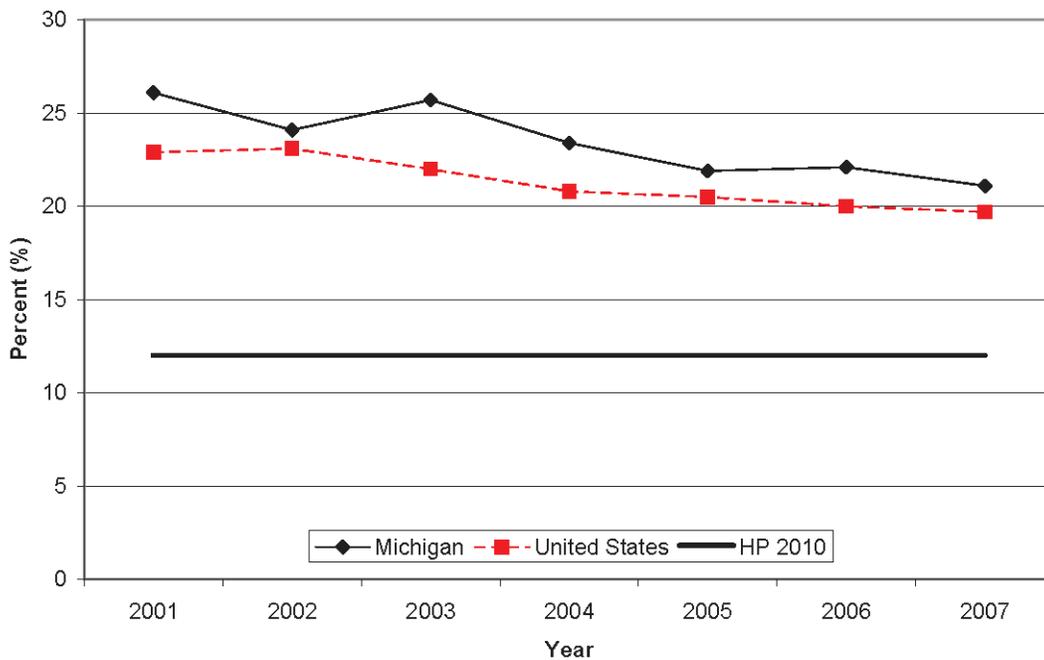
In 2008, Michigan stakeholders developed a five-year strategic plan for tobacco use and prevention and reduction was released for 2008-2013 with a tobacco free movement. The tobacco-free movement in Michigan dedicates itself to

- Smoke-free air for everyone;
- Accessible and affordable tobacco dependent treatment for everyone who wants to quit, when they want to quit;

- New alignments and partnerships to promote social and health policy that bring health equity to Michigan residents who because of poverty, racial/ethnic/ social discrimination, age or disability do not benefit equally from the still unfulfilled promise of good health;
- An increasingly robust media campaign to bring awareness and information to all segments of the population about the health and economic effects of tobacco-free environment; and
- A stable and adequately funded statewide infrastructure to continue these important strategies and activities

Comprehensive tobacco control also would have a large impact on oral health status.

**Figure 18:** Prevalence of current cigarette smoking\* among adults, 18 and over, in Michigan and United States compared to the Healthy People 2010 target, 2001 to 2007



Sources: Michigan Behavioral Risk Factor Survey (BRFS) and CDC Behavioral Risk Factor Surveillance System

\*The proportion who reported that they had ever smoked at least 100 cigarettes in their life and that they smoke cigarettes now, either every day or on some days.

The dental office provides an excellent venue for providing tobacco intervention services. More than one-half of adult smokers see a dentist each year (Tomar, Husten, & Manley, 1996) as do nearly three-quarters of adolescents (NCHS, 2004). Dental patients are particularly receptive to health messages at periodic check-up visits, and oral effects of tobacco use provide visible evidence and a strong motivation for tobacco users to quit. Because dentists and dental hygienists can be effective in treating tobacco use and dependence, the identification, documentation, and treatment of every tobacco user they see needs to become a routine practice in every dental office and clinic (Fiore, Baily, & Cohen, 2000). However, national data from the early 1990s indicated that just 24 percent of smokers who had seen a dentist in the past year reported that their dentist advised them to quit, and only 18 percent of smokeless tobacco users reported that their dentist *ever* advised them to quit.

## **Oral Health Education**

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

The Michigan Department of Community Health Oral Health Program joined forces with the State of New York through a Health Resources and Services Administration (HRSA) 2009 workforce grant to offer live webinars telecasted in multiple locations around the two-states and expanding into additional (USDHHS, 2009) sites in Rhode Island, Hawaii, and Alaska. Michigan Department of Community Health Oral Health Program offers an online one dental professional credit (CE) course that reviews steps in starting a screening/fluoride varnish program in preschools. The CE course can be utilized by dentists, dental hygienists, other health professionals, and preschool staff for steps in setting up a program. The training background includes information on Early Childhood Caries, caries risk assessment, oral screenings and applying fluoride varnish are some topics addressed. Collaborating efforts internally at MDCH with diabetes, tobacco, nutrition, disabilities, maternal/infant health have created educational materials and additional webinars on oral health.

