

The Central Massachusetts Oral Health Initiative Evaluation Report

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EXECUTIVE SUMMARY

The Central Massachusetts Oral Health Initiative (CMOHI) was conceived by the Worcester District Dental Society in early 2000 in response to the lack of oral health care access in the Central Massachusetts region. Of particular concern were low-income and uninsured children and families, especially those from racial and ethnic minority backgrounds, who lack access to preventive and restorative oral health treatment.

In November of 2000, The Health Foundation of Central Massachusetts awarded a planning grant to the Massachusetts Dental Society Foundation through an application submitted by the Worcester District Dental Society. The funds would help create a model program that would increase access to dental care and improve the oral health of people in Central Massachusetts. Under the direction of John P. Gusha, D.M.D., the Central Massachusetts Oral Health Initiative—a broad-based partnership of 25 state and local organizations—was formed to develop and promote programs addressing the oral health crisis in the region. It is the largest community-based effort to date to address the oral health crisis in Massachusetts. Partner organizations have increased since the pilot phase to represent development of new initiatives in Southern Worcester County and continuing outreach to under-served populations.

The mission of the CMOHI was set to focus on improving access to oral health care for under-served populations, and on developing a model program for oral health services that potentially could be replicated across the state of Massachusetts.

Now in its fourth year - one planning year, one pilot year, and two implementation years - the CMOHI has produced effective strategies to address oral health care access for the underserved and has undergone continuous assessments. The process of assessment has enabled CMOHI representatives to refine programs and strategies as necessary. The CMOHI has sharpened its focus, concentrating efforts on six key strategies. These provide a combination of preventive and treatment services that hold promise for long-term sustainability, while maintaining efforts to create systemic change. Currently, the CMOHI incorporates a comprehensive, community-based approach that includes: (1) providing school-based dental services for underserved children; (2) increasing oral health care access through existing health centers and (3) and dental volunteers program; (4) educating health professionals about oral health basics; (5) establishing a dental residency program; and, (6) advocating for oral health policy.

The purpose of this report is to: 1) Provide a summary of the project since its inception, and detail on the last year of work. 2) Provide an analysis of successes and opportunities for improvement. 3) Provide a resource of maps and data that agencies may use for the purposes of targeting oral health efforts and supporting future grant applications. 4) Assay the previous literature on public health dentistry so as to provide an intellectual and scientific context for the current work, and to support future efforts to publish the activities and results of the CMOH, and, 5) Recommend areas of enhanced effort in the future.

RECOMMENDATIONS

CMOHI has made significant progress toward increasing oral health access and creating a model program. Through the various school-based services, several thousands of children—who might not otherwise be treated—have been screened, sealed, fluoride varnished and received follow up dental care. The Family Health Center and Great Brook Valley Health Center have both dramatically increased the number of patients served, particularly the uninsured and those covered by MassHealth. The volunteer and health professionals education programs have helped raise awareness of the oral health needs in the Central Massachusetts region. In addition, CMOHI advocacy efforts are garnering significant legislative and administrative government support, laying a strong foundation for systemic change. To build upon these successes project evaluators recommend that CMOHI:

1. Expand preventive services provided *in* schools. Provision of services in this way reduces “time-out-of-school,” a key concern of school officials. It also maximizes efficiency.
2. Intensify efforts to ascertain methods for increasing the numbers of school children who receive parental permission for screening, sealants, and varnishes. The fluctuation of parental permission returns is a major source of inefficiency in delivering screening, sealants, and varnishes to low income children at risk.
3. In light of the aforementioned, develop methods for working with institutions and organizations, e.g., cultural organizations and/or housing projects, which might provide an alternate means of working with low-income and linguistically isolated children whose parents do not currently give permission for screening, sealants and varnishes.
4. Investigate the micro-areas in Worcester County that have high concentrations of elders, for elders at risk.
5. Investigate how the “common risk factor approach” might yield benefits—and broaden the health coalition, and the understanding of how certain factors, such as highly refined-carbohydrate consumption—may have multiple deleterious impacts. An example, currently underway, is the movement to rid schools of soda vending machines to impact both oral health and obesity. This effort could be broadened.
6. Continue to develop the Quinsigamond Community College site for a staffed dental program with altered scheduling, as planned.
7. Develop means of converting dental volunteers to paid dentists under the umbrellas of Great Brook Valley and Family Health Centers.
8. Continue to push for legislation to create structural changes that will enhance dentists' willingness to treat low-income individuals.
9. Continue to push for legislation that will make statewide fluoridation of water supplies easier. Many communities in Worcester County have community public water supplies (including Worcester City) but are not fluoridated.

10. Further investigate small “micro” areas of poverty and linguistic isolation to determine whether and/or how to target services to these areas.
11. Promote a “public health” orientation among CMOHI partners - an orientation that emphasizes identifying persons in need and how to best reach and serve them, rather than a purely clinical orientation - treating those who present themselves for treatment. In this context that means, for example, increasing attention to the problems associated with getting parental permission for students to be screened, sealed and varnished.

INTRODUCTION

Despite significant advances in oral health care over the past half-century, children and families across the United States are experiencing an oral health crisis. In fact, the 2000 U.S. Surgeon General's report¹ on oral health indicated a "silent epidemic" of dental and oral diseases disproportionately affecting disadvantaged children and families. The risk for tooth decay begins early, with one out of six children between the ages of 2 and 4 affected. The risk grows over time, with 53% of 8-year-olds and 84% of 17-year-olds affected by tooth decay, according to a 1989 report of the National Institute of Dental Research.² As many as 96% of adults and 99% of seniors 65 years and older have experienced tooth decay.³

Figures for Massachusetts mirror those of the nation. More than 2.3 million Massachusetts residents have no dental insurance, requiring that these individuals pay out-of-pocket for services. Cost of care is one of the most significant reasons people report for not seeking dental care when they believe it is needed.⁴ And, a recent survey of persons aged 19-64, found that 58.1% of Worcester residents without insurance had no dental visits. By contrast, only 19.8% of Worcester residents with insurance had no dental visits. The resulting ratio of 2.93 to 1 (58.1/19.8) is paralleled by a similar ratio (2.93 to 1) for physician office visits. These ratios indicate that persons without insurance are far less likely to seek treatment from physicians and dentists than are persons with insurance. But they are almost as likely to seek care in the Emergency setting. The ratio of persons with insurance to persons without insurance seeking Emergency Room care is only 1.12.⁵ The uninsured are therefore relatively far more likely to get their health care in the high cost emergency setting than are the insured.

Low-income patients covered by MassHealth, the state's Medicaid program, are at a similar disadvantage. In March 2001, following declining state revenues, the MassHealth dental program for adults was discontinued, although it continues to provide dental services to children. However, a community assessment found that only about 14% of dentists in the state are active MassHealth providers, in part due to low reimbursement rates for providers, inability to cap the number of MassHealth patients they treat, and cumbersome administrative procedures in dealing with the MassHealth Agency.

In addition, limited access to fluoridation further exacerbates the problem. For example, Worcester, the largest city in Central Massachusetts, has failed to implement fluoridation of the public water supply, despite evidence of its documented effectiveness in reducing risk for oral health problems. Further disconcerting is the low percentage of dental sealant applications in Massachusetts, only 12 to 23 percent of 3rd grade school children according to surveys conducted in several local low income Massachusetts communities (Boston 12% in 1999; New Bedford 14% in 1998, and Cambridge 23% in 1995), and reported by the Special Legislative Commission on Oral Health, which falls far short of the Healthy People 2000 goal of 50 percent. A more recent MSPCC report of a statewide survey of school children in 2003 indicates that there has been improvement, with 53% of all 3rd graders having dental sealants, and 41% of 3rd grade children in poorer districts.

Fluoridation, dental sealant application and untreated caries are key oral health indicators. Dental survey data collected by the Commonwealth's Department of Public Health indicate that many Worcester students have unmet oral health needs in terms

of untreated caries and lack of sealants present. Comparative (preliminary) statistics from a recent statewide survey indicate that for the two non-charter Worcester public schools in the statewide sample (Norback and Vernon Hill), 61.1% had no sealants, which is significantly higher than 44.9% for the state as a whole, and 42.1% had evidence of dental caries, compared with 25.8% for the state as a whole. Seven Hills Charter School had 25.0% with no sealants and 32.1% with untreated caries.

The Central Massachusetts Oral Health Initiative was launched within this context.

THE CENTRAL MASSACHUSETTS ORAL HEALTH INITIATIVE

Background⁴

The Central Massachusetts Oral Health Initiative (CMOHI)ⁱ was conceived by the Worcester District Dental Society in early 2000 in response to the lack of oral health care access in the Central Massachusetts region. Of particular concern were low-income and uninsured children and families, especially those from racial and ethnic minority backgrounds, who lack access to preventive and restorative oral health treatment, primarily because of cost barriers. For instance, according to a report of the Legislative Commission on Oral Health, assessments conducted in several Massachusetts communities with high representation of low-income children (Cambridge, Boston and Lawrence) found that 38% - 48% of children needed restorative dental care, with 9 - 14% requiring immediate referral for treatment. No comparative data for higher income populations was obtained for the Commission report. Other survey results indicated that Massachusetts communities with large low income populations such as Boston (12%) and New Bedford (14%) were below the national average (23%) and Cambridge (23%) was just at the national average for sealant application. All are far below the Healthy People 2000 goals of 50% of children with at least one sealed tooth.

In November of 2000, The Health Foundation of Central Massachusetts awarded a planning grant to the Massachusetts Dental Society Foundation through an application submitted by the Worcester District Dental Society. The funds would help create a model program that would increase access to dental care and improve the oral health of people in Central Massachusetts. Under the direction of John P. Gusha, D.M.D., the Central Massachusetts Oral Health Initiative—a broad-based partnership of 25 state and local organizations—was formed to develop and promote programs addressing the oral health crisis in the region. It is the largest community-based effort to date to address the oral health crisis in Massachusetts. Partner organizations have

The CMOHI Partners

The CMOHI is a collaborative effort of key agencies working to make oral health a priority. It is the largest community-based effort to date to address the oral health crisis in Massachusetts. Partner organizations have increased since the pilot phase to represent development of new initiatives in Southern Worcester County and continuing outreach to under-served populations. Partners and collaborators include:

- Commonwealth of Massachusetts Legislature
- *Family Health Center of Worcester
- *Great Brook Valley Health Center
- Health Care for All and Health Law Advocates
- *Massachusetts Coalition for Oral Health
- Massachusetts Delta Dental Foundation
- *Massachusetts Dental Society
- *Massachusetts Department of Public Health
- *Massachusetts Society for the Prevention of Cruelty to Children (MSPCC)
- Oral Health Initiative of North Central Massachusetts
- *Quinsigamond Community College
- South Worcester Neighborhood Center
- Southbridge Public Schools
- Southern Worcester Neighborhood Center
- The Health Foundation of Central Massachusetts
- *UMass Medical School's Office of Community Programs
- *UMass Memorial Health Care
- United Way of Webster and Dudley
- Webster Public Schools
- Worcester City Council
- Worcester Department of Public Health
- *Worcester District Dental Society
- *Worcester District Hygienists' Association
- Worcester Public Schools

*These organizations are also listed in the 2001-2002 Pilot Phase Evaluation Report.

ⁱ More information about the CMOHI can be found online at: <http://www.fluoridefacts.org/aboutus.html>. Information about the primary funder, The Health Foundation of Central Massachusetts, Inc., can be found at www.hfcm.org.

increased since the pilot phase to represent development of new initiatives in Southern Worcester County and continuing outreach to under-served populations.

Overall, the CMOHI is a response to widespread dental needs among children and adults, particularly from low-income and linguistically isolated communities in Worcester County.

The mission of the CMOHI was set to focus on improving access to oral health care for under-served populations, and on developing a model program for oral health services that potentially could be replicated across the state of Massachusetts.

The CMOHI initially identified five specific goals to achieve its mission: (1) Increasing the number of Massachusetts citizens receiving fluoridated water; (2) Increasing legislative and regulatory agency support of policies to increase oral health services to MassHealth and the uninsured; (3) Decreasing the number of children with dental caries through education of good oral health practices, the application of sealants, and referral to dentists for treatment of caries in an earlier stage of disease onset; (4) Increasing the pool of dentists caring MassHealth members and the uninsured; and (5) Increasing the acceptance and use of fluoride to maintain good oral health.

Following a collaborative model, a Steering Committee, comprised primarily of CMOHI providers and community organizations, was formed to provide project oversight. In earlier years, the Steering Committee met on a monthly basis. Bi-monthly meetings started in October 2003. These meetings provide a vehicle for sharing updates on CMOHI activities, discussing project issues and brainstorming innovative solutions and strategies. Members of the overall partnership are invited to attend meetings as issues arise requiring their expertise. A periodic newsletter is also distributed to all CMOHI partners and interested others to share information on activities and accomplishments.

Several Subcommittees concentrate on major issue areas. These include: an *Advocacy Committee* working on legislative, administrative, and regulatory efforts; a *Residency Committee* working on developing a dental residency program to improve access to care, particularly emergent care needs; and a *CMOHI Worcester Public Schools Planning Committee* focusing on improving and expanding dental services offered in area schools. Other ad hoc committees are formed as necessary.

In addition to joint efforts, a core group of organizations focuses on individual components that make up the initiative (See Table 1) capitalizing on each organization's area of expertise and helping balance the workload. UMass Medical School Office of Community Programs provides grant and fiscal administration and financial support for CMOHI. With expertise in administering grants aimed at solving community problems, the University also serves as convener and facilitator, bringing together an array of academic experts, oral health professionals, and community leaders to achieve systemic changes concerning the region's oral health needs.

Table 1: CMOHI Past and Current Provider Roles

| <u>Organization</u> | <u>Role</u> |
|--|---|
| Worcester District Dental Society | Recruitment of dental volunteers |
| Family Health Center | Expansion of dental services including South County and first Residency Site |
| Great Brook Valley Health Center | Expansion of dental services Operation of GBVHC/QCC site through August, 2004, School-based program September, 2004+ |
| UMassMemorial Ronald McDonald Care Mobile | Dental screening, fluoride varnish, and sealant services in schools |
| Massachusetts Society for the Prevention of Cruelty to Children | Training of staff and home visitors on oral health education of clients and their children - through August 2003 |
| Quinsigamond Community College | Site for QCC-GBVHC dental center, which includes a majority of the volunteer dentists and hygienists; KidSeal, fluoride rinse, and varnish programs |
| Office of Community Programs, UMass Medical School | Grant Administration Residency Program Development |
| UMass Medical School, Department of Family Medicine and Community Health | Development and Housing the Residency Program |
| The Health Foundation of Central Massachusetts and CMOHI leadership | Leadership in promoting systemic change |

Now in its fourth year, the CMOHI has produced effective strategies to address oral health care access for the underserved and has undergone continuous assessments. The process of assessment has enabled CMOHI representatives to refine programs and strategies as necessary. Currently, the CMOHI incorporates a comprehensive, community-based approach that includes: providing school-based dental services for underserved children; increasing oral health care access through existing health centers; educating health professionals about oral health basics; establishing a dental residency program; and advocating for oral health policy.

The purpose of this report is to: 1) Provide a summary of the project since its inception, and detail on the last year of work. 2) Provide an analysis of successes and opportunities for improvement. 3) Provide a resource of maps and data that agencies may use for the purposes of targeting oral health efforts and supporting future grant applications. 4) Assay the previous literature on public health dentistry so as to provide an intellectual and scientific context for the current work, and to support future efforts to publish the activities and results of the CMOH, and, 5) Recommend areas of enhanced effort in the future.

INTERNATIONAL RESEARCH REVIEW

Current research indicates that many of the strategies utilized by the Central Massachusetts Oral Health Initiative are proving effective or showing promise in increasing oral health care access—particularly among poor and underserved populations—in communities across the United States and Canada, and as far away as Northern Ireland and England. We have provided a brief research review noting the major issues, and some responses in the categories of: oral health strategies; physician education and oral health; and community oral health initiatives.

Oral Health Strategies

The Oral Health Initiative⁶

The Health Resources and Services Administration (HRSA), which is the “access agency” within the U.S. Department of Health and Human Services (DHHS), has been especially concerned about oral health access for low-income children and families. Working in partnership with the Health Care Finance Administration (HCFA), which administers Medicaid and the Children’s Health Insurance Program (CHIP), HRSA launched The Oral Health Initiative to provide states and local communities with adequate tools, information, resources, and personnel to provide appropriate oral health care to children.

The Initiative focuses on improving Medicaid and CHIP and providing oral health programs, services and trainings. A committee helps ensure that CHIP programs consider oral health issues. The HRSA CHIP Partnership Program works with national organizations to develop state’s resources, enabling them to access issues on a local level. Ten regional health teams comprised of HRSA consultants, Medicaid regional dental coordinators, and pediatric dental health consultants help states and oral health providers address barriers and enhances services and treatment of children covered by Medicaid and CHIP. These include creating state-based plans; collecting and analyzing Medicaid and CHIP dental data; developing links with other federally-funded entities; training providers; sharing resources and “best practices”; and providing Medicaid and CHIP information and outreach to dentists and others. Additional HRSA activities include establishing or enhancing graduate training programs in pediatric and general dentistry, and funding training programs in dentistry to train dental public health leaders. Funds focus on programs that prepare dentists to practice in under-served areas.

Common Risk Factor Approach⁷

Researchers in the United Kingdom use a Common Risk Factor Approach (CRFA). The theory is that identifying common risk factors among chronic diseases, is more effective than a disease-specific approach. This approach works to address risk factors common to various chronic conditions within a wider socio-environmental context. For example, many chronic conditions, including oral health disease, cancer, strokes, and heart disease, are affected by diet, hygiene, smoking, alcohol use, stress, and trauma. The Common Risk Factor Approach focuses on controlling a small number of risk factors, and thus having an impact on a large number of diseases. A comprehensive health promotion strategy focusing on the common underlying determinants of health, in partnership with various agencies and communities can bring about sustainable change, according to proponents of this theory. While this strategy can be implemented in various ways, one example is Food Policy development. In this example, the CRFA is applied by developing policies that require

a holistic nutritional approach to addressing dental caries among children. Using the CRFA model, developing such a program would not only reduce consumption of fatty and sugary foods, thus improving oral health, but would also improve children's overall diet, reducing obesity while promoting growth and development.

Additional considerations to recommend a more integrated approach are that both caries and periodontal disease have systemic as well as local effects, if left untreated⁸.

Physician Education and Oral Health

The Interdisciplinary Children's Oral Health Promotion Project⁹

The Interdisciplinary Children's Oral Health Promotion (ICOP) Project champions utilizing primary care medical providers to reduce oral health disparities among children in the states of Washington, Wyoming, Alaska, Montana, and Idaho. The main focus of the project is on providing oral health education to family medicine residents and faculty at the University of Washington Affiliated Family Practice Residency Network within the School of Medicine.

