Testimony of Mr. Greg Nycz
Executive Director, Family Health Center of Marshfield, Inc.
Before the Subcommittee on Primary Health and Aging,
Dental Crisis in America: The Need to Address Cost
Thursday, September 12, 2013 ❖ 10:00am
SD-430 of the Dirksen Building

Good morning Chairman Sanders, Ranking Member Burr, and distinguished members of the Subcommittee on Primary Health and Aging. My name is Greg Nycz and I want to thank you for the opportunity to testify today before the Subcommittee. I am the Executive Director of Family Health Center of Marshfield, Inc. a federally and state supported community health center. Our Center serves a 10,354 square mile rural area in Northern Wisconsin with 403,964 residents, 125,229 of which have incomes at or below 200% of poverty. I greatly appreciate the opportunity you've extended to me to share insights accumulated over the last 20 years working with organized dentistry and then building our own dental capacity in an effort to assist our state in resolving significant oral health access problems for many of our residents.

For most of the decade of the 1990's, I worked for change within organized dentistry in Wisconsin. The Wisconsin Dental Association, keenly aware of the access problems in the state's Medicaid program, convened a committee to explore ways to resolve access problems and enable more of our state's dentists to participate in the Medicaid program. They extended an invitation to me to serve on that committee as the only non-dentist in order to get the perspective of a community health center director. At the time, there was no lack of passion or commitment from the committee members. Wisconsin's Medicaid office staff were most helpful in streamlining some of the administrative impediments to greater dentist participation, and during the time of my tenure on the committee we were successful in obtaining an increase in state Medicaid rates. However, in spite of all these efforts, problems persisted and, following passage of the State Child Health Improvement Act and an annual stagnation in dental payment rates, access problems grew worse.

In September of 2001, shortly after the Surgeon General's report on the oral health of the nation, my board faced the prospect of continued deterioration in access to oral health services for our Medicaid and uninsured patients. They directed staff to prioritize solving the oral health access and disparity problems throughout our extensive rural service area. As staff set about the task of fixing the system, we studied the problems more closely, which eventually led us to a question. How do we solve a problem that is pervasive at the state and national level? From a health center perspective the answer to this question is one community at a time. So that is what we set about doing. Our state welcomed our involvement as did our major partner, Marshfield Clinic. An expanded state rural dental clinic grant program provided us with resources to build our first dental center in 2003.

Family Health Center has had a long-term partnership with Marshfield Clinic, relying on, rather than duplicating some of its core infrastructure. While Marshfield Clinic is a large regionalized health system with most specialties in medicine represented, they like many other health systems lacked any dental health professionals. Given their size, reputation, and our desire to promote

the integration of dentistry and medicine, Family Health Center approached Marshfield Clinic to partner with us on our dental initiative. We provided them with information on what amounted to a public health crisis in Wisconsin affecting many Clinic and Family Health Center patients, and suggested that together we could have a much larger impact on the problem throughout our collective service area than our organization could do on its own. Recognizing the scope of the problem, Marshfield Clinic leadership unanimously voted to lend its infrastructure and later additional funding in support of our initiative to reduce oral health disparities throughout the region. This Marshfield Clinic decision enabled the rapid expansion of our dental system which by October 1, 2013, will also include a 9th dental clinic on Ho-Chunk Nation land near Black River Falls, Wisconsin.

Because of state taxpayer investment in our program and also because of strong evidence that literally tens of thousands of Wisconsin residents were going to emergency rooms every year for treatment of non-traumatic dental pain, we committed to caring for patients with emergency dental conditions from across the state. Figure 1 demonstrates that from the provision of our first dental service in temporary facilities in November 2002 through June of 2013 we have cared for 95,535 unique patients. Strikingly, they have come from every one of Wisconsin's counties and from 73% of its zip code areas. We have treated patients from Wisconsin's largest cities who traveled, in some cases hundreds of miles, to get to a dental center in communities as small as Neillsville with a population of 2,443. Patient origin maps, like that of Figure 1, both illustrate the breadth and scope of the dental access problem in Wisconsin as well as provide us with information about communities in need. In essence, the underserved population's care seeking patterns inform us where we should consider placing our next dental center.

To illustrate this point, we observed that within the first 15 months of opening our Park Falls dental center, 1,000 patients had driven an estimated 412,000 miles to receive their dental care there from us. Many of these patients were traveling from the community of Rhinelander, which is 67 miles from Park Falls. We investigated this pattern with Rhinelander community leaders, including the mayor, and learned we were only seeing the tip of the iceberg as many people in need couldn't make the trip. A few years later we were able to open our 8th dental center in Rhinelander bringing quality dental services closer to many of our patients and offering an opportunity for dental care to many others who previously couldn't make the trip.

Our progress, and that of my health center colleagues in Wisconsin, has been spurred on by increased investment of state resources in the state rural dental clinic program, and through a doubling of our state's community health center grant. Our state grant focuses on supporting the mission of all of Wisconsin's 17 community health centers. This investment has paid huge dividends for state residents through greatly expanded access to dental care as shown in Figures 2 and 3, which mark the progress and growth of Wisconsin's community health center dental facilities, patients served, and patient visits.

The dramatic progress of Wisconsin's health centers in expanding oral health access to a growing number of Wisconsin residents is echoed in the steady progress health centers across the nation have made in both incorporating oral health services into their programming and increasing the proportion of their patients who receive oral health services. In 2011, 78% of community health centers offered dental services at at least one site. This compares to Healthy

People 2020's baseline of 75% from 2007 with a nationally established target of 83% by 2020. The number of patients receiving dental services at health centers grew from 1.4 million in 2001 to over 4.0 million in 2011, a 186% increase. Although this represented 20% of total health center patients, more work remains to be done to meet the national goal of 33.3% of such patients by 2020. There is robust evidence that health centers stand ready to do this work as reflected in the fact that more than 300 health centers applied for funding to meet identified unmet dental needs in 2011. Unfortunately, a last minute budget deal to keep the federal government running that year included a $600 million cut to planned health center funding. As a result, none of the 300 applications were funded. Since then, there have been no subsequent federal funding opportunities for dental expansion for health centers due to limited appropriations. Indeed, there have been no funding opportunities period for existing health centers to expand their services since the Recovery Act. While this was disappointing, our resolve is strong. The health center community is ready, willing and able to leverage investments from our states and Congress to meet state and national goals. Our integrative approach to health care can create offsetting savings by substituting quality dental services for more expensive emergency room and/or hospital based treatments that now result from current access barriers. As the rest of my testimony will demonstrate, our approach can also improve health and indeed, save lives.

As the preface to the Surgeon General's report stated "those who suffer the worst oral health are found among the poor of all ages with poor children and poor older Americans particularly vulnerable… Individuals who are medically compromised or who have disabilities are at greater risk for oral diseases and in turn oral diseases further jeopardize their health." Our early experience confirmed the wisdom of this statement. At our ribbon cutting for our second dental center I read a short email to those in attendance. The author of the email reported things were going well, that they were grateful there was a dental clinic that would take their residents, and they were working on arrangements to send us some more patients. What made this short email remarkable was that the author was making arrangements to send his developmentally disabled residents to our dental center, which was 183 miles away.

We quickly learned that accessing dental services for those with significant developmental or cognitive disabilities was even more difficult than the barriers faced by many low income uninsured or publicly insured residents. Understanding the difficulties many disabled residents face in obtaining oral health services in our state, we entered into a Memorandum of Agreement with our state that in essence said "we are open to and welcome the state's disabled population." Beginning with our second dental center, each dental center has been equipped with large treatment rooms and a wheelchair lift to help accommodate this high need population.