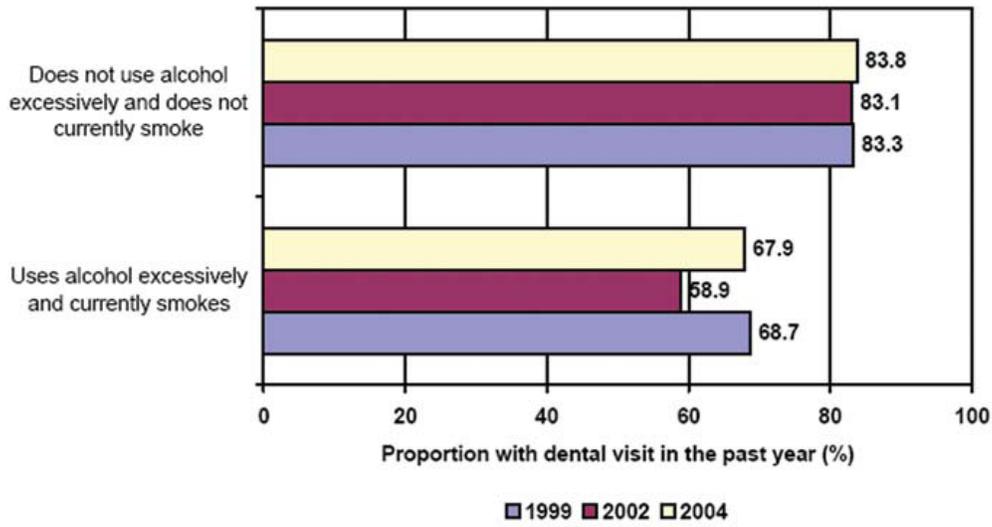
Oral health education is typically performed at the dental office during the regular dental visit. In addition, community college dental hygiene students provide community oral health education through elementary classroom teaching and population-based education. For example, community college projects include providing oral health care to long-term care staff and residents. Community dental, dental hygiene, and dental assisting societies provide oral health education to classrooms and to groups such as Head Start. The “Sip All Day Get Decay” publicity campaign was launched by the Michigan Dental Association to encourage public awareness of the relationship between high incidence of caries and soda pop. The Central District Dental Society and the Michigan Dental Association Oral Health Task Force recently started a “Baby Bottle Tooth Decay” campaign. Delta Dental and the Michigan Oral Health Program collaborated on an oral health campaign to increase awareness of oral health for children, diabetics, oral cancer awareness. Funded by Delta Dental, the campaign included media announcements and posters. The media clip can be found at <http://www.michigan.gov/oralhealth> or [www.mohc.org](http://www.mohc.org). These are just a few examples of oral health education campaigns currently delivered within Michigan communities.

## **Screening for Oral Cancer**

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

Figure 19 compares adults over the age of 40 with both primary preventable risk factors for oral cancer, current smoker and excessive alcohol user, to adults over the age of 40 with neither primary preventable risk factor. This figure demonstrates that persons most at risk for oral cancer are less likely to visit the dentist and are thus less likely to be screened for oral cancer.

**Figure 19:** Proportion of Adults, age 40 and above, with a Dental Visit in the Past Year, CDC BRFSS 1999, 2002, & 2004



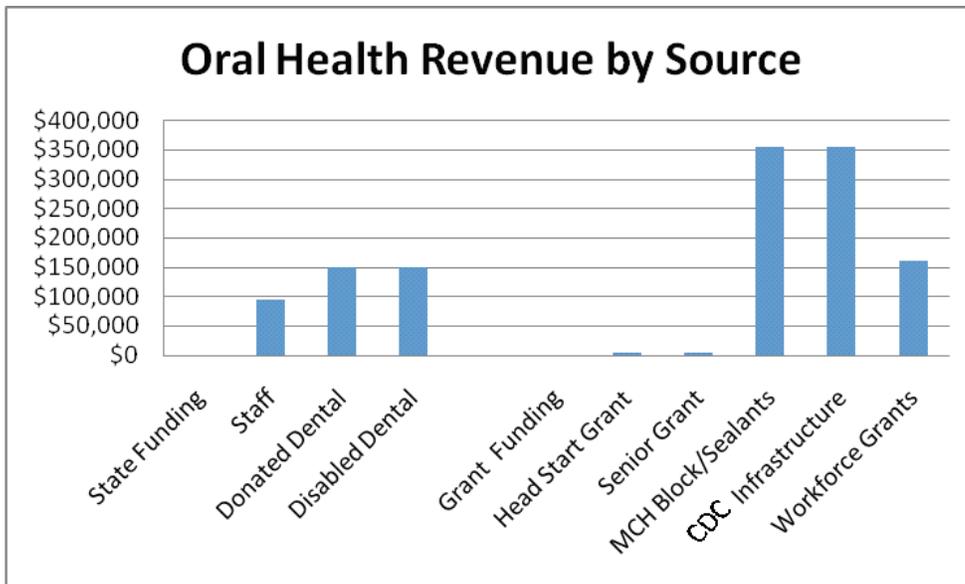
## Michigan Department of Community Health (MDCH) – Oral Health Program

The focus of the Oral Health Program (OHP) is to improve the oral health of the people of Michigan. Improving access to oral health includes oral health education, prevention of dental disease and dental restorative treatment. All three elements are critical to promote oral health throughout the lifespan. Children and adults in Michigan should not suffer from pain, loss of employment or school hours, have difficulty chewing food or speaking, or face social decline due to a preventable disease. The OHP collaborates with internal and external agencies and collaborative partners to increase oral health access.

**Oral Health Infrastructure:** The oral health program staff equals 4.75 full time equivalency. A 1 fte program director, 1 fte oral health coordinator (fluoride varnish and education), 1fte oral health coordinator (dental sealants), 1 fte program coordinator, and .75 fte epidemiology/evaluation. The program director is funded by the state and a grant, two staff are state employees paid through grant funds with the additional 2.75 employees being contract employees funded by grants. Through the CDC Cooperative Agreement DP08-802, the OHP is developing infrastructure in the following areas:

- Staffing, Management and Support
- Data Collection and Surveillance
- Strategic Planning – The State Oral Health Plan
- Partnerships and Coalitions
- Access to and Utilization of Preventive Interventions
- Policy Development
- Evaluation
- Program Collaboration

**Oral Health Funding:** The annual budget for oral health varies depending on available grants. The graph below depicts average funding revenue.



## Oral Health Delivery System

**Professional Dental and Dental Hygiene Schools:** Michigan has two dental schools, 13 dental hygiene schools, 9 accredited dental assisting programs, and no accredited dental laboratory programs.

