

THE MASSACHUSETTS ORAL HEALTH REPORT

**Report of the
Oral Health Collaborative
of Massachusetts**

MAY 2004

TABLE OF CONTENTS

I.	Executive Summary	3
II.	Preface – Statewide Survey of Massachusetts Schoolchildren	5
III.	Introduction	7
IV.	Methods	9
V.	Results	12
VI.	Key Findings	13
VII.	Key Oral Health Factors	20
VIII.	Oral Health of Elders Living in Selected Boston Facilities	30
IX.	Oral Health of Homebound Elders in Cambridge and Somerville	33
X.	Appendix – Data Tables	36
XI.	Glossary	41
XII.	Acknowledgements	42
XIII.	Collaborative Members	43

THE MASSACHUSETTS ORAL HEALTH REPORT EXECUTIVE SUMMARY

The first *Massachusetts Oral Health Report*, from the Massachusetts Oral Health Collaborative provides information about the oral health status of Massachusetts' residents. The information is presented in the format of the National Oral Health Surveillance System (NOHSS)¹, maintained by the Centers for Disease Control and Prevention. The oral health measures monitored by the NOHSS are forming a foundation that will allow comparison of oral health between states and with the national average. The seven measures are:

1. **Dental caries experience** -a past history of treated or untreated tooth decay
2. **Untreated dental decay** -untreated dental cavity present
3. **Preventive dental sealants** -presence of at least 1 protective sealant on the chewing surface of a molar to prevent tooth decay
4. **A dental visit within the past year**
5. **A teeth cleaning visit within the past year**
6. **Complete tooth loss** -the percentage of people age 65 and older who have lost all natural teeth
7. **Fluoridation** -the percentage of people with a public water supply that is optimally fluoridated.

In Massachusetts, information about the first three oral health measures was collected during an oral health screening of a statewide representative sample of 3rd grade public school children. 3,439 children were screened in the first half of 2003. Measures four through six were collected by the Behavioral Risk Factor Surveillance System (BRFSS) in 1999 and 2002. The BRFSS is a state based, ongoing data collection program designed to measure behavioral risk factors in the adult, non-institutionalized population of age 18 and older. Every month, states select a random sample of adults for a telephone interview. The selection process results in a representative sample for each state so that statistical inferences can be made from the information collected. Measure seven is collected and maintained by the Massachusetts Department of Public Health, Office of Oral Health². The Massachusetts and US averages are listed below:

Oral Health Measure	Massachusetts Average	US Average
Dental caries experience – 2003	48%	44-72% (7 states)
Untreated dental decay – 2003	26%	16-42% (10 states)
Preventive dental sealants – 2003	54%	14-66% (10 states)
Dental visit in the past year – 2002	77%	69%
Teeth cleaning in the past year – 2002	79%	69%
Complete tooth loss – 1999	25%	24%
Fluoridation – 2003	62%	66%

On average, the oral health of Massachusetts' residents compares favorably with the national average. Key findings of the statewide third grade survey reveal, however, that disadvantaged children in Massachusetts receive less dental care, have poorer oral health, and receive less preventive dental care than other children. Adults with lower income and less

¹ <http://www.cdc.gov/nohss/>

² <http://www.state.ma.us/dph/fch/ooh.htm>

education also receive less dental care and prevention. Although community water fluoridation has been shown to be a safe cost effective method to prevent dental decay, only 62% of Massachusetts' residents had access to the benefits of fluoridation. The pain, lost school and work time, and poor appearance associated with dental disease is wholly preventable. More than half of Massachusetts' school children have never experienced dental disease. The remaining children deserve the same benefits.

Two smaller surveys of Elders living in elder housing buildings in Boston and homebound elders in Cambridge are also included as comparison. A large percentage of the elders surveyed had unmet dental needs and difficulty getting dental care.

The Massachusetts Oral Health Report will be released annually as a resource for agencies and organizations that are interested in the oral health of the residents of Massachusetts.

Key Findings:

1. Although overall dental decay rates have declined, tooth decay remains a significant childhood health problem in Massachusetts.
2. The burden of dental problems rests most heavily upon Massachusetts' children who don't have access to dental care.
3. Poor children in Massachusetts have the most difficulty accessing dental care.
4. Poor children in Massachusetts suffer the burden of dental decay; yet receive less preventive dental services.
5. Massachusetts' children who are poor and those with MassHealth have poorer oral health.
6. 87% of Massachusetts' children have some type of insurance coverage for dental care, yet those with MassHealth have less dental visits and poorer oral health than those with private dental insurance. Children with MassHealth had poorer oral health than children without dental insurance.
7. More Massachusetts' children have received preventive dental sealants than children nationwide.
8. While 73% of children have a dental visit on average, only a third of children with MassHealth have a dental visit.
9. While 79% of Massachusetts' residents have a dental cleaning visit on average, less than a third of children with MassHealth have a dental cleaning visit.
10. 52% of elders screened in Boston were in need of dental care and 16% had large cavities and pain.
11. 87% of homebound elders screened in Cambridge had untreated dental cavities and 13% had large cavities and pain.

STATEWIDE SURVEY OF MASSACHUSETTS SCHOOLCHILDREN PREFACE

Oral health status among Massachusetts' school children has been widely unknown since the early 1980's when the last statewide oral health survey of school children occurred. Since that time, numerous evidence-based interventions such as the use of fluoride, preventive dental sealants and advances in technologies have led to marked declines in decay rates in this age group. Despite these advances in preventive oral health modalities, dental disease continues to remain a problem, afflicting the majority of school children by age 18. In March 2000, a Special Legislative Commission on Oral Health released its report entitled the *Oral Health Crisis in Massachusetts: The Report of the Special Legislative Commission on Oral Health*. The report described many problems affecting the oral health status of Massachusetts' residents as well as issues related to inadequate access to oral health care services. In addition, the Special Legislative Report noted insufficient prevalence data due to the lack of a statewide oral health surveillance system to monitor the oral health status of school children, and to assess the prevalence of preventive dental sealants. As such, the Special Commission put forth a series of recommendations, one of which included the development and implementation of a data and information system to monitor oral health status, as well as access and utilization of oral health preventive and treatment services.

In January 2003, the Massachusetts Department of Public Health (DPH) coordinated and implemented the *2003 Give Kids A Smile Oral Health Survey of Third Grade School Children in Massachusetts*. In collaboration with the Department of Education, Massachusetts Dental Society, Massachusetts Dental Hygienists' Association, and the Delta Dental Plan of Massachusetts, oral health prevalence and access data was collected on a statewide representative sample of 3,439 third grade school children. Children identified with untreated dental disease were referred to local dentists who provided free care and follow-up services.

The survey was completed in June 2003. This report will provide a description of the third grade population surveyed and the results of the analysis of the data collected.

STATEWIDE SURVEY OF MASSACHUSETTS SCHOOL CHILDREN INTRODUCTION

Dental disease is a chronic infectious disease that affects more than half of school children in Massachusetts. When left untreated, dental caries can lead to significant pain and undue suffering. Children experiencing pain from dental infection often find it difficult to concentrate on schoolwork and risk diminished academic performance. In addition, premature tooth loss may occur resulting in failure to thrive, impaired speech development, overcrowding of the permanent teeth and the potential for costly orthodontic services.

In June 2000, the Office of the Surgeon General released its first oral health report entitled *Oral Health in America: A Report of the Surgeon General*. The report highlights the level of dental disease that exists among Americans and the disparate extent and severity to which low-income, cultural and ethnic minorities, children and elders are affected. The report underscores the importance of oral health and its connection to general health and quality of life. Over the last half-century, public health interventions, such as the use of fluoride supplements, community water fluoridation, preventive dental sealants and advances in technologies have paved the way to a decline in dental disease in children. Despite these advances in preventive oral health modalities, dental decay continues to remain a problem, afflicting the majority of school children by age 18.

In Massachusetts, a Special Legislative Commission on Oral Health issued a report in February 2000 entitled the *Oral Health Crisis in Massachusetts*. The report revealed that dental disease among Massachusetts' school children had declined during the period from 1951 to 1981 (when the last oral health survey of school children was conducted). The Special Commission's report further noted that the oral health status of school children and the prevalence of preventive dental sealants was widely unknown due to the lack of a statewide oral health surveillance system.

The Special Commission's report and the recommendations put forth provided the impetus for the Massachusetts Department of Public Health to send an oral health interdisciplinary team to the Oral Health Policy Academy, sponsored by the National Governors' Association, in October 2001. During their meetings, the Massachusetts' team had the opportunity to work with leading national experts to create state-specific policy initiatives. One such initiative was the development of a statewide oral health surveillance system to monitor oral health status and assess access to oral health care services.

In January 2003, the Massachusetts Department of Public Health, Offices of Oral Health and School Health Services, in collaboration with the Massachusetts Department of Education, Delta Dental Plan of Massachusetts, the Massachusetts Dental Society and the Massachusetts Dental Hygienists' Association, conducted the *2003 Give Kids A Smile* Oral Health Survey of Third Grade School Children in Massachusetts. The purpose of the survey was to develop a system by which oral health status and access to oral health care services, including preventive dental sealants, could be monitored and descriptive estimates of dental disease among school children generated. A systematic random sampling procedure was used to select a representative sample of third grade school children, adjusting for low-income and school population. Of the 102 schools initially selected, 96 schools participated, yielding a sample of 3,439 children.

STATEWIDE SURVEY OF MASSACHUSETTS SCHOOL CHILDREN METHODS

The Basic Screening Survey (BSS) methodology was used to conduct the *2003 Give Kids A Smile* Oral Health Survey of Third Grade Children in Massachusetts. In 1999, the Association of State and Territorial Dental Directors (ASTDD), in collaboration with the Ohio Department of Health and the Centers for Disease Control and Prevention established guidelines for the collection of oral health survey data. The purpose of the guidelines was to assure that oral health information was being collected in a similar fashion throughout the United States. The *2003 Give Kids A Smile* Oral Health Survey of Third Grade Children in Massachusetts followed the ASTDD guidelines in terms of sample selection, diagnostic criteria, data collection, and analysis. Other states that have used this methodology include, but are not limited to: Maine, Vermont, New Hampshire, Delaware, Maryland, Pennsylvania, Kentucky, Ohio, Minnesota, New York, New Mexico, South Dakota, Washington, Oregon, Nevada, Arizona, and Idaho.

The BSS is cross sectional in design, and is used to survey a specific population at a given point in time. The data provides descriptive estimates of the measures observed for the given population. The BSS tool utilizes a direct observation dental screening methodology to assess oral health status and access to preventive dental sealants. The oral health data collected in the *2003 Give Kids A Smile* Oral Health Survey of Third Grade Children in Massachusetts using the BSS included: 1) history of disease; 2) untreated disease; 3) presence of at least one dental sealant on a permanent molar; and 4) treatment urgency. In addition, a parental questionnaire was used to assess access to dental treatment services.