The project targets family medicine residents, recognizing the family physician's critical role in overall health, and because of the declining numbers of dental providers in these regions. The network consists of fifteen residency training sites in rural and urban areas in the Washington, Wyoming, Alaska, Montana, and Idaho region. The goal of the ICOP project was to develop, implement and distribute culturally appropriate oral health education to family medicine residents and faculty, and to evaluate the training's impact on knowledge, attitudes and behavior of participants. The project curricula included such topics as oral health promotion and practice; normal dental development and common oral health pathology; dental caries, fluoride varnish, collaborating with dentists; dental trauma and emergencies; and oral-systemic health interactions.

Post-education evaluations showed that participants demonstrated increased oral health knowledge after didactic and hands-on training sessions. The trainees reported the quality of the course and instructors as "very good." Seventy percent indicated they would use the didactic materials in the future if available on the Internet. Initial surveys of residents and faculty indicated skepticism regarding the family physician's role in providing oral health care. Anecdotal follow-up showed a decrease in these types of comments. Also, there has been an increased interest in this elective oral health curriculum within the network. However, the project needs further data and time before determining whether the training will result in increased oral health activity within the participants' post-residency practice.

Children's Oral Health in the Medical Curriculum¹⁰

Recent articles have urged more collaboration between primary care physicians and dentists to reduce the rate of early childhood caries. But, in order for primary care physicians and pediatricians to increase their involvement in oral health prevention, education on oral health must be included in their medical education. That was the impetus behind an Early Childhood Caries prevention program instituted at the University of Washington. The program aimed to enhance the oral health training of pediatric providers, include fluoride varnish application at well child care visits for toddlers, and improve referral to dentists for preschool children within the university-affiliated program. The curriculum involved a three-step program: 1) examining the child's mouth, determining the risk of caries and discussing with the family; 2) fluoride varnish applied at the first well child care visit following the first tooth

eruption, and follow-up applications for a total of three; and 3) distributing toothbrushes and teaching parents how to brush their toddler's teeth daily. Initially, pediatric nurses received the training. This was then extended to pediatric residents, attending staff, and primary care physicians.

Follow-up evaluations of participants demonstrated an increased awareness of oral health. One year after the program, dental caries was the eleventh most common diagnosis seen in the clinic, compared to previously, where it wasn't even among the top forty diagnoses. Billing data also showed 131 occasions where fluoride varnish was applied. Overall, there was a commitment among staff to learn about oral health and to institute oral health into the clinic. Project evaluators observed a "catalytic effect" in the pediatric residency training program. Two former participants established a similar program at an Indian Health Services site, and two others have shown interest in providing similar services in clinics serving Hispanic children. Another volunteer instituted a similar program where he now works, and two former pediatric trainees have gone on to pursue oral health research careers.

Community Dental Health Initiatives

The "Health Commons" Approach¹¹

In New Mexico, a rural state lacking dental providers, a coalition of community leaders, legislators, dental, medical, and public health providers has implemented a "Health Commons" approach that incorporates oral health services into the primary care model. This approach includes: 1) enhancing dental service capacity through partnerships between the University of New Mexico and local community health centers; 2) broadening the scope of dental skills of local health providers by providing dental health training to primary care and emergency room physicians/residents and dental hygienists; 3) expanding the pool of dental providers serving poor and underserved populations through changes in Medicaid reimbursement levels; 4) creating new interdisciplinary teams in accessible community-based sites, which incorporates dental hygienists into primary care practices, enabling patients to access oral health services as a part of their routine health care; and 5) developing oral health policy to create long-term systematic changes. Research suggests that this comprehensive approach is working to increase access for underserved populations. For instance, by changing the Medicaid reimbursement level, more dental providers are participating in the Medicaid program. Also, as a result of including dental services within the primary care setting, pregnant women, for example, can now access preventive dental services along with their prenatal care, and young children can receive dental care at the time of scheduled immunizations.

Community Participatory Oral Health Promotion Program in an Inner-city Latino Community¹²

In Mount Pleasant, an inner city Latino community in Washington, D.C., a project was launched to focus on early prevention of dental caries through culturally appropriate education of pregnant women and parents of school-age children. This community had extensive dental health problems among children and significant lack of dental health knowledge and practices among parents. The project was divided in six phases: self diagnosis/community organization; needs assessment; development of a culturally appropriate intervention plan; implementation, evaluation and refinement; and impact evaluation. A steering committee of local stakeholders and community representatives assisted in planning, implementation and evaluation. Culturally appropriate health education and promotion activities were planned and implemented through local community organizations, volunteers, and local practitioners. Intervention activities

included: oral examinations and dental check ups for children entering kindergarten; no-cost application of dental sealants and fluoride; oral health presentations at community organizations. Posters with oral health messages were placed at community organizations; oral health songs in Spanish were introduced in preschool, elementary, and middle schools. The project provided support and training to field programs at the University of Maryland dental school and to an AmeriCorps program. Project evaluation indicated that such a community participatory program is not only feasible, but is also useful in building on existing local resources and in addressing oral health issues in a community not reached by traditional oral health care and promotion activities. Community residents showed significant interest in oral health issues and participated readily in various oral health prevention activities sponsored by the project.

Oral Health Promotion Program for Urban Minority Preschool Children¹³

Reports from public health clinics showed extensive dental treatment needs among children of Vietnamese immigrants, which represent the fifth largest group of newcomers to British Columbia, Canada. Taking into account cultural and language differences, a culturally sensitive health promotion program was designed to improve oral health in preschool Vietnamese children in Vancouver Canada. The project involved four phases: information-gathering, planning, implementation and evaluation. A committee was formed to plan and oversee the project.

The program used one-on-one counseling and community-wide initiatives to reach their target audience. A “lay” community dental health worker (CDHW) provided one-on-one counseling to mothers during child immunization visits to the twice-monthly Vietnamese Child Health clinics. Because the program reached mothers while their children were still infants and toddlers, the project focused on shaping, rather than changing, existing behaviors. Follow-up support and tools were provided (e.g. cups were given to mothers for weaning babies from bottle-feeding). A variety of community initiatives were implemented, such as a video created by the planning committee used at presentations given to mothers and toddlers at local community centers; a dental health article written by the CDHW for a local Vietnamese magazine (3000 copies were distributed in the community; child health booths at festivals; and an infant and child brochure for nurses on oral care.

Initially a demonstration project, the program has been in place for 7 years. Evaluations of participating children showed they consistently had fewer decayed surfaces than the children at the baseline, and infant feeding and comforting methods were significantly better than that reported at baseline for children 12 to 60 months old. For example, at follow-up assessment clinics, mothers who attended one or more counseling session reported decreased use of daytime and sleep-time bottles. While not an initial goal, the project demonstrated that dental counseling is well-received in a general health setting, such as a well-baby clinic. Researchers noted the importance of the lay health worker, who was of the same culture and background as the participants, to the program’s success.

Research-Practice-Community Partnership Initiative¹⁴

In Northern Ireland, where there is a high prevalence of childhood caries related to the heavy consumption of cariogenic snack foods, a school-based policy initiative was developed to address poor eating habits among school-age children. A partnership of researchers, practitioners, dieticians, health promotion officers and the school community worked to develop a policy to promote and facilitate healthier eating habits. Called Boost Better Breaks (BBB), the policy allows only the consumption of

milk and fruit at break time. Eighty percent of primary schools and preschool groups primarily in poor socioeconomic areas are involved in the program, which is also endorsed by school meal advisors and local school milk suppliers. The policy was created with the belief that garnering community support to negotiate and develop such changes within the school environment would help get buy-in from parents, teachers, and governors of the school and preschool groups. As part of the initiative, schools are not allowed to sell fatty or sugary foods and teachers must agree not to reward children with candy. Evaluations of the first two years after implementing the policy, children at participating schools have fewer dental caries, in comparison to children at non-participating schools.

The Central Massachusetts Oral Health Initiative combines the best of these strategies into a unified, comprehensive approach within the Worcester County and Worcester City context.

WORCESTER COUNTY CONTEXT

In the following description of the characteristics of Worcester County, this report follows the central proposition that the major correlates of health—and dental health—are measures of race and ethnicity, poverty and education, linguistic isolation, and other associated social indicators (See Tables 2 and 3). In addition, measures of access to care are fundamental. Also significant is the low level of access to fluoridated water in Worcester County.

Of particular interest to the CMOHI is the City of Worcester (See Appendix Tables), which shows demographic characteristics of a higher rate of poverty, a higher rate of linguistic isolation and a lower level of education than does Massachusetts or Worcester County. Southbridge is lower than Worcester in the educational level of adults, and has a higher percentage of Hispanic population than does Worcester, and an equivalent level of linguistic isolation among its Hispanic citizens. A major focus for the work of the CMOHI is on those who currently do not have access to oral health screening, referral, and care. Since lack of access could result from poverty or lack of English language skill, it is of great importance to understand the distribution of poverty and linguistic isolation in Worcester City and County.

Of the forty-one census tracts in Worcester city, thirty-eight tracts contain enough persons living in households for adequate rate calculations (the remaining three tracts are “skewed” by the large numbers of “institutional” residents including college students living in dormitories). Of the thirty-eight tracts, eleven tracts are especially high on one key indicator: persons living at 50% of the poverty level or less. Of these, eight also have a significantly high percentage of households that are “linguistically isolated.”

While Vietnamese are just 3.9% of all foreign born in Massachusetts, they are 13.6% of the 25,097 foreign born in Worcester. Vietnamese are the largest single nation of origin for foreign-born residents of Worcester. Those who speak Asian languages are, on average, more linguistically isolated than those who speak Spanish, although there is very significant tract-to-tract variation. Note, however, that a large number of persons of Hispanic-Puerto Rican background are not included in the “foreign born” category (because they are U.S. citizens) and yet may be linguistically isolated. These data are relevant to issues related to obtaining parental permission for school children's dental screenings and to the provision of multiple language capabilities at Family Health Center and Great Brook Valley Health Center.

Going beyond Worcester and Southbridge (reported on in the 2003 CMOHI Evaluation Report), this report provides data on additional Worcester County communities and maps out the key indicators at the town and census tract level (See Appendix Maps and Tables). These data will help identify particular “micro” areas of need, as the 2003 CMOHI report did for Worcester City. Relevant to other oral health initiatives cooperating with CMOHI in northern Worcester County, are the communities of Fitchburg, Leominster, Gardner, Athol and Clinton. These communities are “old” rural industrial centers that have undergone decades of decline in the manufacturing base. In addition, there are the more economically disadvantaged small rural communities of Royalston and Winchendon. Of relevance for CMOHI in the coming year are the city of Milford, the census tract in Dudley bordering Webster, and other census tracts in Charlton, Millbury, Auburn and Shrewsbury.

Table 2: Poverty Rate by City/Town and Census Tract for Geographic Areas with More than 7% Poverty Rate and More than 500 Persons

| City (C)/Town (T) | Population for Whom Poverty Is Determined | Number Below the Poverty Criterion | Poverty Rate |
|---|---|------------------------------------|--------------|
| Worcester (C) | 162,475 | 29,115 | 17.9 |
| Southbridge (T) | 16,950 | 2,616 | 15.4 |
| Fitchburg (C) | 37,460 | 5,627 | 15.0 |
| Webster (T) | 16,096 | 1,767 | 11.0 |
| Winchendon (T) | 9,520 | 953 | 10.0 |
| Gardner (C) | 19,364 | 1,863 | 9.6 |
| Leominster (C) | 40,915 | 3,889 | 9.5 |
| Athol (T) | 10,997 | 1,038 | 9.4 |
| Templeton (T) | 6,497 | 588 | 9.1 |
| Royalston (T) | 1,247 | 109 | 8.7 |
| Spencer (T) | 11,640 | 1,001 | 8.6 |
| Oxford (T) | 13,192 | 1,026 | 7.8 |
| Hardwick (T) | 2,602 | 195 | 7.5 |
| Milford (T) | 26,478 | 1,908 | 7.2 |
| Clinton (T) | 13,279 | 949 | 7.1 |
| Additional High Poverty (>7.0%) Census Tracts | | | |
| Charlton 7561.01 | 3,491 | 338 | 9.7 |
| Millbury 7372 | 1,694 | 159 | 9.4 |
| Dudley 7551 | 3,240 | 296 | 9.1 |
| Auburn 7363 | 2,458 | 211 | 8.6 |
| Shrewsbury 7392 | 5,842 | 454 | 7.8 |

There are two other small census tracts, Grafton and Westborough that are not tabled here. They are Grafton 7384 Westborough 7421. These are small tracts with high proportions of persons living in "group quarters" worth further investigation.

See Appendix Maps for details on poverty levels by census tract.

We examine further the characteristics of these cities, towns, and census tract areas. The communities of Worcester, Southbridge, Fitchburg, Leominster, Clinton, and Census tract 7392 in Shrewsbury all show 5% or greater linguistic isolation. These same towns have greater than 10% Hispanic populations, while Shrewsbury 7392 shows almost 15% Asian population. Thus, the nature of the linguistic isolation is different for these latter two geographic areas.

The leading four communities for percent below the poverty line (Worcester, Southbridge, Fitchburg and Webster) also show greater than 4% receiving public assistance, as does Millbury 7372. The top eight communities in percent poverty (Worcester, Southbridge, Fitchburg, Webster, Winchendon, Gardner, Leominster, Athol) also show a higher than average - for the county - level of single female-headed households with related children under 18. These are often highly stressed families in need of services. In addition, Charlton 7561.01, Millbury 7372, are above average on this indicator of social stress, and Dudley 7551 is just below the Worcester County average.

Table 3: Demographic Characteristics of Worcester County Cities and Towns, and Selected Census Tracts

| City (C)/ Town (T) | House-holds | Persons | Poverty Rate | % Single Female No Husband Present with Related Children < 18 | % Linguistically Isolated | % Black | % Hispanic | % Asian | % With Public Assistance Income | % of Population > 5 with Some Disability | Educational Attainment for Population 25 and Over: % With Less Than Associates Degree |
|--|-------------|---------|--------------|---|------------------------------|---------|------------|---------|------------------------------------|---|--|
| Worcester (C) | 39,228 | 162,475 | 17.9 | 18.7 | 8.1 | 6.4 | 15.3 | 4.5 | 6.0 | 24.0 | 70.7 |
| Southbridge (T) | 4,520 | 16,950 | 15.4 | 17.6 | 5.9 | 0.5 | 20.7 | 1.9 | 6.8 | 23.7 | 83.9 |
| Fitchburg (C) | 9,363 | 37,460 | 15.0 | 16.6 | 5.0 | 2.8 | 14.8 | 4.4 | 5.9 | 23.5 | 77.9 |
| Webster (T) | 4,271 | 16,096 | 11.0 | 13.0 | 1.8 | 1.1 | 3.3 | 0.6 | 4.5 | 26.4 | 79.5 |
| Winchendon (T) | 2,477 | 9,520 | 10.0 | 11.6 | 0.5 | 0.8 | 1.8 | 0.4 | 3.5 | 18.7 | 73.8 |
| Gardner (C) | 5,086 | 19,364 | 9.6 | 15.0 | 2.2 | 2.3 | 4.3 | 1.0 | 3.2 | 23.3 | 73.6 |
| Leominster (C) | 10,902 | 40,915 | 9.5 | 13.1 | 5.4 | 3.4 | 11.0 | 2.6 | 3.4 | 18.9 | 70.9 |
| Athol (T) | 2,970 | 10,997 | 9.4 | 12.8 | 0.9 | 0.9 | 1.6 | 0.2 | 2.9 | 21.2 | 77.5 |
| Templeton (T) | 1,809 | 6,497 | 9.1 | 7.9 | 0.3 | 0.0 | 1.9 | 0.0 | 1.7 | 19.5 | 77.3 |
| Royalston (T) | 330 | 1,247 | 8.7 | 5.8 | 0.2 | 0.0 | 1.3 | 0.0 | 3.5 | 17.7 | 70.3 |
| Spencer (T) | 3,094 | 11,640 | 8.6 | 10.4 | 0.4 | 0.5 | 0.9 | 0.3 | 2.2 | 16.2 | 75.5 |
| Oxford (T) | 3,598 | 13,192 | 7.8 | 10.8 | 0.1 | 0.5 | 1.3 | 0.3 | 1.9 | 17.5 | 69.5 |
| Hardwick (T) | 690 | 2,602 | 7.5 | 8.1 | 0.2 | 0.5 | 0.0 | 0.3 | 2.1 | 17.3 | 68.9 |
| Milford (T) | 7,197 | 26,478 | 7.2 | 10.1 | 4.5 | 0.9 | 4.5 | 1.7 | 2.9 | 18.9 | 66.1 |
| Clinton (T) | 3,400 | 13,279 | 7.1 | 12.3 | 5.5 | 2.3 | 11.7 | 1.0 | 2.2 | 23.8 | 72.8 |
| Additional Higher (> 7%) Poverty Census Tracts | | | | | | | | | | | |
| Charlton 7561.01 | 948 | 3,491 | 9.7 | 12.1 | 0.7 | 0.9 | 0.4 | 0.0 | 0.4 | 21.9 | 79.0 |
| Millbury 7372 | 414 | 1,694 | 9.4 | 14.7 | 1.7 | 0.0 | 0.0 | 0.0 | 4.1 | 17.9 | 74.8 |
| Dudley 7551 | 864 | 3,240 | 9.1 | 16.9 | 2.1 | 0.2 | 2.0 | 1.2 | 2.6 | 27.4 | 81.1 |
| Auburn 7363 | 698 | 2,458 | 8.6 | 8.9 | 1.7 | 0.9 | 2.2 | 0.2 | 3.1 | 12.7 | 69.2 |
| Shrewsbury 7392 | 1,597 | 5,842 | 7.8 | 8.4 | 6.7 | 0.6 | 0.9 | 14.6 | 1.3 | 13.2 | 66.2 |
| Worcester County | 192,413 | 726,438 | 9.2 | 11.3 | 3.3 | 2.5 | 6.8 | 2.5 | 3.3 | 18.8 | 65.2 |

Note: A linguistically isolated household is one in which no member 14 years old and over (1) speaks only English or (2) speaks a non-English language and speaks English very well." In other words all members 14 years old and over have at least some difficulty with English. Poverty thresholds result from a formula that relates both family size and the number of related children under 18 living in the household.

It appears from these data that the addition of initiatives for Milford and parts of Charlton and Dudley bordering on Southbridge, and Webster, respectively, would be justified. In addition, the partnership with oral health programs in the North Central Oral Health Initiative (also funded in part by THFCM) will give coverage in those communities in need in northern Worcester County.

Another indicator of communities likely in need of dental services is the percentage of the population that are members of MassHealth (See Table 4). All 15 of the communities with the highest poverty rate on the basis of the Census 2000 relatively high in this list as well, as would be expected given eligibility requirements for Mass Health. The towns with rates above the Worcester County average (without Worcester City), are shown in Table 4. A complete list is in Appendix Tables.