### Oral Health Prevention Programs:

- **SMILE!** Michigan Dental Sealant Program – Provides dental sealants to approximately 5,000 – 8,000 children in 2<sup>nd</sup> and 6<sup>th</sup> grade in schools that have a minimum of 40% participation in the free and reduced lunch program. Grants are provided to providers to deliver the dental sealants based on selected criteria and an established selection process.
- **VARNISH!** Michigan and **VARNISH!** Babies Too Programs – These programs encourage the placement of fluoride varnish to infants and Head Start children. The OHP provides a fluoride varnish course for physicians and nurses which when successfully completed, allows billing for varnish application, parental guidance, and oral health screening by Medicaid during the primary care visit. The OHP provides technical assistance for the development and implementation of Head Start fluoride varnish programs.
- **School Weekly Fluoride Rinse Program** – Approximately 17,000 children in non-fluoridated communities participate in the school-based weekly Fluoride Mouth rinse Program. The program is totally funded by the schools or local health departments. The OHP tracks data and provides technical consulting.
- **Community Water Fluoridation** – Working with the Department of Natural Resources and Environment, the OHP is responsible for populating the CDC Water Fluoridation Reporting System.
- **School-based/school-linked oral health programs** – Working collaboratively with the MDCH Child, Adolescent and School Health Program and funded through the Health Resources and Services Administration Workforce Grant, technical support and funding are provided to school systems and health systems to establish comprehensive dental health programs within schools with child and adolescent health centers.

### Partnerships and Collaborations:

The Michigan Department of Community Health has significantly expanded its partnerships and collaboration efforts throughout Michigan and other states. The Oral health Program has reached out to organizations to increase state level and community capacity to address specific oral health issues. In doing this information is provided to policy makers, staff, and the public with educational resources needed.

Other Grant-Supported Programs: Grant projects to increase oral health care access are continually being sought.

### Oral Health Program - Managed Programs:

- **MI Door:** One of Governor Granholm's top 20 priority projects. The project assists local communities in sponsoring one-day events to increase access for adults for dental services.
- **Donated Dental Services:** A network of volunteer dentists provides dental care to persons who are mentally and physically handicapped, who are medically compromised, or who are elderly and indigent.
- **Developmental Disabilities Oral Health Program:** A dental treatment fund provides dental care for persons with developmental disabilities who do not have Medicaid coverage.
- **PA 161:** Hygienists in Michigan can provide dental services to underserved populations with relaxed supervision through PA 161. The OHP approves applications, tracks providers and services provided, and expiration dates.
- **Referral Directories:** Multiple directories for oral health care access is located on the Michigan oral health website: <http://www.michigan.gov/oralhealth>
- **Points of Light:** Funded by Health Resources and Services Administration Workforce Grant is a collaboration between medicine and dentistry. Points of Light brings together different cultures of medicine and dentistry to find solutions to address and improve infant oral health – one office and one community at a time.

**Additional Services Provided:** Oral health surveillance, consultation, technical assistance, and program coordination are provided on many oral health programs and issues. Considerable statewide efforts are needed to assist Michigan in achieving the standards set forth by Healthy People 2020. For more information contact the Michigan Oral Health Program at [oralhealth@michigan.gov](mailto:oralhealth@michigan.gov) or (517) 335-8879.

**Other State Programs (Not Managed by the OHP) providing dental-related services.** For more information on any of the state programs listed below refer to: <http://www.michigan.gov/mdch>

- Adult Dental Medicaid Benefits: Medicaid currently provides emergency extractions only.
  - MICHild is a dental health insurance program for uninsured children of Michigan's working families.
  - Healthy Kids Dental is a Medicaid program for children who meet specific criteria and reside in a designated Healthy Kids County
- Children with Special Health Care Services: A program for children and some adults with special health care needs and their families. Children must have a qualifying medical condition and be 20 years old or under.
- Michigan Dental Program: The Michigan Dental Program covers dental care for persons living with HIV/AIDS who qualify for the program. As of June 30, 2008, the program is no longer accepting applications.

#### **Local Services Access:**

- Fifty one local agencies, including local health departments, primary care centers, migrant health clinics, and Indian Health Services (IHS) conduct public health dental programs. These centers include 20 Federally Qualified Health Centers, 13 local health departments with 27 clinics, and 4 Native American dental clinics.
- Other programs are funded locally, through fee-for-service collection, Medicaid, private foundation funds, and federal funding (IHS, primary care, and migrant health).

**Oral Health Program Publications** available @ <http://www.michigan.gov/oralhealth/Oral> Health Resources, Reports and Links

- Surveillance:
  - Count Your Smiles Survey: Survey of dental decay prevalence and sealant placement in Michigan's 3<sup>rd</sup> grade children (2007)
  - Burden of Oral Disease: A compilation of data and factual information documenting oral disease in Michigan (2008)
- Workforce:
  - Developmental Disabilities Oral Health Policy Paper (2009)
  - Mi-Door Report (2009)
  - Addressing Dental Workforce in the State of Michigan (2009)
  - Addressing Dental Education Curriculum for Treating Persons with Special Needs (2009)
- Oral Health
  - Fluoride Varnish Brochures (English, Spanish, and Arabic)
  - Sealant Brochures (English, Spanish, and Arabic)
  - Diabetes and Oral Health Brochure
  - Community Water Fluoridation brochure and fact sheets
  - State Sealant and Community Water Fluoridation Plans

## **Michigan Oral Health Coalition**

Since 2003, the Michigan Oral Health Coalition has been a leader in the oral health access movement in Michigan. The Coalition's membership is comprised of primary care clinicians, oral health clinicians, dental benefit providers, advocacy and provider organizations, state and local government officials, and consumers working together to improve oral health in Michigan. The Michigan Oral Health Coalition's mission is to improve oral health in Michigan by focusing on prevention, health promotion, oral health data, access and the link between oral health and overall health. For more information, visit [www.mohc.org](http://www.mohc.org).