The sampling frame for the Massachusetts oral health survey consisted of public elementary schools with 20 or more students in third grade. In Massachusetts, there are 1,094 schools with students in third grade. Of these 1,094 schools, 68 schools had fewer than 20

students in third grade. These 68 schools (696 students) were deleted from the sampling frame, leaving 1,026 schools in the sampling frame with a total third grade enrollment of 76,281.

The list of 1,026 schools was sorted by low-income percent then by school district name. A random number was generated by Epi Info 6.04 (number=9) and the ninth school on the list was selected. Every tenth school thereafter was selected for a total of 102 schools, with 7,433 school children enrolled. Of the 102 schools, 95 agreed to participate, yielding a total student sample of 6,912.

All third grade school children enrolled in the selected schools were invited to participate. Only those children whose parents provided consent were eligible for participation. Parental consent was obtained for three thousand, six hundred and eight-five (3,685) children. By the last day of the survey, three thousand, four hundred and thirty-nine (3,439) school children were actually screened, yielding a student response rate of nearly fifty percent (49.7%). School absences and family relocations accounted for the difference in the number of children screened, versus the number of children whose parents originally provided consent

The Massachusetts Department of Public Health, Office of Oral Health coordinated the project and scheduled the school screenings in conjunction with school administrators. Dental screenings took place between January and June 2003 in each of the sample schools, in a location designated by the school nurse. Volunteer dentists and dental hygienists trained in the use of the BSS tool, performed the dental screenings. Mouth mirrors and lighting was used to assure ample visibility. Infection control measures, as outlined in the BSS guidelines, were utilized.

In addition to the clinical dental observations, the survey protocol included a parental consent form and questionnaire. Parents whose children participated in the survey were asked to provide information about their child's age, gender, whether or not their child had a dentist,

time since last dental visit, and type of dental insurance, if any. This data was incorporated into the survey analysis and the following summary highlights the results and key findings.

STATEWIDE SURVEY OF MASSACHUSETTS SCHOOL CHILDREN RESULTS

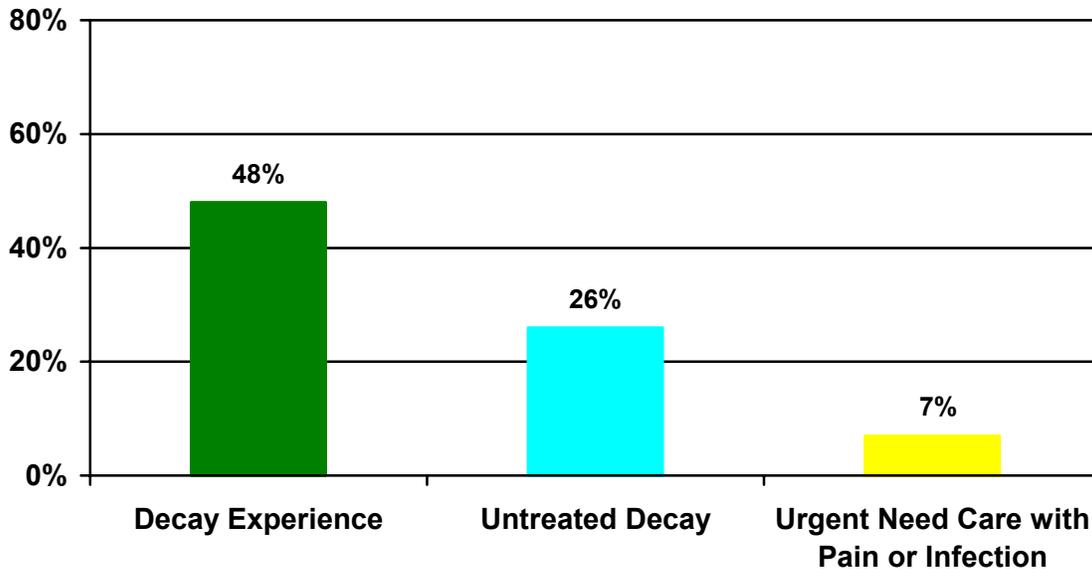
Results from the *2003 Give Kids A Smile* Oral Health Survey of Third Grade School Children in Massachusetts reveal that of the 3,439 children screened, 1,674 or 48.2% of third grade children attending public schools have experienced dental disease.

Among this group, 894 (25.8%) had observable untreated disease, and 240 or 7.2% had urgent dental needs requiring immediate care due to large cavities and infection. The survey also revealed that approximately fifty-four percent (53.8 %) of the children screened had at least one preventive dental sealant in a permanent molar tooth. The Healthy People 2010 National Oral Health Objective for dental sealants in third grade children is 50%. While the data reveal that Massachusetts exceeds this goal, the survey demonstrates that 43% of third graders still have not received this important preventive measure.

Key Findings

Statewide Survey of Massachusetts Schoolchildren

Key Finding #1: Although overall dental decay rates have declined, tooth decay remains a significant childhood health problem in Massachusetts.



Almost half of Massachusetts' 3rd graders have experienced tooth decay in the past. Tooth decay results from an infection. Twenty-six percent of our 3rd graders play, study, and eat with untreated tooth decay that can progress to pain and more serious infection. Seven percent of 3rd graders were at school in pain or with an obvious infection that translates to approximately 5,300* 3rd graders at school with pain and infection.

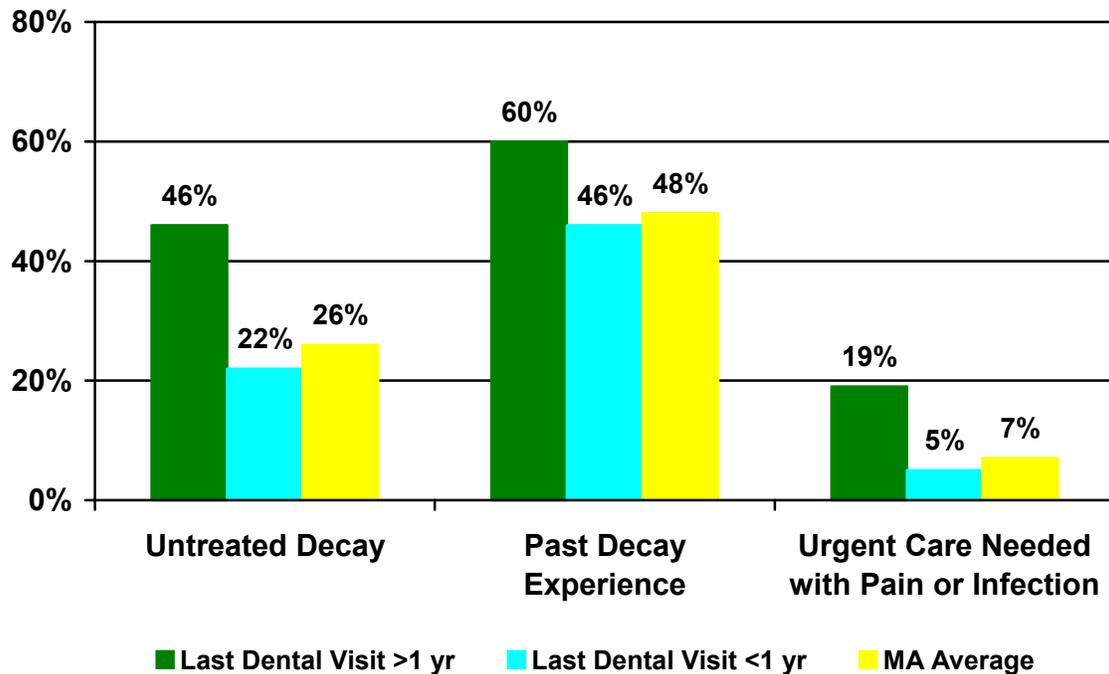
*76,281 3rd graders x 7%

Figure 1. Table 1 (Appendix)
2003 Statewide Survey of Massachusetts 3rd Grade School Children

Key Findings Statewide Survey of Massachusetts Schoolchildren

Key Finding #2: *The burden of dental problems rests most heavily upon Massachusetts' children who don't have access to dental care.*

Children who have seen a dentist in the past year have better oral health



The inability to access dental care has important consequences for children's oral health.

More than twice as many children, who had not seen a dentist in the past year, had untreated tooth decay than those who had seen a dentist. Almost sixty percent of children, who had not seen a dentist in the past year, had past experience of tooth decay, while approximately forty six percent of those who had dental care had past experience of tooth decay.

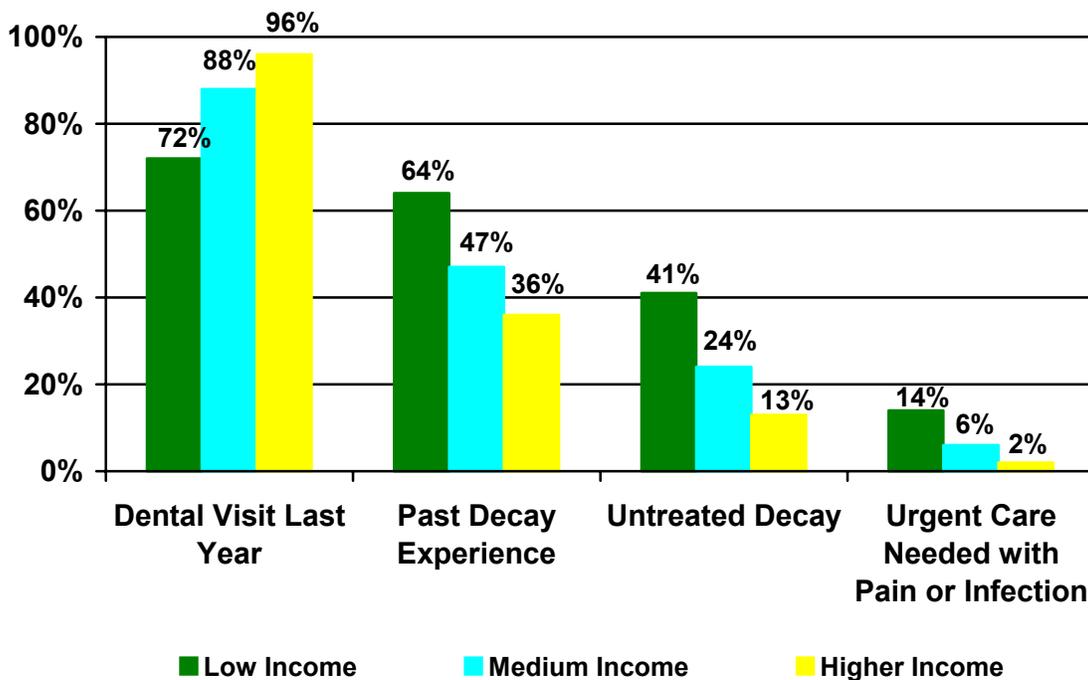
Nineteen percent of the children who had not seen a dentist in the past year had obvious pain or infection, while five percent of the children who had dental care were at school with pain or infection.