Table 4: Mass Health Membership (Member Month), July 31, 204 "Snapshot" (See notes in Appendix Tables)

| Town Name | Under 1 | 1-6 | 7-12 | 13-17 | 18 | 19-44 | 45-64 | 65+ | Total | Pop. | MH % |
|--|--------------|---------------|---------------|---------------|--------------|---------------|---------------|---------------|----------------|------------------|-------------|
| WINCHENDON | 61 | 418 | 426 | 331 | 53 | 817 | 436 | 238 | 2,780 | 9,611 | 28.9 |
| SOUTHBRIDGE | 137 | 790 | 618 | 518 | 85 | 1,416 | 702 | 421 | 4,687 | 17,214 | 27.2 |
| WORCESTER | 1,485 | 6,777 | 6,010 | 4,685 | 781 | 13,559 | 7,023 | 5,084 | 45,404 | 172,648 | 26.3 |
| FITCHBURG | 328 | 1,609 | 1,375 | 1,089 | 169 | 3,081 | 1,397 | 993 | 10,041 | 39,102 | 25.7 |
| ATHOL | 78 | 398 | 374 | 325 | 69 | 872 | 399 | 296 | 2,811 | 11,299 | 24.9 |
| WEBSTER | 101 | 423 | 382 | 272 | 44 | 931 | 440 | 544 | 3,137 | 16,415 | 19.1 |
| GARDNER | 119 | 597 | 494 | 322 | 55 | 1,175 | 559 | 463 | 3,784 | 20,770 | 18.2 |
| NORTHBRIDGE | 55 | 307 | 300 | 279 | 38 | 532 | 245 | 369 | 2,125 | 13,182 | 16.1 |
| LEOMINSTER | 210 | 1,025 | 869 | 689 | 98 | 1,884 | 912 | 696 | 6,383 | 41,303 | 15.5 |
| WARREN | 22 | 110 | 105 | 96 | 20 | 228 | 104 | 50 | 735 | 4,776 | 15.4 |
| TEMPLETON | 24 | 121 | 103 | 110 | 21 | 262 | 197 | 177 | 1,015 | 6,799 | 14.9 |
| WEST BROOKFIELD | 13 | 72 | 52 | 46 | 5 | 121 | 96 | 156 | 561 | 3,804 | 14.7 |
| CLINTON | 67 | 264 | 250 | 148 | 33 | 550 | 282 | 210 | 1,804 | 13,435 | 13.4 |
| HARDWICK | 13 | 44 | 48 | 36 | 7 | 100 | 55 | 38 | 341 | 2,622 | 13.0 |
| MILFORD | 108 | 536 | 381 | 320 | 44 | 1,027 | 499 | 534 | 3,449 | 26,799 | 12.9 |
| ROYALSTON | 9 | 20 | 28 | 22 | 3 | 47 | 20 | 10 | 159 | 1,254 | 12.7 |
| BARRE | 21 | 79 | 77 | 124 | 11 | 168 | 106 | 55 | 641 | 5,113 | 12.5 |
| COUNTY TOTAL | 3,451 | 16,759 | 15,019 | 12,596 | 2,078 | 34,238 | 17,186 | 14,122 | 115,449 | 750,963 | 15.4 |
| COUNTY TOTAL WITHOUT WORCESTER CITY | 1,966 | 9,982 | 9,009 | 7,911 | 1,297 | 20,679 | 10,163 | 9,038 | 70,045 | 578,315 | 12.1 |
| MASS TOTAL | 24 | 147 | 156 | 189 | 35 | 406 | 249 | 302 | 1,508 | 6,349,097 | 0.0 |

We have examined various social indicators (See Table 5) for all cities and towns and census tracts in Worcester County. These data will be available shortly on The Health Foundation of Central Massachusetts' web site.

Table 5: Measures of Worcester County and City/Town Context for Evaluation Report

| | |
|--|--|
| Income Status Poverty Median Income Receiving Public Assistance Receiving SSSI | Race White, Non-Hispanic Black, Non-Hispanic Asian, Non-Hispanic Multi-Racial, Non-Hispanic |
| Educational Attainment | Ethnicity Hispanic |
| Type of Residence Family Household Institution Renter or Owner Stability versus Mobility | Ancestry Brazilian Cape Verdean |
| Family Types Female-Headed Households Grandparents Responsible for own Grandchildren Elders living alone Elders living in group quarters | Linguistic Isolation Spanish Language Asian Language |
| Disability Status | Mass Health Membership |
| | School Data Free Lunch Eligible Limited English Proficient |

Fluoridation in Worcester County

Worcester County lags behind the state average in fluoridation. Only 14 communities are fully fluoridated, and only 206,379 (27.5%) of Worcester County residents have access to fluoridated water as compared with 59.3% of all Massachusetts residents. In the Appendix Tables each community in Worcester County is presented, whether they have a public water supply system, as well as a more precise estimate of the number of persons with access to fluoridation. Table 6 indicates that the number with access to fluoridation may be as low as approximately 206,000. At least 20 communities have some form of public water supply system covering a substantial (> 70%) per cent of the population, and yet are not fluoridated.

Table 6: Worcester County Towns With Full or Partial Fluoridation

| City/Town | Year Fluoridated | # Fluoridated | Estimated | Total Population | Percent Fluoridated |
|-------------------|------------------|---------------|-----------|------------------|---------------------|
| Ashburnham | 1957 | 5,546 | | 5,546 | 100.0 |
| Athol | 1952 | 11,299 | | 11,299 | 100.0 |
| Charlton (Part) | 1996 | 150 | E | 11,263 | 1.3 |
| Charlton (Part)** | | 150 | E | | 1.3 |
| Dudley (Part)** | | 45 | E | 10,036 | 0.4 |
| Fitchburg | 1975 | 39,102 | | 39,102 | 100.0 |

| City/Town | Year Fluoridated | # Fluoridated | Estimated | Total Population | Percent Fluoridated |
|---------------------------|------------------|---------------|-----------|------------------|---------------------|
| Gardner | 1987 | 20,770 | | 20,770 | 100.0 |
| Hardwick (EHS)** | | 150 | E | 2,622 | 5.7 |
| Holden | 1995 | 15,621 | | 15,621 | 100.0 |
| Northborough | 2001 | 14,013 | | 14,013 | 100.0 |
| Oxford | 1987 | 13,352 | | 13,32 | 100.0 |
| Royalston (Part) (SRIC)** | | 400 | E | 1,254 | 31.9 |
| Rutland | 1985 | 6,353 | | 6,353 | 100.0 |
| Shrewsbury | 1953 | 31,640 | | 31,640 | 100.0 |
| Southborough | 1996 | 8,781 | | 8,781 | 100.0 |
| Southbridge | 1971 | 17,214 | | 17,214 | 100.0 |
| Sturbridge | 1990 | 7,837 | | 7,837 | 100.0 |
| Templeton | 1951 | 6,799 | | 6,799 | 100.0 |
| Westminister | 1968 | 6,907 | | 6,907 | 100.0 |
| Worcester (Part) | 1995 | 250 | E | 179,648 | 0.1 |
| Total Worcester County | | 206,379 | | 750,963 | 27.5 |
| Total MWRA | | 2,000,000 | E | 2,000,000 | 100.0 |
| Total Non-MWRA | | 1,065,627 | E | Unknown | Unknown |
| Total Massachusetts | | 3,765,627 | | 6,349,097 | 59.3 |

As of 10/03

Source: MDPH, Office of Oral Health, 10/03

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

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

part - Communities partially fluoridated;

E - Estimated population served.

SUMMARY OF CMOHI YEAR TWO - PILOT PHASE

[June 2001 - August 2002]

Background⁴

In June 2001, with funding from The Health Foundation of Central Massachusetts, the CMOHI began a pilot phase. Through August 2002, under the leadership of Dr. John Gusha and with administrative and programmatic support from the University of Massachusetts (UMass) Medical School, the CMOHI piloted its multi-faceted approach focusing on various strategies.¹⁵ These included the following:

School-Based Services

A school-based program was established to screen children for dental caries, apply sealants, and provide education regarding good oral health practices. Services were delivered by two providers: (1) The UMass Memorial Ronald McDonald Care Mobile, a 40-foot mobile unit specifically designed to deliver pediatric health care, “traveled” to schools to do dental screening examinations. Follow-ups included application of sealants, cleaning, fluoride treatment, and referral to dentists as needed, and (2) Quinsigamond Community College (QCC) Dental Hygiene School Program provided fluoride mouth rinses. The KidSeal sealant program was active in the pilot phase supported by funding sources other than CMOHI.

Increased Access to Clinical Dental Care

A new dental treatment site managed by Great Brook Valley Health Center (GBVHC) was established at the Quinsigamond Community College (QCC). Dentists and dental hygienist were recruited to provide volunteer dental services to MassHealth (Medicaid) participants and the uninsured at the QCC site. The major goals for the Dental Volunteers Program were to increase the number of MassHealth participants and uninsured receiving dental services, and to provide space and equipment for volunteer dentists and dental hygienists to practice with this patient population. In addition, treatment service capacity was enhanced at existing community health centers by setting aside “chair time” for MassHealth participants and the uninsured at Great Brook Valley Health Center and the Family Health Center.

Health Professionals Dental Education

Educational workshops were held for primary physicians and nurses about oral health screening, advising and referring patients for follow-up care.

Outreach Programs for Parents

Community assessments identified the need to educate parents about good oral health practices and the importance of professional dental care, including screening and referral. The Massachusetts Society for the Prevention of Cruelty to Children trained and provided outreach workers to conduct home, group, and community-based educational services on oral health, and provided training for other agencies’ outreach workers.

A Fluoride Education Campaign

An education campaign was mounted to increase awareness of the benefits of and dispel myths and fears surrounding fluoridated water. Efforts also included an education program for both the general public and physicians in the context of an upcoming referendum for fluoridated water in the city of Worcester.

Advocacy

An advocacy agenda was developed to garner legislative and regulatory agency support of CMOHI efforts. The focus was on setting a foundation for systemic change.

Highlights of Program Activities⁴

School-Based Screening, Sealants & Referrals

A screening, sealant, and referral component was implemented through the UMass Memorial Ronald McDonald Care Mobile program. Second- and third-grade students were first screened for oral health problems and sealant application needs by Care Mobile staff with subsequent follow-up through the Care Mobile program to complete sealant applications. Following sealant application, students were to receive referrals for additional oral health care.

The CMOHI set a goal of reaching 75% of eligible 2nd and 3rd grade children in participating schools for screening. School-based screening clinics were conducted at 14 schools during the CMOHI pilot phase. Out of 903 youth in participating schools, 438 (49%) participated in the school-based screenings. Taking parental refusals into account, the school-based screening program reached approximately 60% of the 728 youth without parental refusal. Of these, staff found that 87% had no sealant applications, even though 75% could benefit from some level of sealant treatment.

Sixty eight students (21% of those screened as needing sealant applications) completed the community-based sealant program through the UMass Memorial Ronald McDonald Care Mobile program. This was well below the 75% goal set by CMOHI, but could have been a result of the target population having access to alternative sources of sealant treatment.

Seventy-nine percent of students who completed the Care Mobile program received referrals for follow-up service and oral health treatment, which exceeded the 75% goal set by CMOHI. The Care Mobile made referrals to both Family Health Services and Great Brook Valley Health Center, who held "slots" for them. However, no information is available on whether these referrals resulted in appointments for additional care.

Screening results indicated significant oral health needs. The average youth screened had 3 caries and little previous preventive services. For example, sealant applications were present on only 13% of those children screened. However, low uptake post-screening – through the Care Mobile Program – suggests that many of these needs went untreated (or were treated elsewhere, with no follow-up from the CMOHI programs).

Increased Access to Clinical Dental Care

The initiative's efforts to increase the pool of dentists caring for MassHealth participants and the uninsured were addressed through multiple strategies. The first focused on recruiting dentists, dental assistants, and dental hygienists to provide volunteer services through the GBVHC-QCC Dental Clinic. This program faced a number of challenges during the pilot phase including recruitment of volunteers, (particularly dental hygienists) and the credentialing process, which may account for some of the difficulty in recruiting volunteers and then having them provide volunteer services. The dentists and other dental professionals who did volunteer and complete the credentialing process were able to meet the target goal of averaging 8 hours of

services each (for a total of 480 hours) and were able to see a number of patients and complete a number of procedures during the 6 months of piloting the volunteer program.

The Great Brook Valley Health Center at Quinsigamond Community College Dental Clinic was developed to focus on providing quality oral health care services for MassHealth participants and the uninsured. Service data from this program showed it served a population with significant oral health needs, averaging approximately 6 caries per individual, both young and old and from diverse racial/ethnic backgrounds, many of whom were Free Care or MassHealth participants. A total of 212 patients were placed on the patient roster for GBVHC-QCC. Of these patients, 113 (53%) had completed their treatment during the pilot phase of the program. Appointment data suggests that the dental clinic program maintained a relatively low “no-show” rate of 17% even as session volume increased significantly following the start-up phase of operations. Procedure data suggests that the program provided a wide range of oral health services, with particular emphasis on preventive services and application of composites and restorative amalgams. No specific target goals were set for patient numbers or types of services provided, but the dental clinic seemed to perform consistently during the course of the pilot phase, and served a population in great need of access to preventive and restorative oral health care.

Community Outreach and Education

The Massachusetts Society for the Prevention of Cruelty to Children (MSPCC) and the Division of Medical Assistance MassHealth Access Program trained outreach workers to conduct home- and group-based oral health educational services to families with young children who might be at risk for oral health-related problems, through August, 2003. Overall, 28 outreach workers were trained and provided educational outreach sessions for an average of 3.9 families each during the pilot phase, with a range of 0 to 21 cases. Approximately two-thirds (64%) of outreach workers provided educational outreach services to MSPCC participants, reaching a total of 110 households who completed the three session oral health education training program. Most participants (90%) received the service through home-based outreach; the remaining 10% received it through parent education programs.

Health Professionals Dental Education

The Worcester District Medical Society conducted a training workshop titled "Oral Health and the Well Child Visit Medical Education" in early February 2002. Attendees included 8 physicians and 8 nurses. Program evaluation results indicated that the workshop was well received by the attendees and directly addressed the oral health education and prevention goals of the CMOHI and the Worcester District Medical Society. Also, referral and appointment data collected by the Great Brook Valley Health Center at Quinsigamond Community College Dental Clinic (GBVHC at QCC) showed that participants were active in making referrals following the training; a total of 79 referrals were made from February through May of 2002 (two referrals per physician per month, on average). Seventeen appointments were scheduled and treated from these referrals (29%). All patients referred and scheduled through this pool of physicians attended their scheduled appointments.

Fluoride Education Campaign

A fluoride education campaign was implemented in the fall of 2001, in effort to increase awareness of the benefits of fluoridation and reduce myths and misperceptions of water fluoridation. Despite sustained and focused efforts in this area, the referendum was defeated on November 6, 2001 by a 56 to 44 percent margin.

Advocacy Efforts

Recognizing the need for governmental support in order to effect change on a systemic level, representatives from the CMOHI and the North Central Oral Health Initiative (another oral health improvement effort funded in part by THFCM) met to jointly develop an oral health advocacy agenda. An Access and Advocacy committee was formed, which identified the following priority areas:

(1) Increasing the MassHealth provider reimbursement levels to provide incentive for more dentists to join the MassHealth network. (2) Contracting administration of the MassHealth dental program to a more experienced Third Party Administrator (TPA) that is better able to attract providers into the system. (3) Developing a two-year pilot program to allow dentists to limit their MassHealth caseloads, in an effort to lessen the financial impact on participating dentists. (4) Changing the Massachusetts fluoridation laws to provide for equal access and distribution throughout the state. (5) Proposing changes in the Good Samaritan Laws that protect volunteer health providers.

The Access and Advocacy Committee drafted The Central Massachusetts Oral Health Initiative (CMOHI) Advocacy Agenda, which provided a detailed overview of the agenda of the committee for potential distribution. Advocacy efforts during the pilot year focused primarily on lobbying for a pilot program to evaluate the impact of limiting MassHealth caseloads by dentists. Teaming with Health Law Advocates/Health Care For All, the committee drafted a proposal, Two-Year Pilot MassHealth Dental Program Caseload Cap for Providers in Central Massachusetts. The proposal outlined a potential strategy for implementing a two-year trial of caseload caps. In the past, dentists have been reluctant to accept MassHealth patients, due to low reimbursement rates and their inability (because of state anti-discrimination laws) to limit the number of such patients—and thus control the financial impact on an increased influx of MassHealth patients their practices. It is believed that piloting caseload limits would demonstrate whether or not more dentists would participate as MassHealth providers and if, as a result, increased numbers of MassHealth patients would have access to dentists.

Legislation for this proposal was drafted with minor modifications to the proposal made in May, 2002. The revised proposal was filed with the state legislature by Senator Harriett Chandler at the request of the Access and Advocacy Committee (with the support of Health Care for All) and was approved in July 2002 as an outside section to the state budget. However, the legislation for caseload cap is contingent on there being a third party administrator in place, which the administration of MassHealth had been working toward establishing until March 2003 when the state's revenues declined. This has not as yet been accomplished.

Also, Health Law Advocates was opposed to the proposal for Charitable Immunity Legislation that was drafted by the Access and Advocacy Committee, and as a result, the Committee did not pursue this legislation. In 2004, however, the federal government provided volunteers with Good Samaritan immunity.

Year One Summary (Pilot) Recommendations⁴

Program evaluators found that the initiative had achieved significant progress toward overall goals and objectives. Despite defeat of the referendum on fluoridation of the

public water supply, education for which had been a major component of CMOHI efforts, the initiative continued to focus attention on its goals.

Results from the school-based screening clinic and Care Mobile sealant programs suggested that the program might require additional resources to be more successful in the implementation phase of the CMOHI. Recommendations were made to streamline the referral system after screening, particularly to the Care Mobile program, to ensure a better transition from screening to the necessary services. Evaluators recommended integrating the screening program with school-based health clinics, which might be better able to coordinate services and reach parents or families to discuss screening results and implications for future care.

The initiative's efforts to increase the pool of dentists caring for MassHealth through recruitment of volunteer dentists, dental assistants, and dental hygienists at GBVHC at QCC Dental Clinic faced a number of challenges during the pilot phase. These included recruitment of volunteers, particularly dental hygienists, and the credentialing process, which may account for some of the difficulty in volunteer recruitment and volunteer time. The dentists and other dental professionals who did volunteer and complete the credentialing process met the target goal of averaging eight hours of services each and saw patients and completed dental procedures during the six months of piloting the volunteer program. Evaluators recommended addressing the issues of recruitment and credentialing, particularly for dental hygienists, or re-evaluating the program's target objectives.

Service data from the Great Brook Valley Health Center at Quinsigamond Community College Dental Clinic program showed that it served a population with significant oral health needs.

The Dental Education Outreach Program through MSPCC did not have any formal target evaluation goals. Evaluation results suggested that the program was successful in reaching a population of young, primarily Hispanic families through the home-based training sessions.

Similarly, target objectives for the pilot education program for physicians and nurses were not specific, but the general evaluation results showed that it was well-received, and records from the GBVHC at QCC Dental Clinic indicated that participants did begin making appropriate referrals for dental services.