#### **IV. MICHIGAN’S GOALS AND ACTION STEPS FOR IMPROVING ORAL HEALTH**

The Michigan Oral Health Plan is a plan of action to improve oral health of Michigan’s citizens. Ten goals with accompanying action steps, identified resources/contribution, responsible individual/organizations, a monitoring mechanism or evaluation and a completion date provide a clear road map to reach the identified goals. The goals and action steps involve federal, state and local initiatives and involve a diverse group of stakeholders that include public, private, and non-profit individuals, agencies and organizations dedicated to advancing oral health in Michigan. The plan focuses on education, access, prevention, and policy realizing that these subject areas overlap in numerous ways. The plan focuses on increasing access to oral health among the individuals who are most adversely affected by disparities, poverty, and other socioeconomic factors.

##### Summary of Michigan’s Goals:

1. Identify available data at National, State, and Local levels
2. Implement evidence-based preventive practices that maintain optimal oral health for Michigan communities
3. Increase knowledge of the relationship between oral health and systemic health
4. Provide information about the availability of comprehensive and culturally sensitive oral health education resources
5. Develop strategy(s) for Michigan to increase access to oral health services by establishing a dental home no later than age one
6. Support a public and private system of care that ensures access to comprehensive oral health services for all Michigan residents
7. Increase access to oral health services in underserved populations and communities
8. Increase oral health access for persons with special needs
9. Increase oral health access for the elderly
10. Develop and sustain the necessary infrastructure to successfully implement the State Oral Health Plan

## Acronyms:

AAA - Area Agencies on Aging  
AAP – American Academy of Pediatrics  
AAPD – American Academy of Pediatric Dentistry  
AARP – American Association of Retired People  
ACOG – American College of Obstetrics and Gynecology  
ADA – American Dental Association  
ADHA – American Dental Hygienists Association  
ASTDD – Association for State and Territorial Dental Directors  
BCBSM – Blue Cross Blue Shield of Michigan  
BRFSS – Behavioral Risk Factor Surveillance System  
BSS – Basic Screening Survey (visual dental assessments)  
EBD: Evidence Based Dentistry  
CAHC – Child and Adolescent Health Centers  
CSHCN – Children with Special Health Care Needs  
COHA - Coalition for Oral Health for the Aging  
DEQ – Department of Environmental Quality  
DHS – Department of Human Services  
DOE – Department of Education  
EPA – Environmental Protection Agency  
GECM – Geriatric Education Center of Michigan (MSU)  
HAI – Healthy Aging Initiative  
HCAM – Health Care Association of Michigan  
HPSA - Health Profession Shortage Area  
MCAL – Michigan Center for Assisted Living  
MCAP Michigan Chapter of Academy of Pediatrics  
MCRH – Michigan Center for Rural Health  
MDA – Michigan Dental Association  
MDAA – Michigan Dental Assistants Association  
MDCH - Michigan Department of Community Health  
MDE – Michigan Department of Education  
MDHA – Michigan Dental Hygienists Association  
MBOD – Michigan Board of Dentistry  
MDDC - Michigan Developmental Disabilities Council  
MAADCC – Michigan Association of Adult Day Care Centers  
MALPH – Michigan Association for Local Public Health  
MAFP – Michigan Association of Family Practice  
MALA – Michigan Assisted Living Association  
MOHC – Michigan Oral Health Coalition  
MOA – Michigan Osteopathic Association  
MOU – Memorandum of Understanding  
MPCA – Michigan Primary Care Association  
MPHA – Michigan Public Health Association  
MSMS – Michigan State Medical Society  
NACHC – National Association of Community Health Centers  
NHDA - Nursing Home Directors Association  
NHANES – National Health and Nutrition Examination Survey  
NIDCR – National Institute of Dental and Craniofacial Research  
PANDA – Prevent Abuse and Neglect through Dental Awareness  
PP – Private Practitioners  
PPO – Preferred Provider Organization  
SAM – Smiles Across Michigan  
SOPHE – Society of Public Health Educators  
WIC – Women, Infant and Children Program

Goal 1: Maintain a statewide Oral Health Surveillance System to provide a routine source of actionable data.

*Why:* Routine surveillance will estimate the magnitude of oral health disease in Michigan; monitor trends in oral health indicators; evaluate the effectiveness of implemented programs and policy changes; indicate vulnerable population groups; and provide information for decision making when allocating resources.

Action Step	Resources/ Contribution Needed	Responsible Individual/ Organization	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
1. Identify available data at National, State, and Local levels	NHANES, BRFSS, BSS, DEQ, Medicaid, State Cancer Registry, Detroit Cancer Registry, EPA, long-term care data, emergency room data, Birth Defects Registry, dental insurance providers, Dept. of Education, Count Your Smiles, Elderly Surveys, MDCH, COHA, SAM, and other agencies/organizations, local health departments, etc.	MDCH	Documentation of data included in the Burden of Oral Disease in Michigan	Annually
2. Collect, analyze, and synthesize data regarding Michigan progress to National Oral Health Indicators.	MDCH Oral Health Epidemiologist	MDCH	Analysis completed	Bi-annually
3. Utilize data to affect policy and existing programs.	MOHC, MDCH, MDA, MDHA, MDAA, COHA, Disabled Dental Council, local health departments and other	MOHC, MDCH	Documentation, monitor federal and state legislation	Ongoing

Action Step	Resources/ Contribution Needed	Responsible Individual/ Organization	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
4. Prepare and disseminate oral health information based on findings from oral health surveillance (statewide data, relevant research findings, and other reports such as policy updates, state plan, and health objective progress reports.	Funding or mechanism identified for distributing data	MDCH	Burden of Oral Disease in Michigan;  Statewide data surveillance system maintained	2010 and published every 3 years

Goal 2: Implement evidence-based preventive practices that maintain optimal oral health for Michigan communities.

*Why:* Evidence-based dentistry (EBD) is an approach to oral health care that requires the judicious integration of systematic professional assessments of clinically relevant scientific evidence, relating to the patient’s oral and medical condition and history, with the dentist’s clinical expertise and the patient’s treatment needs and preferences.

