INSTITUTE FOR
Oral Health
IOHWA.ORG

2011

whitepaper

2011 conference

Prevention

Rebranding the Profession

October 27 & 28, 2011
Chicago, Illinois

Writer | Designer: Gavin James | gjamesdesign.com

contents

"Building a future based on prevention would give us the win-win situation we are all looking for. It would decrease costs and increase quality of care. I believe that's the only hope we have of moving forward."

--Dr. John Luther

As caries rates reach epidemic proportions in children across America, and millions of people have unmet dental needs, the dental profession faces a greater challenge than ever before. To improve oral health nationwide, the goals are changing from finding better ways to manage disease to imperatives of preventing disease. Toward that end, the Institute for Oral Health (IOH) dedicated 2011 to the theme of prevention, exploring evidence-based best practices and innovative models of care that are advancing disease prevention and early intervention.

In October 2011, the IOH hosted our fifth national conference in Chicago, Illinois on "**Prevention: Rebranding the Profession**." The event spotlighted impressive steps forward in risk assessment, reducing early childhood caries, integration with primary care, new dental roles and effective collaborations to advance prevention, as well as guiding principles for longevity from the world's healthiest cultures. The conference welcomed guest speakers from across dentistry, medicine, dental benefits, health policy, and the American Dental Association (ADA).

Key prevention strategies discussed at the conference included:

- Risk assessment and early disease detection – Many experts agree that prevention in oral health needs to include a framework centered on caries risk assessment. One progressive approach is an assessment form that reduces the dental office burden by engaging patients to self-assess, and providing choices for treatment strategies that best fit patient needs and willingness to adopt healthier behaviors. Additionally, innovations in salivary diagnostics may soon make it possible for dental teams to conduct quick, scientifically accurate chairside tests to detect the presence of an array of diseases within minutes.
- Preventive dental visits by age one – Studies confirm that children who receive their first preventive dental services by age one have lower incidence of caries over time and require fewer hospital visits for restorative care. As a result, these early visits dramatically reduce the cost of care. Reaching parents early also helps them understand oral health milestones and increases continued usage of dental services to prevent early childhood caries.
- Socially-relevant behavior modification – An innovative model has been introduced that provides an interactive, visually appealing mobile application that community health workers can use to engage parents in childhood caries risk assessment and oral health education. Using simple, culturally relevant language and nutrition references, the system helps guide low-income, low-literacy minority families toward adopting healthier behaviors that help reduce and prevent caries.
- New dental roles to increase access to preventive services – New training programs are underway that establish a new dental team member, the Dental Therapist. Skilled in basic dental services, oral health counseling, and practice management, the Dental Therapist helps increase practice capacity for basic oral exams, risk assessments, and preventive

services, and works closely with families to help them understand ways to maintain good oral health and reduce tooth decay. Another program underway is the ADA-sponsored training for Community Dental Health Coordinators (CDHCs). Supporting the low-income communities in which they live, CDHCs serve as a trusted resource to provide culturally-sensitive oral health education, coordinate access to dental care, and perform basic dental services and risk assessments for families in public health settings.

- Engaging primary care providers in oral health – As family physicians and pediatricians have more frequent access to young children, these primary care providers are increasingly taking advantage of oral health training programs to help reduce early childhood caries. Providing basic oral screenings, fluoride varnish, and oral health education, they help families understand the connections between oral health and overall health, and the importance of starting dental prevention early to reduce caries risk over time.

Stay up to date on 2012 Institute for Oral Health events

Our 2012 theme is "The Evolution of Oral Health Care Delivery." Throughout the year, the Institute for Oral Health will host focus groups with industry experts, participate in national oral health events, and convene our **6th annual national conference on October 4 & 5, 2012 in Boston, Massachusetts**. Keep up with the latest news and findings through our website (IOHWA.ORG), whitepapers, quarterly newsletter, and Facebook fan page. Additionally, check out the latest advances in oral health care on our site's special section "Innovation Central."

About the Institute for Oral Health

The Institute for Oral Health is dedicated to improving oral health in America by bridging the gap between research and everyday dental practice. Serving as a central resource for education and collaboration, IOH brings together nationally recognized experts to focus on important themes of concern in oral health care today, and works to promote innovation and adoption of progressive treatment guidelines, dental plans, and delivery methods.

learn more

Web: **IOHWA.ORG**

Become a Fan on Facebook

Kathleen T. O'Loughlin, DMD, MPH

Executive Director and Chief Operations Officer, American Dental Association

Prevention in Dentistry Over the Next 5 Years

In looking at the current and future state of dentistry and the urgent oral health needs of the U.S. public , Dr. Kathleen O'Loughlin, the Executive Director of the American Dental Association (ADA), began on an encouraging note: prevention is finally gaining appropriate recognition for the value it delivers to oral health. At the 2011 Institute for Oral Health conference, Dr. O'Loughlin focused her discussion on three important themes:

- Increasing awareness with a new framework for prevention – To drive real change across our industry, we need a new way of delivering key messages to policymakers and other stakeholders about what prevention means in terms of comprehensive strategy and actionable steps.
- Improving collaboration within dentistry – To improve oral health through prevention, we need greater cohesion and collaboration across the dental and other health related professions to build consensus on best practices and progressive solutions.
- Affordable Care Act and prevention – A look at how health care reform may or may not impact prevention in oral health, and important steps the ADA is taking to advance the agenda.