SUMMARY OF CMOHI YEAR THREE - IMPLEMENTATION PHASE I [September 2002 - August 2003]

Background¹⁶

In September 2002, continuing under the direction of Dr. John Gusha and administrative oversight of the University of Massachusetts Medical School, the initiative moved into the first year of the implementation of its three-year, comprehensive program. Year one of this phase focused on five strategies that showed significant promise in the pilot phase. These five programmatic areas represented a comprehensive strategy to improve oral health through advocacy, education, screening, and treatment of dental decay targeted especially to under-served parts of the population of Worcester City and South Worcester County, Massachusetts. They include:

School-Based Services: Screening, Fluoride Rinse, Dental Sealants and Referral.

Increased Access to Clinical Dental Care: Increasing capacity to serve those in need through existing centers with enhanced staff and volunteers.

Health Professionals Dental Education: Educating medical students about the need for, and methods of oral health screening, preventive care, and providing referrals.

Outreach Programs for Parents: Educating parents about good oral health practices for their children and the importance of professional dental care, including screening and referral.

Advocacy: Garnering legislative and regulatory support for CMOHI efforts.

Highlights of Program Activities¹⁶

School-Based Services: Screening, Fluoride Rinse, Dental Sealant and Referral

Evaluators found that there were considerable successes in Fluoride Rinse, Dental Sealant and Referral activities in the implementation phase. An estimated 1925 children received fluoride mouth rinse at 10 schools supervised by two programs at Quinsigamond Community College (QCC). Overall, 516 children were screened by the Ronald McDonald Care Mobile. Of these, 87 subsequently received sealants. Some 478 sealants were placed on children in the KidSeal program for 2nd graders at QCC. Improved processes of working with children in schools, for example, Care Mobile “on site” and “one-step” permission for both screening and sealant application, were instituted. Having the Care Mobile at the school or having common transportation to the sealant application site, as in the KidSeal program, helped the sealant portion of the program, as did a simplified permission process.

Barriers remained in coordinating effectively with Worcester Public Schools, and in getting parents to return permission forms. According to program staff, parents who were likely to fail to return permission forms tended to be from immigrant families with limited English language skills, and who might also have children at highest dental risk. In at least one program (QCC) a Vietnamese language permission form was designed and piloted to meet the needs of this linguistically isolated group. Given the linguistic isolation of some immigrant groups, these translations may help to

increase the numbers of children served. Plans were made to supplant fluoride rinse programs with fluoride varnish programs. One advantage is that varnish treatments require much less frequency of application than rinse programs. Groundwork for expansion to "South County," including the communities of Webster and Southbridge, was begun. Dentists recruited and coordinated planning with the Southern Worcester County Oral Health Coalition

Access to Clinical Dental Care: Increasing capacity to serve those in need

Significant progress was made in efforts to increase the numbers of dental professionals serving populations in need, as well as in increasing the equipment and space available to support their work. With 500 hours contributed, the dental volunteer program at QCC met and exceeded its goal of 480 hours of volunteer time during the year. Although recruitment of new volunteers leveled off, suggesting the need for different recruitment strategies, the program succeeded in its goal of creating a cadre of dentists with experience with the CMOHI target population, and raising the awareness level of a significant number of Worcester area dentists. Of an estimated 561 dentists practicing in Worcester County (151 of these practicing in Worcester City) 32 contributed to the program.

The two major health centers, Family Health Center of Worcester and Great Brook Valley Health Center, both substantially increased their dental service to populations in need. Dental visits for Great Brook Valley Health Center grew from 1172 per month from January to June 2000 to 1479 per month from January to June 2003. For Family Health Center of Worcester, visits grew from 576 per month from January to August 1999 to 1236 per month for the period March 2001 to June 2003.

Health Professionals Dental Education Programs

Two oral health training programs for health professionals were run during the year. CMOHI utilized a program developed by the Massachusetts Health Access Project (MAP) on health screening procedures, presentation of parent education materials, and making referrals. The Worcester District Medical and Dental Societies jointly sponsored CMOHI's educational program.

In October 2002, 31 school nurses were involved in a highly rated program on dental issues. In February 2003, a continuing medical education program was run with third and fourth-year University of Massachusetts Medical School students on pediatric rotation. Eight students participated in the training, which covered dental issues, including assessing risk of dental disease in pediatric patients; providing parent education regarding dental care; side effects of pharmaceuticals on oral tissues; and referring patients for follow-up.

Community Outreach Programs for Parents

Massachusetts Society for Prevention of Cruelty to Children, the lead agency involved, endured several funding and staff cutbacks during the year, reducing their capacity to conduct training and follow the results of that training. Twenty-two outreach workers were educated, and they reached 60 parents of a goal of 80. A new outreach "client" form was piloted, including a test of parent knowledge and practices - e.g., bottle-feeding. Due to the problems noted above, this program was terminated in August, 2003.

Advocacy Efforts

Considerable work was done in pressing forward on goals to increase legislative, administrative, and regulatory support of policies that increase oral health services to MassHealth recipients and the uninsured, which were established during the pilot phase. Representatives were active at the local, state, and federal level in several initiatives. These included advocacy to strengthen the oral health of the children in the local schools through enhanced screening, sealant, referral and treatment programs; work at the state level with Health Care for All to establish a Third Party Administrator (TPA) arrangement for MassHealth dental benefits that would allow implementation of a “caseload” capacity pilot; and at the federal level to establish incentives for states to promote fluoridation. CMOHI was also involved in supporting re-enactment of state regulations that limit the sale of junk food and soda during lunchtime in public schools. The Advocacy Committee worked with the Massachusetts Public Health Association (MPHA) on this issue. MPHA had taken the lead in educational efforts to address the issues of obesity, and was already taking a lead in seeking state legislation to limit public school children’s access to junk foods and soda. The impact of sugared sodas on dental health made this a natural partnership for CMOHI.

Year Three Summary Recommendations¹⁶

Evaluators found that providers of dental screening, sealant, referral, and treatment services had made significant progress during the year. Thousands of children and families in need of oral health care—who might not have otherwise received such services—did so, thanks to the efforts of CMOHI. Through the school-based programs, well over 2500 children received dental services, ranging from screening and fluoride mouth rinses to sealants. The volunteer program also made major strides, with 60 volunteers recruited, 39 of which provided 500 hours of volunteer time. In addition, the Great Brook Valley Health Center received 23,563 visits in fiscal year 2003, and gave access to 3,534 new patients. In turn, the Family Health Center of Worcester received approximately 15,546 visits, with an estimated 2,376 new patients. As a result of the health professionals dental education program, 31 school nurses and 8 medical students were trained in basic dental concepts. Also, through the outreach program, 22 workers were trained, and made 52 home visits that reached 61 children. Lastly, the initiative made significant headway in affecting systemic change through its advocacy work, including “winning” a two-year pilot to limit MassHealth caseloads - although a key element - a "Third Party Administrator is still to be established.

Recommendations were made for the CMOHI to develop more expert knowledge about those who are in need of treatment and are currently missed (e.g., students whose parents do not return screening permission forms, and adults who are in need of treatment but who do not get it). Evaluators noted a need for a broad dental public health perspective to collect data about, and plan new strategies for those currently missed. Evaluators also noted that the dental volunteers program was quite successful in filling a part of the gap in care, and in creating a cadre of dentists knowledgeable about the unmet dental health needs in the region. A need for new strategies for recruiting additional volunteers was noted.

EVALUATION OF CMOHI YEAR FOUR - IMPLEMENTATION PHASE II [September 2003 - August 2004]

Background

In its fourth year, the CMOHI re-shaped its focus, concentrating efforts on five key strategies. These represented a comprehensive approach to provide a combination of preventive and treatment services that hold promise for long-term sustainability, while maintaining efforts to create systemic change. Continuing under the leadership of Dr. John Gusha and administrative oversight of the University of Massachusetts, CMOHI Year Four strategies included:

School-Based Services: Screening, Fluoride Rinse, Dental Sealants and Referral.

Increased Access to Clinical Dental Care: Increasing capacity to serve those in need through existing health centers with enhanced staff and volunteers.

Health Professionals Dental Education: Educating medical students and health professionals about the need for, and methods of oral health screening, preventive care, and providing referrals.

Advocacy: Garnering legislative and regulatory support for CMOHI efforts.

Dental Residency Program (New): Creating a high-quality dental education program that is well-integrated with the general medical curricula and raises awareness of the need for increased oral health access, particularly among the poor or uninsured.

School-Based Services

Goal

To increase the numbers of children who are screened, have fluoride rinse and sealant and/or varnish applications, and are referred for care at an early stage of disease where clinical care is needed.

Objective/Strategy

- Screen children for caries and sealant need
- Apply sealants if no family dentist available
- Provide fluoride treatment and cleaning
- Refer for further dental care as needed

Background

The report of the Special Legislative Commission on Oral Health indicates that that 80% of caries are concentrated in just 25% of children, disproportionately among low-income and minority children³. The CMOHI continues to address these needs and work toward increasing the number of children receiving oral screenings, fluoride rinses, sealants, varnishes, and referrals from school-based settings programs. Fluoride varnishes were introduced this year, which last longer than fluoride rinses and require only two applications per school year, in comparison to the necessary weekly fluoride rinse applications. This is particularly noteworthy, as it reduces the time out of school for oral health services, which has been a point of concern for many of the schools involved.

Eighty percent of caries are concentrated in just 25% of children, disproportionately among low-income and minority children.

In the current year most of the work was provided in schools or after school. UMass Memorial Ronald McDonald Care Mobile Program, and the Quinsigamond Community College (QCC) Dental Hygiene School Program were the primary providers in Worcester. The Family Health Center was the primary provider for the in-school programs in Southbridge and Webster.

UMass Memorial Ronald McDonald Care Mobile

Current Status

The UMass Memorial Ronald McDonald Care Mobile program “traveled” to eight schools to do dental screening examinations. Follow-ups included application of sealants, cleaning, fluoride treatment, and referral to dentists as needed. The Care Mobile had a significant increase in preventive care services delivered. The program visited two charter schools and six Worcester Public schools, and introduced a fluoride varnish program at four schools.

The process varied between the two charter schools (Abbey Kelley and Seven Hills) and the six public schools. The Abbey Kelley and Seven Hills schools allowed the Care Mobile to park on school property, which enabled program staff to perform screenings inside the school, and then bring children out to the on-site Care Mobile for follow-up cleanings, fluoride treatment and sealants. With the exception of the Belmont School, the Care Mobile was not allowed to park on school property in Worcester Public Schools, nor were staff allowed to perform follow-up services inside the school. Program staff focused on screening 1st, 2nd, and 6th graders, but were not able to

perform follow up services (cleanings, fluoride treatment, sealants). In May, school officials informed Care Mobile staff that they could provide follow-up services, but only to 2nd and 6th graders. At this time, the Care Mobile program shifted its focus to screening only 2nd and 6th graders, and then performing follow-up services inside the school with portable equipment. This shift caused a decrease in the overall number of screenings, but a significant increase in the number of sealants, as compared to the previous school year. Students needing restorative care were referred to the Family Health Center, which sets aside seven to eight appointments per week for children, enabling them to receive care more quickly. Additional slots were provided at Great Brook Valley Health Center, and referrals were made to this Center as well.

Despite the challenges, 1,280 children were screened; 241 students received sealants with a total of 763 sealants applied; and 727 students received fluoride varnish (See Tables 7 and 8). The number sealed is almost triple the number that were sealed last year and all 727 who received varnishes would have potentially only received a screening and referral in the prior year.²⁰ The Care Mobile was also in the community two days per week caring for adults and children. Staff noted the ability to be flexible with both portable and Care Mobile equipment as a major contributor to the program's success.

Table 7: UMass Memorial Ronald McDonald Care Mobile Varnish Program

| School | On Class Rosters | Return of Permission Form | Refusals | Positive Permission | Percent Permissions Returned | Percent Refused of Those Returned | # Varnished 1X or 2X | Percent Varnished 1X or 2X of All Roster Students |
|----------------------------------|------------------|---------------------------|----------|---------------------|------------------------------|-----------------------------------|----------------------|---|
| City View (K-4) | 292 | 135 | 38 | 97 | 46.2% | 28.1% | 92 | 31.5% |
| Chandler Elementary (K-6) | 283 | 167 | 22 | 145 | 59.0% | 13.2% | 151 | 53.4% |
| Canterbury (K-6) | 336 | 149 | 20 | 129 | 44.3% | 13.4% | 129 | 38.4% |
| Belmont (K-6) | 446 | 337 | 90 | 247 | 75.6% | 26.7% | 234 | 52.5% |
| Elm Park (K-6) | 353 | 149 | 26 | 123 | 42.2% | 17.4% | 121 | 34.3% |
| Care Mobile Varnish, All Schools | 1,710 | 937 | 196 | 741 | 54.8% | 20.9% | 727 | 42.5% |

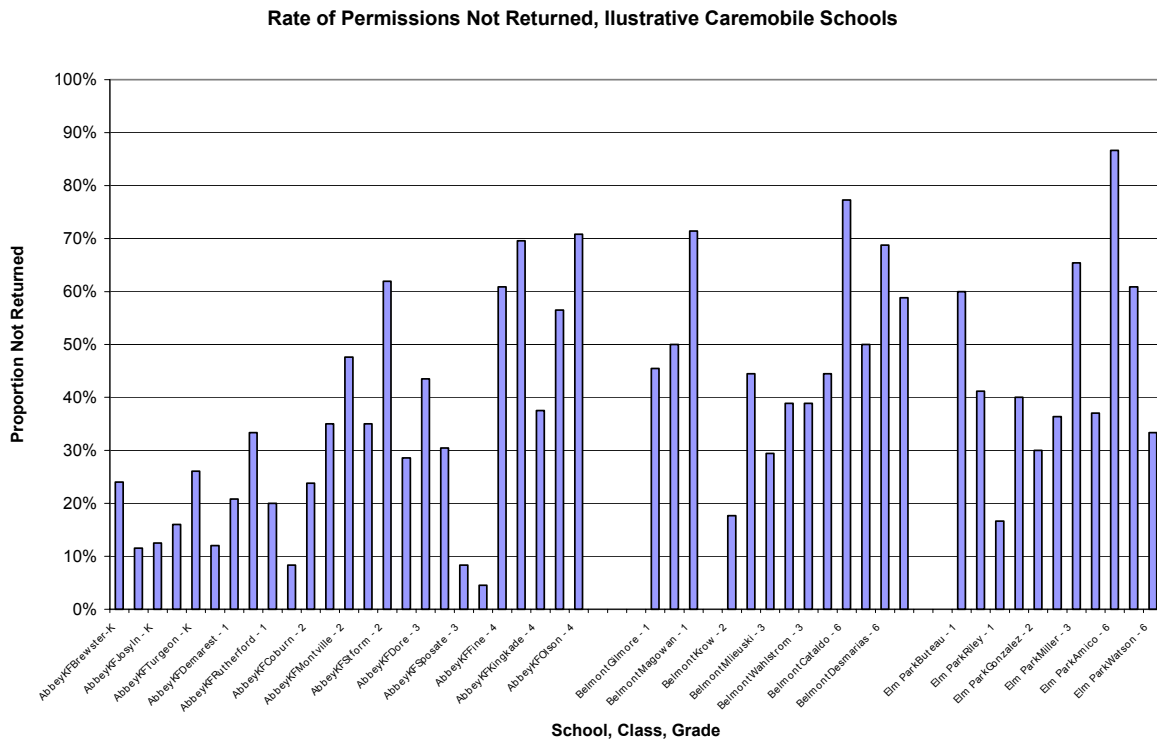
Table 8: UMass Memorial Ronald McDonald Care Mobile Screen and Seal Program

| School | On Class Rosters | Return of Permission Form | Refusals | Positive Permission | Percent Permissions Returned | Percent Refused of Those Returned | # Sealed | Percent Sealed of All Roster Students |
|------------------------------|------------------|---------------------------|----------|---------------------|------------------------------|-----------------------------------|----------|---------------------------------------|
| Canterbury** (2-6) | 119 | 81 | 9 | 72 | 75.6% | 11.1% | 50 | 42.0% |
| Columbus Park (2,6) | 44 | 21 | 0 | 21 | 47.7% | 0.0% | 13 | 29.5% |
| City View (2,6 for sealants) | 157 | 79 | 33 | 46 | 71.3% | 41.8% | 26 | 16.6% |
| 7 Hills (1,2,6) | 206 | 111 | 33 | 78 | 69.9% | 29.7% | 33 | 16.0% |
| Abbey Kelley Foster(K-4) | 578 | 339 | 204 | 135 | 93.9% | 60.2% | 69 | 11.9% |
| Belmont (2,6) | 242 | 131 | 28 | 103 | 65.7% | 21.4% | 40 | 16.5% |
| Elm Park | 216 | 97 | 17 | 80 | 52.8% | 17.5% | Not Done | Not Done |
| Total | 1,562 | 859 | 324 | 535 | 75.7% | 37.7% | 231 | 14.8% |

*Canterbury School had 267 on Roster, but only 119 permission forms were sent out.

As noted in previous evaluation reports, there is enormous variation in the percent of children who return permission forms (See Figure 1). It is not likely that this is variation in "passive" refusals, that is, parents who do not wish for their children to take part, but do not return forms. It is unlikely that there would be that degree of parent variation within classes at the same schools. Rather, it is likely, based also on anecdotal evidence, that there is significant variation in how the permission process is approached by teachers, and the level of their acceptance and importance associated with the services offered.

Figure 1



Opportunities for Improvement

Staff noted that more collaboration with the Worcester Public Schools and allowing Care Mobile to park at the schools would help better coordinate screening and follow up care. The program will continue to work on processes to maximize services and improve follow-up in the schools. They are now providing insurance packets for children and their families who do not have insurance.

The rate of returned permission slips for this program continued to fluctuate markedly by school and classroom. Program staff and the primary CMOHI evaluator are considering performing focus groups to help determine the cause of such fluctuations, and possible solutions to increasing overall rate of permission slips returned.

An important aspect of this effort is to help "clinical" program staff to come to a greater appreciation of the public health approach - the concept that we should focus on the under-served and hard to reach population - in this case children whose parents do not return permission forms. There should be increased, systematic investigation of the reasons for non return and development and test of innovative strategies to increase the rate of positive return.

QCC KidSeal Program

Current Status

The KidSeal Program operated by Quinsigamond Community College School of Dental Hygiene served nine Worcester Schools and treated both 2nd and 6th grade students (See Tables 9 and 10). The most recent data indicates that 249 children received sealants.

