The Burden of Oral Disease in Chicago

Chicago Community Oral Health Forum (CCOHF)

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Acknowledgments

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"The mouth reflects general health and well-being."
– Surgeon General Carmona

Background

This report is the first-ever report on the burden of oral disease in Chicago. It highlights the often overlooked oral health needs of Chicago residents, links oral health to overall health, and seeks to foster a broader understanding of the importance of good oral health care to every resident.

The objectives of this report are to:

- Summarize the most current data supported information available on oral disease in Chicago and wherever possible illustrate the comparison between Chicago, Illinois and US
- Highlight the importance of good oral health as part of total health
- Highlight oral health disparities

This document of oral health status in Chicago has been collected and provided to you through the Epidemiology services of the Chicago Community Oral Health Forum. A major objective of the Forum is to collect and analyze most current data on oral health for Chicagoans. By collecting oral health status, access and Medicaid data, it will be possible to monitor oral needs and disease trends over time and to document improvements and gaps in oral health among Chicago residents.

This report summarizes the most current available information on oral health related indicators for Chicago residents and where applicable with comparison to Illinois. Comparisons are made to national data whenever possible and to *Healthy People 2010* and 2020 goals when appropriate. For some indicators, national data, but not city or state data, is available at this time. It is hoped that the information reported herein will help raise awareness of the need for monitoring oral health burden in Chicago and guide efforts to prevent and treat oral diseases that translates to improved health and enhance the quality of life of Chicago residents.

Describing the extent of oral disease burden allows the Forum to share information about oral health needs with state policy makers, the public health community, other stakeholders and interested parties. This burden document describes the status of oral diseases (e.g., dental caries/cavities), periodontal disease, total tooth loss, oral cancer), including any disparities in oral disease status among population groups. It also discusses the ability of the existing oral health systems to meet these needs by including a description of existing oral health assets, such as professional dental and dental hygiene education programs, workforce capacity and intervention programs that focus on preventing oral diseases. Since it is important for this document to include the most current information; data older than five years was not used.

Chicago Community Oral Health Forum (CCOHF)

The Chicago Community Oral Health Forum (CCOHF), also known as the FORUM, is a project funded by a grant from the Otho S. A. Sprague Memorial Institute and sponsored by Heartland Alliance for Human Needs and Human Rights. The Forum is committed to improving oral health programs and services for all Chicago residents through education, assessment, policy/program development, and collaboration. CCOHF promotes cooperation, communication and concerted action among organizations dedicated to eliminating oral health disparities.
The main objectives of the Forum are[1]:

- "Conduct an infrastructure assessment of oral health care delivery systems in Chicago".
- "Provide opportunities and support to Chicago communities interested in quantifying oral health needs in their community".
- "Help existing service programs work together, share resources and efforts to improve oral health care and access in Chicago"

Executive Summary

This summary is intended to highlight the oral disease burden of individuals in the City of Chicago. The disease burden refers not only to persons with oral diseases, but also to the capacity of the city to prevent oral diseases and provide care for those affected by them.

- Oral health is an essential and integral component of people's overall health. Good oral health requires a comprehensive approach to prevention that includes optimally fluoridated water or fluoride supplementation, regular access to professional dental care, daily routine of home dental care and a nutritious diet that is low in sugar.

- The prevention of tooth decay through the use of fluorides has been recognized by CDC as one of the 10 greatest public health achievements of the 20th century. Today, 100 percent of the population in Chicago receives fluoridated drinking water.

- There is an absence of IL and Chicago data related to Healthy People 2020 Oral Health Objectives. Chicago is better than national indicators on:

    - Tooth loss due to caries or periodontitis in adults (45-64 yrs)
    - Dental sealants in elementary school children (6-9 yrs)
    - Population served by fluoridated community water systems

  Chicago is worse than national indicators on:

    - Dental caries experience and untreated caries in 3rd graders
    - Edentulous (toothless) older adults (65-74 yrs)

- Maintaining good oral health during pregnancy is very important. Researchers have found that women with periodontal disease are at increased risk for delivering preterm low birth weight babies. Pregnant women should obtain professional dental care during pregnancy. There is no available data related to the oral health status of pregnant woman in Chicago

- The majority of oral diseases are highly preventable. The combination of dental sealants and fluoride has the potential to nearly eliminate tooth decay in school-age children. Chicago children have the highest rate of dental caries in the state. However, the sealant rates in elementary school-children have remarkably improved.

- Effective July 1, 2005, all children in kindergarten, second, and sixth grades in Illinois are required to have a dental examination. Chicago Public Schools began reporting data in the 2007-08 school years. In the school-years of 2008-2009, 33% of second-graders were reported as having untreated tooth decay and 10% of them as having an urgent dental need

- There is lack of oral status data and indicators for High School students. Efforts need to be made to collect oral health indicators among high school population similar to the screening data of 3rd grade children in Illinois

- Major risk factors for oral cancer include the use of tobacco products and alcohol. Tobacco and alcohol usage among Chicago residents is higher than the state and national average. The five-year survival rates for oral cancer are greater with early diagnosis.

- Older Americans make up a growing segment of the US population. Older Americans with the poorest oral health are those who are economically disadvantaged, lack insurance, and are members of racial and ethnic minorities. Being disabled, homebound, or institutionalized also increases the risk of poor oral health. One of the major problems they face is the lack of dental insurance because benefits are lost when they retire and Medicare was not designed to provide routine dental care. In Chicago, 46% of all adults and 57% of those 65 years and older do not have any form of dental insurance.

- There are 66 safety net dental clinics in Chicago that provide care for underserved population. In 2010, Chicago had 753,281 Medicaid enrollees, meaning there is just one safety net clinic for every 11,400 enrollees. Access is further limited since many of these clinics do not provide full range of basic dental services.

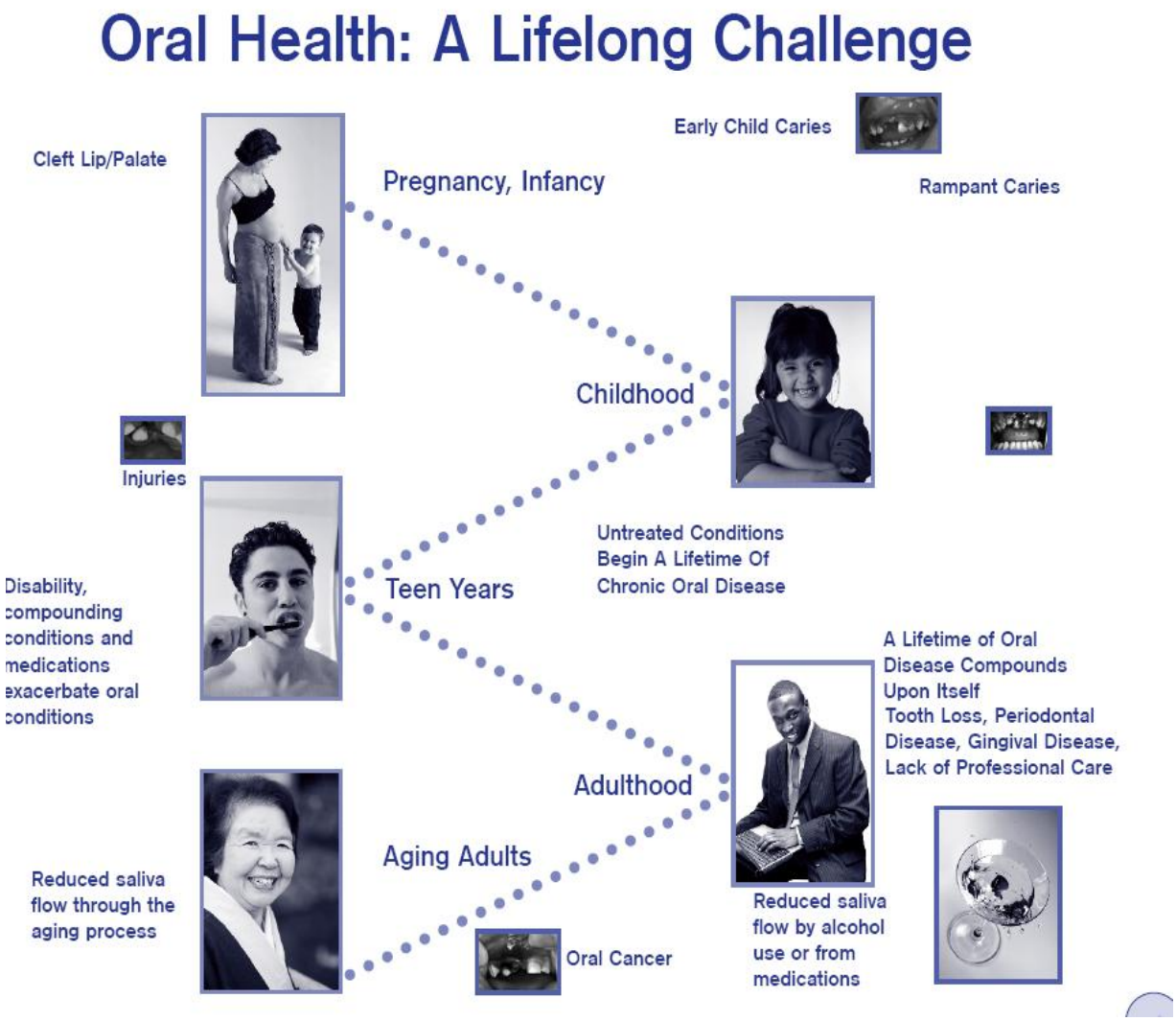
- Oral health access for low income Chicagoans is challenging. Forty-six percent of Chicago adults do not have any form of dental insurance. Low income and vulnerable populations, if insured, are covered under the state Medicaid program. For primary care, people who are enrolled in Medicaid can obtain services they need. It is much more challenging to obtain needed dental care. Participation of private dentists in the Medicaid program is key to improving access to Medicaid beneficiaries. A major challenge for the private practitioner in signing on to Medicaid is low reimbursement rates which often do not cover the cost of providing care. In addition, Medicaid payments are often well below what the provider would receive from the privately insured or uninsured (self-pay) patient.