Action Step	Resources/ Contribution Needed	Responsible Individual/ Organization	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
1. Research EBD to maintain optimal oral health for Michigan’s communities to include: <ul style="list-style-type: none"> <li>• Research and promote prenatal and postpartum oral health care</li> <li>• Infant oral health</li> </ul>	Research of best practices, Medicaid, WIC; oral health exams in other states, MDE, ASTDD, MDDC, CSHCN, Social Services, ADA evidence based	MDCH, MOHC	Research completed and recommendations made to the MOHC  Referral mechanism established for referral following oral health exam	Annually

<ul style="list-style-type: none"> <li>• Mandatory oral health exams prior to school enrollment and prior to 5<sup>th</sup> grade with a mechanism for referral to insure comprehensive care</li> <li>• Adult dental access</li> <li>• Elderly dental access</li> <li>• Special populations access</li> </ul>	website			
2. Implement ADA, AAP and AAPD guidelines for infant oral health throughout Michigan	ADA, AAP and AAPD guidelines	MOHC, MDCH	Monitor guideline implementation	Reviewed annually
3. Implement current oral health guidelines for elderly, special needs and special populations throughout Michigan.	ADA, CSHCN, MDDC, GECM, GECM, GN, HCAM, MAADCC, MADSA, MALA, MCAL, PP, etc	MOHC, MDCH, COHA	Monitor guideline implementation	Reviewed annually
4. Support preventive oral health measures to include: <ul style="list-style-type: none"> <li>• Community water fluoridation</li> <li>• School fluoride rinse programs</li> <li>• Sealant programs</li> <li>• Fluoride varnish programs</li> </ul>	MDCH; MOHC, partner organizations including but not limited to MDA, MDHA; DOE; Head Start; DEQ; School Nurses Association, Child and Adolescent Health Centers, School Principal Associations, non-dental professionals. etc.	MDCH, MOHC	<ul style="list-style-type: none"> <li>• Percent of communities with optimally fluoridated water maintained or increased</li> <li>• Number of children participating in school rinse programs</li> <li>• Number of children with dental sealants on 1<sup>st</sup> and 2<sup>nd</sup> permanent molars</li> <li>• Fluoride varnish programs</li> </ul>	Ongoing

			implemented	
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Goal 3: Increase knowledge of the relationship between oral health and systemic health.

*Why:* Oral health is essential to systemic health. When developing health policy, oral health must be considered primary care.

Action Step	Resources/ Contribution Needed	Responsible Individual/ Organization	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
1. Coordinate a statewide public education and awareness campaign regarding oral health outcomes related to <ul style="list-style-type: none"> <li>• Pregnancy</li> <li>• Chronic conditions</li> <li>• Overall health</li> </ul>	MDCH, MOHC including but not limited to MDA, MDHA, Delta Dental; BCBS; private industry partners; local broadcasting and other media  Funding for media campaign	MDCH, MOHC	Public relations plan and campaign developed implemented, and evaluated.	Annually
2. Educate state and local policy makers and decision makers.	MOHC, COHA,	MOHC, MDHA, COHA	Policy and programs developed as a result of the increased awareness	Bi-annually
3. Network with appropriate organizations/ entities.	MI Surgeon General, Oral Health Partners, MDCH Chronic Disease, State Coalitions (i.e. diabetes, COHA, etc.), physicians and nurses associations	MOHC and MDCH	<ul style="list-style-type: none"> <li>• Evidence of Networking</li> </ul>	Ongoing
4. Provide annual trainings/ continuing education opportunities for dental and non-dental health care providers on topics such as:	Collaborate with agencies and organizations to increase oral health trainings/continuing education opportunities at professional	MDCH, MOHC, Dental and dental hygiene schools	<ul style="list-style-type: none"> <li>• Provide a variety of trainings/continuing education opportunities for oral health care and health care providers related to oral health.</li> </ul>	Annually

<ul style="list-style-type: none"> <li>• The relationship between oral health and maternal health</li> <li>• The effects of chronic disease such as diabetes</li> <li>• The oral side effects of medications</li> <li>• The negative oral health effects of tobacco including periodontal disease and oral cancer</li> <li>• Screening and referral for early signs of decay in infants/ children</li> <li>• Optimizing oral health in medically-compromised and elderly populations</li> <li>• Identification and prevention of abuse and neglect</li> <li>• Hospital based and long-term care health programs</li> </ul>	<p>conferences hosted by ACOG, AAP, MAFP, AARP, SOPHE, MSMS, MOA, MNAA, MDCH, MPCA, MDHA, Michigan Diabetes Association, MDA, Delta Dental, BCBS, etc.; online continuing education; links on websites of MPCA, MDA, MDCH, etc; residency programs and dental and dental hygiene schools</p> <p>Funding sources identified for speaker honorariums.</p>		<ul style="list-style-type: none"> <li>• A list of trainings widely distributed across the state</li> <li>• A list of speakers available for distribution for health professional conferences</li> <li>• Online educational materials available</li> <li>• CE/CME credits for: MD/PA/Nurse/NP/ DDS/RDH/RDA/OT/ PT/ SW</li> </ul>	
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Goal 4: Provide information about the availability of comprehensive and culturally sensitive oral health education resources.

*Why:* In order to increase awareness about the importance of oral health, age appropriate and culturally sensitive information should be provided to health professionals, parents, teachers, etc.

Action Step	Resources/ Contribution	Responsible Individual/	Monitoring Mechanism/	Completion Date/Frequency
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	Needed	Organization	Evaluation	
1. Partner with organizations (e.g., WIC, Head Start, MIH, CSHCS, geriatric (AAA/HAI), special needs orgs, Disability Council, NIDCR etc. to provide resources to support comprehensive and culturally sensitive oral health education and prevention activities.	MOHC, WIC, Head Start, MIH, CSHCS, geriatric, special needs orgs, MDDC, NIDCR, Maternal and Child Health Resource Center, MCRH, Aging Association of Michigan, etc.	MOHC, MDCH	Oral Health Education and Prevention Resources Available	Ongoing
2. Facilitate awareness of available oral health resources.	MOHC, MDCH and all related oral health partners	MOHC	Existing resources identified and available that are comprehensive, and culturally sensitive and include both clinical care information and educational materials (videos, brochures, classes, courses, lectures, etc.)	Annually

Goal 5: Develop strategy(s) for Michigan to increase access to oral health services by establishing a dental home no later than age one.