We learned other lessons that surprised us. Local county Veteran's Affairs officers informed us that low income vets uninsured for dental care had great difficulty accessing care. We learned that VA benefits extended to those who are 100% service disabled and that a state program provided some help, but many dentists did not participate in the program because of paperwork issues. We learned that one of the largest constituent complaints voiced to local legislative offices was the inability to get dental care, and we learned that many elderly were foregoing care because of its cost. When we build a dental center and open our doors, our local legislators report that the phones fall silent regarding complaints on access to dental care. Our vets, the

disabled, and the poor of all ages have a place to go. Access to dental care is no longer the issue it once was. The health center model leaves no one behind.

It is our belief that any organization that accepts federal or state taxpayer funds has a huge stewardship responsibility and a requirement to be accountable for the expenditure of funds. One of the ways we try to be accountable is to look for targets of opportunity to add value. To avoid increased emergency room use for non-traumatic oral pain, we work in many emergency patients from all over the state on a daily basis at all of our dental centers. We also believe one of the best services we can provide to our state is to assist our patients in leaving the Medicaid program altogether through job attainment or job promotion. To achieve this goal we accept referrals of job seekers from job placement agencies. Many individuals being retrained for predominantly service sector jobs have a difficult time getting hired or promoted if they have significant oral health problems. We eagerly accept such referrals in the hope that we increase such individuals' opportunities to achieve gainful employment or promotion and leave Medicaid in favor of private employment based insurance. In addition we have historically prioritized low income pregnant women. The reason for this is evidence that periodontal disease may contribute to poorer birth outcomes. While the scientific community is still debating this topic, for the sake of these unborn children, we prefer to do everything possible that might help lead to a better birth outcome.

We have made demonstrable progress. As Figure 4 shows, while Wisconsin was second to last in 2008 among all states in children on Medicaid who received a dental service, the three counties with our dental centers had access rates equivalent to those in the nation's top performing states. Unfortunately we are far from declaring victory. Our accountabilities to our supporters, including taxpayers and the communities we serve, demand that we do more to generate societal savings to help offset the cost of dental care to those who previously went without that care. What are our options to do better?

There is a tremendous prevention potential in dentistry. We believe there is also a tremendous potential to improve health and reduce costs overall if we can bridge the chasm that exists between medicine and dentistry. We believe the bridge is through closer integration of medicine and dentistry using 21st century technology that can support virtual teaming between our health professionals and their staffs, and through practice changes that reinforce shared professional interests in patients and their health. We have begun acting on these beliefs and received support from like-minded partners. To this end I wish to acknowledge the significant support we have received from Delta Dental of Wisconsin in helping us create an integrated medical/dental electronic record to provide a platform to allow virtual teaming on patients. Delta Dental of Wisconsin has also provided support for oral health research and education initiatives at Marshfield Clinic's Education and Research Divisions. I also wish to acknowledge the DentaQuest Foundation for their support in helping us learn about best practices for engaging our patients with diabetes and encouraging them to seek regular dental care.

We have come to the conclusion that to get to a preferred future we have to fundamentally change how we view dentistry within the larger health care system. To illustrate this point, let's consider a series of questions involving dermatology, a specialty that deals with problems of the skin:

> Why do we think we can afford adult dermatology in our Nation's Medicaid program but not adult dental? Why is it that we don't have separate dermatology insurance like we do for dental insurance? Why is it that we include dermatological care in our medical records but not dental care? Why do most medical care systems, many who tout most if not all medical specialties, exclude dentistry? Why do medical schools teach our future physicians to be concerned about infections anywhere in the body but the oral cavity? Why in Wisconsin, in spite of very low payment rates to physicians and dentists, do most physicians continue to treat Medicaid patients while most dentists do not?

Other policy oriented examples are the exclusion of dental benefits in Medicare and the limitations on dental benefits in the VA. A more recent example is the promotion of "primary care medical homes" a terminology that excludes dental. Why not "primary care health homes" which is a much more inclusive concept? (Incidentally, most federally-qualified health centers would rightly consider themselves to be integrated primary care health homes). The separate and stark contrast between dentistry and medicine beginning with training and continuing through insurance and practice policies should increasingly be questioned in light of a growing body of scientific evidence linking oral and systemic health.[1]

Everyone is united in wanting our country to derive even more value from our health care system, with better quality at a lower price point. If that is the case then why is there such reluctance to act? We can debate whether we can afford to have dental benefits covered under our Medicare program or whether all states should offer dental benefits to adults in their Medicaid programs. But if cost is the central issue holding us back, if cost is the driver in much of our decision-making, why don't we act to lower costs when an evidence base outlining how it could be done exits? Consider the following. As a nation we fund medical research through the National Institutes of Health. That societal investment has helped us understand that connections exist between diabetes and periodontal disease and to treat one without treating the other does have health and cost consequences. (Please refer to Attachment 1 for a concise summary of some evidence regarding periodontal disease and diabetes.) The value of our investment in research to our nation's taxpayers is magnified when we put the results of that research into practice.

The private sector has responded and is attempting to leverage this knowledge: the public sector should as well. What seems to have driven the private sector to act was the emerging evidence, mostly from the past 10 years, that individuals with selected chronic health conditions or combinations of them benefit from improved oral health, specifically improved periodontal status, and that potentially large reductions in medical care costs associated with their chronic condition(s) follow closely and appear to be sustainable as long as good oral health is maintained. The emerging evidence appears strongest for individuals with diabetes (only) or in combination with cardiovascular disease, kidney disease or congestive heart failure. Savings of approximately 10 percent annually for individuals with diabetes receiving periodontal care were reported in a multi-year Michigan Blue Cross Blue Shield study. That study also found annual medical cost reductions ranging from 20-40 percent for individuals with diabetes and at least one other chronic condition previously noted.[2]

A 2006-2008 CIGNA study of 46,094 individuals with diabetes estimated annual medical cost savings of $2,483/person (23%) in year 3 for those who received dental care. Notably, study results suggested increasing annual cost savings as a function of continuing better oral health among those individuals with diabetes that received periodontal care at baseline (2006) and continued maintenance oral health care annually compared to those individuals that did neither.[3]

United Concordia and Highmark, Inc. reported average medical care cost savings of $1,814 per year over 3 years for individuals with diabetes who sought periodontal treatment and subsequent regular dental care during the 2007-2009 study compared to individuals with diabetes who did not receive dental care during the study period. Another important study result was additional estimated cost savings of $1,477 per person per year among individuals with diabetes after they completed 7 periodontal treatments and/or oral health maintenance visits. In subsequent analyses that examined the relationships between gum disease and other medical conditions, annual medical cost savings from reduced hospitalization and office visits associated with periodontal treatment were found for heart disease ($2,956), cerebrovascular disease ($1,029), rheumatoid arthritis ($3,964) and pregnancy ($2,430).[4]

A recent study in an HMO population provides further insight into the potential sources of savings associated with better oral health status among individuals with diabetes. Diabetes-specific hospital emergency department visits rates were more than 60% higher (16.2% vs. 10.1%) and diabetes-related hospitalization rates were more than 75% higher (14.8% vs 8.3%) among individuals with diabetes who did not seek dental care compared to individuals that had 2 or more periodontal or prophylactic treatments annually for 3 years.[5]

There is clear evidence that health insurers are ramping up their oral health programs that many established in 2005-2007. Several major insurers have announced expanded oral health-related programs for their insureds that are pregnant and those with kidney disease, cerebrovascular (stroke) conditions, head and neck cancer and organ transplants.[6] Leading health insurers seem to have concluded that supporting and even incenting better oral health access and care is good business. It should be so for our publicly supported programs as well. The taxpayers of this country should demand it.