Key items of note in this document include:

  - Medicaid reimbursement rate increases are necessary – but not sufficient on their own – to improve access to dental care.
  - Improving dentist to patient ratio in underserved Chicago communities is necessary. Since 2007 the dentist to population ratio for Chicago has been decreasing gradually adding to the already challenging access disparities.
  - Dental clinics need to continue expanding their services to meet diverse population needs of their communities.

Introduction

The mouth is our primary connection to the world: it is how we take in water and nutrients to sustain life, our primary means of communication, the most visible sign of our mood, and a major part of how we appear to others. Oral health is an essential and integral component of people's overall health throughout life, and is much more than just healthy teeth. Oral refers to the whole mouth: the teeth, gums, hard and soft palate, linings of the mouth and throat, tongue, lips, salivary glands, chewing muscles, and upper and lower jaws.



Source for the chart: Oregon Burden of Oral Disease

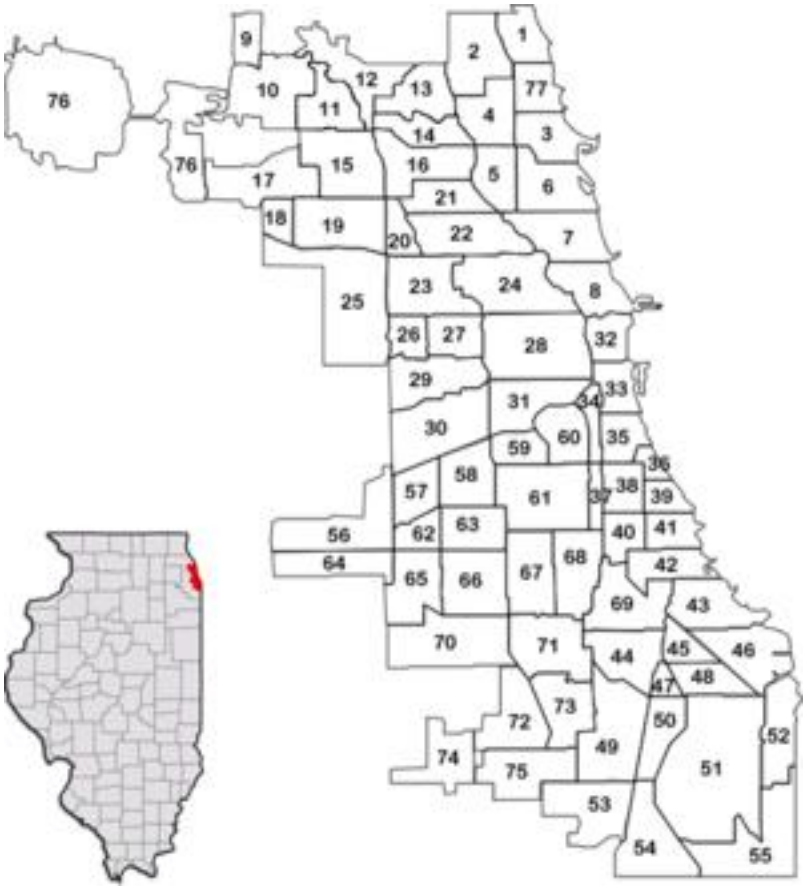
Not only does good oral health mean being free of tooth decay and gum disease, but it also means being free of chronic oral pain conditions; oral cancer; birth defects, such as cleft lip and palate; and other conditions that affect the mouth and throat. Good oral health also includes the ability to carry on the basic human functions, such as chewing, swallowing, speaking, smiling, kissing, and singing[2].

> Oral health is an essential and integral component of people's overall health.

Because the mouth is an integral part of the human anatomy, oral health is intimately related to the health of the rest of the body. Mounting evidence suggests that infections in the mouth, such as periodontal (gum) diseases, can increase the risk for heart disease, can put pregnant women at greater risk for premature delivery, and can complicate control of blood sugar for people living with diabetes. Untreated dental infections can be life threatening through spread into brain and other organs. Changes in the mouth are often the first signs of problems elsewhere in the body, such as in infectious diseases, immune disorders, nutritional deficiencies, and cancers.

Good oral health requires a comprehensive approach to prevention that includes optimally fluoridated water or fluoride supplementation, regular access to professional dental care, daily routine of home dental care and a nutritious diet that is low in sugar[3].

Chicago Demographics



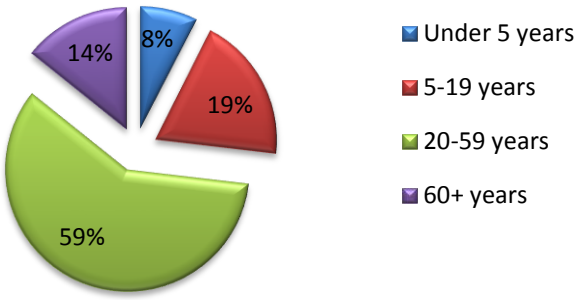
Illinois is the fifth-most populous state of the United States of America. As of 2008, Illinois has an estimated population of 12,901,563. Chicago is the largest city in the state and the third most populous city in the United States, with its 2009-estimated population of 2,824,064 [4] . As per 2008 estimates Chicago is home to 22% of the total state population.

Chicago Population by Race & Ethnicity (2009)[4]	
Race & Ethnicity	**%**
Non-Hispanic White	32.5
Non-Hispanic Black	33.8
Hispanic	27.4

Chicago has a diverse population mix. One-third of the population is Hispanic and one-third is African-American. Fourteen percent of population is 60 years of age or over and almost one-third of the population is under 19 years of age.

According to an analysis of the U.S. Census Bureau, one in 5 Chicago residents were without health insurance in 2009, a figure that puts the city higher than the national average (16.7%) of those without medical coverage. There were more than 550,000 uninsured people – or 19.7% of the population, in the city of Chicago[5].

Chicago Population by age (2009)



National, State, and Local Oral Health Objectives

A key component of improving oral health is to have measurable targets for improvement. The U.S. Department of Health and Human Services coordinates an effort to create a set of national health goals "Healthy People 2010 and the now updated HP 2020 (HP 2010 & HP 2020)" to be reached by the respective years. The national objectives include oral health objectives. These objectives serve as the benchmark for measuring the burden of oral disease in the country, state or local community. The state health department monitors Illinois' progress toward these objectives and the Forum tracks them at the community level. The following is the table of the HP2020 Oral Health Objectives and US baseline along with current status for Illinois & Chicago. NA stands for data not available.

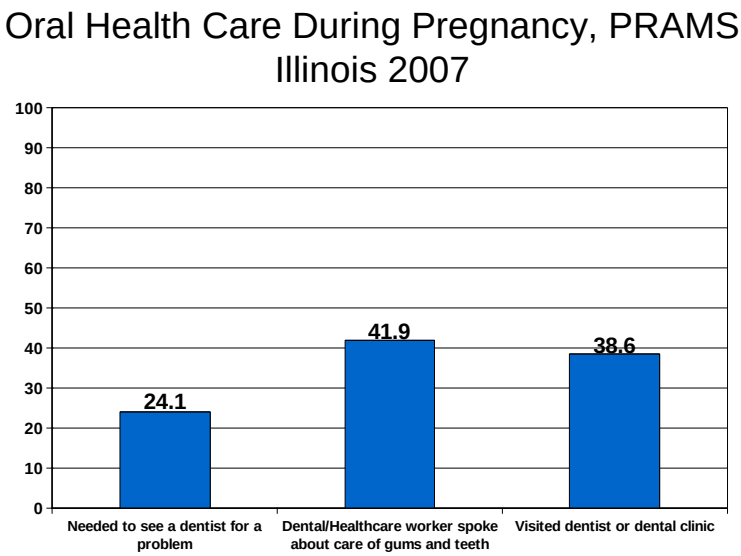
Table 1. Healthy People 2020 Oral Health Objectives Related to National, State, and City Baseline Measures