*Why:* By establishing a Dental Home by age one, assessment and parental/guardian education is provided early when intervention is most effective for long-term success. An ongoing relationship between the dentist who is the Primary Dental Care Provider and the patient, is established, pursuant to ADA and AAPD policies.

Action Step	Resources/ Contribution Needed	Responsible Individual/ Organization	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
1. Research and create an inventory on strategy	MOHC, MDCH, MAPD, MDA	MOHC	Inventory Created	October 2010

models for establishing a dental home that have been successful in Michigan and other states.				
2. Identify legislative or administrative changes necessary to establish a dental home.	MOHC	MDCH, MOHC	Potential challenges identified	October 2010
3. Recommend strategies based on best practices.	Meeting of partnership and facilitated discussion; ASTDD Best Practices	MOHC	Common strategy is formed by partners	October 2010
4. Educate employers about the importance of providing dental benefits.	MOHC including but not limited to MDA, MDHA, MDAA; Third-Party Payers, Better Business Bureau, business-related organizations, MDE parent teacher groups	MOHC	<ul style="list-style-type: none"> <li>• Employer packets prepared and dispersed regarding evidence of the importance of dental benefits</li> <li>• Evaluate the impact of education to increased dental insurance in businesses</li> </ul>	October 2010 and ongoing
5. Educate the public on the importance of a dental home	MDCH, MOHC, WIC	MDCH, MOHC	Increased number of residents with a dental home due to the increased awareness	October 2010 and ongoing

Goal 6: Support a public and private system of care that ensures access to comprehensive oral health services for all Michigan residents.

*Why:* Research has shown that poor oral health has a tremendous impact on an individual's overall health. Michigan must commit itself to giving our residents the best possible start at a healthy life.

Action Step	Resources/	Responsible	Monitoring	Completion
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	Contribution Needed	Individual/ Organization	Mechanism/ Evaluation	Date/Frequency
1. Support the implementation of an effective and efficient Medicaid dental system (i.e., billing systems).	Medicaid dental system review, MOHC, MDA, MPCA, MALPH, MDHA	MDCH, MOHC	<i>Primary:</i> Utilization, provider participation  <i>Secondary:</i> Bi-annual review of payment rates compared to UCR	Ongoing
2. Advocate for adequate Medicaid and Medicare funding of procedures/ services for comprehensive care for children, adults, the elderly, and special needs populations.	MOHC , MDDC, NHDA, CSHCS, Nursing Home Directors Association, Children with Special Health Care Services, Social Services, Consumers, PP	MOHC, MDCH	Adequate Medicaid and Medicare funding	Annually
3. Support the exploration and expansion of cost-effective alternative workforce models that can safely provide care, increase access to oral health care, and that are evidenced-based (i.e PA 161 programs).	MDCH, MOHC, MDHA, MDA, MDAA, MBOD	MDCH, MOHC, MBOD	Workforce models, such as PA 161, demonstrate increased access to quality oral health services to such populations as public schools, long-term care facilities, homes for special populations, prisons, and community dental clinics.	Ongoing
4. Support Healthy Kids Dental expansion to all counties.	MOHC MDA, MAPD	MOHC, MDCH	Expansion to additional counties.	Ongoing
5. Support efforts to mandate oral health as part of the adult Medicaid benefit/ program based upon the Healthy Kids Dental	MOHC - Commitment and staff time; MPCA will work with NACHC and the ASTDD, MDA will work with the ADA, MDHA will work with	MOHC	Dental services are a mandatory benefit for Medicaid, provides adequate coverage (i.e. periodontal scaling, endodontics, etc.) and is	Ongoing

model.	the ADHA		reimbursed at a PPO or greater level  Medicaid dental utilization reports	Bi-Annually
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Goal 7: Increase access to oral health services in underserved populations and communities.

*Why:* There is a serious shortage of dentists who care for the uninsured and publicly insured populations. In addition, a number of communities lack enough dentists to care for even the commercially insured population.

Action Step	Resources/ Contribution Needed	Responsible Individual/ Organization	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
1. Research approaches used by other states to address workforce issues, for example: <ul style="list-style-type: none"> <li>• Incentive programs</li> <li>• Academic training programs</li> <li>• Recruitment programs</li> </ul>	MOHC, MPCA, MDCH, ASTDD, Michigan Center for Rural health, State and national linkages, UDM, UM, state inventory of workforce	MOHC	Report prepared summarizing creative approaches	Bi-annually
2. Identify and review existing Michigan workforce data to assess and respond to issues of supply, demand, and distribution for oral health professionals.	MOHC, Michigan Health Council, Rural Health, dental and dental hygiene schools, MDCH licensee surveys, MDA, MDHA, Free Clinics of Michigan Association	MDCH, MOHC	Report prepared summarizing Michigan workforce data	Annually
3. Develop marketing information for dental professionals about the incentives of working in a HPSA.	MDCH Loan Repayment Program  FQHC and community dental clinic	MDCH	HPSA decreases as a result of the increased awareness of incentives from working in a HPSA	On-going

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Goal 8: Increase oral health access for persons with special needs.

*Why:* Medically compromised and mentally impaired individuals often need sedation that requires a medical facility or hospital setting for dental care delivery. The state’s current programs cannot adequately address access both in terms of wait time and travel time. For those patients who can receive care in an ambulatory setting, there is a shortage of providers who believe that they have the training and who are comfortable with special needs patients in their practices.