Figure 2. Table 4 (Appendix)
2003 Statewide Survey of Massachusetts 3rd Grade School Children

Key Findings
Statewide Survey of Massachusetts Schoolchildren

Key Finding #3: *Massachusetts' children from lower-income schools have the most difficulty accessing dental care.*

**Massachusetts' children from lower-income schools
suffer more tooth decay**



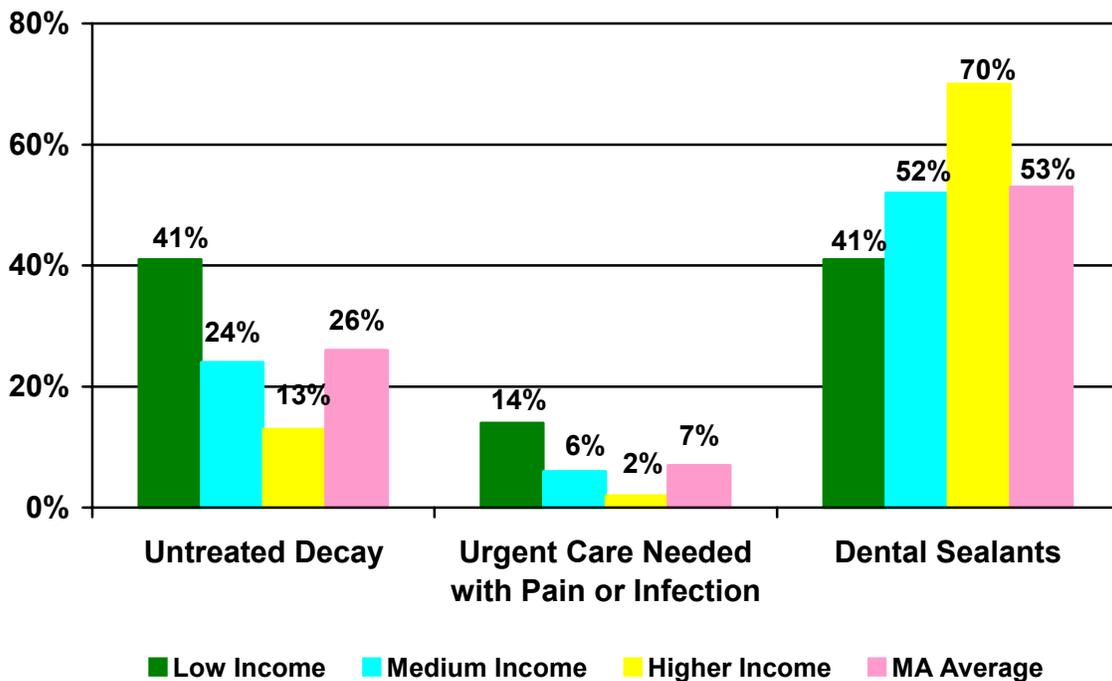
Seventy two percent of children from lower income schools reported seeing a dentist last year compared to ninety five percent of children from higher income schools. The consequences of income status on oral health are evident in past experience of dental decay, untreated dental decay, and evidence of pain or infection.

Figure 3. Table 6 (Appendix)
2003 Statewide Survey of Massachusetts 3rd Grade School Children

Key Findings Statewide Survey of Massachusetts Schoolchildren

Key Finding #4: *Massachusetts' children from lower-income schools suffer the burden of dental decay; yet, receive less preventive dental services.*

Massachusetts' children from lower-income schools have more untreated decay and need more urgent care, but receive less preventive dental sealants



Forty-one percent of 3rd graders from lower income schools live with untreated decay and almost fourteen percent were at school with pain and infection.

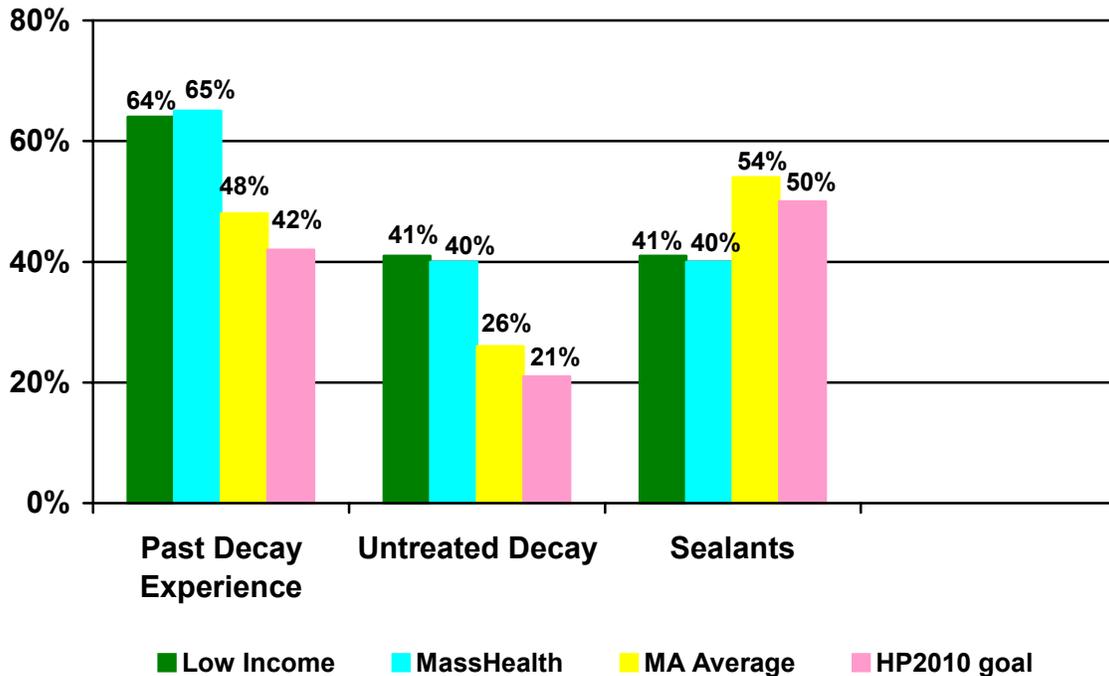
Dental sealants are a protective coating that is applied to the chewing surfaces of molar teeth by a dental professional. Dental sealants are an extremely effective way to prevent the most common type of dental decay.

Approximately forty one percent of 3rd graders from lower income schools had at least one dental sealant compared to seventy one percent of 3rd graders from higher income schools.

Figure 4. Tables 1 and 6 (Appendix)
2003 Statewide Survey of Massachusetts 3rd Grade School Children

Key Findings Statewide Survey of Massachusetts Schoolchildren

Key Finding #5: Massachusetts' poorest children lag behind national goals in every category.



Healthy People 2010 are a group of health goals for the U.S. to reach by 2010. Healthy People 2010 goals include oral health goals.*

While on average Massachusetts' children are closer to the Healthy People 2010 goals, low-income children and children with MassHealth lag behind the goals in every category.

*Healthy People 2010 goals at <http://www.healthypeople.gov/>

21-1b – Reduce the proportion of children with dental caries experience in their primary and permanent teeth to 42%.

21-2b – Reduce the proportion of children with untreated dental decay in their primary and permanent teeth to 21%.

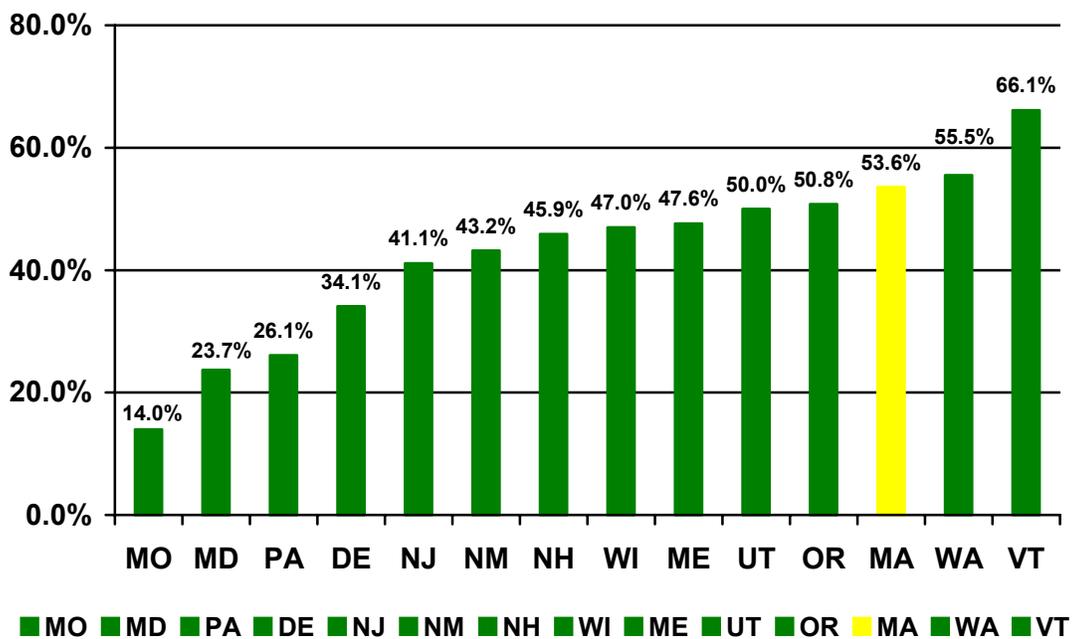
21-8a – Increase the proportion of children who have received dental sealants on their molar teeth to 50%.

Figure 5. Tables 1, 5, and 6 (Appendix)
2003 Statewide Survey of Massachusetts 3rd Grade School Children

Key Findings Statewide Survey of Massachusetts Schoolchildren

Key Finding #6: *More Massachusetts' children have received preventive dental sealants than children nationwide.*

On average Massachusetts has exceeded the Healthy People 2010 goal for dental sealants, but low-income children and those with MassHealth have been left behind



Third grade children in Massachusetts have surpassed the national Healthy People 2010 target for dental sealants of fifty percent. Of the states that have reported dental sealant rates, Massachusetts ranks near the top.