Oral Health Objective	HP 2020 Target %[6]	US[7] %	IL %	Chicago %
Dental Caries Experience				
Preschool (3-5yrs) primary teeth	At or below 30	33.3	NA	NA
Elementary 6-9yrs (3rd Grade)	At or below 49	54.4	53	65
Adolescents 13-15 yrs	At or below 48.3	53.7	NA	NA
Untreated Caries				
Preschool (3-5yrs) primary teeth	At or below 21.4	23.8	NA	NA
Elementary (3rd Grade)	At or below 25.9	28.8	29.1	35.6
Adolescents	At or below 15.3	17.0	NA	NA
Adults 35-44yrs	At or below 25.0	27.8	NA	NA
Adults 65-74 yrs (coronal caries)	At or below 15.4	17.1	NA	NA
Adults 75 yrs+ (root surface caries)	At or below 34.1	37.9	NA	NA
Tooth loss due to caries or periodontitis				
Adults 45-64yrs	At or below 68.8	76.4	55.9	60.7
Edentulous (toothless) older adults, ages 65-74	At or below 21.6	24.0	19.1	22.6
Periodontal (gum) disease	At or below 11.4	12.7	NA	NA
Oral and pharyngeal cancers detected at the earliest stage	At or above 35.8	32.5[8]	NA	NA
Oral and pharyngeal cancer exam within past 12 months, age 40+	Increase			
Dental sealants				
Preschool (3-5yrs) primary molar	At or above 1.5	1.4	NA	NA
Elementary (6-9yrs) permanent molars	At or above 28.1	25.5	41.5	34.3
Adolescents	At or above 21.9	19.9	NA	NA
Population served by fluoridated community water systems	At or above 79.6	NA	NA	100
Dental visits within past 12 months				
Children and adults (age 2+)	At or above 49	44.5	NA	NA
Low-income (at or below 200% federal poverty level) children and adolescents receiving preventive dental service during the past 12 months, ages 0-18	At or above 29.4	26.7[9]	NA	NA
Local health department with oral health prevention or care programs	At or above 28.4	25.8[10]	NA	NA
Federally Qualified Health Centers and local health departments with oral health component	At or above 83	75[11]	NA	NA
Patients receiving oral health services at FQHCs	At or above 33.3	17.5	NA	NA
School-based health centers with dental sealants component	At or above 26.5	24.1	NA	NA
School-based health centers with dental care	At or above 11.1	10.1	NA	NA

There is an absence of IL and Chicago data related to HP2020 objectives. Chicago is worse than national data on the proportion of children with dental caries experience and untreated caries (3rd graders); and the proportion of older adults (65-74 yrs) who are edentulous (toothless). The city is better than national levels on tooth loss due to caries or periodontitis in adults (45-64 yrs), dental sealants in elementary school children (6-9 yrs), and population served by fluoridated community water systems.

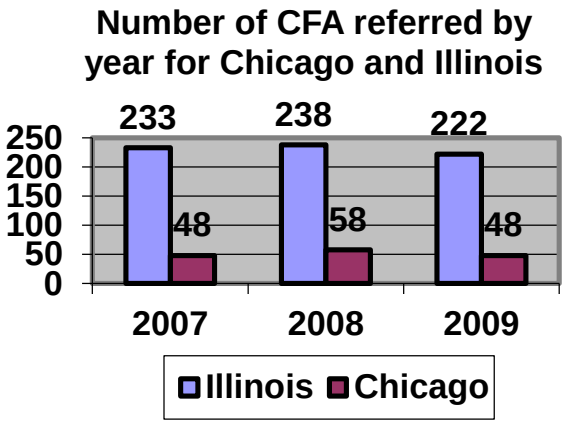
Importance of Oral Health in Pregnant Women and Infants

Maintaining good oral health during pregnancy is important. Researchers have found that women with periodontal disease are at increased risk for delivering preterm low birth weight babies. Pregnant women should obtain professional dental care during pregnancy. To collect and monitor health behaviors and experiences before, during, and immediately following the birth of a baby, there exists a national ongoing population based survey of women who have delivered a live born infant called The Pregnancy Risk Assessment Monitoring System (PRAMS). Illinois participates in PRAMS but the sampling strategy does not allow the data to be broken down to city level. As shown in the graph above left, according to the 2007 IL PRAMS data, only 38.6 percent of women in Illinois said that they visited a dentist or dental clinic during pregnancy. Nearly one-fourth of women said they needed to see the dentist for an existing problem or difficulty. White and non-Hispanic women were more likely to report going to the dentist during pregnancy when compared with black and Hispanic women. Women in their mid-20s or older and women with more than a high school education also reported dental visit more often than younger and those with a high school education or less[13].



Prevalence of Craniofacial Anomalies

Craniofacial anomalies (cleft lip and cleft palate) are one of the most common congenital anomalies. These conditions may occur as isolated defects or as part of other syndromes. The Adverse Pregnancy Outcomes Reporting System (APORS) and electronic birth certificates programs of the Illinois



Department of Public Health (IDPH) identifies craniofacial anomalies, along with other birth data and reports to the Department's Division of Vital Records. The Craniofacial Anomaly (CFA) Program has three components: (1) education of parents of infants with craniofacial anomalies; (2) the development and distribution of educational materials for health professionals, including hospital staff; (3) education programs at local health agencies, pediatrician and dental offices. Since the program's inception in 1986, it has served more than 4,500 families. On an average, 20% of the families referred by the CFA program reside in Chicago[12]. The graph above right describes that over a three year period, the number of craniofacial anomaly cases has held steady at about 22% of state's cases.

Public Health Prevention through the Use of Fluorides

The decrease of dental disease through wide spread fluoridation prevention has been recognized by CDC as one of the 10 greatest public health achievements of the 20th century. Fluoridation is a safe, cost effective way of preventing tooth decay. Today, 100 percent of the population in Chicago receives fluoridated drinking water. However, there may still be a significant number of Chicagoans who may not receive the benefits of fluoride in their water, such as those drinking only bottled or filtered water.

> Fluoridation is a safe, cost effective way of preventing tooth decay.

Research has shown that topical fluoride varnish (FV) application is an important additional vehicle that decreases, reverses and prevents tooth decay. Fluoride varnish is a high concentration of fluoride that can be "painted" on the surfaces of teeth, where it adheres for several hours. FV has been demonstrated to be clinically effective in reducing Early Childhood Caries among young children[13]. The Illinois Chapter, American Academy of Pediatrics (ICAAP) is a statewide membership organization representing 1,900 pediatricians and pediatric specialist throughout Illinois. ICAAP's primary activities include developing education programs for primary care providers using a practice based, academic detailing approach often using peer-to-peer training models. Practices are encouraged to adopt the necessary changes needed to increase the quality of care provided to children in their practices. Current programs offered by ICAAP include education on prevention and treatment obesity in children, immunizations in childhood and adolescents, establishing medical homes for children with special healthcare needs and incorporating developmental screening into well child visits.

In 2006, ICAAP launched an oral health initiative - Bright Smiles from Birth (BSFB). BSFB provides education to primary care providers on oral health in children under three including application of fluoride varnish. Local dentists are trained as speakers to present the program in physician's offices and provide information on the pathogenesis of early childhood caries, performing oral health assessments, applying fluoride varnish, oral health anticipatory guidance and referring to a dental home. Upon completion of

the BSFB program, providers can receive reimbursement for application of fluoride varnish. BSFB works with providers to make the necessary changes to incorporate oral health into well child visits beginning at 6 months including providing a mentoring program where local dentist provide a hands-on demonstration on applying fluoride varnish. As of June 2011, over 280 presentations have been held for over 1300 primary care providers and over 1100 support staff[14]. This ICAAP initiative represents a significant investment in prevention education and treatment. Up to date dental disease pathogenesis and prevention methods have been shared with pediatric primary care providers who care for many thousands of children. Trained pediatric providers have knowledge to talk to parents about proper oral health and hygiene and provide much needed education and preventive treatment as part of the medical visit.

Oral Health of Children and Teens

Among children tooth decay is five times more common than asthma and seven times more common than hayfever[15]. Untreated tooth decay causes pain and infections that may lead to problems; such as eating, speaking, playing, and learning[16].

The majority of oral diseases (tooth decay and gingival disease) are highly preventable. The combination of dental sealants and fluoride has the potential to nearly eliminate tooth decay in school-age children. Poor oral care, including a delay in dental visits at young age, can initiate a lifetime of poorer health outcomes that extend beyond oral disease.

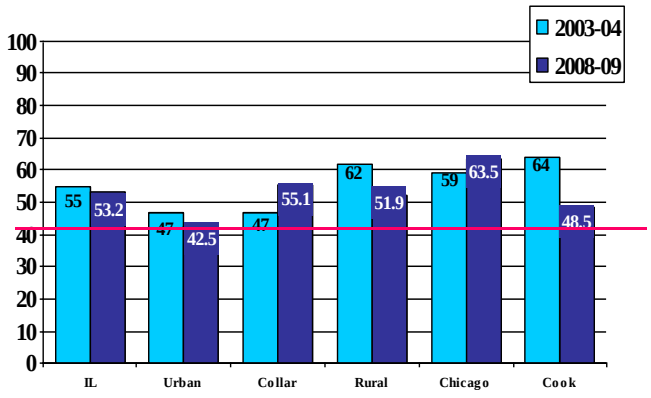
The majority of oral diseases are highly preventable. The combination of dental sealants and fluoride has the potential to nearly eliminate tooth decay in school-age children.

Burden of Oral Diseases in Elementary School-children

The Forum collaborated with Illinois Department of Public Health (Divisions of Oral Health and Chronic Disease) to conduct the Healthy Smile Healthy Growth assessment in 2008-09 school year. The assessment is done every five years among randomly selected 3rd graders in public schools. Information collected included caries experience, cavitated lesions (untreated cavities), treatment need, presence of sealants, and body mass index (BMI).