I urge the Subcommittee to consider following the lead of these insurers by capitalizing on our nation's investment in the National Institutes of Health, and institute policy changes that would enable Medicare and Medicaid enrollees with such chronic conditions to access appropriate high quality oral health treatments.

Another key point for the Subcommittee to consider is that it is not enough to simply establish coverage or even more dental clinics, as many low income Americans do not seek dental care until they have oral pain. While addressing pain and suffering is meritorious in its own right, avoiding that pain and suffering and more expensive treatment interventions is our goal. The undervaluing of oral health in America is, from our perspective, one of the greatest health literacy challenges we have. Our health center is involved in a generational effort to address health literacy issues that shape the current practice among many high-risk, low-income populations. A major initiative is needed to help convince our residents of the importance of oral health to general health and of the importance of regular dental checkups in maintaining good

oral health. Developing more reliable and internally consistent estimates of population access to oral health services should be considered part of that effort. I make this point because it appears that the proportion of children, adolescents and adults who use the oral health care system in the past year is actually well below what many people believe. The percent of residents aged 2 and older who received a dental service in 2007 is estimated by Healthy People 2020 to be 44.5%. Our national goal for 2020 is 49%. However, widely cited estimates based on health interview survey data using self-reported information is in the range of 20 percentage points higher. Although such widely diverse estimates cannot be reconciled without further work, I note that the higher estimate is based on self-report data that requires recall on long past events making such estimates generally less reliable than those based on observed expenditures. I urge the Subcommittee to explore this information further as it has significant implications for dental workforce projections, as well as understating the need to integrate medicine and dentistry to help address the oral health literacy issue.

We must strive for a future where people better understand the importance of daily oral hygiene, proper nutrition, and regular dental checkups not just to their oral health but to their overall health as well. We believe success in this effort is tied to convincing our medical colleagues to help educate their patients on the importance of good oral health care and regular dental checkups. This is made more difficult by the fact that our nation's medical schools by and large pay little attention to the oral cavity in medical student training. This is evidenced by the response to 2012 survey question by the AAMC of our nation's graduating medical students on, "How well do you feel that your medical school has trained you to address oral/dental health topics?" Apparently, students were underwhelmed as 32.4% of the nation's graduates checked "not well trained at all" and only 1.3% checked "very well trained." Our vision for the future is that our physician community treat the importance of regular oral health checkups on a par with their counseling of patients on the need to be immunized, receive clinical preventive services, exercise, and eat right. In addition to the virtual teaming I mentioned earlier, our dental teams should be aided by an integrated electronic medical record, to engage patients on the importance of receiving clinical preventive services in medicine. Currently we do blood pressure checks and non-fasting blood sugars under protocols in our dental centers. These efforts can have a direct impact on morbidity and even mortality in our patients as evidenced by a recent message one of our hygienists received from a dental patient:

"You know I thought that it seemed dumb that you would take blood pressure at the dentist office until I had a friend of mine come here and you guys took his blood pressure in hygiene and wouldn't even see him. You sent him right over to the emergency room. Good thing you did, they took him into emergency surgery. I guess they said he was ready to pop."

We should expect this type of coordination in our health care system. Additional examples of teaming across medicine and dentistry are provided in Attachment 2.

I'd like to conclude my testimony by sharing some observations regarding dental workforce and dental education issues. Early on, we recognized that to be successful in our dental initiative we could not ignore workforce and dental education issues that might confound our progress. Figure 5 indicates that given current rates of dental school production, the age distribution of dentists in Wisconsin portends a shortage of dentists. Over the next 20 years, 2.2 dentists are

likely to retire for each new dentist entering practice. As if this is not bad enough, two factors may further aggravate the situation for northern rural communities. First, there currently exists a marked preference of dentists to locate in suburban or urban areas of our state relative to the less populated communities. Second, retiring dentists are predominantly male, while new graduates are gender balanced and female dentists in Wisconsin have shown an even more marked preference for suburban or urban practices. Rural Wisconsin loses on both of these. We are hoping to meet this challenge by establishing, in partnership with Marshfield Clinic, a dental residency program and by providing dedicated space within our dental facilities for dental students.

As we continue to grow our dental system to enlist nearly 50 dentists in this work by years end, we can reflect on the opportunity we have had to hire dentists trained in over a dozen dental schools across the country. Most dental schools are urban-based and specialty oriented. Most provide students with less exposure than we would like to treating developmentally disabled patients and young children. Nationally, as I speak with my health center colleagues, not enough graduates are interested in careers in the safety-net. Ed O'Neil, Director, UCSF, Center for the Health Professions, Center on Recommendations for Reform (3/7/07) said it best:

> "For instance, in many specific locations the nation is experiencing a raging epidemic of pediatric dental disease. In face of this reality, does it make sense to prepare more young men and women with the skills to serve the bungalow-based smile clinics that serve the suburbs? Instead, shouldn't we align the training with the needs of community clinics to organize and deliver a broad range of preventative and therapeutic services to the population that is experiencing the epidemic?"

As a nation we should not lose sight of the importance of oral health to general health, and the importance of oral health in its own right. What some of us take for granted is currently beyond the reach of many. Discussions I have had with many well educated people on the problems lower income people face obtaining dental care usually result in surprise. They didn't know. There is a reason the Surgeon General referred to this problem as a "silent epidemic."

I thank the Subcommittee for this opportunity for me to share what we've learned and most importantly for taking up this subject, it may still be an epidemic but let it be silent no longer.