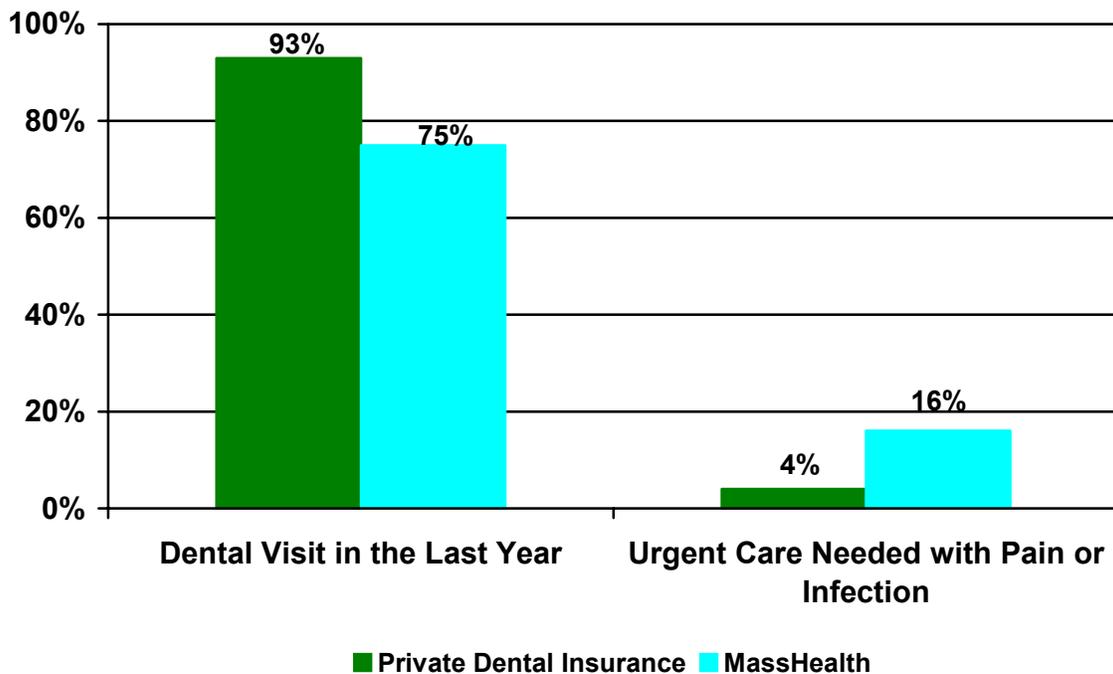
40% of children with MassHealth have received preventive dental sealants.

Figure 6.
2003 Statewide Survey of Massachusetts 3rd Grade School Children

Key Findings Statewide Survey of Massachusetts Schoolchildren

Key Finding #7: Most of Massachusetts' children have some type of insurance coverage for dental care, yet the ability to receive dental care varies widely by insurance type.

Children with private dental insurance have better oral health



Eighty-seven percent of Massachusetts' children have some type of dental insurance coverage. Sixty-one percent reported private dental insurance and twenty-six percent reported government programs, MassHealth or Children's Medical Security Plan.

Despite the seemingly comprehensive coverage, access to dental care still evades some children. Children with private dental insurance were more likely to have seen a dentist in the past year.

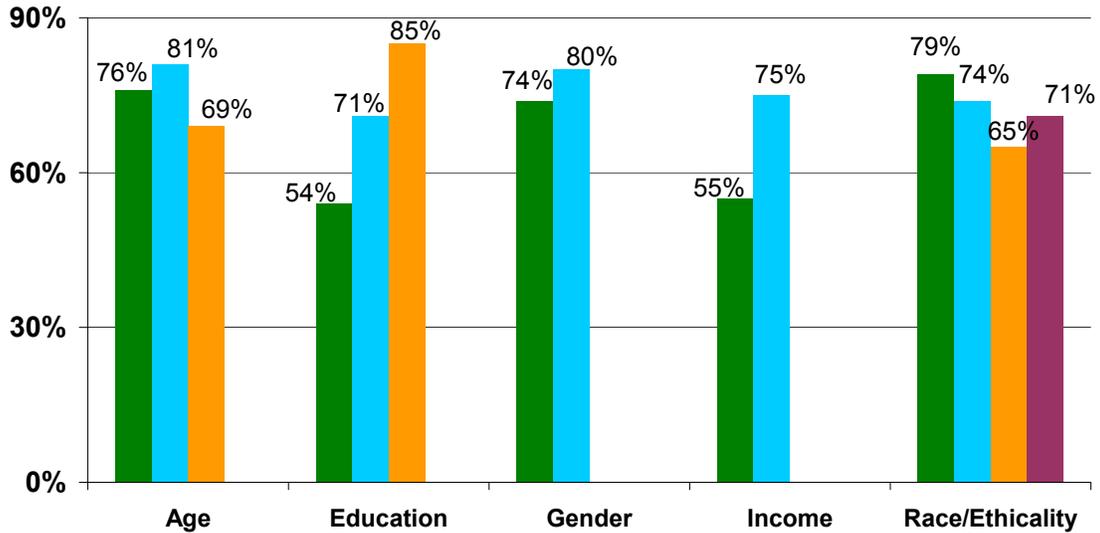
Sixteen percent of children with MassHealth have large cavities or infection requiring urgent care, while three percent of children with private insurance had the same problems.

Figure 7. Table 5 (Appendix)
2003 Statewide Survey of Massachusetts 3rd Grade School Children

Key Oral Health Factors Dental Visits*

A visit to the dentist is important for optimal oral health.

77% of Massachusetts residents reported a dental visit within the past year in 2002.



Age

- 18-34
- 35-64
- 65+

Education

- <12 yrs
- 12 yrs
- >12 yrs

Gender

- Male
- Female

Income

- <\$15,000
- \$15,000+

Race/Ethnicity

- White, Non-Hispanic
- Black, Non-Hispanic
- Hispanic
- Other

Demographic characteristics can effect having a dental visit in the past year.

People over age 65 were less likely to see a dentist in the past year than younger Massachusetts residents

Massachusetts residents with less than 12 years of education were less likely to have seen a dentist.

Massachusetts residents with annual incomes below \$15,000 were less likely to have seen a dentist in the past year.

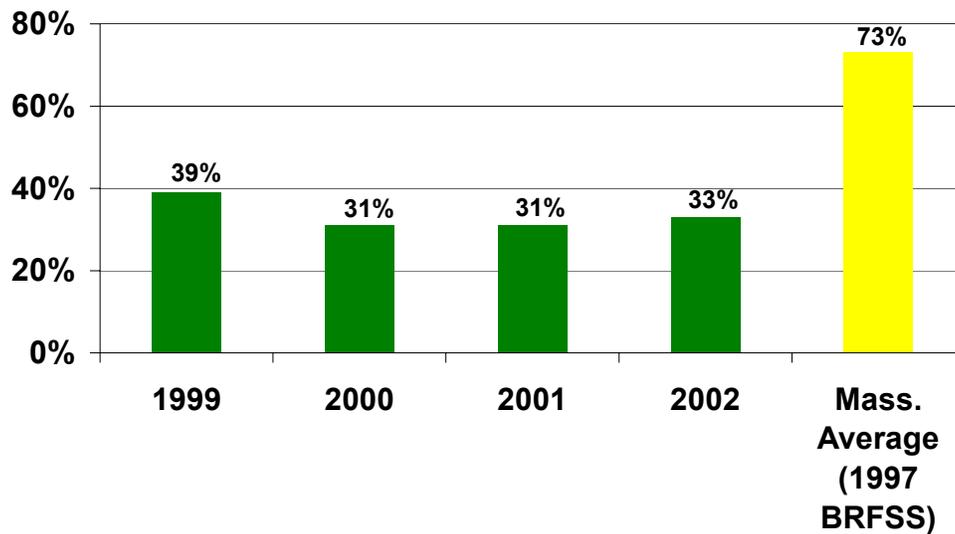
Black and Hispanic Massachusetts residents were less likely to have seen a dentist within the past year.

*BRFSS 2002 at www.cdc.gov/brfss/

Figure 8.
Massachusetts Oral Health Report

Key Oral Health Factors Dental Visits (continued)*

Children with MassHealth dental coverage had less dental visits than the general population of Massachusetts' children.



Although a visit to the dentist is important and necessary for optimal oral health, dramatically fewer children with MassHealth had a dental visit, in the years 1999 to 2002, than the statewide average for children in 1997.*

*Source: Annual EPSDT 416 Participation Report 1999-2002

*BRFSS 2002 at www.cdc.gov/brfss/

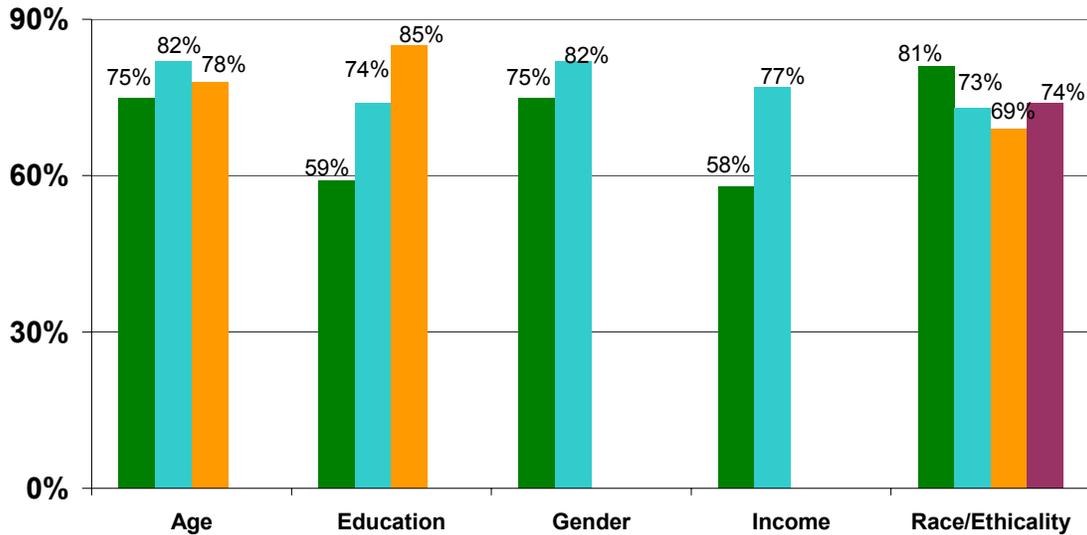
Figure 9.

Massachusetts Oral Health Report

Key Oral Health Factors Dental Cleanings*

Regular dental teeth cleanings are important for optimal oral health.

79% of Massachusetts residents over age 18 reported a teeth cleaning in the past year in 2002.



Age

- 18-34
- 35-64
- 65+

Education

- <12 yrs
- 12 yrs
- >12 yrs

Gender

- Male
- Female

Income

- <\$15,000
- >\$15,000

Race/Ethnicity

- White, Non-Hispanic
- Black, Non-Hispanic
- Hispanic
- Other

Demographic characteristics can effect having a teeth cleaning in the past year.

Massachusetts residents with 12 years or less of education were less likely to have had a dental cleaning in the past year.

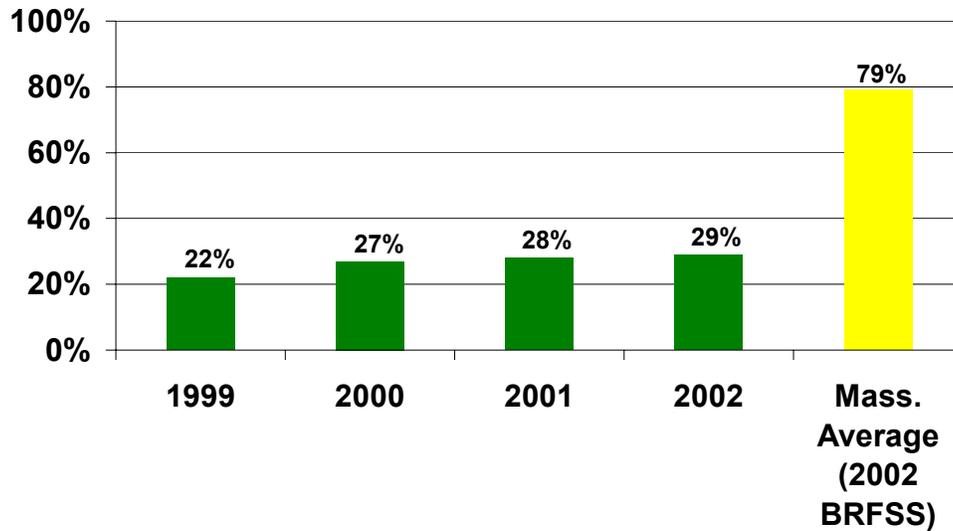
Massachusetts residents with annual incomes of less than \$15,000 were less likely to have had a teeth cleaning in the past year

Black and Hispanic Massachusetts residents were less likely to have had a teeth cleaning in the past year

*BRFSS 2002 at www.cdc.gov/brfss/
Figure 10
Massachusetts Oral Health Report

Key Oral Health Factors Dental Cleanings* (continued)

Children with MassHealth dental coverage had their teeth cleaned in the past year less often than the statewide average.