Percentage with Caries Experience, HSHG 2008-2009

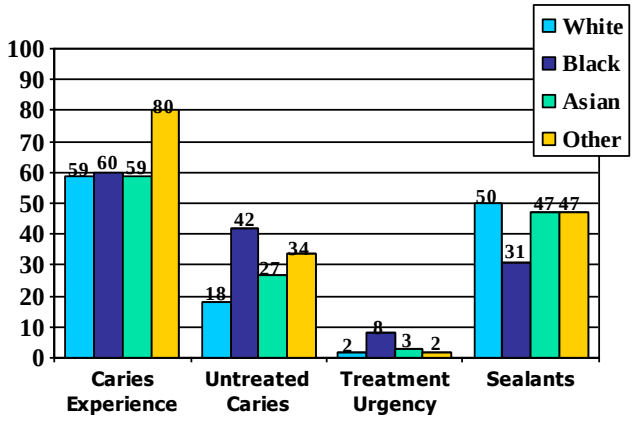
HP 2010 Goal 42%



Chicago children have the highest rate of dental caries in the state. According to the assessment conducted in 2008-09:

- Over half of Chicago children (3rd Graders) have already had caries.
- One-in-three have untreated decay.
- Nearly one-in-fifteen are in urgent need of care.

Percentage of Children screened in Chicago with Oral Health Status by Race

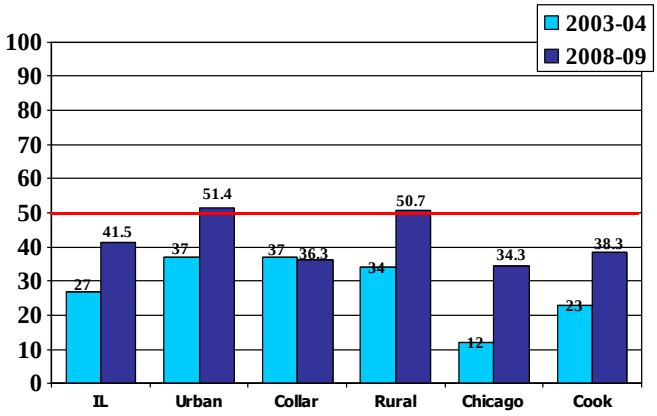


Those with fewer financial resources suffer more oral disease. Children from low-income families experience more caries, more untreated decay, and treatment urgency and have lower percentage of sealants. Along with income, race and ethnicity also play role with oral disease White and Asian sub populations have lower rates of caries experience, untreated decay, treatment urgency and higher rates for sealants.

A dental sealant is a plastic coating that fills the natural pits and grooves on the tops of permanent molar teeth, essentially sealing out decay. Considering that approximately 90% of all cavities in children's teeth occur in the permanent molars, dental sealants are an inexpensive and very effective means of preventing cavities in children[17]. The estimated percent of children with a dental sealant on a permanent molar in Chicago has significantly improved from 12% in 2003-04 to 34.3% in 2008-09 assessments. Healthy People 2010 Target for sealants was 50 percent[18].

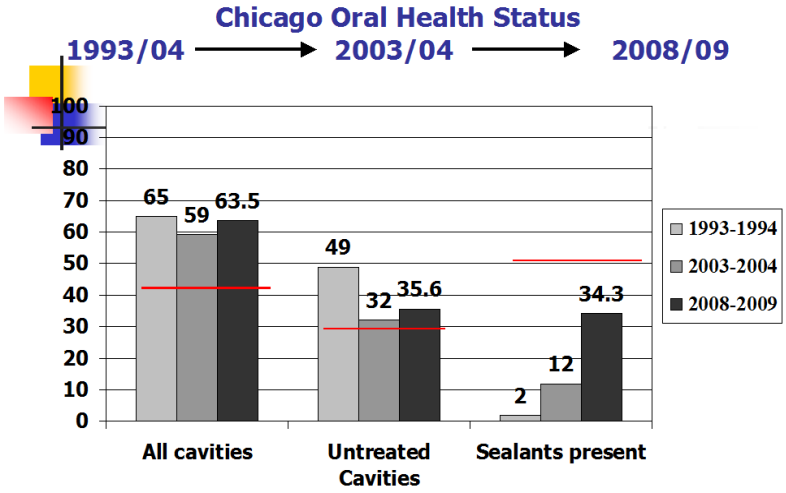
Percentage with Sealants, HSHG 2008-09

HP 2010 Goal 50%



Chicago children have the highest rate of dental caries in the state. However, the sealant rates in elementary school-children have remarkably improved.

Among Chicago 3rd graders dental caries experience (treated and untreated cavities) rates have remained unchanged since 1993/94 assessment. Untreated decay rates have decreases from 49% to 35.6% and the sealant rates have remarkably improved from 2% to 34.3%. The improvement in sealant rates can be credited to the citywide sealant program administered by Chicago Department of Public Health.



Monitoring Oral Health Status of Students with a Dental Examination

Effective July 1, 2005, as mandated by Section 27-8.1 of the Illinois School Code, all children in kindergarten, second and sixth grades are required to have a dental examination by May 15th of each year in compliance with the rules adopted by the Illinois Department of Public Health. In addition, school code requires all school districts to submit a summary report of examination results to the Illinois State Board of Education by June 30th each year. In years one through four of the mandate, the compliance levels for Kindergarten, 2nd and 6th grades remained consistent at 80.4%, 78.2% and 78.4% respectively. Chicago Public Schools began reporting data in the 2007-08 school year[19]. 2007-08 school year and 2008-09 school year dental exam data is listed in Table 2 below.

Since the implementation of the Section 27-8.1 Illinois School Code dental examination requirement, school reports show approximately 80% of children received a dental examination, 10% were exempt through waivers, and 10% did not receive a dental examination. Compliance levels (percentage of students who received a dental examination during the school year) in non-public schools were much higher than public schools, overall and by grade levels. Compliance levels decreased with increasing grade levels.

Since year two (2006-2007), schools have annually reported oral health status of the students who received a dental examination (recorded on the Proof of School Dental Examination Forms) in addition to the compliance data. Reported oral health status information includes: presence of dental sealants, caries experience, untreated dental decay, and urgent treatment needs. Compliance and oral health status information is available for each school that has reported.

The following table shows the reported oral health status of students who received a mandated dental examination in Chicago Public Schools. It is important to note that: 1) the findings are reported by dentists who are not calibrated or given standardized examination criteria and 2) oral health status of students in non-public school environments is not available and thus is unknown.

Table 2. Oral Health Status of Students with a Dental Examination Mandate: Chicago, 2007-2009

Grade	Year 3 2007-08	Year 4 2008-09
Kindergarten		
In compliance with complete dental examination (%)	37,600 (74%)	12,086 (100%)
With dental sealant	7.9%	11.1%
With caries experience/restoration history	17.9%	12.3%
With untreated caries	15.4%	14.7%
Needing urgent treatment	2.0%	4.0%
2nd Grade		
In compliance with complete dental examination	29,950 (53.6%)	7,827 (36.1%)
With dental sealant	29.5%	39.8%
With caries experience/restoration history	31.0%	27.8%
With untreated caries	20.6%	33.3%
Needing urgent treatment	2.1%	10.1%
6th Grade		
In compliance with complete dental examination	27,033 (53%)	6,504 (41.2%)
With dental sealant	41.0%	43.9%
With caries experience/restoration history	31.5%	26.0%
With untreated caries	16.3%	28.3%
Needing urgent treatment	1.1%	6.2%

Adolescent Risk Factors that Lead to Poor Oral Health

As children progress to adolescence, they are more sensitive to peer pressures and feel an increase in independence. Effective prevention health messages become more challenging at this age. As their bodies and personalities mature, adolescents face a myriad of differing health issues:

- Excess consumption of sugary foods also contributes to poor oral health. Based on 2008 data, Across the US, the obesity prevalence for children 6-11 years old was 19.6%. In Chicago, the obesity prevalence among children 10-13 years old

was 28% and among children 3-7 years old was 22%, more than double that of US rates for similarly aged children[20].

- Tobacco use – smoked and chewed – increases. Tobacco use is linked with periodontal disease, loose teeth and oral and pharyngeal cancers. The earlier tobacco use begins, the more likely it will develop into an addictive lifestyle pattern.

    - Approximately 80% of adults who smoke began smoking before the age of 18 [21]. Among Illinois' youth, approximately one in 10 middle school students (11%) and one in four high school students (27.5%) currently use some form of tobacco product.
    - Cigars are the most commonly used tobacco product among middle school students (5.9%), whereas cigarettes are most common among high school students (18.8%).
    - Smokeless tobacco products are used by 2.1% of middle school students and 8.1% of high school students[22].

- Alcohol use – Adolescents often begin or increase alcohol consumption, which is the second most common risk factor for oral cancer.

- Sports-related injuries are common in adolescents. Football and lacrosse are the only school-sanctioned sports that currently require the use of mouth guards[23].

There is a lack of oral health status data and indicators for high school-students in Chicago.