Table 9: QCC KidSeal Sealants by School and Grade

| School and Grade | On Class Rosters | Return of Permission Form | Refusals | Positive Permission | Percent Permissions Returned | Percent Refused of Those Returned | # Sealed | Percent Sealed of All Roster Students |
|--------------------|------------------|---------------------------|------------|---------------------|------------------------------|-----------------------------------|------------|---------------------------------------|
| Vernon Hill (2) | 72 | 58 | DNA | DNA | 80.6% | DNA | 33 | 45.8% |
| Columbus Park (2) | 46 | 31 | DNA | DNA | 67.4% | DNA | 23 | 50.0% |
| Lincoln St (2) | 33 | 25 | DNA | DNA | 75.8% | DNA | 12 | 36.4% |
| Lincoln St (6) | 29 | 14 | DNA | DNA | 48.3% | DNA | 10 | 34.5% |
| Grafton St (2) | 45 | 33 | DNA | DNA | 73.3% | DNA | 26 | 57.8% |
| McGrath (6) | 40 | 25 | DNA | DNA | 62.5% | DNA | 14 | 35.0% |
| Harlow St (2) | 19 | 17 | DNA | DNA | 89.5% | DNA | 10 | 52.6% |
| Harlow St (6) | 30 | 24 | DNA | DNA | 80.0% | DNA | 9 | 30.0% |
| Union Hill (2) | 30 | 14 | DNA | DNA | 46.7% | DNA | 13 | 43.3% |
| Union Hill (6) | 45 | 23 | DNA | DNA | 51.1% | DNA | 15 | 33.3% |
| Burntcoat Prep (2) | 29 | 27 | DNA | DNA | 93.1% | DNA | 23 | 79.3% |
| Burntcoat Prep (6) | 41 | 29 | DNA | DNA | 70.7% | DNA | 24 | 58.5% |
| Roosevelt (2) | 80 | 55 | DNA | DNA | 68.8% | DNA | 37 | 46.3% |
| Total | 539 | 375 | DNA | DNA | 69.6% | DNA | 249 | 46.2% |

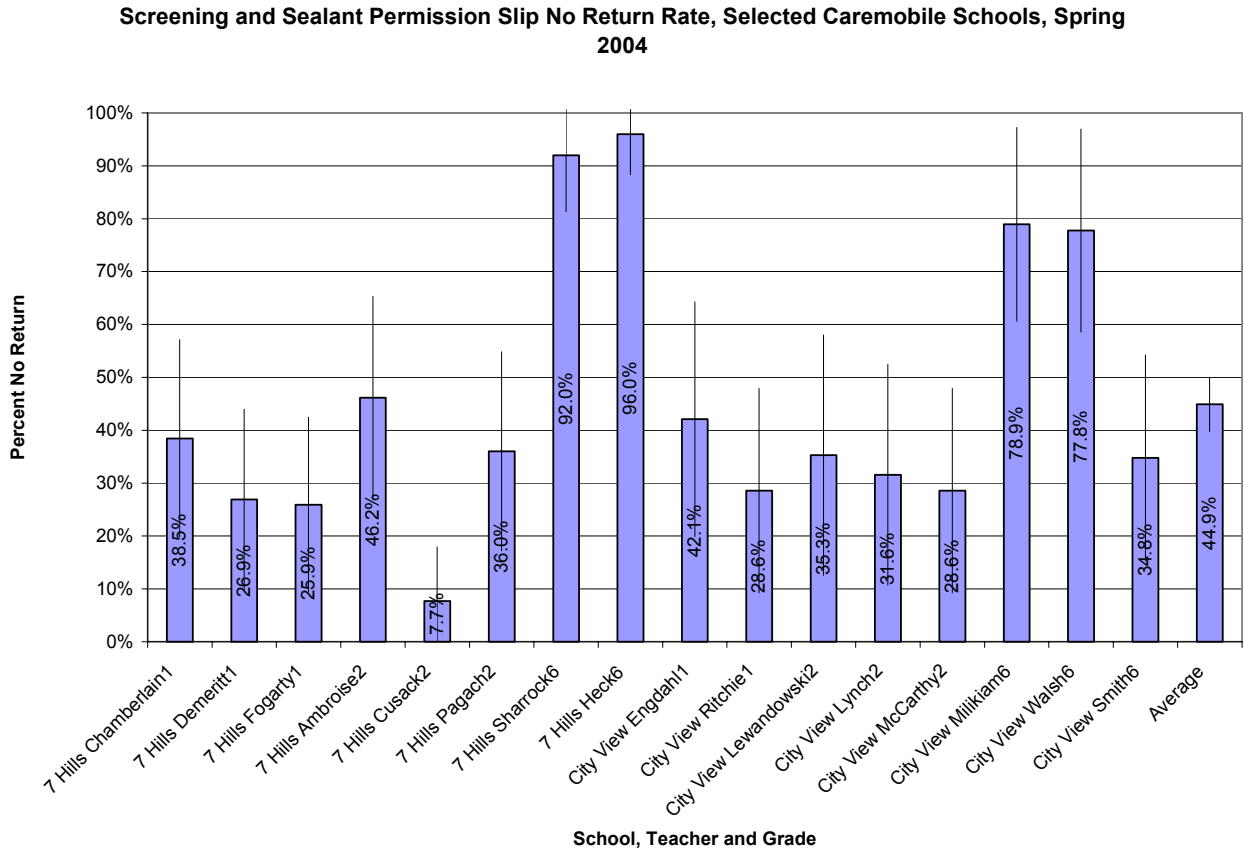
Table 10: QCC KidSeal Fluoride Varnish by School and Grade

| School and Grade | On Class Rosters | Return of Permission Form | Refusals | Positive Permission | Percent Permissions Returned | Percent Refused of Those Returned | # Varnished 1X or 2X | Percent Varnished 1X or 2X of All Roster Students |
|---------------------------------|------------------|---------------------------|-----------|---------------------|------------------------------|-----------------------------------|----------------------|---|
| Vernon Hill (1-5) | 359 | 246 | 4 | 242 | 68.5% | 1.6% | 242 | 67.4% |
| Columbus (3) | 35 | 33 | 3 | 30 | 94.3% | 9.1% | 30 | 85.7% |
| McGrath (K-6) | 196 | 178 | 10 | 168 | 90.8% | 5.6% | 167 | 85.2% |
| Harlow St (1-6) | 293 | 154 | 0 | 154 | 52.6% | 0.0% | 153 | 52.2% |
| Union Hill (1-6) | 231 | 99 | 0 | 99 | 42.9% | 0.0% | 88 | 38.1% |
| Roosevelt (1-6, PLS, ILS) | 508 | 364 | 52 | 312 | 71.7% | 14.3% | 308 | 60.6% |
| QCC Varnish, All Schools | 1,622 | 1,074 | 69 | 1,005 | 70.5% | 6.4% | 988 | 60.9% |

As with the all school-based programs to date, there is highly significant class-by-class variation in the rate of permission slips being returned by students (See Figure 2). This is a very significant issue to be faced by CMOHI. Other research on related tobacco prevention programs for school children has reported on the problems of obtaining parental consent and some strategies for improving the rate of response.

These included: “(1) rely on project staff, not school staff, to distribute and explain consent procedures; (2) ask students to deliver consent materials to parents [already done within CMOHI]; (3) use a class-based incentive, complete with visual aids to track progress, to motivate students to return parental consent forms; . . .(7) designate a central project person to handle communications with teachers and schools; and (8) communicate with schools and teachers through multiple methods.¹⁷” The lessons for CMOHI are to do much more communication with school and teachers, and to continue to try class-based incentives (e.g., pizza party).

Figure 2



Opportunities for Improvement

According to program staff, coordinating schedules for multiple schools and children, while introducing a new program to school administrators and teachers was cumbersome. They will spend more time at each so teachers and administrators know exactly what to expect, which seems to alleviate problems.

Varnish

Overall, of 3,332 grade-eligible children on rosters in Care Mobile and QCC public schools programs, 2,011 returned positive permission, and 1,715 were varnished once or twice.

Sealant

Overall, of 2,101 grade-eligible children on rosters in Care Mobile and QCC public schools programs, 480 received sealants.

FHC – Southbridge/Webster and Worcester Public Schools

Current Status – Southbridge and Webster¹⁸

The school-based services program was expanded this year to include the towns of Southbridge and Webster, neither of which has community health centers and, thus, must rely on local providers for medical and dental needs for Medicaid patients and the uninsured. Yet, only one dentist accepts Medicaid patients. The expansion of CMOHI to Southbridge and Webster brought to these areas the services of a Worcester-based community health center (FHC). School-based services in Southbridge and Webster focused on screening children in Grade 2. Initially, the program was administered by an independent consultant who served as school coordinator reporting to: (1) the Dental Director of the community health center; (2) the dentist leader of a local coalition partnering with CMOHI; and (3) the program manager for the CMOHI. According to CMOHI administrators, the coordinator found it difficult to work within this diverse reporting structure and complex network of relationships, which hampered project performance. Mid year, Family Health Center (FHC) took on direct administrative oversight of the program and hired a new coordinator housed within the Family Health Center. By the end of the school year, all children were screened and all students who returned consent forms received cleanings, fluoride treatments and sealants (See Table 11). Students needing restorative work were referred to FHC.

Table 11: South Worcester County Services by School

| School (2nd and 3rd Grade) | On Class Rosters | Return of Permission Form | Refusals | # Screened | Referred to School Sealant Program | Referred to FHC | Permission to Seal/Sealed |
|-------------------------------|---------------------|---------------------------------|----------|------------|---|--------------------|---------------------------------|
| Southbridge (Charlton St) | 410 | DNA | DNA | 303 | 153 | 150 | DNA est 20-40 |
| Webster (Park Ave) | 156 | DNA | DNA | 82 | 44 | 38 | 18 |
| Total | 566 | | | 385 | 197 | 188 | |

Opportunities for Improvement

Although the programs in Southbridge and Webster created dental awareness and provided some preventive services, program staff noted significant limitations in organization and in the long distance to routine care (the nearest community health center is 30 miles away). The problem however, as staff noted, is community based and ultimately needs to be resolved in Southern Worcester County, perhaps by establishing a health center in South County.

The program has already undertaken some steps toward improvement, including reorganizing the FHC department to create a Dental School Coordinator who will directly oversee the South County and Worcester Public Schools (see below) programs. The Coordinator will ensure that program is structured adequately to function well with multiple levels of responsibility (i.e. FHC, Dental Department, CMOHI, school systems, etc.) Staff are also working on connecting with parents earlier to verbally clarify the program and its expectations.

Current Status – Worcester Public Schools

Through the efforts of Dr. John Gusha, the Worcester Public Schools system has approved a pilot program in up to four schools to provide preventive services on site using portable equipment during the school day. The pilot would be in school-based health centers operated by either Great Brook Valley Health Center or Family Health Center. Slated to begin in the fall of 2004, students would leave their classrooms to obtain services—including exams, cleanings, fluoride rinse, and sealant application—for up to 30 minutes per session, thus minimizing time out of class.

Advocacy

Goal

To focus on legislative, administrative and regulatory support of policies that will increase oral health services to MassHealth members and the uninsured.

Objectives/Strategy

- Respond to the Commonwealth's oral health crisis with specific initiatives.
- Pilot oral health programs specifically focused on areas of need in Worcester in order to establish a standard for full state implementation.

Background

In November 2002 representatives from the CMOHI and the North Central Oral Health Initiative (another oral health improvement effort funded in part by THFCM) met to jointly develop an oral health advocacy agenda. The aim was to gain governmental support of CMOHI efforts in order to effect change on a systemic level. The agenda identified the following priority areas:

(1) Increasing the MassHealth provider reimbursement levels to provide incentive for more dentists to join the MassHealth network. (2) Contracting administration of the MassHealth dental program to a more experienced Third Party Administrator (TPA) that is better able to attract providers into the system. (3) Developing a two-year pilot program to allow dentists to limit their MassHealth caseloads, in an effort to lessen the financial impact on participating dentists. (4) Changing the Massachusetts fluoridation laws to provide for equal access and distribution throughout the state. (5) Proposing changes in the Good Samaritan Laws that protect volunteer health providers.

Current Status

Since its inception, CMOHI has been pressing its agenda forward at the local, state, and federal level in several initiatives. These have included advocacy to strengthen the oral health of the children in the local schools through enhanced screening, sealant, referral and treatment programs; work at the state level with Health Care for All to establish a Third Party Administrator (TPA) arrangement for MassHealth dental benefits to allow implementation of a "caseload" capacity pilot; and at the federal level to establish incentives for states to promote fluoridation.

As a result of CMOHI's continuous advocacy, through the leadership of THFCM's Jan Yost, in June 2004 the State Legislature authorized a Legislative study of the cost and benefits of implementing a TPA for the Medicaid Dental program. Medicaid is expected to release a request for proposals by March of 2005 and report back to the Legislature by January 2006 on the cost of such a program. This move is expected to make a significant impact on systematic change in increasing the supply of private dentists caring for MassHealth patients. Surveys have found that dentists have been reluctant to accept MassHealth patients, due to low reimbursement rates and their inability (because of state anti-discrimination laws) to limit the number of such patients—and thus control the financial impact the increased influx of MassHealth patients could create on their practice. Legislation, which passed in July 2002 through the efforts of State Senator Harriet Chandler, that approved a CMOHI two-year pilot to enable dentists to limit Medicaid caseloads in return for becoming a participating provider in Medicaid, had been stalled because it required a third party administrator (TPA). If the TPA proceeds, CMOHI officials expect that once caseload caps are implemented, the strategy will be effective in increasing access and the program could be introduced statewide, pending legislation.

CMOHI also continued to advocate for statewide fluoridation and worked closely with the Massachusetts Coalition for Oral Health, which has filed an application with the Centers for Disease Control to implement a statewide fluoridation advocacy campaign through the Harvard University Prevention Center. The grant was not funded. However, the CMOHI continues its joint advocacy agenda, working with the Oral Health Initiative of North Central Mass and Health Care For All's Oral Health Task Force, and is advocating for the introduction of legislation in December 2004 to mandate statewide fluoridation.

In addition, CMOHI continued supporting re-enactment of state regulations that limit the sale of junk food and soda during lunchtime in public schools. The Advocacy Committee chose to work with the Massachusetts Public Health Association (MPHA) on this issue, as the MPHA has taken the lead for several years in educational efforts to address the issues of obesity, and was already taking a lead in seeking state legislation to limit public school children's access to junk foods and soda. CMOHI plans to increase efforts in this area during the next evaluation year given the relationship between sugared sodas and tooth decay.

Increased Access to Clinical Dental Care

Goal

To increase the number of patients in need of dental care who receive treatment, particularly those in the MassHealth Program or the uninsured.

Objectives/Strategies

- Increase the capacity of health centers to provide both paid staff and equipment to provide more dental care.
- Increase the numbers of dental professionals volunteering to provide dental care in a clinical setting.

Background

More than 2.3 million Massachusetts residents have no dental insurance, requiring that these individuals pay out-of-pocket for services. Cost of care is one of the most significant reasons people report for not seeking dental care when they believe it is needed.⁴ Two overall programs were established to increase the accessibility to clinical dental care: a **Health Center Program** to monitor and enhance the range of preventive and restorative services provided to uninsured patients or participants in MassHealth at three clinical sites--Great Brook Valley Health Center at Quinsigamond Community College, Great Brook Valley Health Center at Tacoma Street, and the Family Health Center of Worcester; and a **Volunteer Program**, which focused on recruiting dentists and dental hygienists to provide dental services on a volunteer basis at QCC. For the current year the goal was 503 volunteer hours.

Cost of care is one of the most significant reasons people report for not seeking dental care when they believe it is needed.

Great Brook Valley Health Center and Family Health Center Overall

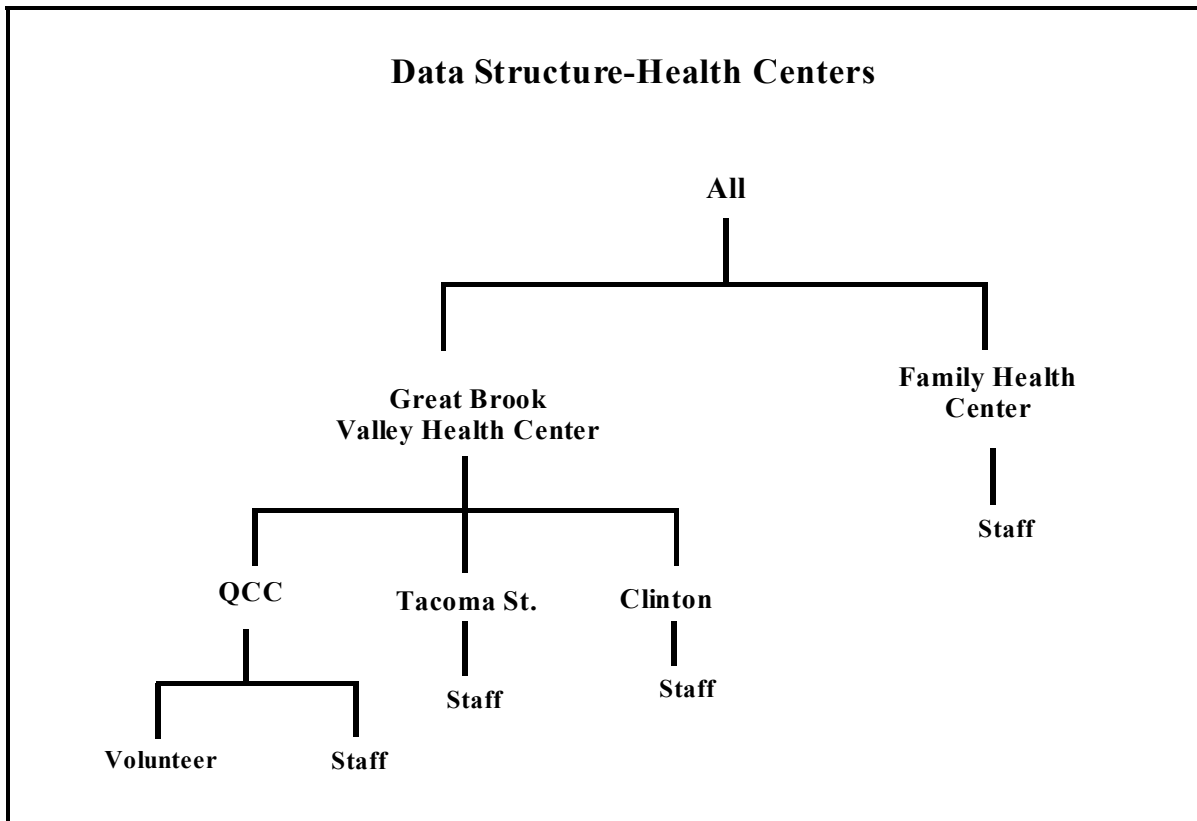
Current Status

Growth of the services available at the dental practices of Great Brook Valley Health Center and the Family Health Center continued this year. There are four patient service models of particular interest to CMOHI: (1) Patients seen by Volunteer Dental providers at Great Brook Valley Health Center - Quinsigamond Community College Dental Site (2) Patients seen by staff dentists at the same site, (3) Patients seen by staff dentists at the Great Brook Valley Health Center - Tacoma Street Site, and (4) Patients seen by staff dentists at the Family Health Center (See Figure 3).