Although a teeth cleaning visit is important and necessary for optimal oral health, dramatically fewer children with MassHealth had their teeth cleaned, in the years 1999 to 2002, than the statewide average for adults in 2002.

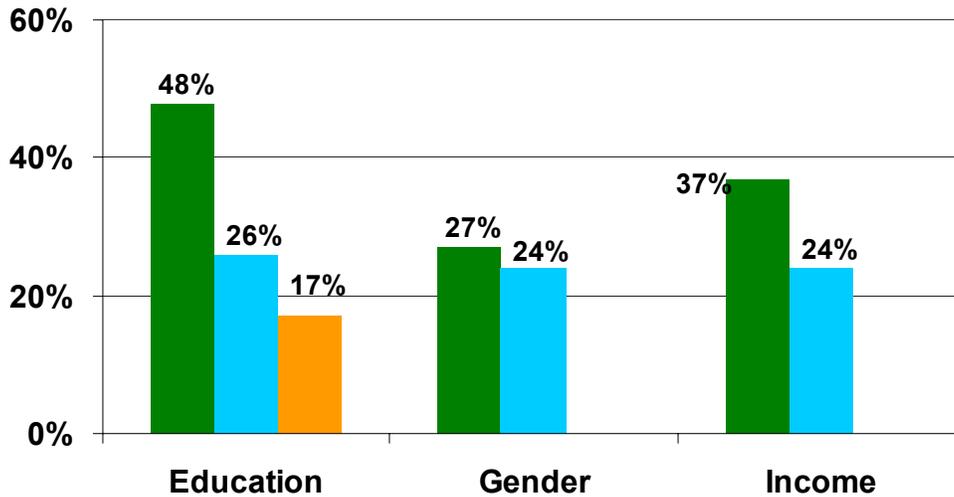
*Source: Annual EPSDT 416 Participation Report 1999-2002

*BRFSS 2002 at www.cdc.gov/brfss/
Figure 11
Massachusetts Oral Health Report

Key Oral Health Factors Complete Tooth Loss*

Teeth are important for nutrition and self esteem

25% of Massachusetts residents over age 65 have lost all of their natural teeth. The Massachusetts average is similar to the national average.



Education
■ <12 yrs
■ 12 yrs
■ >12 yrs

Gender
■ Male
■ Female

Income
■ <\$15,000
■ >\$15,000

Demographic characteristics can affect complete tooth loss in people age 65+ older.

Massachusetts residents with less than 12 years of education had a much higher chance of being without natural teeth.

Massachusetts residents with incomes less than \$15,000 were more likely to have lost all of their natural teeth.

*BRFSS 1999 at www.cdc.gov/brfss/
 Figure 12
 Massachusetts Oral Health Report

Key Oral Health Factors Optimally Fluoridated Community Water Supply*

Fluoridation has been shown to reduce dental cavities by 29-51%

Community water fluoridation has been cited by the US Centers for Disease Control and Prevention as one of the 10 top public health achievements of the 20th century.

Community water fluoridation is the most cost effective method to prevent dental decay.

On average, it costs less than .50 cents per year per person to adjust to optimal fluoride for a community water supply in Massachusetts.

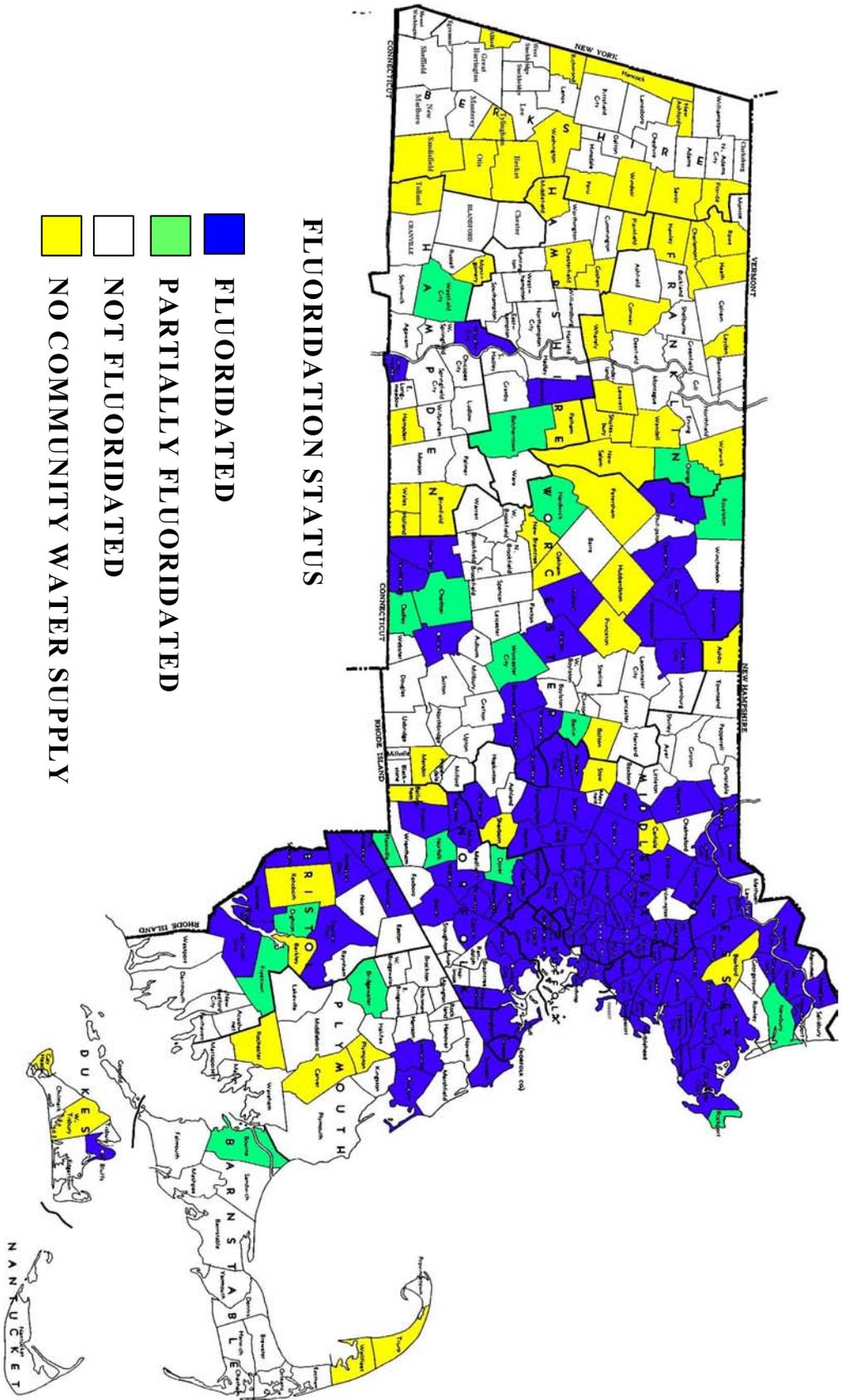
Fluoride is adjusted to 1ppm for optimal oral health in Massachusetts.

62% of Massachusetts residents (3,756,870 people) have access to optimally fluoridated water from their community water supply.

135 of the 351 communities in Massachusetts participate in the community water fluoridation program.

62 communities do not have a public water supply and are, therefore, unable to participate in the program.

* www.thecommunityguide.org



135 MASSACHUSETTS COMMUNITIES RECEIVING WATER FLUORIDATION

FLUORIDATED AT 1 PPM 1 PART FLUORIDE PER MILLION PARTS WATER (PPM) OR MG/L

<u>CITY/ TOWN</u>	<u>YEAR OF START UP</u>	<u>2000 POPULATION</u>	<u>CITY/ TOWN</u>	<u>YEAR OF START- UP</u>	<u>2000 POPULATION</u>
1 ACTON	1970	20,331	70 MILLIS	1983	7,902
2 AMESBURY	1968	16,450	71 MILTON*	1978	26,062
3 AMHERST	1987	34,874	72 NAHANT*	1978	3,632
4 ANDOVER	1969	31,247	73 NATICK	1997	32,170
5 AQUINNAH(WHA PART)	1996	80(E)	74 NEEDHAM (FL)*	1971	28,911
6 ARLINGTON*	1978	42,389	75 NEWBURY (PART)	1969	1,000(E)
7 ASHBURNHAM	1957	5,546	76 NEWBURYPORT	1969	17,189
8 ATHOL	1952	11,299	77 NEWTON (FL)	1963	83,829
9 ATTLEBORO	1973	42,068	78 NORFOLK (PART)	1977	40(E)
10 BEDFORD	1978	12,595	79 NORTH ANDOVER	1975	27,202
11 BELCHERTOWN(PART)	1987	243(E)	80 NORTH ATTLEBORO (PART)	2002	27,143
12 BELMONT*	1978	24,194	81 NORTHBOROUGH	2001	14,013
13 BERLIN(SP MALL ONLY)	1997	-	82 NORTH READING	1971	13,837
14 BEVERLY	1952	39,862	83 NORWOOD*	1978	28,587
15 BILLERICA	1992	38,981	84 OAK BLUFFS	1991	3,713
16 BOSTON*	1978	589,141	85 ORANGE (PART)	1975	120(E)
17 BOURNE (OTIS ANG)	1960	1,000(E)	86 OXFORD	1987	13,352
18 BRIDGEWATER(MCI)	1989	2,230	87 PEABODY	1983	48,129
19 BROOKLINE*	1978	57,107	88 PELHAM (PART)	1987	309(E)
20 BURLINGTON	1993	22,876	89 PEMBROKE	1969	16,927
21 CAMBRIDGE (FL)*	1974	101,355	PLAINVILLE		
22 CANTON	1978	20,755	90 QUINCY*	1978	88,025
23 CHARLTON**		150(E)	91 READING	1970	23,708
CHARLTON (PART)	1996	150(E)	92 REVERE*	1978	47,283
24 CHELSEA	1978	35,080	93 ROCKPORT (PART NATURAL	1984	7,767
25 COHASSET	1956	7,261	94 ROYALSTON (PART) (SRIC)**		400(E)
26 CONCORD	1970	16,993	95 RUTLAND	1985	6,353
27 DANVERS	1951	25,212	96 SALEM	1952	40,407
28 DEDHAM	1977	23,464	97 SAUGUS*	1978	26,078
29 DIGHTON (PART)	1971	2,200(E)	98 SCITUATE	1954	17,863
30 DOVER(PART)	1997	159(E)	99 SEEKONK	1952	13,425
31 DRACUT	1982	28,562	100 SHARON	1953	17,408
32 DUDLEY (PART)**		45(E)	101 SHREWSBURY	1953	31,640
33 DUXBURY	1987	14,248	102 SOMERSET	1969	18,234
34 ESSEX	1970	3,260	103 SOMERVILLE*	1978	77,478
35 EVERETT*	1978	38,037	104 SOUTHBORO	1996	8,781
36 FALL RIVER	1973	91,938	105 SOUTHBRIDGE	1971	17,214
37 FITCHBURG	1975	39,102	106 STONEHAM*	1978	22,219
38 FRAMINGHAM (FL)*	1970	66,910	107 STURBRIDGE	1990	7,837
39 FRANKLIN	1970	29,560	108 SUDBURY	1960	16,841
40 FREETOWN WATER CO	1978	2,500 (E)	109 SWAMPSCOTT*	1978	14,412
41 GARDNER	1987	20,770	110 SWANSEA	1969	15,901
42 GLOUCESTER	1981	30,273	111 TAUNTON	1981	55,976
43 GROVELAND	1995	6,038	112 TEMPLETON	1951	6,799
44 HAMILTON	1956	8,315	113 TEWKSBURY	1983	28,851
45 HARDWICK-EHS**		150(E)	114 TOPSFIELD	1953	6,141
46 HAVERHILL	1971	58,969	115 TYNGSBORO	1987	11081
47 HINGHAM	1953	19,882	116 WAKEFIELD*	1978	24,825
48 HOLDEN	1995	15,621	117 WALPOLE	1977	22,824
49 HOLLISTON	1970	13,801	118 WALTHAM*	1978	59,226
50 HOLYOKE	1970	39,838	119 WATERTOWN (FL)*	1971	32,986
51 HUDSON	1985	18,113	120 WAYLAND	2000	13,100
52 HULL	1953	11,050	121 WENHAM	1967	4,440