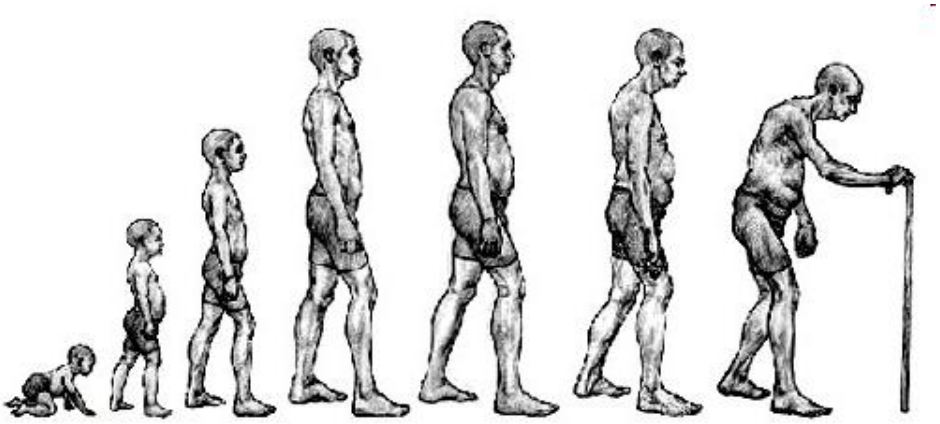
- Methamphetamine use – the recent surge in the use of this drug carries a high price in oral disease. Users are characterized by rampant caries; cracked teeth; periodontitis and tooth loss, caused by the drug itself; high intake of soft drinks while using the drug, and lack of care during extended periods of abuse[24].

- Mouth jewelry – Wearing mouth jewelry can lead to risks of infection, blood borne disease transmission, and heart infection (endocarditis). Complications may include injury to the gums, damage to the teeth, interference with speech, and allergies.

There is lack of oral status data and indicators for High School students. Efforts need to be made to collect oral health indicators among high school population similar to BSS among 3rd grade children in Illinois.

Oral Health among Adults

There are threats to oral health across the lifespan. In the words of former Surgeon General C. Everett Koop: "You are not healthy without good oral health."[25]
Years of inadequate or lack of access to quality oral health care can take its toll resulting in poor oral health and need for extensive and complex care to re-establish health and function of oral structures.



Diseases of the Supporting Structures of Teeth

Nearly one-third of all adults in the United States have untreated tooth decay. In addition, nearly 8.52% of adults age 20 to 64 have periodontal disease. Periodontal diseases (gum diseases) are infections of the supporting structures of the teeth. Older adults, Black and Hispanic adults, current smokers, and those with lower incomes and less education are more likely to have moderate/severe periodontal disease [26]. Nationwide, 18.5% adults 65+ years old have lost all natural teeth because of tooth decay or gum disease. 44.0% adults have had any number of teeth extracted. Losses of multiple teeth affect confidence, ability to speak, masticate, and may result in poor food choices impacting nutrition and systemic health.

Table 3. Percentage of Adults Aged 18 or Older Who Had Their Teeth Cleaned within the Past Year, BRFSS 2008

	Illinois (%)	Chicago (%)
Total	66.4	57.9
Age		
18-24 years	63.5	DNA
25-44 years	63.0	54.4
45-64 years	69.7	62.9
65 + years	70.7	69.9
Gender		
Male	61.7	50.5
Female	70.8	64.9
Race		
White	70.7	69.9
Black	48.8	45.6
Other	60.9	50.6
Hispanic or Latino	58.8	51.6
Education Level		
Less than high school	49.9	51.7
High school graduate	58.0	39.7
Some college	66.5	59.8
College graduate	76.4	70.2
Income		
Less thsn $15,000	44.4	47.5
$15,000 – 35,000	50.4	39.3
$35,000 – 50,000	62.4	56.8
$50,000 +	76.6	74.9

Regular visits to the dentists and preventive care can reduce the development of disease.

- As of BRFSS 2008, nearly 60% of the adults in Chicago visited dentist within last year.
- Black, Hispanics and other racial Chicago resident adults access dental care at rates lower than the city and state average.
- Those with less education (39.7% of high school graduate) and /or less income (39.3% of $15-35,000 Income level) are also less likely to access preventive care

Vulnerable populations in Chicago experience more challenges to access dental care.

Table 4. Proportion of Adults who Have Lost Natural Teeth Because of Tooth Decay or Gum Disease, BRFSS 2008

	Lost some teeth, but Not All		Lost All Teeth	
	Illinois	**Chicago**	**Illinois**	**Chicago**
Total	38.2	40.3	5.0	5.0
Age				
25-44 years	28.8	35.0		DNA
45-64 years	50.9	55.1	5.0	5.6
65 + years	57.8	52.0	19.1	22.6
Gender				
Male	37.4	36.8	4.1	4.1
Female	38.8	43.5	5.6	5.8
Race				
White	36.3	32.7	4.8	2.4
Black	48.1	49.9	6.8	9.6
Other	36.1	37.6	2.4	DNA
Hispanic or Latino	36.5	40.2	2.7	4.0
Education Level				
Less than high school	42.9	38.6	15.5	14.3
High school graduate	45.8	34.1	7.1	8.3
Some college	39.9	33.6	3.7	1.5
College graduate	29.0	22.6	1.1	1.9
Income				
Less than $15,000	54.0	53.2	12.0	10.2
$15,000 – 35,000	45.3	42.4	8.1	7.0
$35,000 – 50,000	45.9	47.8	5.4	DNA
$50,000 +	31.6	32.7	1.6	DNA

Data from the BRFSS 2008 reveal that in Chicago 50% of African American adults have lost some teeth because of tooth decay or gum disease, and almost 10% of them have lost all teeth. Adults with less education (38.6% of less than high school) and/or less income (53.2% of less than $15,000) are more likely to have lost some teeth.

Local Chicago Community Dental Survey Results

In summer of 2009, the Chicago Community Oral Health Forum conducted an oral health assessment among adults in three communities (Englewood, Humboldt Park and Rogers park) chosen for diversity, perceived need, geographic location, community interest, and community resources among other factors. A total of 1,273 adults were screened randomly with a smile check and an oral health questionnaire. The questionnaire included the following categories: demographics, Perceived Oral Health Status, Dental History, Access & Utilization of Dental services, Importance of oral health, Smoking status.

Table 5. Results from the Community Dental Health Survey: Chicago, 2009

	Humboldt Park	Englewood	Rogers Park
Number of participants	**514 (n)**	**258 (n)**	**501 (n)**
Age Groups			
18-24 years	18.5 %	51.4 %	19.2 %
25-64 years	78.9%	39.2%	68.0%
65+ years	2.6%	9.4%	12.7%
Gender			
Male	27.9%	45.4%	37%
Female	72.1%	54.2%	63%
Race & Ethnicity			
Caucasian	6.5%	7.7%	42.2%
African American	27%	90%	50.0%
Hispanics	62%	15.9%	55%
Perceived Oral health			
Satisfaction with oral health (yes)	57%	66%	40%
Pain in teeth (yes)	57%	60%	60%
Dental Insurance Status			
No Dental Insurance	41%	47%	62%
Medicaid (yes)	36%	38%	40%
Private/Self (yes)	50%	17%	22%
Difficulty in finding a dentist	53%	61%	74%
Dental visits			
Visited a dentist < 1 year ago	48%	42%	35%
Visited a dentist 1-3 years ago	28%	31%	32%
Visited a dentist over 3 years ago	20%	19%	30%
Never visited a dentist	4%	7%	3%
Smoking & Tobacco use			
Occasional smoker	15%	23%	16%
Regular smoker	15%	21%	17%

The three communities had different subgroups represented in the survey responses. In Humboldt Park, the majority of participants were 25-64 years, females and Hispanics. In Englewood, majority of the responses came from African Americans between 18-24 years old, and the male to female ratio was 1:1. In Rogers Park, 68% of the respondents were 25-64 years old, majority females and 55% Hispanics followed by 50% Caucasians. In general the survey results show higher oral disease burden and lower access and utilization of dental services among the African-American group. Between 41% and 62% of the respondents in the three communities reported having no dental insurance.

Perceptions in the community regarding the importance of oral health and the importance of having regular dental visits were very high. However, over half of the interviewed adults reported not visiting the dentist in the last year.

Survey findings reveal that adults in these three Chicago communities have major difficulties to access dental care.

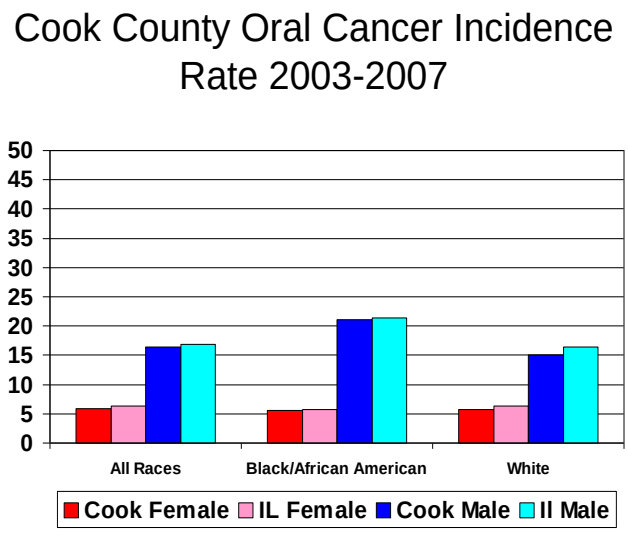
The main reasons reported for not visiting the dentist were: 1) don't know where to go, 2) cannot afford it, 3) dentist doesn't take my insurance and 4) clinic hours are not suitable. Survey results suggest that limited access to dental care and lack of awareness/education of oral health may be the reason for not being able to obtain dental care. Strategies should be implemented in the community to increase the awareness for oral health, make available accurate information regarding existing dental services and to expand the possibilities to access dental care for low-income adults.