Action Step	Resources/ Contribution Needed	Responsible Individual/ Organization	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
1. Develop and maintain a list of providers for persons with special needs.	MOHC	MOHC	Documentation of providers completed	Bi-annually
2. Gather input from key state groups.	Special needs, MDDC, CSHCN	MOHC, MDCH	Documentation of input	Ongoing
3. Provide continuing education to medical and oral health providers, including hospital-based programs and long term care facilities.	Residency programs; continuing education programs; MDCH; MOHC including but not limited to Schools of Dentistry, MDA	MOHC, Dental Schools	Documentation of materials and continuing education completed	Annually

Goal 9: Increase oral health access for the elderly.

*Why:* The need for dental care continues throughout the lifespan. Increased numbers of people retaining their natural teeth will result in increased need for comprehensive oral health care (preventive and restorative services). Medicare does not provide coverage for routine dental care and many adults lose dental insurance coverage when they retire. As a result, community-based strategies must be mindful to include the needs (medical, financial, logistical) of the elderly . It is essential to work with primary care providers and geriatricians to establish the importance of oral health.

Action Step	Resources/ Contribution Needed	Responsible Individual/ Organization	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
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1. Develop and maintain a list of providers for the elderly.	MOHC	MOHC	Documentation of providers completed	Bi-annually
2. Gather input from key state groups.	AAA, AARP, ACOG, GECEM, HAI, MCAL, MAADCC, MALA, NHDA	MOHC, MDCH	Documentation of input	Ongoing
3. Provide continuing education to medical and oral health providers, including hospital-based programs and long term care facilities.	Residency programs; continuing education programs; MDCH; MOHC including but not limited to Schools of Dentistry and Dental Hygiene, MDA	MOHC, Dental and Dental Hygiene Schools	Documentation of materials and continuing education completed	Annually
4. Develop and disseminate educational messages about oral hygiene, periodontal disease, and effects on chronic conditions for use by community organizations serving elderly populations (such as social centers, assisted living facilities, etc.).	AAA, AARP, ACOG, GECEM, HAI, MCAL, MAADCC, MALA, NHDA	MOHC, MDCH	Educational messages created for community organizations	Bi-annually

Goal 10: Develop and sustain the necessary infrastructure to successfully implement the State Oral Health Plan.

*Why:* To successfully complete many of the initiatives listed in the Michigan Oral Health Plan, Michigan needs to be able to work effectively with all components of the health care system and professional training programs. Creation of a state law to mandate the oral health program helps the program survive in the face of outside pressures and expresses the importance of oral health for all to see. With a mandate, legislators and state health officials have more reason to maintain the oral health program and to give it the support required for success.

Action Step	Resources/ Contribution Needed	Responsible Individual/ Organization	Monitoring Mechanism/ Evaluation	Completion Date/Frequency
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1. Pursue funding sources to support the implementation of goals of the SOHP	MOHC, MDCH, key stakeholders identify in the SOHP Goals	MOHC, MDCH	Plan implemented with annual progress review	Ongoing with completion September 2012
2. Create a mandated oral health program within MDCH that is placed at a high enough and visible level to communicate readily with state officials, influence policy and participate in resource allocation to implement oral health programs.	MOHC, MDCH, MDA, MDHA	MOHC, MDCH	Oral Health Program is mandated within MDCH and is placed at a high enough and visible level to communicate readily with state officials, influence policy and participate in resource allocation to implement oral health programs.	October 2012
3. Expand the infrastructure of oral health coalitions (MOHC, COHA, etc.) that work integrally together to implement the SOHP through incorporation of SOHP goals into coalition strategic plans.	MOHC, COHA  Sustainable funding sources identified (large organization/corporate/foundation, support)	MOHC, COHA	The infrastructure of MOHC and COHA are sustainable with diverse funding sources  SOHP is incorporated into the MOHC and COHA strategic plans	October 2011
4. Foster collaboration with partnering organizations.	Partnerships with MOHC and MDCH to include but not limited to MDCH, MDA, MDHA, MDAA, Delta Dental; BCBS; Head Start; Chronic Disease; COHA, MDDC, parent and school	MOHC, MDCH	MOUs, Contracts, or other evidence of collaboration	Ongoing

	organizations, elderly organizations (i.e. AARP), dental and dental hygiene schools, the Dept. of Education, DEQ, and other stakeholders			
5. Evaluate the State Oral Health Plan	MDCH, MOHC, and key stakeholders	MDCH, MOHC	State Oral Health Plan revised	Every 3-5 years

## V. PROGRAMS AND PRACTICES

### **Michigan's Oral Health Programs**

The Michigan Department of Community Health (MDCH) implements and monitors statewide dental health programs to reduce the incidence of oral disease, reduce disparities, promote healthy behaviors, and increase quality of life.

The MDCH Oral Health administers public health programs that focus on preventive programs, oral health education, increasing access to oral health and workforce development. Over 95% of funding for the MDCH oral health program comes from federal grants. Grants have been important in meeting goals but are not sustainable.

The oral health program leverages resources through collaboration with internal and external agencies to build capacity and long-term sustainability for oral health in Michigan.

Prevention programs are funded through federal grants. Prevention programs include:

1. SMILE! Michigan Dental Sealant Program
2. VARNISH! Michigan Program
3. VARNISH Babies Too!
4. Community Water Fluoridation

Oral health education:

Increasing access: Access to oral health is more than access to dental services. Access to prevent disease throughout the lifespan.....

1. MI Door
2. Prevention Program
3. Donated Dental
4. Dental Treatment Fund

Workforce: HRSA grants

1. School and adolescent health centers
2. PA 161

Other MDCH programs

1. CSHCS
2. Michigan Dental Program

Surveillance Program – surveys, documents

### **Other Health Coalitions**

1. Michigan Oral Health Coalition
2. Coalition for Oral Health for the Aging

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## VII. TERMINOLOGY

**Behavioral Risk Factor Surveillance System (BRFS):** an ongoing telephone survey that collects annual data on emerging public health issues, health conditions, risk factors, and behaviors in adults. <http://www.cdc.gov/BRFSS/>

**Basic Screening Survey (BSS):** Developed by the Association of State and Territorial Dental Directors (ASTDD), the BSS is a means of measuring dental caries prevalence within a community.