53 IPSWICH	1971	11,873	122 WELLESLEY	1987	26,613
54 LAWRENCE	1983	72,043	123 WESTBOROUGH	1974	17,997
55 LEXINGTON*	1978	30,355	124 WESTFIELD(WHITE OAK SH)**		-
56 LINCOLN	1971	7,666	125 WESTFORD	1994	20,754
57 LONGMEADOW	1989	15,633	126 WESTMINSTER	1968	6,907
58 LOWELL	1982	105,167	127 WEST NEWBURY	1969	4,149
59 LYNNFIELD (FL)*	1972	11,542	128 WESTPORT (PART)	1975	1,000(E)
(LYNNFIELD CENTER)	1959		129 WESTON (FL)*	1973	11,469
60 LYNN	1983	89,050	130 WESTWOOD	1977	14,117
61 MALDEN*	1978	56,340	131 WEYMOUTH	1972	53,988
62 MANCHESTER BY SEA	1983	5,228	132 WINCHESTER (FL)*	1956	20,810
63 MANSFIELD	1997	22,414	133 WINTHROP*	1978	18,303
64 MARBLEHEAD*	1978	20,377	134 WOBURN (PART)*	1978	20,615(E)
65 MARLBOROUGH	1982	36,255	135 WORCESTER (PART)	1995	250(E)
66 MEDFORD*	1978	55,765			
67 MEDWAY	1953	12,448			
68 MELROSE*	1978	27,134			
69 MIDDLETON	1951	7,744			

**TOTAL POPULATION
NATURAL & ADJUSTED**

3,765,870

* - Members of the Massachusetts Water Resources Authority (MWRA) fluoridated in 1978 (old MDC)

** - Naturally fluoridated at .7 or higher ppm.

(part) - Communities partially fluoridated. Check with local water department/board of health

(FL) – Fluoridating prior to MDC.

E – Estimated population served.

PREPARED BY THE DEPARTMENT OF PUBLIC HEALTH (617) 624-5943 or (978) 851-7261, X4019

www.state.ma.us/dph/fch/ooh.htm

62 Massachusetts Cities and Towns with No Community Water Supply

City/Town	Population	City/Town	Population
Alford	399	New Salem	929
Ashby	2,845	Oakham	1,673
Becket	1,755	Otis	1,365
Bellingham	15,314	Pelham	1,403
Berkley	5,749	Peru	821
Berlin	2,380	Petersham	1,180
Bolton	4,148	Phillipston	1,621
Boxborough	4,868	Plainfield	589
Boxford	7,921	Plympton	2,637
Brimfield	3,339	Princeton	3,353
Carlisle	4,717	Rehoboth	10,172
Carver	11,163	Richmond	1,604
Charlemont	1,358	Rochester	4,581
Charlton	11,263	Rowe	351
Chesterfield	1,201	Sandisfield	824
Conway	1,809	Savoy	705
Florida	676	Sherborn	4,200
Gay Head	344	Shutesbury	1,810
Goshen	921	Stow	5,902
Hampden	5,171	Tolland	426
Hancock	721	Truro	2,087
Hawley	336	Tyringham	350
Heath	805	Wales	1,737
Holland	2,407	Warwick	750
Hubbardston	3,909	Washington	544
Leverett	1,663	Wellfleet	2,749
Leyden	772	Wendell	986
Mendon	5,286	West Tisbury	2,467
Middlefield	542	Whately	1,573
Montgomery	654	Windsor	875
Mount Washington	130		
New Ashford	247		
New Braintree	927		

April 27, 2004

Oral Health Screenings of Elders Residing in Selected Boston Facilities: Report Needs Assessment

June, 2003

The purpose of this assessment was to determine the level of dental need among elders residing in 11 elder housing facilities in Boston's District 8, and to determine their utilization of dental services.

Oral health screenings were conducted in 11 elder housing facilities in District 8 of the City of Boston during March and April of 2003. 264 residents, representing 16% of the population of residents, participated in the screenings.

Dentists, hygienists, dental students, and dental hygiene students from Boston University, Forsyth School of Hygiene at Massachusetts College of Pharmacy, Harvard University, and Tufts University provided oral health screenings and education. The Boston Public Health Commission, Delta Dental Plan of Massachusetts, and the office of Boston City Councilor Michael Ross coordinated and supported all screenings.

- The majority of the elders examined (52%) needed dental care, and 15% needed urgent care.
- 42% had urgent needs during that last year and were unable to obtain care.
- 39% of the elders screened did not seek care because they were unable to afford care.
- 56% had not seen a dentist within the past year, yet nearly half had untreated dental disease.
- The most common oral health problem reported by participants was unreplaced missing teeth.
- 44% of the elders screened saw a dentist only when experiencing pain or a problem.
- 80% reported that they were in need of dental care.
- Without access to regular or preventive oral health care, 42% had untreated dental cavities and nearly 15% were in urgent need of dental care with pain or infection.
- 62% reported that their oral health was fair to poor.
- Approximately 40% of upper dentures and 50% of lower dentures examined were not stable during chewing and did not stay in place with mouth opening.

Oral Health Screenings of Elders Residing in Selected Boston Facilities: Report Needs Assessment

June, 2003

Executive Summary

The purpose of this assessment was to determine the level of dental need among elders residing in 11 elder housing facilities in Boston's District 8, and to determine their utilization of dental services. The majority of the elders examined (52%) needed dental care, and 15% needed urgent care. Further, 42% had urgent needs during that last year and were unable to obtain care.

Method

Screening examinations were conducted to obtain information on the health of the oral soft tissues, teeth, and level of complete and partial tooth loss (edentulousness). Elders in need of dental care were given assistance with referral to the dental facilities providing the screenings.

Oral health screenings were conducted in 11 elder housing facilities in District 8 of the City of Boston and the Boston Housing Authority during March and April of 2003. Dentists, hygienists, dental students, and dental hygiene students from Boston University, Forsyth School of Hygiene at Massachusetts College of Pharmacy, Harvard University, and Tufts University provided oral health screenings and education. 264 residents, representing 16% of the population of residents, participated in the screenings. The Boston Public Health Commission, Delta Dental Plan of Massachusetts, and the office of Boston City Councilor Michael Ross coordinated and supported all screenings.

Results – Dentition

The majority of participants screened (52%) were in need of dental treatment, and 15% had urgent needs, but were unable to afford dental care. Economically disadvantaged older adults face severe barriers to access to dental services.¹ 39% of the elders screened did not seek care because they were unable to afford care. 56% had not seen a dentist within the past year, yet nearly half had untreated dental disease. The most common oral health problem reported by participants was unreplaced missing teeth.

Commentary – Dentition

The importance of adequate oral health in the elderly cannot be overstated. Recent scientific studies have begun to clarify the importance of oral health to overall health.² The adequacy of a functioning dentition is directly related to dietary choices and proper nutrition. National surveys indicate that older Americans are

keeping their teeth later in life.³ Therefore; the need for access to routine dental care for older adults will continue to increase. The elderly are also more likely to have roots of teeth exposed due to gingival recession, which increases with age. This puts them at higher risk for root cavities. 44% of the elders screened saw a dentist only when experiencing pain or a problem. 80% reported that they were in need of dental care. Without access to regular or preventive oral health care, 42% had untreated dental cavities and nearly 15% were in urgent need of dental care with pain or infection. 62% reported that their oral health was fair to poor. Access to regular and preventive dental care for elders with natural teeth is essential for overall health and well-being.

Results – Dentures

The adequacy and stability of dentures is also directly related to quality of diet and the health of oral soft tissues. Approximately 40% of upper dentures and 50% of lower dentures examined were unstable and not well retained. Individuals who are fully or partially edentulous must see a dentist regularly for oral cancer screenings, denture check ups and improvement of denture stability and retention.

Discussion

Although these results may not be representative of all residents residing in elder facilities in Boston, there is a clear need for oral health services among the group. Lack of public and private dental payment programs, inability to pay for care, and lack of perceived need for regular and preventive oral health care puts many elders at risk for conditions that may affect their overall health. Efforts should be made to facilitate access to reduced fee oral health care services and provide easily accessible oral health education and preventive care.



The following is a summary of results obtained from the oral health screenings of residents of selected facilities in Boston. (Table 1). Two-hundred sixty-four residents of elder facilities in the city of Boston participated in the oral health screenings. The mean age was 69.22 (\pm 13.803). The majority (57.9%) of participants were Caucasian (Table 2).