The Great Brook Valley Health Center is a major provider of services to the Worcester area. It seeks 100% access to care and zero disparities in health status. The GBVHC is located in the lowest income, most densely populated neighborhood in the City of Worcester. This area is primarily comprised of the largest public housing project in the City and is home to an estimated 4,000 individuals. However, the users of the GBVHC come from all over Central Massachusetts – from 100 cities and towns. Seventy-percent of the users are from Worcester. Comprehensive services include medical, dental, mental health, laboratory, pharmacy, podiatry, optometry, family planning, health education, nutrition, outreach, case management, and transportation services. These services are provided by a staff of 280 multicultural professionals and

paraprofessionals who speak 13 languages (82% of staff speak at least two languages and 8% speak at least 3 languages).¹⁹ GBVHC also offers multilingual interpreter services: English, Portuguese, Spanish, Albanian, and Vietnamese.¹⁶

Figure 3



The Family Health Center (FHC) of Worcester's Dental Department has a goal of delivering comprehensive dental care as a component of comprehensive health care. They plan to provide specialty services, including periodontics, endodontics, pedodontics, and orthodontics and oral surgery. This would minimize the need to refer patients outside the center, and would allow them to deliver care in a culturally sensitive setting, where interpreters are more readily available. FHC's Dental Department continues to develop outreach and other programs, including the Prenatal Program, the Ryan White Clinics, the Care Mobile Referrals Program, the HOAP Referrals Program, the Homeless Families Program, the Head Start Care and Field Trip Program, an Oral Surgery Program in conjunction with Massachusetts General Hospital, and acts as a referral site for St Anne's Free Clinic and Health Link. It continues to develop the partnership with the CMOHI through an active alliance with the South County communities of Southbridge and Webster, working to develop a dental program bringing screenings, cleanings, fluoride treatment, sealants and referrals to the Southbridge and Webster schools. Currently, all but one of the dental assistants is bilingual, with one tri-lingual. This enhances the dental service staff's ability to communicate with patients by increasing direct communication between the patient and the dental team in English, Spanish, and Portuguese.¹⁶

In addition to Family Health Center adding oral surgery services last year, Great Brook Valley added oral surgery through a grant from the MassHealth Access Program. Both will be adding pediatric services in the coming year from grants from the MassHealth

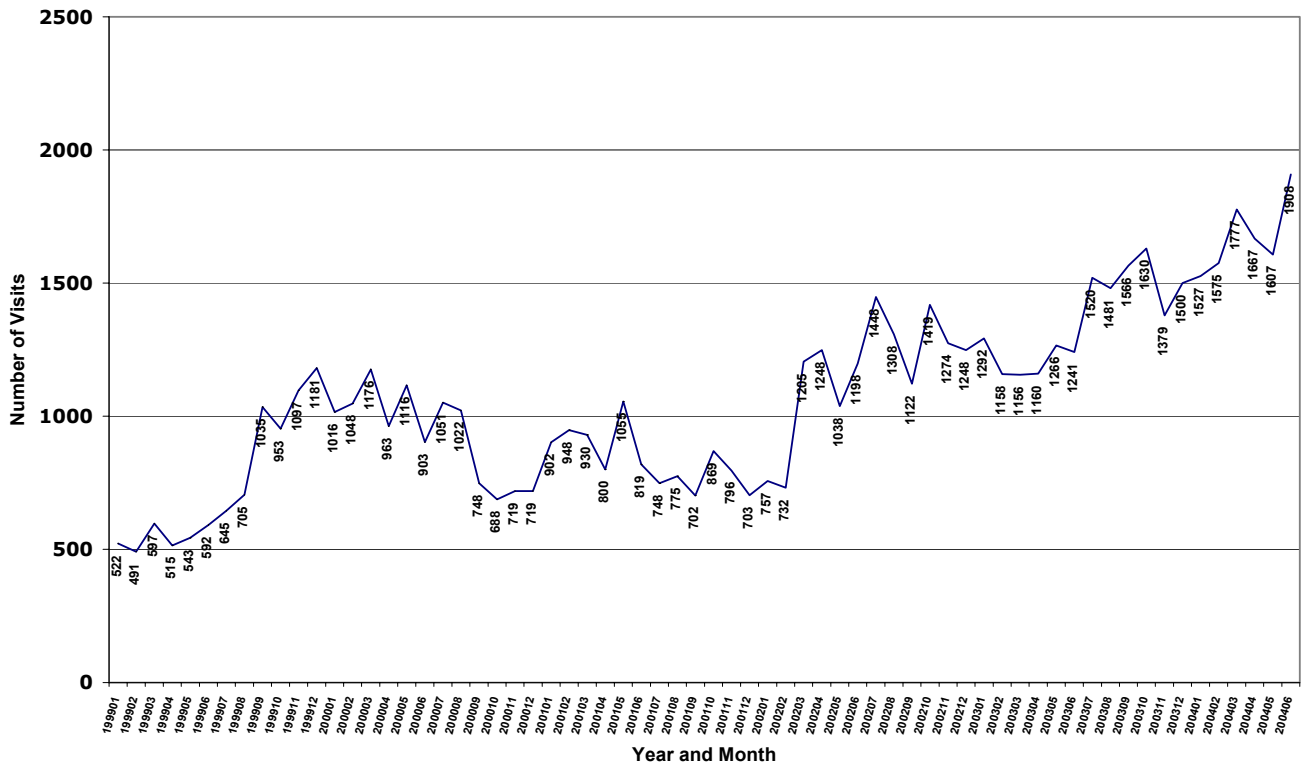
Access Program. Family Health will dedicate two chairs to pediatric care and Great Brook Valley will add a dental unit within their medical pediatrics department. Family Health Center is also servicing the Webster and Southbridge second graders, using portable equipment to provide preventive services on site.²⁰

Overall Growth in FHC Dental Services

Overall, there has been substantial growth in FHC dental services, as is illustrated in Figure 4.

Figure 4

Number of Family Health Center Dental Patient Visits, Each Month, for January 1999 - June, 2004



Dental Volunteer Program

Current Status

The Quinsigamond Community College Dental Clinic, administered by Great Brook Valley Health Center (GBVHC), was successful in juggling scheduling issues to see a larger number of patients, including the elderly, working poor, and children who were not accessing care elsewhere. For the period from October '03 and before the August '04 termination of the program, dental volunteers gave 506.8 hours of service, 534 patient-visits, and 903 procedures. Over the lifetime of the program, there were 1317 volunteer hours, 1363 patient-visits, and 2544 procedures delivered.

GBVHC at QCC continued using procedures developed in the prior years to schedule patients and providers as well as support staff. They also added a children's program that allowed three children per hour to be seen, increasing access for this under-served population. GBVHC staff set up treatment plans, enabling volunteers to concentrate on completing the work. GBVHC staff carried out all infection control and equipment maintenance functions; ordered all supplies and handled all inventory issues; and performed all billing, scheduling, and record-keeping.

Recruitment of additional dental volunteers continued to be a problem and the dentists and hygienists contributing hours were substantially from the same pool of regular contributors (See Appendix Tables). In fact, eleven dentists or dental practices contributed over half of all hours contributed by a total of 46 volunteers, while the top eighteen accounted for over 90% of hours contributed. This group of dedicated volunteers essentially sustained the program. The data in Table 12 and Figures 5 and 6 demonstrate that over the course of the implementation phase dental hours contributed and visits accomplished stayed at a fairly constant rate.

Table 12: Dental Volunteer Program Data

| | | | Volunteer Hours | Patient Visits | Procedures |
|------------------|------------------------|-----------------------|------------------------|-----------------------|-------------------|
| Year 2 | Pilot Phase - Start-up | June '01-Feb'02 | 0 | 0 | 0 |
| Year 2 | Pilot Phase - Active | March '02-Sept. '02 | 209.5 | 225 | 472 |
| | | Average/Month | 29.9 | 32.1 | 67.4 |
| Year 3 | Implementation Phase | Oct. '02-Sept. '03 | 600.8 | 594 | 1169 |
| | | Average/Month | 50.1 | 49.5 | 97.4 |
| Year 4 | Implementation Phase | Oct. '03-August '04 | 506.8 | 534 | 903 |
| | | Average/Month | 46.1 | 48.5 | 82.1 |
| All years | Active Phases | March '02-August, '04 | 1317 | 1363 | 2544 |
| | | Average/Month | 43.9 | 45.1 | 84.8 |

Figure 5

Dental Volunteers Program: Volunteer Hours, Patients Seen, and Restorative Procedures, March, 2002 - August 2004

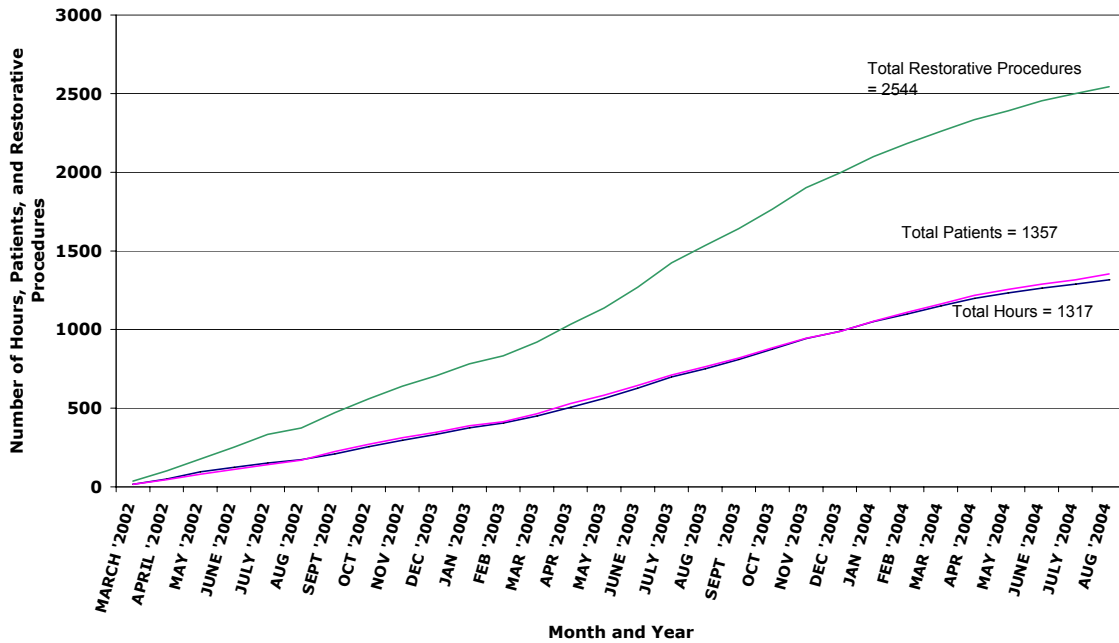
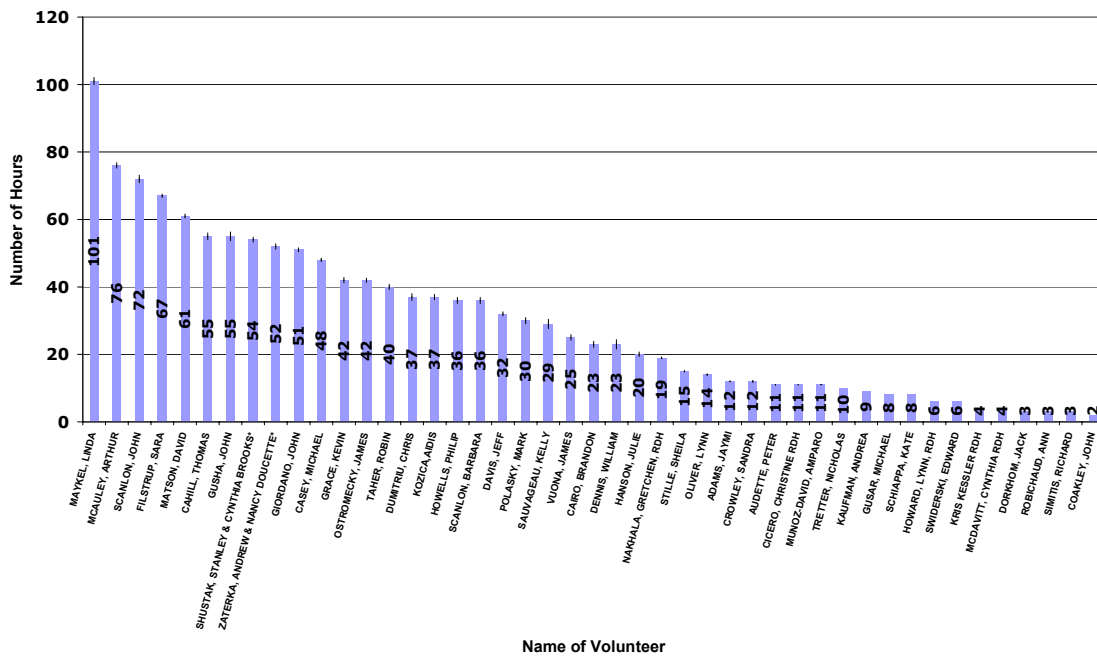


Figure 6

Volunteer Hours Provided By Volunteers, March, 2002 - August, 2003



Opportunities for Improvement

During Year 4 of CMOHI, it became clear that there were significant rate-limiting factors affecting the volunteer program. The number and timing of hours of clinic availability was limited, due to other demands on space and equipment. According to GBVHC staff, the schedule was constricted to match the QCC academic schedule and “set up” and “take down” required extra human resources (time) because they had to share the space. This additional time was not billable and created a financial burden to the program. Also, the Clinic mainly attracted adults, and with limited reimbursement, revenues did not meet expectations.²⁰ The other rate limiting factor was the limitation on numbers of different volunteer dentists for a "during the work week" commitment. The decision to create a "Saturday only" program was an effort to confront these twin limitations.

Given the financial constraints and unlikely sustainability of the program in its current configuration, GBVHC has chosen not to continue their operations at QCC. CMOHI is exploring a Partnering Program, where dental volunteers would be shifted to partner administratively with a health center and provide services in their own practice, but scheduling and billing is done through the health center. CMOHI is also exploring contracting with Dr. Mark Doherty to operate the Quinsigamond Children’s Dental Services, intending to serve 200-500 MassHealth children (0-20 years of age) per year at the QCC dental clinic on Saturdays.

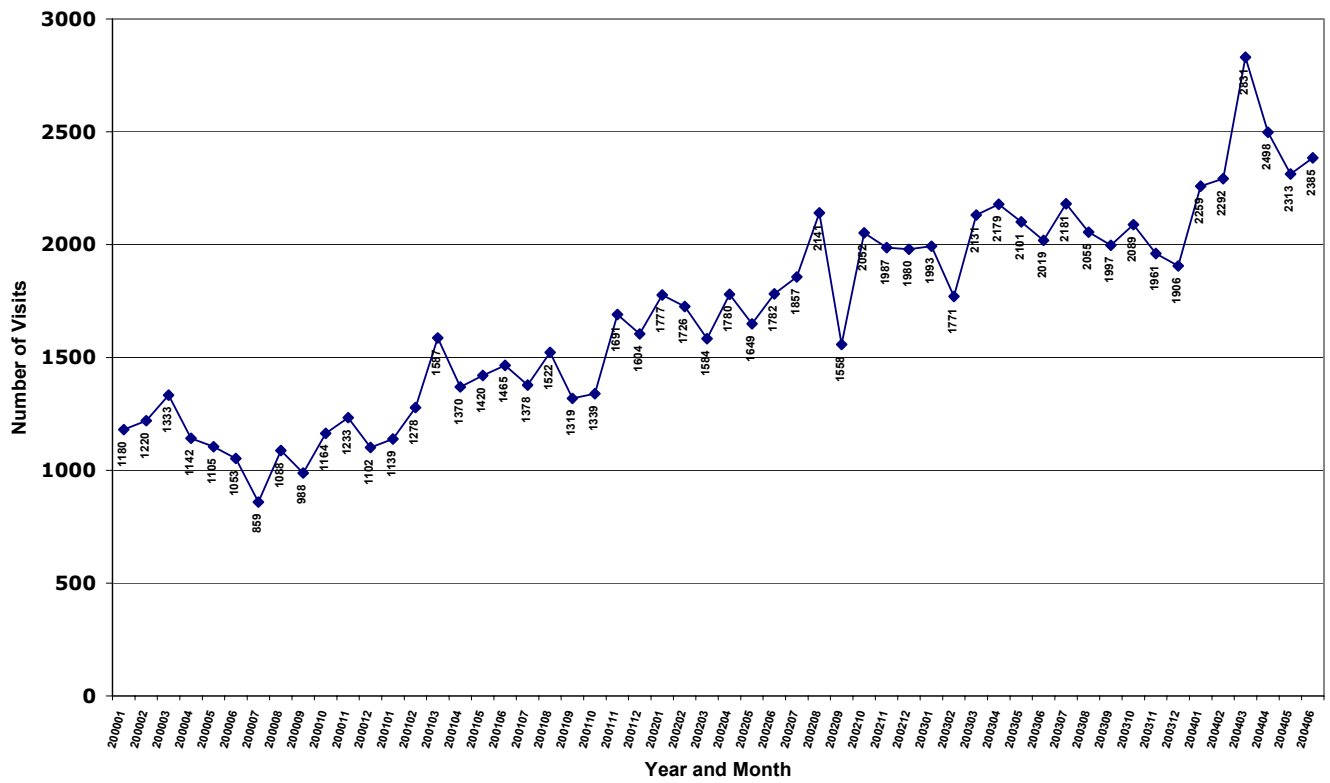
During this evaluation year, Dr. John Gusha’s practice served as a limited pilot site for this strategy. Because he was already credentialed through his volunteer work with GBVHC, it was a simple transition. Working through the GBVHC, he accepted eight MassHealth patients in his private practice. Overall, Dr. Gusha reported that the pilot went well. He was able to provide care for eight patients who might not otherwise have received treatment. Reimbursement levels, which were 60% to 70% of usual customary fees, were enough to cover overhead. Important to note is that because of the partnering relationship with the health center, he was able to cap the number of MassHealth patients he accepted, thus minimizing the financial impact of lower MassHealth reimbursement levels on his practice. One draw-back noted was the lengthy turn-around time (3 to 4 months) for payment, which CMOHI representatives are planning to address in the following evaluation year. They will also analyze the impact of the private practice arrangement on the number of patients seen at the participating health center(s).

Overall Growth in GBV Services

Great Brook Valley Health Center continues to grow in provision of dental services. The total for July, 2003 to June 2004 was 26,767 visits. The growth and fluctuation are illustrated in Figure 7.

Figure 7

Number of Great Brook Valley Dental Patient Visits, Each Month, All Sites*, for January 2000 - June, 2004



Health Professionals Education

Goal

To increase the knowledge of health practitioners about the importance of oral health examination and referral.

Objectives/Strategy

- Educate primary care and pediatric physicians on oral health issues
- Emphasize the importance of early detection of oral health problems

Background¹⁵

During the planning phase, it was determined that educational programs would be developed to educate pediatricians, primary care physicians, and nursing staff on oral health screening procedures, presentation of parent education materials, and making referrals. CMOHI utilized a program developed by the MassHealth Access Program (MAP). The Worcester District Medical and Dental Societies jointly sponsored CMOHI's educational program. Training covered dental issues, including: assessing risk of dental disease in pediatric patients; providing parent education regarding dental care; side effects of pharmaceuticals on oral tissues; and referring patients for follow-up.

Current Status

This year Dr. John Gusha delivered one training session to fourth-year University of Massachusetts Medical School students on pediatric rotation. Eight students attended the training, which covered key topics, from oral health screening procedures and providing educational materials for parents, to the importance of referring patients to a dentist at early stages of dental problems. It also covered broader oral health issues, including access to care and the rationale for integrating oral health education into the general medical curriculum. Dr. Gusha plans to deliver additional trainings in the next evaluation year, including several grand rounds presentations at UMass Medical School.