Figure 1

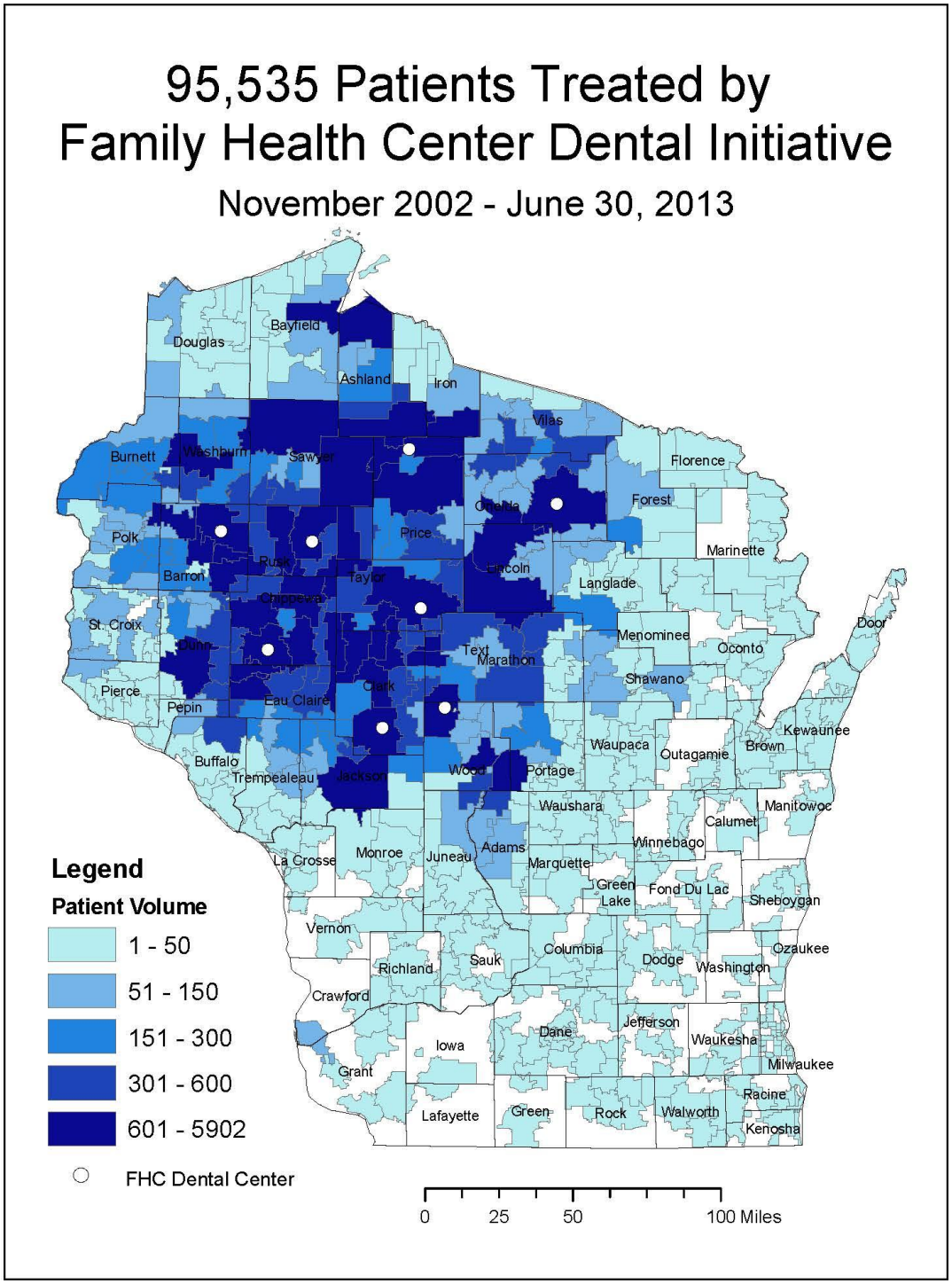

95,535 Patients Treated by
Family Health Center Dental Initiative
November 2002 - June 30, 2013
Bayfield
Douglas
Ashland
Iron
Vilas
Florence
Burnett
Washburn
Sawyer
Forest
Oneida
Price
Polk
Marinette
Rusk
Barron
Taylor
Lincoln
Langlade
Chippewa
St. Croix
Door
Menominee
Oconto
Dunn
Text
Marathon
Shawano
Pierce
Clark
Pepin
Eau Claire
Kewaunee
Waupaca
Brown
Outagamie
Buffalo
Trempealeau
Jackson
Wood
Portage
Waushara
Manitowoc
Calumet
Winnebago
Adams
La Crosse
Monroe
Juneau
Marquette
Green Lake
Fond Du Lac
Sheboygan
Vernon
Columbia
Ozaukee
Sauk
Dodge
Washington
Richland
Crawford
Jefferson
Dane
Waukesha
Iowa
Milwaukee
Grant
Racine
Lafayette
Green
Rock
Walworth
Kenosha
Legend
Patient Volume
1 - 50
51 - 150
151 - 300
301 - 600
601 - 5902
FHC Dental Center
0
25
50
100 Miles