Table 1. Number of Participants by Screening Site

Facility	Number of Participants	Percent of Residents
Amy Lowell Apts	14	9
Beacon House	4	2
Blackstone Apts	38	27
Back of the Hill	22	18
Flynn House	27	27
Franklin Field	13	22
Kenmore Abbey	22	8
Lower Mills	19	23
Morville House	40	23
St. Cecilia's	26	13
Symphony	39	12
TOTAL	264	16

Table 2. Race/Ethnicity of Participants of Elder Screening

Race/Ethnicity	Percent
White	57.9
African American/Black	20.7
Asian	12.3
Native Hawaiian/Pacific Islander	0.0
American Indian/Alaskan Native	0.8
Hispanic	5.7
Unknown	0.4

Oral Health and Denture Status

Oral health conditions are detailed in Table 3. Over half needed dental care, 15% needed urgent care and 42% had untreated decay.

Table 3. Frequency of Oral Health Conditions in Boston Elders

Oral Health Condition	Percent
Edentulous	23.2
Untreated Caries	42.1
Urgent dental care needed	14.6
Dental care needed	52.3
Root tips retained	13.9
Soft tissue lesions	4

Denture status is shown in Table 4. Over half wore upper dentures, of which a third were unstable (rocked or moved during chewing) and 41% were non-retentive (did not stay in place). One in five wore a lower denture; half of these were ill fitting.

Table 4. Denture Status

Denture Condition	Percent
Upper Complete Denture	61
Upper Dentures unstable	37.1 of 61%
Upper Denture non-retentive	40.8 of 61%
Lower Dentures	21
Lower Dentures Unstable	48 of 21%
Lower Dentures non-retentive	53.2 of 21%

Utilization and Self-Reported Oral Health

Forty-one percent of participants reported that they needed dental care within the past year but were unable to receive care. Twenty-four percent of participants reported having a dental visit within the past six months. Seventeen percent reported visiting a dentist between 6 months and 1 year ago, with 28% reporting a dental visit between 1 and 3 years ago and 27% reporting not visiting a dentist within the last 3 years. The most common reason for seeking care (44%) was due to pain or another oral health problem. The most commonly cited reason for not seeking care (39%) was due to the inability to afford dental treatment. While 91% reported having insurance to cover medical/surgical treatment, only 32% reported having any dental insurance.

The majority of participants (61.8%) reported that their oral health was fair (36.6) or poor (25.2) with 80% reporting that they are in need of dental treatment. The most common reason (55%) for needing treatment was to replace missing teeth.



References

1. GAO/HEHS-00-72 Oral Health in Low Income Populations, April 2000.
2. Oral Health in America: A Report of the Surgeon General, September 2000.
3. NCHS 1975, 1996.

Oral Health of Homebound Elders Residing in Cambridge and Somerville

Needs Assessment Summary *May, 2004*

The purpose of this assessment was to gather data on the oral health status of homebound elderly, to increase awareness of the importance of oral health to general health for non-dental health professionals through collaboration and to gather information about the issues that prevent access to dental services and disparities of oral health among the older adults.

The oral health surveys and screenings were conducted in the homes of elders participating in the House Calls Service of the Cambridge Health Alliance Geriatric Department. Data were collected from 55 of the 200 active patients. The HCS staff accompanied the screener on most of the home visits allowing for a collaborative effort in assessing the patients overall health.

The subjects were given information and assistance to access dental services. Collaborative partnerships with the three Boston dental schools and the Windsor Street Health Center Dental Clinic were formed to provide affordable dental services as part of the referral process.

- 13% of the elders examined required urgent dental care.
- 87% of the dentate elders screened had untreated dental caries.
- Over 70% reported a last dental visit over three years ago.
- The most common reason for last seeking dental care was due to pain or another oral health problem. (58%)
- The most commonly cited reasons for not seeking care was lack of perceived need (21%) and lack of transportation (16%).
- 38% of the elders had a soft tissue lesion upon screening, most of which were related to poor denture hygiene, poor fitting dentures, and tooth related infections.
- 34% of the participants reported that they needed dental care within the past year but were unable to receive care.
- Of those who felt that they had not needed dental care in the past twelve months, 57% were determined to need dental care by the screener.

**Oral Health Screenings of Homebound Elders
in Cambridge and Somerville:
Report Needs Assessment** *May, 2004*

Executive Summary

The goals of this oral health assessment are to gather data on the oral health status of homebound elderly, to increase awareness of the importance of oral health to general health for non-dental health professionals through collaborative works and to provide further support for the issues that prevent access to dental services and disparities of oral health among older adults.

Method

The oral health assessment consisted primarily of identifying oral health needs and identifying barriers to access to dental services. Non-dental health professionals were also trained to provide oral health screenings.

One screener utilized the Basic Screening Survey and a question survey to gather data from patients within the House Call Services (HCS) of the Cambridge Health Alliance Geriatric Department. Data was collected from 55 of the 200 active patients of the HCS. The screener traveled to all the subjects' homes in the cities of Cambridge and Somerville, MA. to conduct the survey and oral health screening. The HCS staff accompanied the screener on most of the home visits allowing for a collaborative effort in assessing the patient's overall health. The subjects were given information and resources to access dental services. Collaborative partnerships with the three Boston area dental schools and Windsor Street Dental Clinic were formed to provide affordable dental services as part of the referral process.

Results

56% the participants screened required dental care with 13% requiring urgent care. 87% of the dentate elders screened had untreated dental caries. 71% of subjects reported a last dental visit over three years ago. The most common reason for last seeking care (58%) was due to pain or another oral health problem. The two most common reasons cited for not seeking care was lack of perceived need and lack of transportation, 21% and 16% of the total responses, respectively.

Commentary – Dentition

Patterns of oral disease have shifted in the past several decades. In general, older adults in the U.S. are retaining their teeth longer with a significant decline the rate of complete tooth loss.¹ However,

frail elders face barriers to access to dental care. The most important barriers appear to be financial, lack of perceived need for care without symptoms, and transportation. Only 13 % of the American elders report having private dental insurance.² This leaves many older adults paying for dental services out of pocket. Loss or lack of dental insurance occurs at a time when there are increased oral health needs and often a reduction in ability to pay. It is clear that many elders live with unmet needs dental needs due to these barriers.

Results – Dentures

Over forty five percent of those screened were edentulous. Over 38% of the elders had a soft tissue lesion upon screening, most of which were related to poor denture hygiene, poorly fitting dentures, and tooth caused infections. Approximately 60% of the edentulous elders screened had upper dentures and 49% had lower dentures. Over a quarter of those with dentures were wearing dentures that were not retentive or stable enough to provide adequate function.

Discussion

Many older adults fail to seek dental services because of a lack of perceived need for those services. Lack of perceived need was rated high in a self-reported study of elders living in Cambridge.³ This is especially true among individuals with complete tooth loss as evidenced by extremely low utilization of dental services by this group.⁴ Individuals with no teeth are still at risk for a host of oral diseases that affect the soft tissues of the mouth. For example, 95% of oral cancer occurs in adults over age 50. Successful treatment can strongly depend on early detection.

The following is a summary of results obtained from the oral health screenings of homebound elders residing in Cambridge and Somerville, MA. The mean age was 79 (± 9.400). The majority (84.2%) of participants were Caucasian (Table 2).

Table 1. Age/Gender of the Homebound Elders

Gender	Mean Age	Number	Percentage
Male	75.62	24	43.6
Female	81.68	31	56.4
Total	79.04	55	100

Table 2. Race/Ethnicity of the Homebound Elder Screening

Race/Ethnicity	Percent
White	84.2
Hispanic	12.2
African American/Black	3.6
Asian	0
Native Hawaiian/Pacific Islander	0
American Indian/Alaskan Native	0

Oral Health and Denture Status

Oral health conditions are detailed in Table 3. Over half needed dental care, 12.7% needed urgent care and 86.7% had untreated decay.

Table 3. Frequency of Oral Health Conditions in Boston Elders

Oral Health Condition	Percent
Edentulous	45.5
Untreated Caries	86.7
Urgent dental care needed	12.7
Soft tissue lesions	38.2

Denture status is shown in Table 4. Sixty percent wore upper dentures, of which 24% were unstable (rocked or moved during chewing) and 27% were non-retentive (did not stay in place). Almost half wore a lower denture with 33% unstable and 41% non-retentive.

Table 4. Denture Status

Denture Condition	Percent
Upper Complete Denture	60
Upper Dentures unstable	24 of 60%
Upper Denture non-retentive	27 of 60%
Lower Dentures	49
Lower Dentures Unstable	33 of 49%
Lower Dentures non-retentive	41 of 49%

Utilization and Self-Reported Oral Health

Thirty four percent of participants reported that they needed dental care within the past year but were unable to receive care. Of those whose did not feel they needed care in the last twelve months, 56% needed early or urgent care upon screening. Over 70% reported a last dental visit over three years ago. The most commonly cited reasons for not

seeking care were lack of perceived need (21%) and transportation (16%).

A program that promotes increased access to dental care and improved oral health must reduce barriers to care. The integration of dental services in the House Calls Services will seek to promote access to dental care by providing low cost and free care in a variety of accessible clinical settings through the Cambridge Health Alliance and the dental education centers of Boston.

References

- ¹Oral health status of elderly in New England, Journal of Gerontology, 1993
- ²Dental expenditures and insurance coverage among older adults. Gerontologist 1995
- ³Barriers to Access Dental Care in the Elderly Population of Cambridge. Thesis project, HSDM, April 2000
- ⁴Dental Service Use and Dental Insurance Coverage – US BRSS, 1996, MMWR 1997, 46(50): 1999-1203

APPENDIX

Table 1

**Demographics, Access to Care and Oral Health of Massachusetts' Third Grade Children Participating in the 2003 Oral Health Survey
Adjusted for Non-Response**

Variable	Number with Data	Mean or Percent	95% CI
Number of children screened	3,439		
Age			
Mean age (standard error)	3,114	8.6 (0.023)	8.6 – 8.7
Age range		7-12 years	
Gender			
Male (%)	3,168	48.9	47.0 – 50.9
Female (%)		51.1	49.1 – 53.0
Time Since Last Dental Visit			
Within last year (%)		86.2	83.4 – 89.0
2-3 years ago (%)	3,070	10.3	8.3 – 12.4
3-5 years ago (%)		1.4	0.9 – 1.9
Never been to dentist (%)		2.0	1.3 – 2.7
Type of Dental Insurance			
Private (%)		61.3	56.1-66.5
MassHealth (%)	3,035	24.0	18.9-29.2
CMSP (%)		1.6	1.1-2.1
None (%)		13.1	11.6-14.5
Listed a Dentist (% Yes)	3,171	85.3	82.2 – 88.4
Caries Free (%)*	3,439	51.8	48.6 – 55.0
Caries History (%) ⁺	3,439	48.2	45.0 – 51.4
Untreated Decay (%)	3,439	25.8	22.4 – 29.2
Treatment Urgency			
No visible caries	3,439	74.1	70.7 – 77.6
Possible or obvious caries		18.7	16.2 – 21.2
Large caries		7.2	5.6 – 8.8
Dental Sealants (% with \geq 1 sealant)	3,439	53.8	49.5 – 58.0

* Caries free = no fillings or untreated decay

⁺ Caries history = at least one tooth with a filling and/or untreated decay

Table 2
Detail of Caries History for Massachusetts' Third Grade Children
Participating in the 2003 Oral Health Survey
Adjusted for Non-Response