Most oral diseases are preventable and treatments are cost-effective if diagnosed and treated early. Oral health education, awareness and easy access to preventive services are some of the basic steps to improve the oral health of a community. Printed materials providing information regarding different oral health topics may be gathered or developed to improve people's knowledge regarding: good dental habits (brushing, flossing, etc.), the importance of a healthy diet, and how to recognize healthy and unhealthy dental tissues.

The project was not without limitations. The Dental Health Survey was a self-reported questionnaire and had some vague questions that did not produce useful results. The use of a convenience sample instead of a randomly selected, limited the external validity of the findings to all community members. Some of the strengths of the project were: the active involvement of different local community organizations to collect information regarding the oral health of the community, being able to collect a large enough sample of the population, and the higher response rate of community members. Information collected through the survey is an excellent first step in a process that will help to develop future strategies to improve the oral health of the community members and with action steps taken a future similar survey would provide trends over time for the oral health status.

Risk Factors, Incidence and Survival Rates of Oral and Pharyngeal Cancer

According to the Illinois State Cancer Registry (ISCR), about 1,480 new cases of oral and pharyngeal cancer were diagnosed in 2008 [27]. Unfortunately, the ISCR date does not have the ability to break down data to city specific incidence rates.



Oral cancer starts in the mouth (oral cavity) and can interfere with the ability to breath, talk, eat, chew or swallow. The oral cavity is easy to examine and when oral cancer is diagnosed early, treatment has a much higher rate of success. From 2004-2008, the median age at diagnosis for cancer of the oral cavity and pharynx was 62 years of age. Oral Cancers are the fourth most common type of cancer among African American males and the seventh most common cancer in white males.

Important risk factors include but are not limited to tobacco, alcohol, poor nutrition, Human Pappilloma Virus (HPV) infection and age [27]. There are disparities in the incidence rates of oral cancer with African-American males have the highest rates. Females have substantially lower incidence rates within every race/ethnic group as compared to males, while the rates among African-American women are lower than that of white women. During recent decades, however, tobacco use has increased among women and will likely result in higher oral cancer rates over time.

Stage at diagnosis refers to the extent of disease at diagnosis. There are three stages: localized, regional, and distant metastasis. Five-year relative survival rates vary with the stage at diagnosis; localized cancers have the highest survival rates and cancers with distant metastasis the lowest. Five-year survival rates for all oral cancer cases are 79% for those with localized disease, 42% for regional disease, and 19% for disease with distant metastases. [28] The difference in oral cancer incidence, prevalence, mortality is substantially higher in black males as compared to white males. In one research study by ethnicity alone, the danger of fatality from oral cancer for blacks was 1.7 times that of whites, when controlled for socioeconomic stats, fatality outcome was lessened to 1.3 times than that of whites[29].

Major risk factors for oral cancer include the use of tobacco products and alcohol. Five-year survival rates are greater with early cancer diagnosis.

Early stage of diagnosis is one important factor in good clinical outcome, however, in 1998, only 13 percent of U.S. adults (14 percent for whites, 7 percent for blacks) reported having received such an examination within the preceding 12 months[30]. Lack of access to periodic oral cancer screenings will result in greater numbers of oral cancer cases being diagnosed later when the cancer may be more wide-spread.

Lack of Screening by Dental and Medical Professionals: Just a fraction of Americans get an oral cancer exam. Based upon the 1998 NHIS survey signifies that only 20.1% of adults have ever received such an examination and blacks, Hispanics, and patients with low educational attainment are considerably less likely to have had such an examination[31 32 33 34].

Tobacco Use among Adults

Tobacco use is one of the most common risk factors for oral cancer and other conditions in the mouth, such as periodontal disease, gingival recession, xerostomia (dry mouth) and caries. Alcohol and tobacco use are the major risk factors for oral cancer, accounting for 75 percent of all oral cancers. As per BRFSS 2009 data, tobacco and alcohol usage among Chicago residents is higher than the state and national average[35] resulting in increased risk for oral cancers among Chicagoans.

> Tobacco and alcohol usage among Chicago residents is higher than the state and national average.

Table 6. Cigarette Smoking among Adults Aged 18 Years and Older: BRFSS, 2009

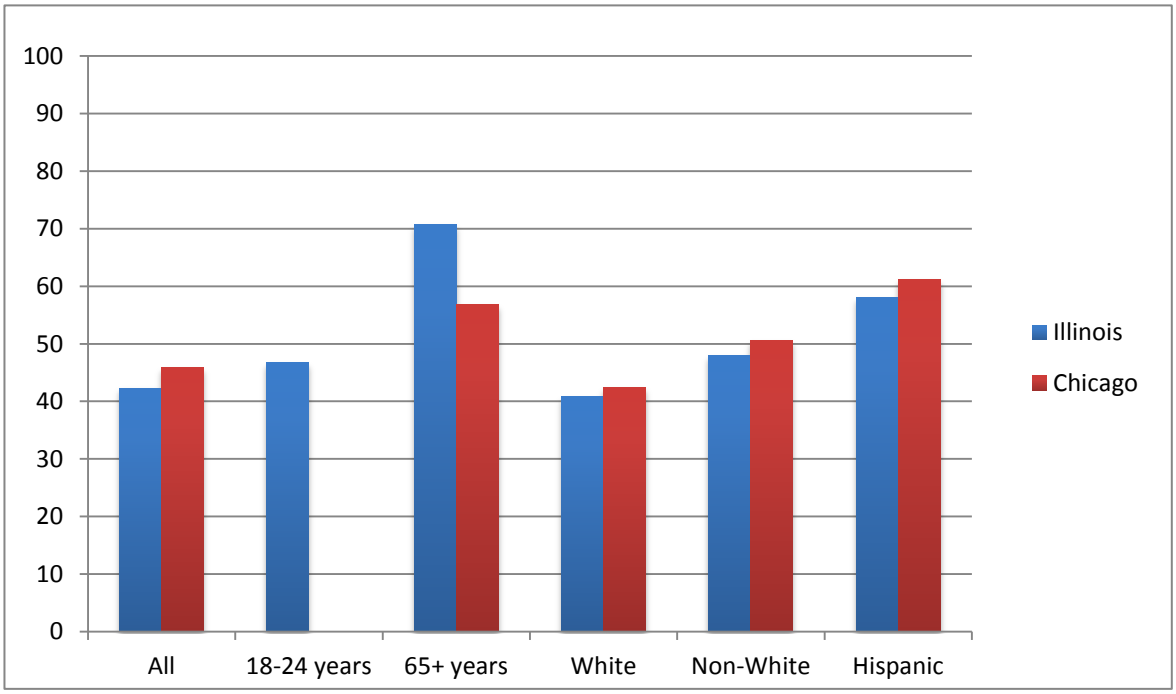
	USA (%)	Illinois (%)	Chicago (%)
Smoke everyday	12.7	12.0	19.5
White	12.6	12.2	19.1
Black	13.4	15.1	21.7
Hispanic	8.6	10.3	19.4
Smoke some days	5.0	6.6	19.7
White	4.5	5.6	DNA
Black	6.8	9.2	DNA
Hispanic	6.0	7.4	DNA
Former smoker	25.5	23.1	DNA
White	27.7	26.9	22.9
Black	17.3	16.7	20.2
Hispanic	17.0	15.5	9.1

Oral Health in Older Adults

According to CDC[36], older Americans make up a growing percentage of the U.S. population, 35 million in 2000 and by 2050; the number is expected to increase to 48 million. Oral diseases and conditions are common among these older Americans who grew up without the benefit of community water fluoridation, effective dental therapies and other prevention efforts. Older Americans with the poorest oral health are those who are economically disadvantaged, lack insurance, and are members of racial and ethnic minorities. Being disabled, homebound, or institutionalized also increases the risk of poor oral health.

Many older Americans do not have dental insurance. Often these benefits are lost when they retire from their employer and enroll for Medicare. Medicare, which provides health insurance for people over age 65 and people with certain illnesses and disabilities, was not designed to provide routine dental care. The situation may be worse for older women, who generally have lower incomes, may never have had dental insurance and have a longer life span. Based on BRFSS 2003 data, 46% of all Chicago adults, and 57% of those 65 years of age and older do not have any form of dental insurance[37].

Population in Chicago and Illinois without Dental Insurance: BRFSS, 2003



According to BRFSS 2008, 23% of adults over age 65 are toothless (edentulous). Having missing teeth can affect nutrition, since people without teeth often prefer soft, easily chewed foods. Because dentures are not as efficient for chewing food as natural teeth, denture wearers also may choose soft foods and avoid fresh fruits and vegetables.