A New Framework for Prevention

In terms of health care, prevention is defined as "measures taken to prevent disease" (Wikipedia). A major component in preventing disease is risk management, and effectively managing risk involves four key steps:

1. Identify the risks
2. Assess the risks
3. Prioritize the risks
4. Apply the first three steps to a comprehensive strategy deployed to mitigate those risks.

This model for risk management could provide a more effective framework for any discussion on prevention. When we define prevention as "managing health risk," we can more easily explain to policymakers that we are talking about actions we will take to identify, assess, and prioritize patient health risks, and taking those same steps to design appropriate interventions to ensure the best health outcomes. When we frame prevention in a larger context of risk management, "it means a lot more than sealants, fluoridated water, and fluoride varnish."

While the dental profession does "a masterful job" of disease management, we can no longer move forward with the same modalities for managing disease; we need to prevent disease and manage health. Simply managing disease is no longer affordable for the American public, for public health systems, for state Medicaid budgets, and for the dental benefits industry.

Dr. O'Loughlin called upon the profession to collectively agree on a "master framework for prevention that we can all buy into," a model that can be echoed consistently across policy, dental practice, health benefit plan design, and public health interventions. The ADA is accelerating this effort with an organization-wide campaign starting in 2012 to define a new framework for prevention. As policymakers and influencers, the ADA is well positioned to affect real change; yet to do so, they need a solid platform, based on consensus across the dental profession on the critical actions that encompass strategic prevention.

"Can you imagine what would happen to our industry if we framed our purpose as "health management" instead of "disease management"? What would happen to dental education, which focuses 1,800 hours on drill and fill, and 100 hours on prevention?"
–Dr. Kathleen O'Loughlin

A New Commitment to Collaboration

To increase effectiveness across the industry and affect real change in improving oral health, across the dental profession we need to combine our collective intelligence and expertise toward unified goals. A cornerstone of that collaboration is prevention: agreeing upon a uniform framework that defines our approach to health management via prevention across dental practice, benefits, health policy, and in our communities.

Collaboration and the ADA

According to Dr. O'Loughlin, the American Dental Association (ADA)'s mission is "a seismic shift in terms of being willing and committed to external collaboration," includijng adopting a new mission statement:

> "*We are the professional association of dentists that fosters the success of a diverse membership, and advances the oral health of the public.*"

As part of the ADA's mission, the organization focuses on three strategic goals:

- Provide support to dentists so they can be successful throughout their careers. This goal embraces the many career paths one might take, such as private or corporate practice, academia, research, public health, dental insurance, health policy, etc.
- Help people be better stewards of their own oral health by being the trusted resource for oral health information. The ADA aims to be the go-to resource for "credible, vetted, scientifically sound health information."
- Demonstrate our commitment to improving the public's health by being a collaborative profession. The ADA is driving collaborative efforts across the industry; in fact, their policy team has mandated that member dentists must participate actively in their communities to benefit public health.

What the Affordable Care Act Means for Prevention

Achieving these strategic goals is the foundation of the ADA's work, as evidenced by their strong advocacy in driving changes in oral health care reform. As a starting point for reform, the ADA lobbied to expand the public health infrastructure, which for years has struggled to achieve health goals in the wake of budget cuts and the closing of community hospitals and clinics.

To rebuild a structure in which public health could succeed, the ADA pushed to include the following provisions in the Affordable Care Act (ACA):

- Cooperative agreements with CDC – Allow the Center for Disease Control and Prevention (CDC) to enter into cooperative agreements with states, territories, and tribes, particularly where dental caries rates are extraordinarily high across the population.
- Oral health data systems – Create oral health interelational data bases. While a popular idea, like many of the oral health provisions written into the ACA, this provision was not funded.
- National oral health education campaign – Authorization for the CDC to establish a five-year national public education campaign for oral health prevention and education (another great idea not funded in the ACA). However, Medicaid and some governmental organizations have targeted initiatives (currently unfunded) for public awareness campaigns, so with any luck we may see opportunities emerge in the coming years.
- Dental training – Provide support and development for dental training programs. Although this provision was not funded, a renewed interest in Congress may help drive this to fruition. The grants would help teach professionals and provide loan repayments for dental faculty.

The ACA did include some oral health successes with funding for training in geriatrics, for both dentistry and family caregivers to care for the frail elderly. However, very little coverage for oral health is represented, which means the dental profession needs to rally together to make the business case for oral health.

The challenge of pediatric benefits in ACA

The one area of ACA with more substantial support for oral health is the mandate of an essential dental benefit for children. However, it introduces a host of complexities in terms of implementation and insurance plan and pricing issues that may outweigh the benefits. The provisions raise a myriad of questions on what benefit plans will look like, who would be eligible, and how to manage a system in which parents and children may have different insurance carriers and different networks of practitioners.