Dental Residency Program¹⁸

Goal

To create a high-quality dental education program that is well-integrated with general medical curricula and raises awareness of the need for increased oral health access, particularly among the poor or uninsured.

Objectives/Strategy

- Design a one year postdoctoral training program in general dentistry located at a medical school.
- Create an optimal educational, clinical and scientific environment for the training of dental residents with support from hospital, university, community, institutional and private oral health care programs.
- Development of socially responsible professionals with a commitment to community service and life-long learning.

Background

Since late 2003, CMOHI has been working on developing a postdoctoral one-year dental residency program within UMass Medical School as a strategy to address the need for increased local dental resources. The program would help bring new resources to the area and perhaps encourage graduates to practice locally after completing the program. In addition, the focus on community based service is intended to encourage the dental trainees to make a lasting commitment to people in greatest need. Housing the dental residency program within a medical school affirms dental health as a key factor in general health and well-being.

Current Status

CMOHI set up a committee within UMass to develop the specifications and a business plan, and prepare for ADA accreditation for a new program to be operating by July 2005. John Morgan from Tufts University School of Dental Medicine is serving as the program manager and Robert Baldor, the Vice Chair of the Department of Family and Community Medicine, is serving as the in-house residency expert, navigating the UMass system and coordinating with the departments that will serve as rotation sites.

Program Design

Dental Residents will come from UMass Medical School, which has a clinical relationship with UMass Memorial Hospital for training and Graduate Medical Education funding. Clinical training will take place at Worcester-based Family Health Center, which serves an urban, underserved population of patients. Family Health currently houses a UMass Medical School family practice residency. Academic training will take place at Tufts Dental School in combination with their Dental Residency program. Clinical rotations will take place at UMass Memorial Hospital in the areas of anesthesiology, emergency medicine, and surgery. General medicine clinical rotation will take place at Family Health in conjunction with the UMass Family Practice residents. Additional clinical rotations may take place through Tufts Dental Residency Program where the focus will be on the developmentally disabled.

The CMOHI has made significant progress toward establishing the program, including:

- Filing application with ADA for accreditation, with an October 20, 2004 site visit.
- Developing a business plan for the first five years of operation, focusing on future sustainability.
- Identifying grant opportunities to assist the program and reduce the overall deficits expected in the first five years.
- Developing affiliation agreements with Family Health Center and Tufts Dental School for academic and clinical training.
- Finalizing rotation arrangements with UMass departments.
- Developing administrative and budget support in the Department of Family Medicine where the program will be housed.
- Identifying the roles and responsibilities of the Residency Director and Associate Residency Director.

The program is expected to begin with two residents in its first year (beginning July 2005), increase to four residents in 2006, and to six residents in 2007.

APPENDIX TABLES

MassHealth Membership (Member Month), July 31, 2004 "Snapshot" *

| Town Name | Under 1 | 1-6 | 7-12 | 13-17 | 18 | 19-44 | 45-64 | 65+ | Total | Pop. | MH % |
|------------------|---------|-------|-------|-------|-----|-------|-------|-----|--------|--------|------|
| ASHBURNHAM | 8 | 52 | 64 | 52 | 11 | 147 | 67 | 40 | 441 | 5,546 | 8.0 |
| ATHOL (p) | 78 | 398 | 374 | 325 | 69 | 872 | 399 | 296 | 2,811 | 11,299 | 24.9 |
| AUBURN | 21 | 139 | 154 | 117 | 23 | 326 | 219 | 261 | 1,260 | 15,901 | 7.9 |
| BARRE | 21 | 79 | 77 | 124 | 11 | 168 | 106 | 55 | 641 | 5,113 | 12.5 |
| BERLIN | 2 | 11 | 14 | 10 | 1 | 28 | 17 | 13 | 96 | 2,380 | 4.0 |
| BLACKSTONE | 27 | 120 | 103 | 98 | 13 | 248 | 110 | 84 | 803 | 8,804 | 9.1 |
| BOLTON | 4 | 11 | 15 | 13 | 4 | 35 | 15 | 9 | 106 | 4,148 | 2.6 |
| BOYLSTON | 9 | 28 | 22 | 12 | 3 | 50 | 24 | 15 | 163 | 4,008 | 4.1 |
| BROOKFIELD | 6 | 53 | 38 | 43 | 6 | 109 | 60 | 26 | 341 | 3,051 | 11.2 |
| CHARLTON | 18 | 124 | 119 | 111 | 25 | 284 | 129 | 227 | 1,037 | 11,263 | 9.2 |
| CLINTON (p) | 67 | 264 | 250 | 148 | 33 | 550 | 282 | 210 | 1,804 | 13,435 | 13.4 |
| DOUGLAS | 19 | 94 | 92 | 68 | 9 | 186 | 71 | 51 | 590 | 7,045 | 8.4 |
| DUDLEY | 28 | 141 | 129 | 97 | 14 | 328 | 141 | 114 | 992 | 10,036 | 9.9 |
| EAST BROOKFIELD | 6 | 31 | 18 | 18 | 4 | 53 | 27 | 20 | 177 | 2,097 | 8.4 |
| FITCHBURG (p) | 328 | 1,609 | 1,375 | 1,089 | 169 | 3,081 | 1,397 | 993 | 10,041 | 39,102 | 25.7 |
| GARDNER (p) | 119 | 597 | 494 | 322 | 55 | 1,175 | 559 | 463 | 3,784 | 20,770 | 18.2 |
| GRAFTON | 25 | 126 | 120 | 161 | 83 | 474 | 208 | 152 | 1,349 | 14,894 | 9.1 |
| HARDWICK (p) | 13 | 44 | 48 | 36 | 7 | 100 | 55 | 38 | 341 | 2,622 | 13.0 |
| HARVARD | 5 | 7 | 14 | 9 | 1 | 35 | 37 | 19 | 127 | 5,981 | 2.1 |
| HOLDEN | 28 | 100 | 70 | 64 | 16 | 217 | 125 | 157 | 777 | 15,621 | 5.0 |
| HOPEDALE | 11 | 43 | 30 | 24 | 6 | 104 | 69 | 79 | 366 | 5,907 | 6.2 |
| HUBBARDSTON | 3 | 30 | 59 | 32 | 5 | 82 | 31 | 27 | 269 | 3,909 | 6.9 |
| LANCASTER | 19 | 85 | 110 | 115 | 5 | 173 | 67 | 105 | 679 | 7,380 | 9.2 |
| LEICESTER | 19 | 62 | 76 | 80 | 19 | 156 | 90 | 60 | 562 | 10,471 | 5.4 |
| LEOMINSTER (p) | 210 | 1,025 | 869 | 689 | 98 | 1,884 | 912 | 696 | 6,383 | 41,303 | 15.5 |
| LUNENBURG | 12 | 102 | 82 | 67 | 11 | 206 | 88 | 63 | 631 | 9,401 | 6.7 |
| MENDON | 4 | 28 | 44 | 22 | 4 | 71 | 41 | 20 | 234 | 5,286 | 4.4 |
| MILFORD (p) | 108 | 536 | 381 | 320 | 44 | 1,027 | 499 | 534 | 3,449 | 26,799 | 12.9 |
| MILLBURY | 35 | 170 | 138 | 116 | 20 | 363 | 181 | 329 | 1,352 | 12,784 | 10.6 |
| MILLVILLE | 13 | 51 | 51 | 31 | 8 | 100 | 34 | 28 | 316 | 2,724 | 11.6 |
| NEW BRAintree | | 11 | 15 | 13 | 4 | 21 | 13 | 6 | 83 | 927 | 9.0 |
| NORTH BROOKFIELD | 7 | 85 | 77 | 63 | 7 | 148 | 57 | 56 | 500 | 4,683 | 10.7 |
| NORTHBORO | 13 | 65 | 63 | 48 | 10 | 179 | 92 | 166 | 636 | 14,013 | 4.5 |
| NORTHBRIDGE | 55 | 307 | 300 | 279 | 38 | 532 | 245 | 369 | 2,125 | 13,182 | 16.1 |
| OAKHAM | 1 | 15 | 29 | 19 | | 34 | 25 | 7 | 130 | 1,673 | 7.8 |
| OXFORD (p) | 43 | 228 | 229 | 139 | 24 | 466 | 237 | 181 | 1,547 | 13,352 | 11.6 |
| PAXTON | 5 | 29 | 11 | 11 | 3 | 42 | 16 | 26 | 143 | 4,386 | 3.3 |
| PETERSHAM | 1 | 8 | 10 | 7 | 2 | 21 | 20 | 37 | 106 | 1,180 | 9.0 |
| PHILLIPSTON | | | | | | | | | 0 | 1,621 | 0.0 |
| PRINCETON | 1 | 21 | 12 | 11 | 1 | 33 | 22 | 9 | 110 | 3,353 | 3.3 |
| ROYALSTON (p) | 9 | 20 | 28 | 22 | 3 | 47 | 20 | 10 | 159 | 1,254 | 12.7 |
| RUTLAND | 7 | 71 | 78 | 89 | 6 | 150 | 58 | 30 | 489 | 6,353 | 7.7 |
| SHREWSBURY | 47 | 207 | 231 | 159 | 25 | 511 | 291 | 385 | 1,856 | 31,640 | 5.9 |
| SOUTHBORO | 2 | 29 | 44 | 45 | 6 | 82 | 44 | 36 | 288 | 8,781 | 3.3 |
| SOUTHBRIDGE (p) | 137 | 790 | 618 | 518 | 85 | 1,416 | 702 | 421 | 4,687 | 17,214 | 27.2 |
| SPENCER (p) | 39 | 213 | 179 | 127 | 15 | 421 | 231 | 159 | 1,384 | 11,691 | 11.8 |
| STERLING | 8 | 44 | 45 | 47 | 5 | 104 | 48 | 116 | 417 | 7,257 | 5.7 |
| STURBRIDGE | 17 | 96 | 103 | 85 | 12 | 221 | 132 | 69 | 735 | 7,837 | 9.4 |
| SUTTON | 11 | 41 | 50 | 27 | 7 | 92 | 57 | 21 | 306 | 8,250 | 3.7 |
| TEMPLETON (p) | 24 | 121 | 103 | 110 | 21 | 262 | 197 | 177 | 1,015 | 6,799 | 14.9 |
| UPTON | 8 | 38 | 43 | 28 | 4 | 100 | 57 | 63 | 341 | 5,642 | 6.0 |
| UXBRIDGE | 16 | 138 | 134 | 115 | 20 | 316 | 164 | 149 | 1,052 | 11,156 | 9.4 |

| Town Name | Under 1 | 1-6 | 7-12 | 13-17 | 18 | 19-44 | 45-64 | 65+ | Total | Pop. | MH % |
|-----------------|---------|---------|---------|---------|--------|---------|---------|---------|---------|-----------|------|
| WARREN | 22 | 110 | 105 | 96 | 20 | 228 | 104 | 50 | 735 | 4,776 | 15.4 |
| WEBSTER (p) | 101 | 423 | 382 | 272 | 44 | 931 | 440 | 544 | 3,137 | 16,415 | 19.1 |
| WEST BOYLSTON | 5 | 55 | 62 | 50 | 12 | 126 | 63 | 65 | 438 | 7,481 | 5.9 |
| WEST BROOKFIELD | 13 | 72 | 52 | 46 | 5 | 121 | 96 | 156 | 561 | 3,804 | 14.7 |
| WESTBORO | 40 | 111 | 95 | 700 | 85 | 484 | 168 | 285 | 1,968 | 17,997 | 10.9 |
| WESTMINSTER | 7 | 56 | 55 | 41 | 3 | 142 | 68 | 23 | 395 | 6,907 | 5.7 |
| WINCHENDON (p) | 61 | 418 | 426 | 331 | 53 | 817 | 436 | 238 | 2,780 | 9,611 | 28.9 |
| WORCESTER (p) | 1,485 | 6,777 | 6,010 | 4,685 | 781 | 13,559 | 7,023 | 5,084 | 45,404 | 172,648 | 26.3 |
| COUNTY TOTAL | 3,451 | 16,759 | 15,019 | 12,596 | 2,078 | 34,238 | 17,186 | 14,122 | 115,449 | 750,963 | 15.4 |
| MASS TOTAL | 27,325 | 133,176 | 122,076 | 102,077 | 16,922 | 273,100 | 145,891 | 121,441 | 942,008 | 6,349,097 | 14.8 |

*Source and Notes: Received from Mass Health "Cognos" System

Membership is calculated on a days/month basis. For example, if two persons each contribute 15 days in the applicable month, then this is counted as one member month. Decimal member months are "rounded up" by the MassHealth Report. Membership assigned to "villages" by the Mass Health system are aggregated to towns. Some towns with zeros are likely due to no separate postal zip code definition.

Population: U.S. Census 2000, SF1: Table P1

Fluoridation Status For Worcester County Cities And Towns, 2003

| CITY OR TOWN NAME | POPULATION 2000, U.S. CENSUS | ESTIMATED POPULATION ON COMMUNITY PUBLIC WATER SUPPLY | PERCENT ON COMMUNITY WATER SUPPLY* | MDPH FLUORIDATION STATUS*** | ESTIMATED # FLUORIDATED FOR PARTIALLY FLUORIDATED | ESTIMATED # FLUORIDATED** |
|--------------------------|-------------------------------------|--|---|------------------------------------|--|----------------------------------|
| ASHBURNHAM | 5,546 | 4,464 | 80.5 | TOTAL | | 4,464 |
| ATHOL | 11,299 | 7,988 | 70.7 | TOTAL | | 7,988 |
| FITCHBURG | 39,102 | 39,000 | 99.7 | TOTAL | | 39,000 |
| GARDNER | 20,770 | 20,770 | 100.0 | TOTAL | | 20,770 |
| HOLDEN | 15,621 | 15,000 | 96.0 | TOTAL | | 14,999 |
| NORTHBOROUGH | 14,013 | 10,980 | 78.4 | TOTAL | | 10,981 |
| OXFORD | 13,352 | 7,559 | 56.6 | TOTAL | | 7,559 |
| RUTLAND | 6,353 | 4,327 | 68.1 | TOTAL | | 4,327 |
| SHREWSBURY | 31,640 | 31,640 | 100.0 | TOTAL | | 31,640 |
| SOUTHBOROUGH | 8,781 | 7,430 | 84.6 | TOTAL | | 7,430 |
| SOUTHBRIDGE | 17,214 | 17,000 | 98.8 | TOTAL | | 17,001 |
| STURBRIDGE | 7,837 | 2,881 | 36.8 | TOTAL | | 2,881 |
| TEMPLETON | 6,799 | 7,479 | 110.0 | TOTAL | | 6,799 |
| WESTMINSTER | 6,907 | 5,002 | 72.4 | TOTAL | | 5,002 |
| CHARLTON | 11,263 | 985 | 8.8 | PARTIAL | 300 | 300 |
| DUDLEY | 10,036 | 8,337 | 83.1 | PARTIAL | 45 | 45 |
| HARDWICK | 2,622 | 1,580 | 60.3 | PARTIAL | 150 | 150 |
| ROYALSTON | 1,254 | 250 | 19.9 | PARTIAL | 400 | 400 |
| WORCESTER | 172,648 | 172,648 | 100.0 | PARTIAL | 250 | 250 |
| AUBURN | 15,901 | 12,471 | 78.4 | NONE | | 0 |
| BARRE | 5,113 | 3,955 | 77.4 | NONE | | 0 |
| BERLIN | 2,380 | 198 | 8.3 | NONE | | 0 |
| BLACKSTONE | 8,804 | 9,798 | 111.3 | NONE | | 0 |
| BOLTON | 4,148 | | 0.0 | NONE | | 0 |
| BOYLSTON | 4,008 | 2,647 | 66.0 | NONE | | 0 |
| BROOKFIELD | 3,051 | 1,659 | 54.4 | NONE | | 0 |
| CLINTON | 13,435 | 13,000 | 96.8 | NONE | | 0 |
| DOUGLAS | 7,045 | 3,100 | 44.0 | NONE | | 0 |
| EAST BROOKFIELD | 2,097 | 1,550 | 73.9 | NONE | | 0 |
| GRAFTON | 14,894 | 12,527 | 84.1 | NONE | | 0 |
| HARVARD | 5,981 | 1,180 | 19.7 | NONE | | 0 |
| HOPEDALE | 5,907 | 6,011 | 101.8 | NONE | | 0 |
| HUBBARDSTON | 3,909 | 120 | 3.1 | NONE | | 0 |
| LANCASTER | 7,380 | 1,800 | 24.4 | NONE | | 0 |
| LEICESTER | 10,471 | 9,585 | 91.5 | NONE | | 0 |
| LEOMINSTER | 41,303 | 36,000 | 87.2 | NONE | | 0 |
| LUNENBURG | 9,401 | 5,280 | 56.2 | NONE | | 0 |
| MENDON | 5,286 | 481 | 9.1 | NONE | | 0 |
| MILFORD | 26,799 | 27,100 | 101.1 | NONE | | 0 |
| MILLBURY | 12,784 | 9,096 | 71.2 | NONE | | 0 |
| MILLVILLE | 2,724 | | 0.0 | NONE | | 0 |
| NEW BRAintree | 927 | | 0.0 | NONE | | 0 |
| NORTH BROOKFIELD | 4,683 | 3,892 | 83.1 | NONE | | 0 |
| NORTHBRIDGE | 13,182 | 19,500 | 147.9 | NONE | | 0 |

| CITY OR TOWN NAME | POPULATION 2000, U.S. CENSUS | ESTIMATED POPULATION ON COMMUNITY PUBLIC WATER SUPPLY | PERCENT ON COMMUNITY WATER SUPPLY* | MDPH FLUORIDATION STATUS*** | ESTIMATED # FLUORIDATED FOR PARTIALLY FLUORIDATED | ESTIMATED # FLUORIDATED** |
|-------------------|------------------------------|---|------------------------------------|-----------------------------|---|---------------------------|
| OAKHAM | 1,673 | | 0.0 | NONE | | 0 |
| PAXTON | 4,386 | 3,510 | 80.0 | NONE | | 0 |
| PETERSHAM | 1,180 | 45 | 3.8 | NONE | | 0 |
| PHILLIPSTON | 1,621 | | 0.0 | NONE | | 0 |
| PRINCETON | 3,353 | | 0.0 | NONE | | 0 |
| SPENCER | 11,691 | 6,750 | 57.7 | NONE | | 0 |
| STERLING | 7,257 | 7,053 | 97.2 | NONE | | 0 |
| SUTTON | 8,250 | 3,127 | 37.9 | NONE | | 0 |
| UPTON | 5,642 | 3,000 | 53.2 | NONE | | 0 |
| UXBRIDGE | 11,156 | 10,514 | 94.3 | NONE | | 0 |
| WARREN | 4,776 | 2,697 | 56.5 | NONE | | 0 |
| WEBSTER | 16,415 | 14,500 | 88.3 | NONE | | 0 |
| WEST BOYLSTON | 7,481 | 6,281 | 84.0 | NONE | | 0 |
| WEST BROOKFIELD | 3,804 | 935 | 24.6 | NONE | | 0 |
| WESTBOROUGH | 17,997 | 19,306 | 107.3 | NONE | | 0 |
| WINCHENDON | 9,611 | 5,600 | 58.3 | NONE | | 0 |
| Total | 750,963 | 629,588 | 83.8 | | | 181,985 |

*Note that percentages may go above 100% due to local water departments using more recent population estimates in their reporting of public water supply data, double counting by several sources, water districts covering more than one town, or imprecise estimation procedures.