Figure 2

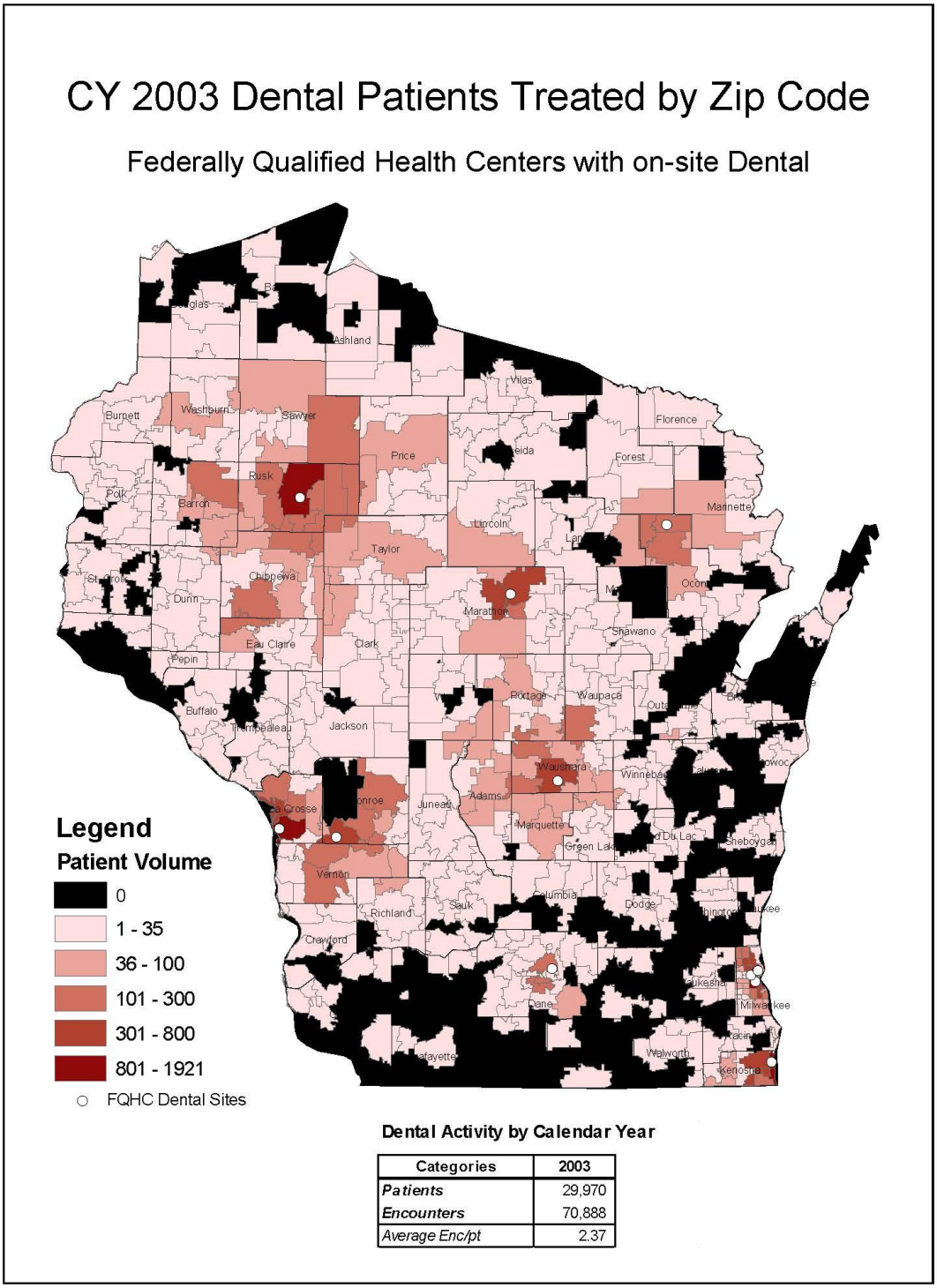
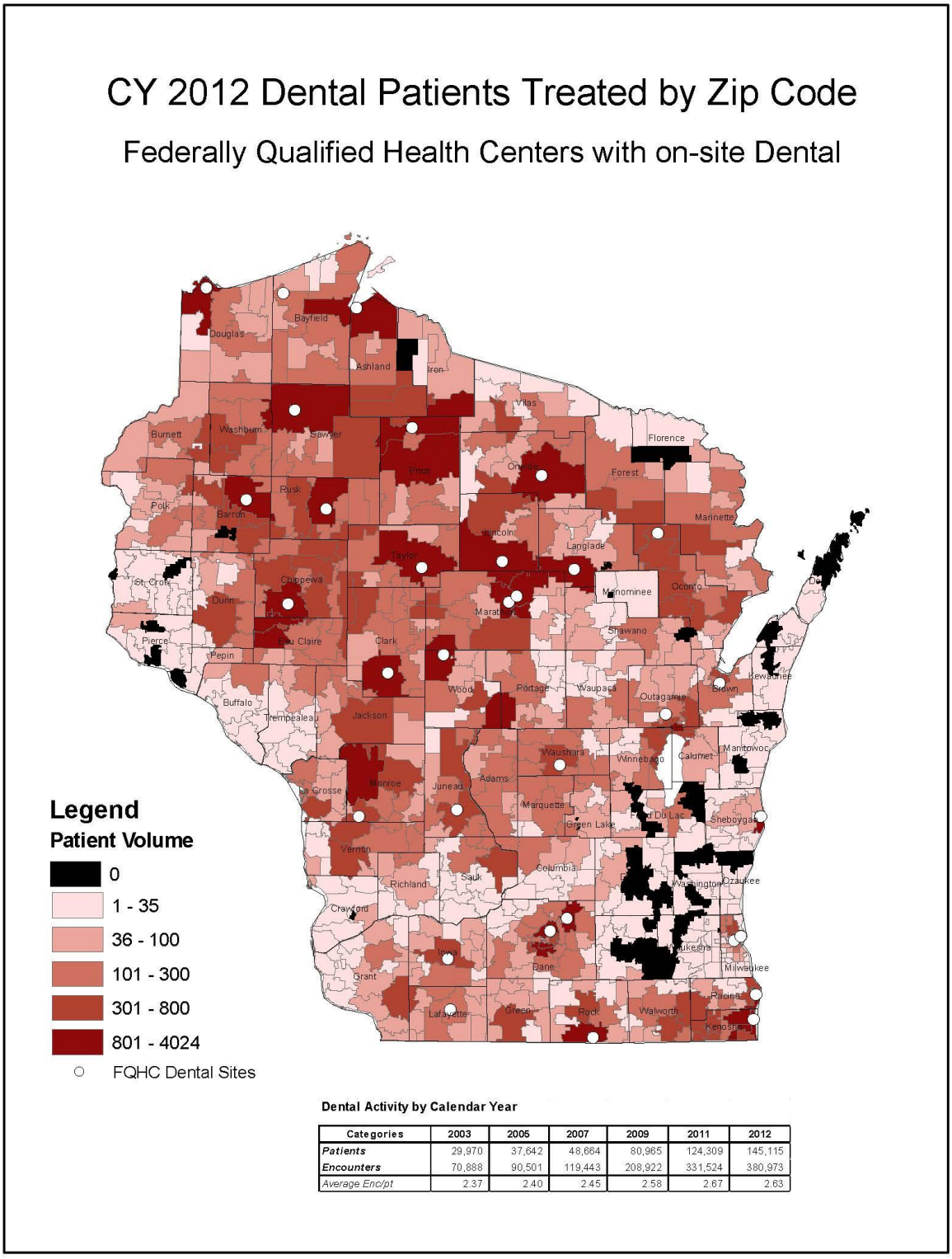

CY 2003 Dental Patients Treated by Zip Code
Federally Qualified Health Centers with on-site Dental
Legend
Patient Volume
0
1 - 35
36 - 100
101 - 300
301 - 800
801 - 1921
FQHC Dental Sites
Dental Activity by Calendar Year
Categories
2003
Patients
29,970
Encounters
70,888
Average Enc/pt
2.37

Figure 3



Categories	2003	2005	2007	2009	2011	2012
Patients	29,970	37,642	48,664	80,965	124,309	145,115
Encounters	70,888	90,501	119,443	208,922	331,524	380,973
Average Enc/pt	2.37	2.40	2.45	2.58	2.67	2.63

Figure 4

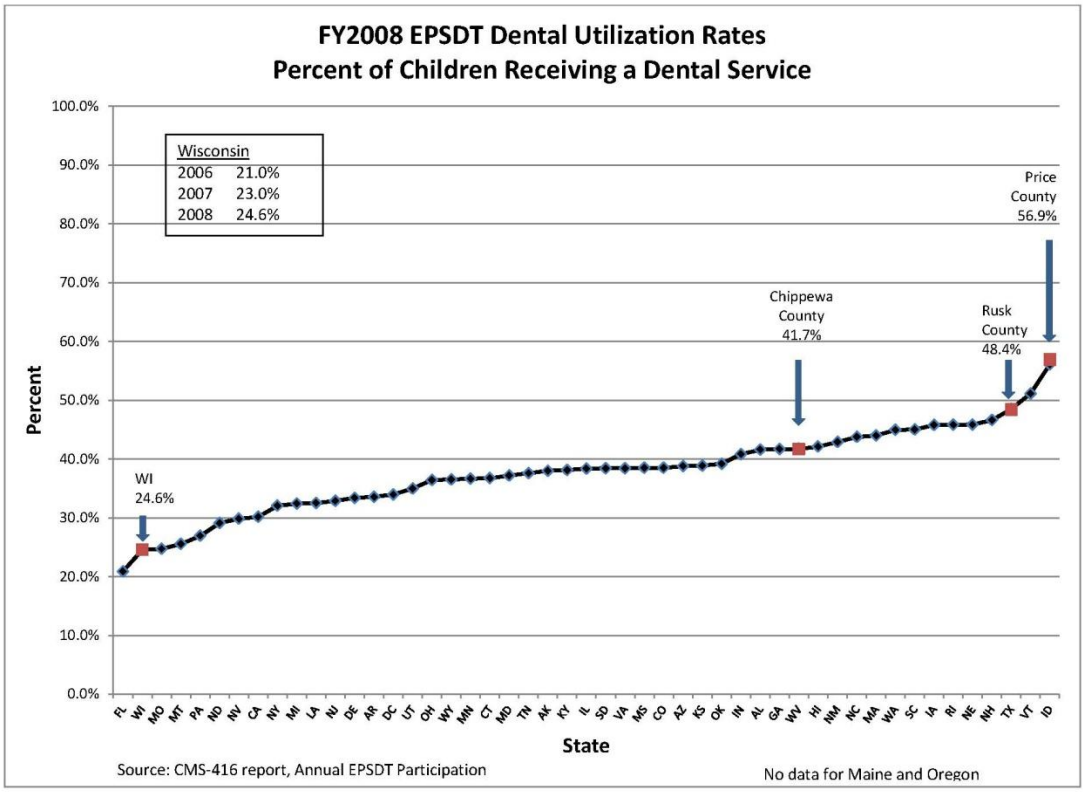
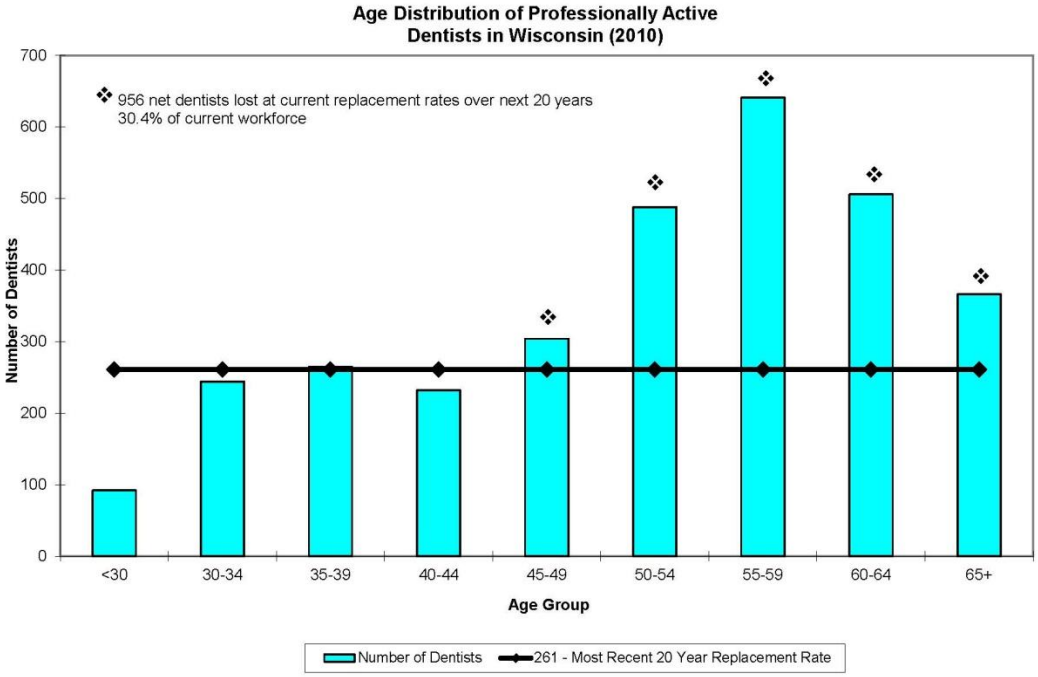