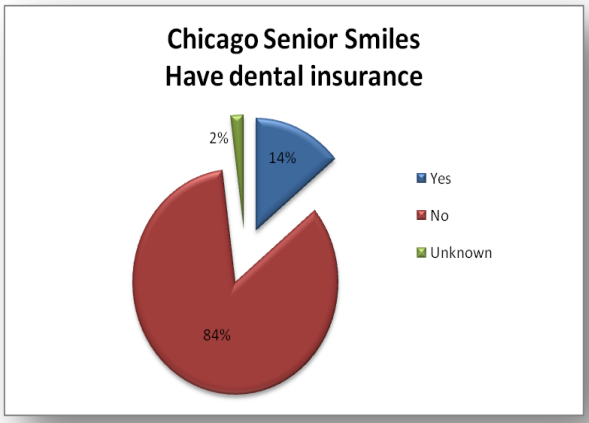
National data indicate that 7 percent of adults 65 years and older reported having tooth pain at least twice during the past 6 months. Older adults who belonged to racial/ethnic minorities or who had a low level of education were more likely to report dental pain than older adults who were white or better educated. Older men and older women showed no difference in their likelihood of reporting tooth pain[38].

Periodontal diseases when not treated can result in pain, abscesses and eventual loss of teeth. The prevalence of periodontal diseases increases with age, from 6 percent among persons 25-34 years to 41 percent among those 65 years and older[39]. This increase is not necessarily due to older persons being more susceptible to periodontal diseases, but rather to the slow progression and chronic consequences of these diseases (i.e., bone loss and gingival recession), that accumulate over time and are thus more evident in the elderly[40]. Preventing and treating periodontal diseases early is particularly relevant because recent studies have shown a possible association between these diseases and diabetes and cardiovascular diseases, which are major causes of death among the elderly population[41].

Because chronic diseases are so prevalent among older adults, many take multiple prescribed and over-the-counter medications. It is not unusual for at least one of these medications to have a side effect that is detrimental to their oral health. For example, antihistamines, diuretics, antipsychotics, and antidepressants can reduce salivary flow. This may result in dry mouth, one of the most common side effects of both prescription and over-the-counter medications. Having a dry mouth can cause difficulty chewing, speaking, and swallowing. It also increases the risk of developing caries and soft tissue problems. Dry mouth may also decrease the ability and comfort of dentures[42].

Painful conditions that affect the facial nerves are more common among the elderly and can be severely debilitating. These conditions can affect mood, sleep, and oral-motor functions such as chewing and swallowing. Neurological diseases associated with age, such as Parkinson's disease, Alzheimer's disease, Huntington's disease, and stroke also affect oral sensory and motor functions, in addition to limiting the ability to care for one-self.

In 2010-2011, The Forum conducted an assessment of oral health among older adults in some Chicago communities. Oral health survey, in mouth screening and education program was conducted at selected sites including independent senior living, assisted living, and institutionalized elders in specific targeted communities.



Preliminary data shows that of the seniors (60+ years) surveyed, 84% of participants report having no dental insurance. Almost 39% of participants reported visiting the dentist less than one year ago while 44% reported visiting the dentist 3 or more years ago.

Chicago Public Health Dental Clinics

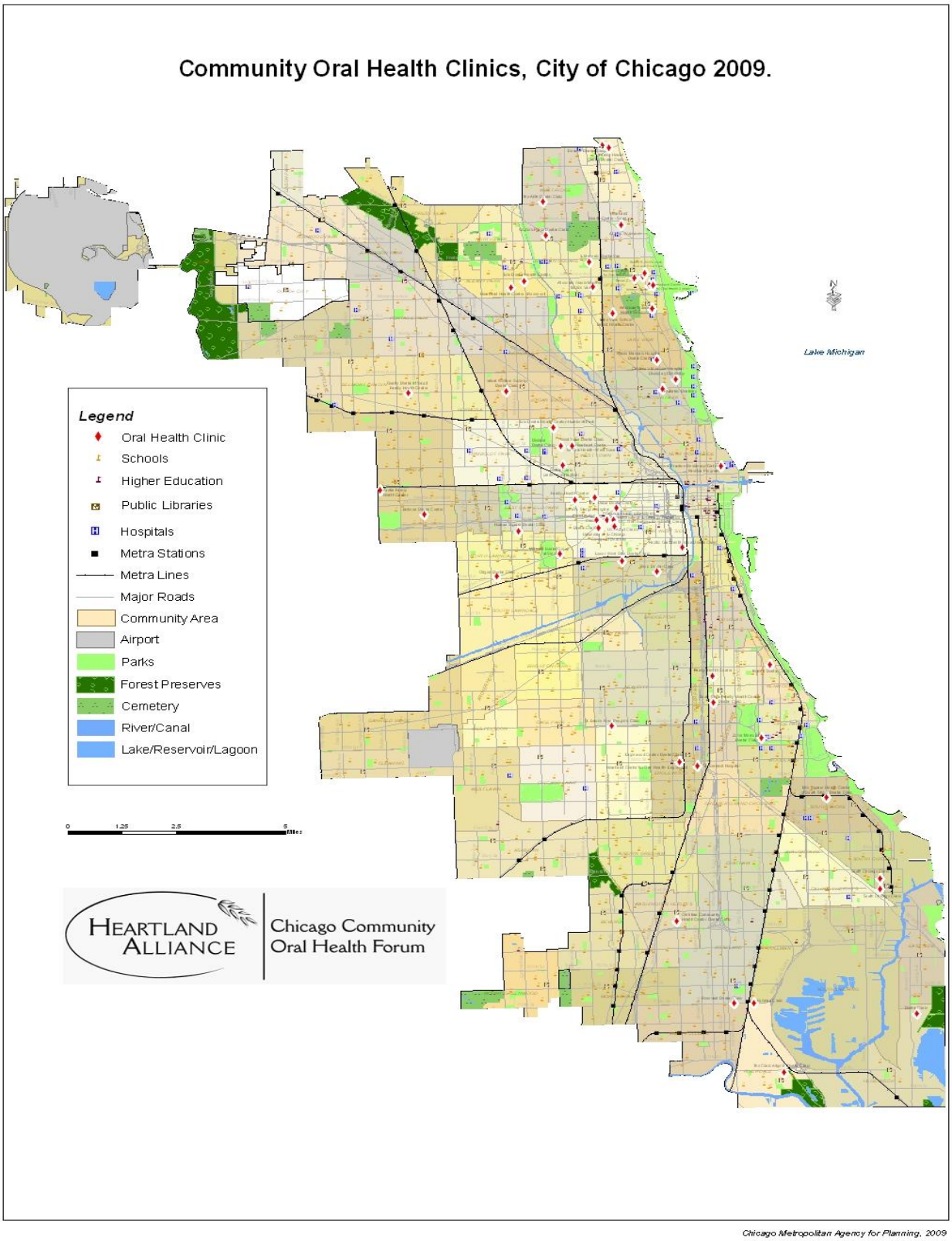
Safety net dental clinics provide a much-needed service to Chicago communities. The mission of a safety net clinic is to provide oral care to underserved populations, such as those with low incomes, Illinois Department of Healthcare and Family Services beneficiaries, the uninsured, and underinsured. These dental clinics provide a variety of services. Without these important services and providers, many Chicago residents would suffer from untreated dental problems. There are a total of 66 safety net dental clinics in Chicago area. Of these thirty-one are Federally Qualified Health Centers (FQHC), seven are School-based health centers, Six Hospital dental clinics, Ten Non-profit dental clinics and 6 Educational institute dental clinics.[43]

The Chicago Department of Public Health had dental clinics located in 5 of their community health centers. Due to budgetary constraints within the City, CDPH was forced to close these dental clinics. The Forum provided technical assistance to CDPH to reopen the clinics through a variety of public-private partnerships.

Safety net clinics provide care to underserved populations.

There are 66 safety net dental clinics in Chicago.

Map Source: CCOHF -Safety Net Dental Clinic in Chicago, IL



Medicaid Population and Oral Health Access

In Illinois, approximately 1.1 million children are enrolled in Medicaid/State Children's Health Insurance Plan (SCHIP). In Illinois, Medicaid provides limited dental benefits for adult (21 years of age and older) men, non-pregnant women and women eligible for pregnancy-related services. As of 2005, only 33% of children enrolled in Medicaid/SCHIP utilized oral health care services during the year, and only 34% of active general and pediatric dentists were enrolled as Medicaid providers, with most providing only a small volume of services. A number of studies report that the number of dentists participating in Medicaid programs increase when the reimbursement increases to levels that cover the operating cost of the clinic and one of the primary reasons for dentists not participating in Medicaid programs is the level of reimbursement is too low.

Table 7. Medicaid Enrollment: Chicago, 2010

Comprehensive Benefit Enrollees	FY 2010 (#)
Children (0-18yrs)	424,285
Adults with Disabilities	81,734
Other Adults	136,862
Seniors (65+yrs)	52,202
Partial benefits all ages	58,198

Both children and adult Medicaid/SCHIP enrollees do not access oral health care for a variety of complex reasons, including low value placed on oral health and lack of access to enrolled providers enrolled. In 2005, out of 2,007 dentists enrolled as Medicaid providers, only 1,615 submitted at least one claim for payment to Medicaid. 877 dentists provided care through 50 or more claims, and 732 dental providers saw 100 or more beneficiaries under age 21. Adult claims were low in both the 18-65 and 65+ age groups, likely due to the limited services available to adult and elderly patients.