Variable	Percent of Children	95% CI
Fillings Only	22.4	20.4 – 24.4
Fillings and Untreated Decay	15.5	13.0 – 17.9
Untreated Decay Only	10.3	8.2 – 12.4
Caries History (total of above)	48.2	45.0 – 51.4

Table 3
Detail of Sealant Prevalence for Massachusetts' Third Grade Children
Participating in the 2003 Oral Health Survey
Adjusted for Non-Response

Variable	Percent of Children or Mean	95% CI
One Sealant (%)	4.0	3.2 – 4.8
Two Sealants (%)	7.1	6.1 – 8.1
Three Sealants (%)	5.9	4.8 – 6.9
Four Sealants (%)	36.8	32.6 – 41.0
≥ 1 Sealant (total of above) (%)	53.8	49.5 – 58.0
Mean Number of Sealants		
All Children (n=3,439)	1.8	1.7 – 2.0
Children with Sealants (n=1,833)	3.4	3.3 – 3.5

Table 4
Access to Care and Oral Health of Massachusetts' Third Grade Children
Stratified by Time Since Last Dental Visit
Adjusted for Non-Response

Variable	Percent of Children (95% CI)				
	Visit in Last Year (n=2,630)	Visit in Last 2-3 Years (n=328)	Visit in Last 3-5 Years (n=47)	Never Been to Dentist (n=65)	No Visit in Last Year (n=440)
Type of Dental Insurance					
Private (%)	67.2(62.8-71.6)	35.3 (28.2-42.4)	17.7 (6.0-29.4)	21.5 (10.0-33.0)	31.4 (25.5-37.2)
MassHealth or CMSP (%)	21.0 (16.5-25.5)	46.2 (37.6-54.8)	58.4 (44.3-72.5)	51.0 (38.9-63.2)	48.3 (41.0-55.5)
None (%)	11.8 (10.2-13.5)	18.5 (13.9-23.1)	23.9 (11.1-36.6)	27.5 (16.1-38.9)	20.4 (16.3-24.5)
Listed a Dentist (% Yes)	92.4 (90.8-94.0)	63.1 (56.3-69.9)	33.7 (20.0-47.7)	14.2 (-0.9-29.4)	52.8 (46.7-58.9)
Caries History (%)	45.7 (42.3-49.1)	59.9 (54.3-65.6)	57.1 (42.6-71.6)	58.8 (45.9-71.8)	59.5 (55.4-63.6)
Untreated Decay (%)	21.7 (18.5-24.8)	45.3 (38.3-52.3)	44.7 (29.9-59.6)	53.5 (42.0-65.1)	46.4 (40.7-52.2)
Treatment Urgency					
No visible caries (%)	78.4 (75.2-81.5)	53.9 (47.0-60.8)	55.2 (38.5-72.0)	47.8 (36.3-59.4)	53.2 (47.7-58.9)
Possible / obvious caries (%)	16.5 (14.1-18.9)	28.4 (21.4-35.5)	25.9 (8.9-42.8)	24.0 (15.5-32.4)	27.5 (21.9-33.2)
Large caries (%)	5.1 (3.8-6.4)	17.7 (12.8-22.5)	18.9 (7.7-30.0)	28.2 (13.3-43.1)	19.3 (14.5-24.1)
Dental Sealants (% with \geq one)	60.4 (56.4-64.3)	25.4 (19.4-31.5)	18.3 (7.6-29.1)	16.2 (4.8-27.6)	23.3 (17.5-29.2)

Table 5
Access to Care and Oral Health of Massachusetts' Third Grade Children
Stratified by Type of Dental Insurance
Adjusted for Non-Response

Variable	Percent of Children (95% CI)		
	Private Insurance (n=1,841)	Government Insurance (n=795)	No Insurance (n=399)
Checkup in Last Year (% Yes)	93.2 (91.7-94.7)	73.5 (69.1-77.9)	78.7 (73.4-84.0)
Listed a Dentist (% Yes)	94.5 (93.3-95.7)	71.2 (66.9-75.5)	79.1 (73.2-84.9)
Caries History (%)	41.0 (37.7-44.4)	65.0 (61.7-68.4)	44.7 (39.2-50.1)
Untreated Decay (%)	18.7 (16.0-21.4)	40.1 (35.1-45.1)	24.4 (19.0-29.9)
Treatment Urgency			
No visible caries	81.3 (78.5-84.2)	60.4 (55.5-65.3)	74.0 (68.3-79.7)
Possible or obvious caries	15.0 (12.7-17.3)	23.6 (19.1-28.0)	20.1 (14.7-25.5)
Large caries	3.6 (2.5-4.8)	16.0 (12.4-19.7)	5.9 (3.4-8.5)
Dental Sealants (% with \geq 1 sealant)	63.2 (59.0-67.5)	40.5 (34.8-46.2)	49.1 (42.6-55.6)

Table 6
Access to Care and Oral Health of Massachusetts' Third Grade Children
Stratified by Income Status of School – % of Students Classified as Low-Income
Adjusted for Non-Response

Variable	Percent of Children (95% CI)		
	Higher Income < 5% Low-Income (n=844)	Middle Income 5-49% Low-Income (n=1,662)	Lower Income ≥ 50% Low-Income (n=933)
Checkup in Last Year (% Yes)	95.8 (94.0-97.5)	87.6 (84.8-90.4)	72.0 (66.4-77.6)
Type of Dental Insurance			
Private (%)	79.1 (75.1-83.1)	64.0 (59.0-69.0)	35.1 (25.0-45.2)
MassHealth or CMSP (%)	7.3 (4.9-9.6)	21.0 (16.7-25.3)	56.4 (46.3-66.5)
None (%)	13.6 (10.9-16.4)	15.0 (12.8-17.2)	8.5 (6.7-10.2)
Listed a Dentist (% Yes)	95.4 (93.7-97.1)	86.8 (83.6-90.1)	70.9 (64.6-77.2)
Caries History (%)	35.5 (32.3-38.6)	46.8 (42.6-50.9)	63.8 (60.6-67.0)
Untreated Decay (%)	13.3 (10.4-16.3)	24.2 (20.2-28.3)	41.4 (35.8-47.0)
Treatment Urgency			
No visible caries	86.9 (83.7-90.2)	75.7 (71.4-79.9)	58.3 (52.9-63.7)
Possible or obvious caries	11.1 (7.9-14.3)	17.9 (14.9-20.9)	27.8 (23.3-32.4)
Large caries	2.0 (1.1-2.9)	6.4 (4.6-8.3)	13.9 (9.9-17.8)
Dental Sealants (% with ≥ 1 sealant)	70.7 (66.3-75.1)	51.6 (45.9-57.3)	40.7 (32.8-48.6)

Glossary of Terms

Advances in technology	Improvements resulting from scientific progress
Community water fluoridation	Adjustment of the fluoride levels in a community water supply to the optimum level recommended to promote oral health
Cross sectional	A survey design in which participants/ subjects are sampled at a fixed point in time and then associations between the presence or absence of risk factors are investigated
Dental disease, dental decay, dental caries, cavities (all used interchangeably in this report)	A hole or pitted area in a tooth caused by acid attack on the outer layers of the tooth surface
Dental sealants	Protective plastic coating applied to the biting surfaces of molar teeth
Direct observation (dental screening)	Visual examination of the teeth (using lighting and mirrors), without the aid of dental explorers
Evidence-based modalities	The integration of basic science, animal and human studies with clinical experience and patient values to make appropriate clinical decisions
History of disease	Presence of untreated cavities and fillings
Infectious disease	The invasion of microorganisms into a body part/tooth resulting in decay or deterioration of the body part/tooth
Prevalence rate	The proportion of persons in a population group who have a particular disease at a given point in time
Representative sample	A sample selected to stand for a given population group
Sampling frame	A sub-group of a given population chosen to represent that population
Surveillance system	The ongoing organized collection, analysis, and interpretation of data for use in planning, implementation, and evaluation of public health practice.
Treatment urgency	A triage system of treatment needs of subjects/students screened 1= no visual cavities observed 2= possible cavities exist 3= large cavities suspected, pain, obvious infection

ACKNOWLEDGEMENTS

The Massachusetts Department of Public Health would like to acknowledge the following individuals for their assistance with the statewide screening of third graders and the preparation of this report.

Myron Allukian, D.D.S.	Boston Public Health Commission
Bob Boose, EdD Executive Director	Massachusetts Dental Society
Rob Compton, D.D.S.	Dental Service of Massachusetts
Scott Davis	Massachusetts Dental Society
Mark Doherty, D.D.S.	Dorchester House Multi-Service Center
Chester Douglass, D.D.S, PhD	Harvard School of Dental Medicine
Sally Fogerty, Assistant Commissioner	MDPH, Bureau of Family and Community Health
Mary E. Foley, R.D.H., M.P.H., Director	MDPH, Office of Oral Health
Michelle Henshaw, D.D.S., M.P.H.	Boston University Goldman School of Dental Medicine
Janice Healey, C.D.A.	MDPH, Office of Oral Health
Danielle Jusseaume, R.D.H., M.S.	MDPH, Office of Oral Health
Michael Monopoli, D.M.D., M.P.H.	Dental Service of Massachusetts
Richard Niederman, D.M.D.	The Forsyth Institute
Kathy Phipps, R.D.H., PhD	Association of State and Territorial Dental Directors
Karen Rafeld, Assistant Executive Director	Massachusetts Dental Society
Anne Sheetz, Director	MDPH, Essential School Health Services
Lionel White	MDPH, Office of Oral Health
Michelle Zbell, Program Coordinator	MDPH, Coordinated School Health Service

The Massachusetts Oral Health Collaborative

Kathy O'Loughlin	Chair, Dental Service of Massachusetts
Dean Spencer Frankl	Boston University School of Dental Medicine
Dean Lonnie Norris	Tufts University School of Dental Medicine
Dean Bruce Donoff	Harvard School of Dental Medicine
Dominick DePaola	President & CEO, The Forsyth Institute
Representative Peter Koutoujian	
Senator Richard Moore	
Janet Selwitz-Segal	Forsyth at Massachusetts College of Pharmacy and Health Sciences
Mary Foley	Massachusetts Department of Public Health
Nancy Turnbull	Harvard School of Public Health
Robert Boose	Executive Director, Massachusetts Dental Society
Helene Bednarsh	Dental Ryan White Ombudsman, Boston Public Health Commission
Richard Lord	President & CEO, Associated Industries of Massachusetts
John McDonough	Executive Director, Health Care For All
Marylou Sudders	President & CEO, Massachusetts Society for Prevention of Cruelty to Children
Jan Yost	President and CEO, The Health Foundation of Central Massachusetts
Gerald J. Morrissey	Commissioner, MA Department of Mental Retardation
John G. (Sean) Palfrey	President, Massachusetts Chapter American Academy of Pediatrics
Marylou Buyse	President and CEO, MA Association of Health Plans
Susan Webb	Massachusetts Medical Society