FY2008 EPSDT Dental Utilization Rates
Percent of Children Receiving a Dental Service
Wisconsin
2006 21.0%
2007 23.0%
2008 24.6%
Price County 56.9%
Chippewa County 41.7%
Rusk County 48.4%
WI 24.6%
Percent
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
FL WI MO MT PA ND NV CA NY MI LA NJ DE AR DC UT OH WY MN CT MD TN AK KY IL SD VA MS CO AZ KS OK IN AL GA WV HI NM NC MA WA SC IA RI NE NH TX VT ID
State
Source: CMS-416 report, Annual EPSDT Participation
No data for Maine and Oregon

Figure 5



Supply and Demand for Dental Services: Wisconsin 2010-2020, Report to the Wisconsin Dental Association, January 2010, Page 48

[1]Powell V, Din F, Acharya A, et al, Project on Clinical Data Integration Page 20, Contact points between medical and dental care/research – Version J: Categories (1-29) and references)
[2] http://www.bcbsm.com/pr/pr_08-27-2009_71090.shtml
[3]Jeffcoat M, et al. CIGNA, Does Treatment of Oral Disease Reduce the Costs of Medical Care? Medscape Today. October 19, 2011. On-line: http://www.medscape.com/viewarticle/751609
[4]https://secure.ucci.com/ducdws/dental.xhtml?content=dhc-conditions&s1=ucwellness-oral-health-study&s2=results-ucwellness-oral-health-study
[5]Mosen D, Pihlstrom D, Snyder J, Shuster E. Assessing the association between receipt of dental care, diabetes control measures and health care utilization. *JADA* January 2012 143(1): 20-30
[6]http://newsroom.cigna.com/article_display.cfm?article_id=1287

Supplement to Testimony by Greg Nycz

Attachment 1: A Brief Summary of the Evidence Base for Intervention to Improve Oral Health Among Individuals with Diabetes

Diabetes as a Pandemic Threat to Oral Health

Physiology does not respect the disciplinary divide that separates the medical from the dental care of the diabetic patient. Diabetes (DM) is a pandemic in the United States: in many counties, over 10% of people over 20 years old are affected. [1] The disease is accompanied by wide-ranging health consequences that worsen if it is poorly controlled. To use the legal vernacular, it is established beyond a reasonable doubt that DM has a deleterious effect on periodontal disease (PD) and the evidence is mounting on the impact of periodontal health on diabetic control [2]. The evidence supporting a link between PD and DM is so strong that PD has been classified as the 6th complication of diabetes [3]. DM now affects nearly 26 million Americans and over the next decade, an estimated 40 million more adults could develop the condition, and its complications are expensive. Absent changes, the surge in new cases could add an estimated $512 billion to annual health care spending by 2021…" [4]. In spite of this knowledge, only 55.6% of the US population aged 2 years and older with diagnosed diabetes had been to the dentist in the past year [5]. Moreover, severe disparities exist in dental access based on income, insurance status, educational attainment and race.

Comprehensive Description of the Model and Supporting Evidence Base

The Institute of Medicine (IOM), National Academy of Sciences, released a report, "Dental Education at the Crossroads: Challenges and Change," in January 1995, calling for greater collaboration between medicine and dentistry. The report said closer integration was needed between dentistry and medicine on all levels of the health care system: research, education and patient care. In 2000 Surgeon General David Satcher's report entitled "Oral Health in America" was released. The report focused attention on a national problem which had gone largely unrecognized for decades: the oral health crisis. Dr. Satcher emphasized that oral health does not only encompass teeth. He underlined the importance of recognizing the integration between oral and systemic health and the profound mutual impact that one has on the other, stating that one cannot have systemic health in the absence of oral health. To emphasize this point, he summarized the existing evidence that points to important links between oral disease, such as PD, and systemic diseases such as DM, heart disease and stroke, respiratory health and fetal health (miscarriage and stillbirth). The Surgeon General further exposed disproportionate access to dental health care encountered by disparity-prone populations including low income individuals, those with no insurance, children, the elderly, handicapped and institutionalized patients who experience what he dubbed the "silent epidemic" when referencing the high rate of oral disease prevalent among these populations.

The report revealed how a struggling and stagnated dental industry that was experiencing workforce shortages exacerbated the problem by denying access to vulnerable populations without the ability to pay for, or access services. His report revealed how, in addition to the systemic ramifications of poor oral health, far reaching consequences were inflicted on those with limited or no access, including high social and economic cost to the individual, negative impact on quality of life and the burden this also placed on society. Importantly, the Surgeon General emphasized that this trend was reversible and preventable and pointed to the importance of bringing education and research to bear on the problem as actionable ways to advance oral-systemic health. Dr. Satcher called for further investigations into oral-systemic health connections, health disparity research, community based, public health and behavioral health initiatives, health services research, and an expansion in diagnostic and treatment options which would emphasize proactive disease prevention. His report emphasized that for three decades improvement in oral health had been a focus area of US Department of Health and Human Service's Healthy People initiative and that solving the problem would require a concerted effort between the health care industry including

professionals and health care entities, academia, the government, health insurers and patients. Notably, thirteen years later, oral health remains a priority focus in Healthy People 2020, with many objectives remaining to be achieved [6].