There are 66 safety net dental clinics in Chicago and a total of 753,281 Medicaid enrollees in Chicago. That is just one dental clinic every 11,400 Medicaid enrollee. Access is further limited since many of these clinics do not provide full range of basic services; most perform limited procedures such as exams, cleanings and fillings. Some clinics do not treat children; some do not treat adults or adults with disabilities. Many are only able to provide services on a part-time basis.

Chicago Dental Sealant Program

The City of Chicago's School Oral Health Program is the largest in the country, serving all children in Chicago Public Schools from pre-Kindergarten through eighth grade. Directed and administered by the Chicago Department of Public Health (CDPH) through a strong working partnership with the Chicago Public Schools (CPS), the program allows for contract dentists and staff to visit schools and provide preventive care (dental sealants, fluoride varnish treatments, oral exams, and dental cleanings). CDPH provides oversight of the program, contract management, linking contracted dentists to the schools, collects data, and serves as a referral mechanism for children who need further treatment.

> The City of Chicago's School-based Oral Health Program is the largest in the country.

In the Chicago Public Schools, the majority of the 408,601 children are African American (46.5 percent) and Latino (39.1 percent). Over 84 percent of CPS students are from low-income families, and close to 19 percent have limited-English-proficiency[44].

Dentists working in CPS through contracts with CDPH are required to treat all children who return a consent form, whether or not they have insurance. The School-based Oral Health Program was launched as a pilot program in 7 schools in 2000. The program was further expanded to 126 schools in 2004. During the 2007-08 school year, the program served approximately 481 elementary schools, and provided oral disease prevention services (including close to 115,276 dental sealants) to almost 61,000 children.

The school-based oral health program has received accolades from the Lieutenant Governor, the City of Chicago Mayor's office, CPS and CDPH leadership, school reform advocates, and prompted outreach with the Illinois Maternal and Child Health Coalition to increase "AllKids" enrollment in schools. The presence of the program and the numbers of children who are receiving dental sealants through the program are recognized as a significant outcome of the Illinois Oral Health Plan, developed by IFLOSS, the state's oral health coalition.

Table 8. Number of Schools, Dental Exams and Sealants: Chicago Dental Sealant Program, 2007–2010

Year	Schools (#)	Exams (#)	Students Receiving Sealants (#)	Sealants Placed (#)	Students Presenting with Sealants (#)	Students with Referral Needs (#)	Students with Urgent Referral Needs (#)
2007-8	481	50,234	30,325	115,276	11,476	10,918	6,362
2008-9	457	52,808	30,983	109,716	15,833	17,392	7,408
2009-10	491	93,646	59,524	211,533	34,984	25,452	8,558

Workforce Capacity

The table provides the total number of dentists and dental hygienists licensed by the Illinois Department of Financial and Professional Regulation by calendar year. The number represents only licensed dentists and dental hygienists, and does not give details about their specialty and their practice status. Since 2007 the dentist to population ratio for Chicago has been decreasing gradually adding to the already challenging access disparity.

Table 9. Dental Workforce Trend in Illinois and Chicago: 2007-2010

Chicago Workforce	2007	2008	2009	2010
Number of Dentists in Illinois	8,585	8,810	8,896	8,837
Number of Dentists in Chicago	1,657	1,738	1,732	1,724
Number of Hygienists licensed in Illinois	6,282	6,654	6,578	6,921
Number of Hygienists in Chicago[45]	441	482	480	507
Chicago Population [46]	2,842,900	2,852,700	2,824,064	2,659,958
Dentist to Population Ratio Chicago	1:1,715	1:1,641	1:1,631	1:1,543

Characteristics of Current Dental Practitioners in Chicago

Illinois Department of Public Health (IDPH) in collaboration with Illinois Department of Financial and Professional Regulation conducts a dental workforce survey along with licensure renewal. The survey is sent to all dentists and dental hygienists with a license in Illinois irrespective of their practice status and location. The data is analyzed for all the dentists and dental hygienists that are currently practicing in Illinois. Reports produced by IDPH can be found at http://www.idph.state.il.us/HealthWellness/oralhlth. The Forum analyzed Chicago specific data for all the responses received from Chicago

area dentists and dental hygienists. The following tables are dedicated to the results obtained from the surveys conducted in 2004, 2006 and 2009 years respectively.

Table 10. Demographic Characteristics of Chicago Dentists Responding to the Dental Workforce Survey: 2004-2009

	2004 (%)	2006 (%)	2009 (%)
Number of surveys received from clinically practicing dentists in Illinois	4,571	7,310	4,290
Total number of surveys received from dentists clinically practicing in Chicago	820	1448	777
Practice Description			
General Dentist	85.6	82.0	83.6
Pediatrician	1.2	3.0	3.9
Orthodontist	2.4	2.5	4.0
Prosthodontist	3.4	3.5	1.3
Periodontist	2.0	2.7	1.9
Oral Surgery	2.1	2.2	2.6
Age Group			
25-39 years	17.3	26.9	21.1
40-49 years	35.4	27.1	20.3
50-59 years	30.2	28.2	30.3
60-69 years	12.7	10.8	19.7
70-88 years	4.3	5.8	8.6
Gender			
Male	80	64.9	68.1
Female	20	32.1	31.9
Race and Ethnicity			
White	82.3	65.5	71.0
Black	2.8	9.7	6.5
Asian	10.5	16.7	16.8
Other		8.1	5.5
Dental School attended			
Northwestern	11.2	12.6	13.0
Loyola	21.4	15.5	16.5
UIC	34.4	36.9	37.4
SIU	7.4	1.7	3.1
Other	25.1	33.4	30.0
Number of sites practicing			
One	DNA	78.5	80.0
Two	DNA	21.5	20.0
Hours worked per week			
1-10 hours	2.9	4.5	4.2
11-20 hours	9.0	7.7	7.5
21-30 hours	18.3	17.8	19.0
31-40 hours	56.4	53.9	51.2
41-50 hours	11.6	12.1	9.1
Plans to stop practice			
1-2 years	4.8	4.2	4.1
3-5 years	9.1	7.8	13.0
6-10 years	19.4	14.3	17.6
No Plans	62.8	73.7	65.3

Table 11. Demographic Characteristics of the Chicago Registered Dental Hygienist Responding to the Dental Workforce Survey: 2004-2009

	2004 (%)	2006 (%)	2009 (%)
Total number of surveys received from clinically practicing hygienists in Illinois	3,151	4,386	3,403
Number of surveys received from hygienists clinically practicing in Chicago (%)	211	317	256
Number of Practice Locations			
One	88.2	68.1	70.7
Two	27.5	22.4	29.3
Three	4.3	9.5	NA
Age Group			
20-29 years	21.0	14.5	25.0
30-39 years	32.4	36.7	27.7
40-49 years	30.5	27.3	19.9
50-59 years	11.9	18.0	21.5
60-69 years	4.3	3.5	5.9
Race			
African-American	7.1	8.5	6.5
White	72.0	74.4	84.5
Hispanic	10.0	11.4	12.7
Female	99.1	98.7	98.9
Hygiene Education in Illinois			
Yes	73.0	74.1	DNA
Kennedy King	15.2	20.5	DNA
Loyola	9.5	11.0	DNA
Northwestern	9.0	6.9	DNA
Prairie State College	15.6	15.5	DNA
SIU Carbondale	7.6	8.2	DNA
William Rainey Harper College	5.7	6.3	DNA
Hours worked per week			
1-10 hours	7.6	4.6	6.6
11-20 hours	12.4	10.2	8.6
21-30 hours	21.9	19.5	28.0
31-40 hours	47.1	50.8	44.4
41-50 hours	9.5	12.5	6.6
51-60 hours	1.4	2.3	0
Plans to stop practice			
1-2 years	5.2	3.8	3.9
3-5 years	5.7	4.4	6.4
6-10 years	10.4	15.1	15.5
No Plans	75.8	70.0	74.2

Conclusion

Currently, there is some data in Chicago related to the burden of oral diseases in elementary school-children but little to none data related to the burden of diseases in other groups such as adolescents, young adults and elderly. In order to improve the oral health of Chicago residents, there is an urgent need to collect reliable data that will further inform the level and extent of oral disease burden in these age groups. In addition, more detailed disease information affecting different subgroups of the population will allow us to target strategies, identify disease trends, and measure oral health improvements over time.

Considerable citywide efforts should be employed to ensure that Chicago achieves national standards set by *Healthy People 2020*. The 2010 Health Care Reform will improve insurance coverage for low income populations but improving insurance status alone will not solve the oral health disease burden. The integration of oral health as an important component of overall health should be promoted and exercised routinely. Health centers should automatically have oral health component to health services programs; individuals should adopt healthy oral health behaviors like daily brushing and flossing, regular visits to the dentist and nutritional eating in order to prevent diseases. Adequate workforce supply should be available in order to meet the dental needs of all Chicago residents and to assure that every person has the opportunity to access timely quality dental care.

It is the intention of The Forum that the Burden of Oral Disease in Chicago document may be used by policy makers, the public health community, and other stakeholders to promote and improve the oral health of Chicago residents.

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