**Caries:** A progressive, destructive chronic disease caused by bacteria that damage the hard tooth structures, enamel, dentin and cementum. The damage caused by caries is called a cavity also known as tooth decay.

**Children with Special Health Care Needs:** Children who have or are at increased risk for a chronic physical, development, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally.

**Community Water Fluoridation (CWF):** Community water fluoridation is the upward adjustment of the concentration of fluoride of a community water supply for optimal oral health. Optimal fluoride levels in Michigan are 0.9-1.2 ppm.

**Count Your Smiles (CYS):** A 2005 survey designed to address dental outcomes in Michigan that pertain to *Healthy People 2010* objectives.

**Dental Health Professional Shortage Area:** Federal designations reflecting a shortage of dental health providers for the number of community members, in accordance with the federal guidelines.

**Dental Sealant:** A resin-based material placed on the pits and fissures of the chewing surfaces of teeth. Sealants prevent tooth decay by creating a barrier between a tooth and decay-causing bacteria. Sealants also stop cavities from growing and can prevent the need for expensive fillings.

**Diabetes:** A chronic disease in which the body does not produce or properly use insulin. Insulin is a hormone that is needed to convert sugar, starches and other food into energy needed for daily life.

**Disability:** *American's with Disability Act* defines disability as a physical or mental impairment that substantially limits one or more of the major life activity of an individual, a record of an impairment or being regarded as having an impairment.

**Donated Dental Program:** A collaboration between Michigan Department of Community Health (MDCH) and the Michigan Dental Association (MDA) working to find dentists and dental labs to donate dental services to the elderly and disabled.

**Early Childhood Caries (ECC):** A chronic disease where one or more tooth surfaces are decayed, missing, or filled before reaching 6 years of age.

**Edentulism:** The absence of three or more teeth in one arch, not including third molars (wisdom teeth).

**Fluoride:** A form of fluorine, a naturally occurring mineral found in all water sources, including the ocean. The fluoride ion comes from the element fluorine. Fluorine is the 17<sup>th</sup> most abundant element in the earth's crust.

**Fluoride Varnish:** A highly concentrated (~22,000 ppm) topical application of fluoride which may prevent tooth decay by as much as 30%. Fluoride varnish has been used in Europe for the last 30 years. The use of fluoride varnish to prevent tooth decay is an off-label use. The Food and Drug Administration (FDA) recognizes fluoride varnish as a desensitizing agent and cavity liner.

**Fluoride Mouth Rise Program:** Program primarily for elementary school children grades K-6 who do not have access to optimal levels of fluoride in community water.

**Healthy Kids Dental:** Healthy Kids Dental replaces the children's Medicaid dental program in 61 Michigan counties and has been named one of five national models for improving access to dental care for low-income populations.

**History of Decay:** Denotes the historical presence of dental decay noted by fillings, extraction and/or untreated decay.

**Incidence:** The number of people who are newly diagnosed with a disease, condition, or illness during a particular time period.

**Medicaid:** A federal-state program established in 1965 that provides health insurance coverage for low income individuals and families, as well as those with disabilities. Payment of the coverage is split 50:50 by the state and federal government.

**Medicare:** A federal program established in 1965 that provides health insurance coverage for individuals 65 years of age and older and those that are disabled. Medicare is not based on income-eligibility and includes very limited, highly specialized dental coverage.

**MIChild:** A state and federally funded health insurance program developed in 1998 by the State of Michigan to provide low-cost health and dental insurance to the state's uninsured children who don't qualify for Medicaid.

**MI-Door:** A donated day initiated in 2008 by the Governor of Michigan, Jennifer Granholm, to provide free emergency dental care and oral health education to adults who have an immediate dental need.

**Michigan Dental Program:** Program that covers dental care for persons living with HIV/AIDS who qualify for the program.

**Mortality:** The number of people who die from a disease, condition, or illness during a particular time period.

**Oral Cancer:** Cancer that forms in tissues of the oral cavity (the mouth) or the oropharynx (the part of the throat at the back of the mouth).

Surveillance Epidemiology and End Results (SEER) describes cancers in five stages:

**In situ cancer:** early cancer that is present only in the layer of cells in which it began

**Localized cancer:** cancer that is limited to the organ in which it began, without evidence of spread

**Regional cancer:** cancer that has spread beyond the original (primary) site to nearby lymph nodes or organs and tissues.

**Distant cancer:** cancer that has spread from the primary site to distant organs or distant lymph nodes

**Unstaged cancer:** cancer for which there is not enough information to indicate a stage.

**Pregnancy Risk Assessment Monitoring System (PRAMS):** The Pregnancy Risk Assessment Monitoring System is a surveillance project of the Centers for Disease Control and Prevention (CDC) in collaboration with state health departments. PRAMS collects state-specific, population-based data on maternal attitudes and experiences before, during, and shortly after pregnancy.

**Prevalence:** Total number of existing cases of a disease in the population at a given time.

**PA 161 Program:** Public Act 161 (PA 161) was passed into law in 2005 to facilitate greater access to oral health care services for underserved populations in the state. The policy allows dental hygienists approved by the state Department of Community Health to provide preventive oral health care without the prior authorization of a dentist in a variety of public health settings, including federally qualified health centers. Under PA 161, dental hygienists maintain a supervisory relationship with the dentist and make referrals for patients in need of additional dental care. The program enables hygienists to bring preventive oral health care directly to those who are unable to access care in traditional office settings. As links between oral health and systemic health continue to emerge, making oral health care accessible to all residents of Michigan becomes increasingly important.

**SEAL! Michigan:** a program for public and non-profit eligible organizations to support the development and/or expansion of sustainable school-based/school-linked dental sealant programs.

**VARNISH! Michigan:** a program launched in 2007 to provide early intervention to prevent or reduce dental disease among low-income children aged birth to five through oral screenings, applying fluoride varnish and connecting these children to a dental home.

**Xerostomia:** A medical condition known as “dry mouth” caused by a lack of saliva. The condition may be caused from medication-use, diabetes or another underlying medical condition.