A chasm currently exists between our perceptions, financing, and delivery of oral health services and general medical services. It persists despite mounting evidence that it should not. Yet today, proportionately fewer of us annually access oral health services than medical services. Our oral health record for some of our most vulnerable citizens is abysmal. The elderly, where chronic disease is more prevalent, have the lowest rate of dental insurance of any age group [7]. Poor children on Medicaid/CHIP have public dental insurance, but low reimbursement rates and other problems have left most without annual oral health services. Poor adults have even less coverage and access.

This trail leads to an important question, "If the future is medical homes and ACOs, where is oral health in that calculus? Why isn't it more prominent when evidence exists to support its inclusion in these new models/systems."

Brief Summary of the Evidence Base

PD is a broad term encompassing a complex disease initiated by a variety of pathogens, largely anaerobic bacteria which establish a niche in dental plaque that they lay down to protect themselves from exposure to oxygen. The disease is not a single entity and may, or may not exhibit a familial pattern of inheritance. PD may range from its mildest manifestation, gingivitis, a self-limited condition, to severe periodontal disease that is associated with pain, gum erosion, loosening of teeth (attachment loss) and bone loss below the affected tooth and eventually, if untreated, loss of the tooth. PD may be acute and resolve with appropriate treatment (scaling and root planing, sometimes supplemented by antibiotic therapy, and proper oral hygiene) or in a subset of patients, establish chronicity and refractoriness to treatment. PD is a highly prevalent condition among adults in the US with an estimated 40% prevalence rate of moderate to severe disease [8]. Research examining exacerbation of systemic disease in the presence of oral disease and vice versa has produced substantive evidence that such connections are real [9,10]. Much research in the past two decades has explored the validity of the 'focal infection theory' that promotes the possibility that organisms present at a focal infection site or their products may gain systemic access and become associated with promulgating other disease processes. PD represents such a focal infection and risks for systemic manifestations increase with establishment of chronicity. Of importance here is that with proper hygiene and regular dental care and education, this disease is largely preventable and its prevention and control could exert considerable far reaching impact on promoting systemic health at multiple levels.

An extensive evidence base exists to support the reintegration of the mouth into the body for everyone [11]. The impact of DM on PD was recognized nearly 50 years ago [12]; Moreover, mounting evidence substantively supports mutual bidirectional exacerbation of these two conditions [13,14,15]. In a systematic review of 48 studies undertaken since 1960's, 44 studies reported increased prevalence, extent, severity or progression of PD in patients with DM [16]. Interestingly, the observation by two independent studies in 1989 [17,18] reported that infectious processes can establish insulin resistance in non-diabetics that can persist for 3 months following resolution of the infectious process, promoted the concept that PD also contributes to diabetic status. Notably, PD is also a risk factor for stimulating diabetes-associated complications [19,20,21]. Adjusted for other risk factors, mortality risks related to ischemic heart disease and diabetic nephropathy were 2.3 and 8.5 times higher, respectively, for individuals with DM and severe PD compared to those with no PD; overall mortality risk from cardio-renal pathology was 3.5 times higher for those with DM and PD compared to subjects with no PD [20].

The mechanism underlying this bacterial impact on glycemic control is attributed to dysregulation of insulin-mediated glucose uptake at the skeletal muscle level, inducing a state of systemic insulin resistance [22] Studies among Pima Indians with a high rate of DM [23] and in a population of Japanese patients with DM [24] strongly suggest that DM is a risk factor for PD, likely due to increased susceptibility of diabetic patients to infectious processes due to compromised immunocompetence related

to irreversible formation of advanced glycation end products. Proteins mediating immunological functions become compromised due to non-enzymatically mediated glycation and multiple pathological mechanisms converge to induce what manifests as a heightened chronic proinflammatory state that simultaneously exacerbates both the DM and PD pathophysiological processes [22,25,26]. Chronic systemic micro-inflammatory processes have been implicated as a common factor underlying both DM and PD, driving chronicity, progression and mutual exacerbation of these conditions in the absence of intervention. Importantly, micro-inflammatory processes which contribute to disease chronicity appear to be *modifiable* risk factors responsive to PD treatment and regular dental care as well as more advanced therapeutic regimes [27].

Poor glycemic control is an important factor in PD progression and severity [28, 29]. Notably, outcomes of four recent systematic reviews and meta-analyses support the position that glycemic control improves periodontal health, and, conversely, improvement in periodontal health impacts positively on glycemic control [30, 31, 32, 33, 34]. Collectively, these results strongly support potential for simultaneous stemming of epidemic prevalence of both PD and DM through cross disciplinary efforts that systematically target glycemic control and good oral care. Promoting interdisciplinary care processes is pivotal: studies evaluating dentists' understanding of DM- PD bi-directional relationship showed that ≤60% promoted this with patients; physician awareness of PD/DM complications was low [34]. Strikingly, interactions between dentists and physicians on oral-systemic patient management were measured at <15% in a 2006 US study [35].

References

1. Centers for Disease Control and Prevention. National Diabetes Surveillance System. 2009 [cited 2013 April 02]; Available from: http://apps.nccd.cdc.gov/DDTSTRS/default.aspx.
2. Taylor, G.W. and W.S. Borgnakke, Periodontal disease: associations with diabetes, glycemic control and complications. Oral Dis, 2008. 14(3): p. 191-203.
3. Loe H. 1993. Periodontal disease. The sixth complication of diabetes mellitus. Diab Care 16:329–34.
4. Vojta D, De Sa J, Prospect T, Stevens S, Effective Interventions for Stemming the Growing Crisis of Diabetes and Prediabetes: A National Payer's Perspective. Health Affairs, 31, No 1 (2012): 20-26.
5. Healthy People 2020, Summary of Objectives, Diabetes, D-8, Annual dental examinations
6. Koh, H. 2010. A 2020 vision for Healthy People. NEJM 362: 1653-56.
7. MEPS Chartbook No.17, Dental Use, Expenses, Dental Coverage, and Changes, 1996 and 2004, AHRQ, DHHS.
8. Fuster V, Badimon L, Badimon JJ 1992. The pathogenesis of coronary artery disease and the acute coronary syndromes NEJM 326: 242-50.
9. Kim J and Amar S. 2006 Periodontal disease and systemic conditions: a bidirectional relationship. Odontol 94: 10-21.
10. Pizzo G, Guiglia R, Lo Russo L, Campisi G. 2010. Dentistry and internal medicine: from the focal infection theory to the periodontal medicine concept. Eur J Internal Med 21: 496-502.
11. Powell V, Din F, Acharya A, et al, Project on Clinical Data Integration Page 20, Contact points between medical and dental care/research – Version J: Categories (1-29) and references.
12. Belting SM, Hiniker JJ, Dummett CO. Influence of diabetes mellitus on severity of periodontal disease. J Periodontol 1964 35:476-480.
13. Mealey BL, Rose LF. Diabetes mellitus and inflammatory periodontal diseases. Curr Opin Endocrinol Diabetes Obes. 2008;15:135-141.
14. Taylor GW, Borgnakke WS. Periodontal disease: associations with diabetes, glycemic control and complications. Oral Dis. 2008;14:191-203.