** Estimated at 100% maximum of 2000 population

***From MDPH Division of Oral Health

Sources: Dept. of Environmental Protection, Drinking Water Division; Dept. Public Health, Division of Oral Health; U.S. Census 2000 Table P1.

Number of Dentists in Worcester County Who Are Active in Medicaid Program

| Town | Billed Any Amount in FY 01-04 | Billed > \$10,000 in FY '04 |
|------------------|--|---|
| ASHBURNHAM | 0 | 0 |
| ATHOL | 3 | 0 |
| AUBURN | 0 | 0 |
| BARRE | 0 | 0 |
| BERLIN | 0 | 0 |
| BLACKSTONE | 0 | 0 |
| BOLTON | 0 | 0 |
| BOYLSTON | 0 | 0 |
| BROOKFIELD | 0 | 0 |
| CHARLTON | 0 | 0 |
| CLINTON | 0 | 0 |
| DOUGLAS | 0 | 0 |
| DUDLEY | 0 | 0 |
| EAST BROOKFIELD | 0 | 0 |
| FITCHBURG | 6 | 1 |
| GARDNER | 0 | 0 |
| GRAFTON | 1 | 0 |
| HARDWICK | 0 | 0 |
| HARVARD | 0 | 0 |
| HOLDEN | 3 | 0 |
| HOPEDALE | 0 | 0 |
| HUBBARDSTON | 0 | 0 |
| LANCASTER | 0 | 0 |
| LEICESTER | 0 | 0 |
| LEOMINSTER | 0 | 0 |
| LUNENBURG | 1 | 0 |
| MENDON | 0 | 0 |
| MILFORD | 15 | 5 |
| MILLBURY | 0 | 0 |
| MILLVILLE | 0 | 0 |
| NEW BRAINTREE | 0 | 0 |
| NORTH BROOKFIELD | 0 | 0 |
| NORTHBOROUGH | 5 | 1 |
| NORTHBRIDGE | 0 | 0 |
| OAKHAM | 0 | 0 |
| OXFORD | 1 | 1 |
| PAXTON | 1 | 1 |
| PETERSHAM | 0 | 0 |
| PHILLIPSTON | 0 | 0 |
| PRINCETON | 0 | 0 |
| ROYALSTON | 0 | 0 |
| RUTLAND | 0 | 0 |
| SHREWSBURY | 8 | 1 |
| SOUTHBOROUGH | 1 | 0 |
| SOUTHBRIDGE | 3 | 1 |
| SPENCER | 0 | 0 |
| STERLING | 1 | 0 |

| Town | Billed Any Amount in FY 01-04 | Billed > \$10,000 in FY '04 |
|-------------------------------------|--|---|
| STURBRIDGE | 3 | 2 |
| SUTTON | 0 | 0 |
| TEMPLETON | 0 | 0 |
| UPTON | 0 | 0 |
| UXBRIDGE | 0 | 0 |
| WARREN | 0 | 0 |
| WEBSTER | 0 | 0 |
| WEST BOYLSTON | 1 | 1 |
| WEST BROOKFIELD | 0 | 0 |
| WESTBOROUGH | 3 | 1 |
| WESTMINSTER | 0 | 0 |
| WINCHENDON | 1 | 1 |
| WORCESTER | 57 | 24 |
| Total, Worcester County | 114 | 40 |
| Total, Massachusetts | 1,562 | NA |
| Worcester County Population | 750,963 | 750,963 |
| Massachusetts Population | 6,349,097 | 6,349,097 |
| Worcester County Rate per 10,000 | 1.52 | 0.53 |
| Massachusetts Rate per 10,000 | 2.46 | NA |

Source: MassHealth Custodian of Records, November 30, 2004
Report Run August 25, 2004

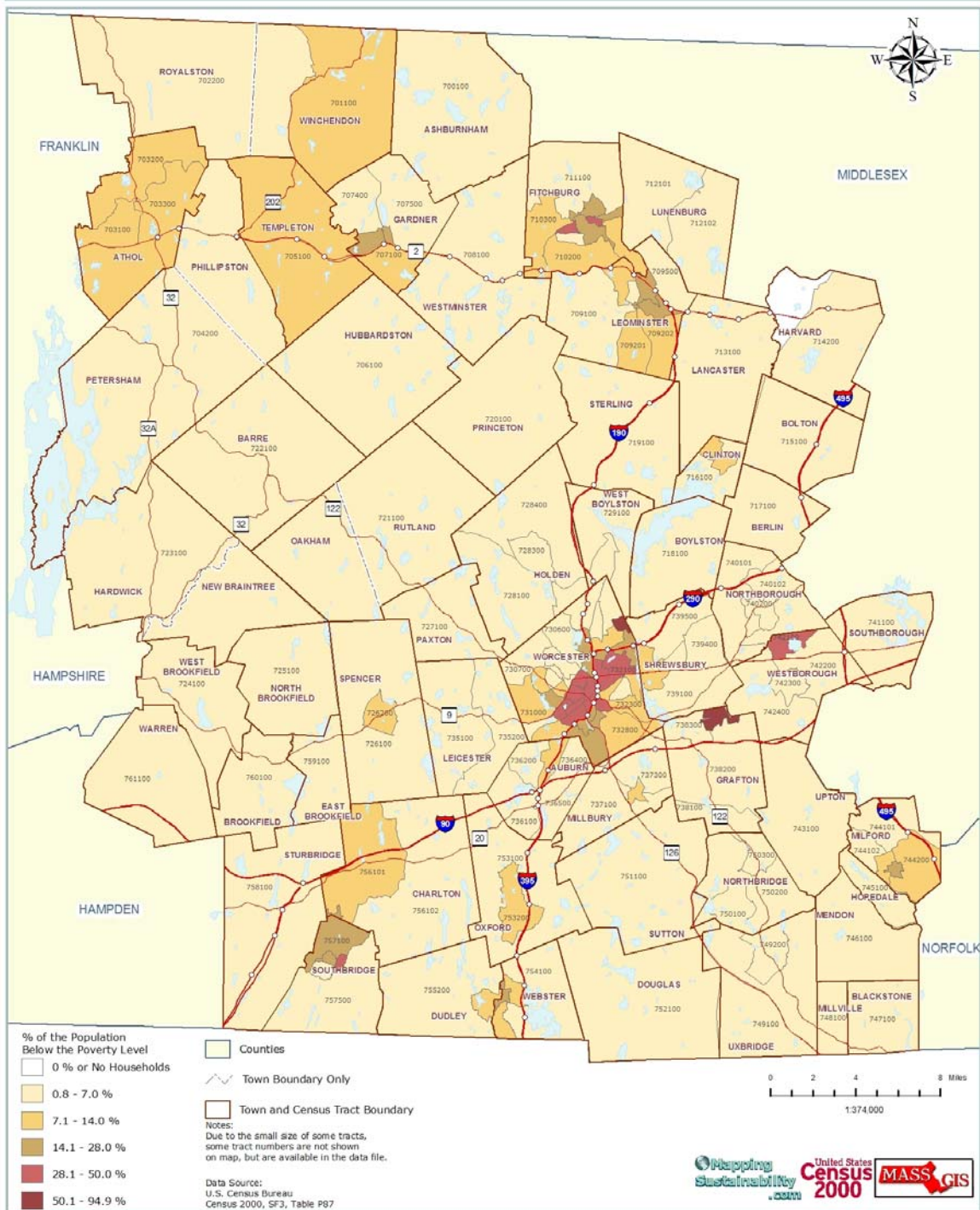
QCC Volunteer Hours, March 2002 - August 2004

| Volunteers | Total Hours, Rounded | Cumulative | Cumulative % |
|------------------------------------|---------------------------------|-------------------|---------------------|
| MAYKEL, LINDA | 101 | 101 | 7.7 |
| MCAULEY, ARTHUR | 76 | 177 | 13.5 |
| SCANLON, JOHN | 72 | 249 | 18.9 |
| FILSTRUP, SARA | 67 | 316 | 24.0 |
| MATSON, DAVID | 61 | 377 | 28.7 |
| CAHILL, THOMAS | 55 | 432 | 32.9 |
| GUSHA, JOHN | 55 | 487 | 37.0 |
| SHUSTAK, STANLEY & CYNTHIA BROOKS* | 54 | 541 | 41.1 |
| ZATERKA, ANDREW & NANCY DOUCETTE* | 52 | 593 | 45.1 |
| GIORDANO, JOHN | 51 | 644 | 49.0 |
| CASEY, MICHAEL | 48 | 692 | 52.6 |
| GRACE, KEVIN | 42 | 734 | 55.8 |
| OSTROMECKY, JAMES | 42 | 776 | 59.0 |
| TAHER, ROBIN | 40 | 816 | 62.1 |
| DUMITRIU, CHRIS | 37 | 853 | 64.9 |
| KOZICA, AIDIS | 37 | 890 | 67.7 |
| HOWELLS, PHILIP | 36 | 926 | 70.4 |
| SCANLON, BARBARA | 36 | 962 | 73.2 |
| DAVIS, JEFF | 32 | 994 | 75.6 |
| POLASKY, MARK | 30 | 1024 | 77.9 |
| SAUVAGEAU, KELLY | 29 | 1053 | 80.1 |
| VUONA, JAMES | 25 | 1078 | 82.0 |
| CAIRO, BRANDON | 23 | 1101 | 83.7 |
| DENNIS, WILLIAM | 23 | 1124 | 85.5 |
| HANSON, JULIE | 20 | 1144 | 87.0 |
| NAKHALA, GRETCHEN, RDH | 19 | 1163 | 88.4 |
| STILLE, SHEILA | 15 | 1178 | 89.6 |
| OLIVER, LYNN | 14 | 1192 | 90.6 |
| ADAMS, JAYMI | 12 | 1204 | 91.6 |
| CROWLEY, SANDRA | 12 | 1216 | 92.5 |
| AUDETTE, PETER | 11 | 1227 | 93.3 |
| CICERO, CHRISTINE RDH | 11 | 1238 | 94.1 |
| MUNOZ-DAVID, AMPARO | 11 | 1249 | 95.0 |
| TRETTER, NICHOLAS | 10 | 1259 | 95.7 |
| KAUFMAN, ANDREA | 9 | 1268 | 96.4 |
| GUSAR, MICHAEL | 8 | 1276 | 97.0 |
| SCHIAPPA, KATE | 8 | 1284 | 97.6 |
| HOWARD, LYNN, RDH | 6 | 1290 | 98.1 |
| SWIDERSKI, EDWARD | 6 | 1296 | 98.6 |
| KRIS KESSLER RDH | 4 | 1300 | 98.9 |
| MCDAVITT, CYNTHIA RDH | 4 | 1304 | 99.2 |
| DORKHOM, JACK | 3 | 1307 | 99.4 |
| ROBICHAUD, ANN | 3 | 1310 | 99.6 |
| SIMITIS, RICHARD | 3 | 1313 | 99.8 |
| COAKLEY, JOHN | 2 | 1315 | 100.0 |
| TOTAL | 1315 | | |

*Hours Doubled

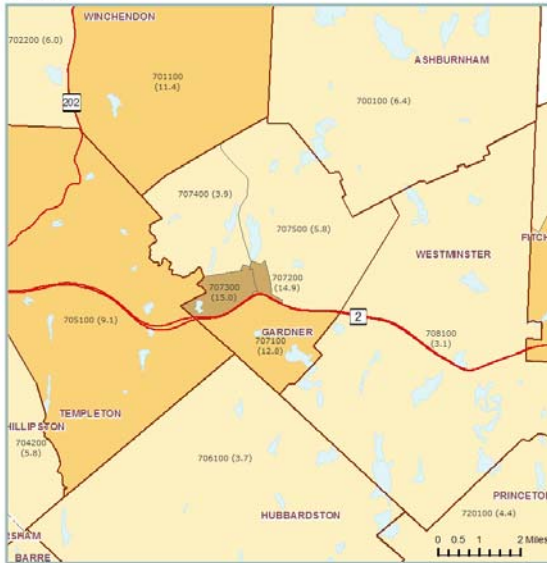
Worcester County:

Percentage of the Population Below the Poverty Level, by Census Tract

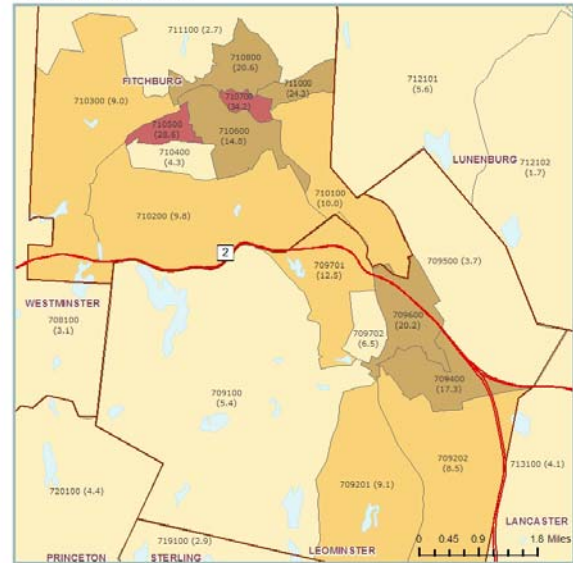


Gardner, Fitchburg/Leominster, Southbridge, Webster, and Milford Percentage of the Population Below the Poverty Level

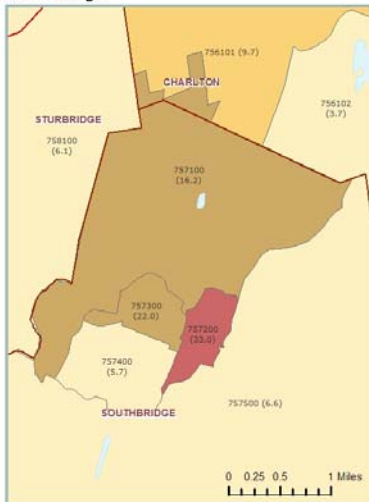
Gardner



Fitchburg / Leominster



Southbridge



Webster



Milford



% of the Population Below the Poverty Level

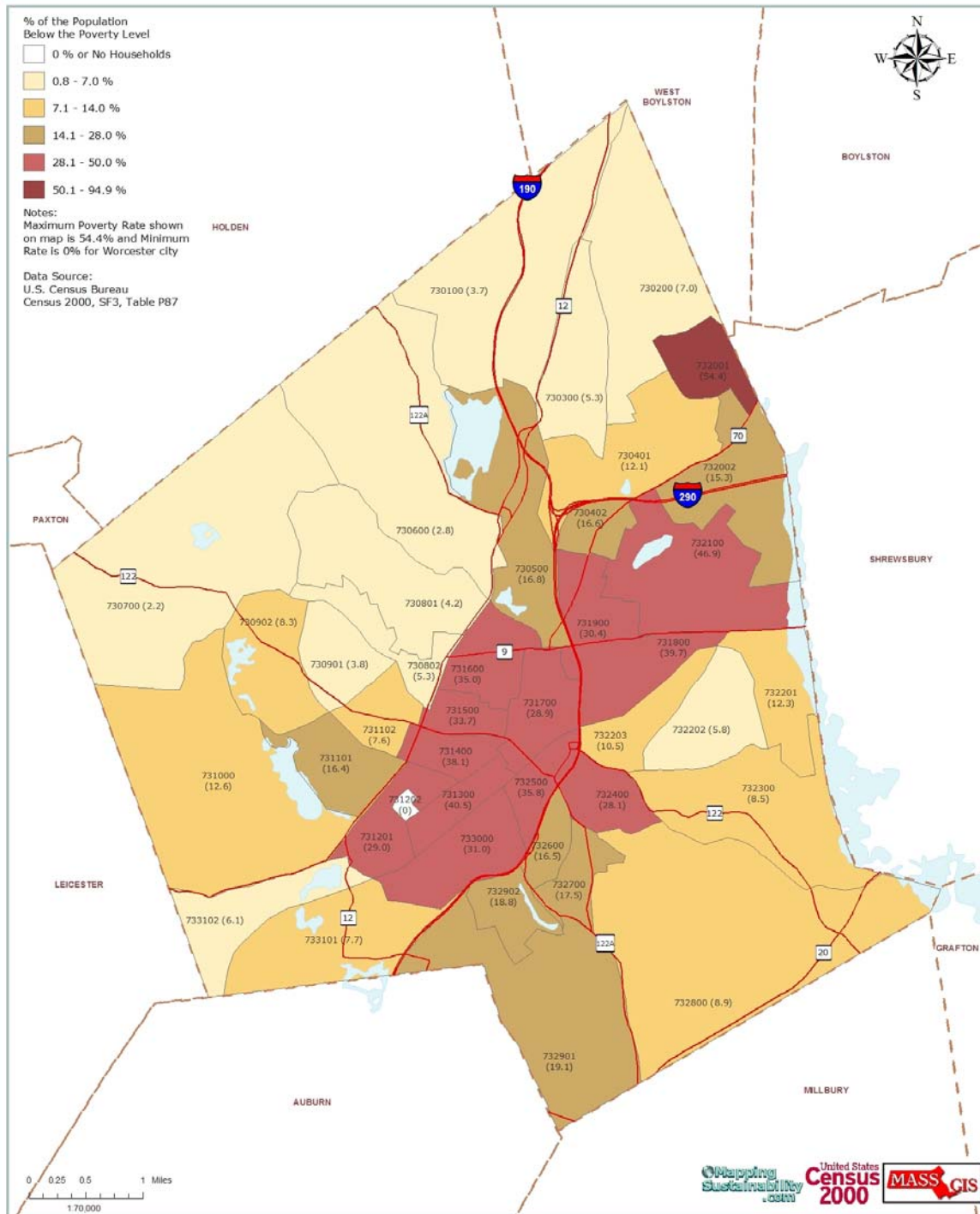
- 0 % or No Households
- 0.8 - 7.0 %
- 7.1 - 14.0 %
- 14.1 - 28.0 %
- 28.1 - 50.0 %
- 50.1 - 94.9 %

- Counties
- Town Boundary Only
- Town and Census Tract Boundary

Data Source:
U.S. Census Bureau
Census 2000, SF3, Table P87



Worcester City: Percentage of the Population Below the Poverty Level



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¹⁶ Sigma Works: “Central Massachusetts Oral Health Initiative Implementation Grant Evaluation Report (Sept. 2003-Aug. 2004)”, Finison, Lorenz, Ph.D., 2004.

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¹⁹ Source: Great Brook Valley Health Center.

²⁰ CMOHI Project Implementation Evaluation and Continuation Proposal to The Health Foundation of Central Massachusetts, August 15, 2004