15. Nagasawa T, Noda M, Katagiri S, Takaichi M, Takahashi Y, Wara-Aswapati N, Kobayashi H, Ohara S, Kawaguchi Y, Tagami T, Furuichi Y, Izumi Y. Relationship between periodontitis and diabetes - importance of a clinical study to prove the vicious cycle. Intern Med. 2010;49:881-885.
16. Taylor GW, Burt BA, Becker MP, Genco RJ, SChlossman M, Knowler WC. 2001 Severe periodontitis and risk for poor glycemic control in patients with non-insulin dependent diabetes mellitus. J Periodontol 67: 1085-93.
17. Sammalkorpi K. 1989. Glucose intolerance in acute infections. J Int Med 225: 15-19
18. Yki-Jarvinen H, Sammalkorpi K, Koivisto VA, Nikkila EA. 1989 Severity, duration and mechanisms of insulin resistance during acute infections. J Clin Endocrinol Metab 69: 317-323.
19. Jepsen S, Kebschull M, Deschner J. Relationship between periodontitis and systemic diseases. Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz. 2011;54:1089-1096.
20. Saremi A, Nelson RG, Tulloch-Reid M, et al. Periodontal disease and mortality in type 2 diabetes. Diabetes Care 2005;28:27-32.
21. Shultis WA, Weil EJ, Looker HC, Curtis JM, Shlossman M, Genco RJ, Knowler WC, Nelson RG. Effect of periodontitis on overt nerphropathy and end-stage renal disease in type 2 diabetes. Diabetes Care. 2007 30: 306-311.
22. Grossi SG, Genco RJ. 1998. Periodontal disease and diabetes mellitus: a two way relationship.3: 51-61.
23. Nelson RG, Shlossman M, Budding LM, Pettitt DJ, Saad MF, Genco RJ, Knowler WC. 1990 Periodontal disease and NIDDM in Pima Indians Diabetes Care. 13: 836-40.
24. Nishimura F, Kono T, Fujimoto C, Iwamoto Y, Murayama Y. 2000. Negative effects of chronic inflammatory periodontal disease on diabetes mellitus. J Int Acad Periodontol. 2: 49-55.
25. Genco, R.J., Glurich, I., Haraszthy, V.,Zambon, J., DeNardin, E. 1998. Overview of Risk Factors for Periodontal Disease and Implications for Diabetes and Cardiovascular Disease. Compendium of Continuing Education in Dentistry (Symposium Proceedings) 19: 40-4.
26. Collin, HL, Uusitupa M, Nisanen L, Kontturi-Narhi V, Markkanen H, Koivisto AM. 1998, Periodontal findings in elderly patients with non-insulin dependent diabetes mellitus. J Periodontol 69: 962-66.
27. Lalla E and Papapanou PN. Diabetes mellitus and periodontitis: a tale of two interrelated diseases. Nat Rev Endocrinol 2011 Jun 28 Epub ahead of print.
28. Weidlich P, Cimões R, Pannuti CM, Oppermann RV. Association between periodontal diseases and systemic diseases. Braz Oral Res. 2008;22 Suppl 1:32-43.
29. Chávarry NG, Vettore MV, Sansone C, Sheiham A. The relationship between diabetes mellitus and destructive periodontal disease: a meta-analysis. Oral Health Prev Dent. 2009;7:107-127.
30. Darré L, Vergnes JN, Gourdy P, Sixou M. Efficacy of periodontal treatment on glycaemic control in diabetic patients: A meta-analysis of interventional studies. Diabetes Metab. 2008;34:497-506.
31. Janket SJ, Wightman A, Baird AE, Van Dyke TE, Jones JA. Does periodontal treatment improve glycemic control in diabetic patients? A meta-analysis of intervention studies. J Dent Res. 2005;84:1154-1159.
32. Simpson TC, Needleman I, Wild SH, Moles DR, Mills EJ. Treatment of periodontal disease for glycaemic control in people with diabetes. Cochrane Database Syst Rev. 2010:CD004714.
33. Teeuw WJ, Gerdes VE, Loos BG. Effect of periodontal treatment on glycemic control of diabetic patients: a systematic review and meta-analysis. Diabetes Care. 2010;33:421-427.
34. Al-Khabbaz AK, Al-Shammari KF, Al-Saleh NA. Knowledge About the Association Between Periodontal Diseases and Diabetes Mellitus: Contrasting Dentists and Physicians. J Periodontol. 2011;82:360-366.
35. Kunzel C Lalla E Lamster IB. Management of the patient who smokes and the diabetic patient in the dental office. J Periodontol 2006 77: 331-340.

Supplement to Testimony by Greg Nycz

Attachment 2: Examples of the value to patients of better coordination between medicine and dentistry

Case example: A Family Health Center patient living in Clark County was referred to the Ladysmith Dental Center by his Marshfield Clinic Oncologist. His cancer treatments were negatively impacting on his oral health status, and as a result he began losing weight. The patient was initially scheduled for an emergency visit and follow-up dental care. All of his teeth needed to be extracted and he was fitted for dentures. To date, the patient has improved oral health and has gained 10 pounds.

Case example: An elderly woman on Medicare presented at our Ladysmith Dental Center with severe diabetes, which was not controlled well due to the condition of her teeth. She had driven over four hours one way to get to our clinic. She had only a few teeth, which had to be extracted. Over several visits we were able to provide her with dentures and in a subsequent visit she reported that she is now eating better and has her diabetes under better control.

Case example: Another diabetic patient presented at our Ladysmith Dental Center. The patient was jaundiced and very ill and had a large lesion on his leg for the past four years that would not heal. He also had severe oral health disease. Following a full mouth extraction and dentures, this patient has been back for routine care. He reports his blood glucoses are under control, he has good skin color, his skin lesion is healed and he is very happy.

Case example: A 20-year-old female with no income presented as unemployed and depressed with very poor oral health. We provided extractions and dentures. She now has an improved self image and a job.

Case example: A patient presented at our Ladysmith Dental Center as an emergency. She was in high school at the time of her first visit and she qualified for a full discount under our sliding-fee program. Due to the extensive dental care needed and her family's inability to afford that care, she was not able to find a dentist that would see her. Her extensive dental care included root canals, crowns, and major fillings in the majority of her top teeth. To date, the cost of her care exceeds $5,000. She is now an established patient with the dental center and the majority of the work was completed in time for her senior picture.

Case example: A teenage child with spina bifida presented to clinic to establish care with a new pediatrician. The examination revealed multiple severe dental caries requiring extraction and repair. This child had just been hospitalized for many months to repair and heal her third sacral decubitus. Pediatrician requested prompt dental treatment to decrease the potential for additional infections that could jeopardize skin integrity. Pediatric care coordinator and special needs dental coordinator worked together to arrange dental treatment under anesthesia with appropriate skin pressure relief measures in place to prevent possible skin breakdown. Dental health was achieved, skin integrity was maintained and potential for additional infections due to decay and gum disease reduced. This child also had improved self-esteem and improved social interactions with peers.

Case example: A teenage patient with special needs presented to the pediatrician for a well-check. Patient has profound cognitive impairment, no speech, aggressive behavior and is completely uncooperative with examinations. Patient had previously received dental care and treatment under anesthesia and was in need of a dental exam with cleaning again. Pediatrician requested additional specialty care examinations and procedures be done in conjunction with the scheduled dental service. Pediatric care coordinator and special needs dental coordinator were able to arrange eye exam, gynecological exam, ENT exam, blood draw for lab testing and vaccinations to take place while patient was anesthetized for the dental procedure.