Additionally, we face complex issues in determining the actual scope of services that should be provided, whether it is simply a basic oral exam and prophylaxis, or a more robust, risk assessment-based array of benefits. Here, the risk management question comes into play again. Toward that end, the ADA has been closely involved with ACA legislators to ensure the pediatric dental benefit plan factors in fundamentals such as:

- Support preventive services based on sound scientific evidence.
- Ensure insurance carriers can implement the benefit plan designs.
- Provide access points for community based dental networks for eligible children.

Implementing the pediatric essential dental benefit will also introduce a major challenge to Medicaid, as they must somehow find the funding to support another 25 million people. With Medicaid budget cuts already a nationwide trend, we will most likely see cuts made to many other valuable state programs in order to fund this new health care provision. The good news is that by 2016, the government will increase state funding by 23% for Children's Health Insurance Program (CHIP) initiatives, including outreach and enrollment.

Overall, with so little representation in ACA for oral health, it is incumbent on the profession to collaborate on developing an evidence based, risk-based, prevention-oriented approach to dentistry with an eye on what can be operationalized now, and what the possibilities are for the future.

ADA Initiatives for Prevention

A key concern for the ADA is the "urgent disparity" between the limited resources for affordable dental services and the overwhelming number of Americans who need care. Many of the ADA's campaigns and conferences work to address this problem through a focus on prevention. For example:

- Preventive dental care for the elderly – Last year, the ADA convened a successful consensus conference focused on the oral health needs of vulnerable older adults, including those with chronic conditions and disabilities. Their findings will soon be published by the Health Resources and Services Administration (hrsa.gov).
- Oral health literacy – An important component in advancing prevention involves educating the public about the importance of oral health and motivating "positive, self-help" behaviors to reduce or eliminate disease risk factors. Because the ADA recognizes that, "a campaign is worthless if you don't change behavior," they partner with other health organizations to increase the effectiveness of messaging to the public. Currently they are working with the American College of Obstetrics and Gynecology to develop clinical guidelines for perinatal care to support benefit plan design and dental practices in caring for pregnant women and new mothers. These guidelines will be available in 2012.
- Expert dental advice on ShareCare.com – The interactive health education website of celebrity Dr. Mehmet Oz focuses on educating the public to increase access to health and wellness information. As the site offers the ability to ask questions online and receive credible, expert answers on a wide range of health issues, the ADA has signed on to provide expert content on oral health care. With an estimated 300 million hits a year, this site offers an exciting new channel for increasing oral health literacy and promoting prevention. This venue and its broad audience would benefit greatly from clear, accurate information from credible dental professionals and insurance experts, and all are welcome to contribute on sharecare.com. It is a valuable way to both share your expertise and gain new insight into common concerns from consumers.
- Ad Council campaign for oral health – The Ad Council is the organization behind such high profile public service awareness campaigns as Smokey the Bear and crash test dummies, and the ADA is collaborating with the Dental Trade Alliance Foundation in launching a major three year public awareness campaign on the importance of oral health in vulnerable kids. After a rigorous juried process, the DTAF/ADA collaboration won their bid to have the Ad Council develop a three-year, $100 million multi-mediaad campaign to promote the importance of prevention for high risk kids, launching in summer 2012.

Looking at the Road Ahead

Coming full circle to the need for collaboration and a new approach for prevention, Dr. O'Loughlin stressed the importance of approaching prevention as an investment. *Is it working and what it is the return? Are efforts for prevention having an impact on disease rates*?

"Many of us across the profession are working hard to promote prevention. But busy is not enough; busy does not equate to impact. We need to keep our activities focused on impact."

–Dr. Kathleen O'Loughlin

To ensure the dental profession and industry gain a positive return on our investment, we need a comprehensive strategy and framework for "health management." That means risk management as a core component in prevention, to extend the potential impact beyond sealants and fluoridated water.

Expanding the scope of prevention becomes more important when we see the erosion of even the most commonly accepted preventive measures, such as community water fluoridation. Initiated in 1945, it is considered one of the most cost-effective programs in terms of health management, yet cities across the nation are voting it out of their budgets. Furthermore, the sweeping rise of social media has opened the floor to rampant misinformation about water fluoridation. Trends like this signal important opportunities for oral health advocates across our profession to clarify the near and long term value of initiatives that support health management.

> "*Now is the time for big vision: Let's eradicate childhood caries in this country in the next 10 years. If we're going to do that, we need a comprehensive, broad-based, consensus-driven prevention health management strategy that we all buy into, so we're all moving in the same direction. If the government doesn't have the resources to do it, somebody else has to step up –all of us who represent pieces of the dental health care delivery system. Together we can actually get this done*."

V. Kim Kutsch, DMD

General Dentist; Board Member, World Congress of Minimally Invasive Dentistry; CEO, Oral Biotech

Using Risk Assessments to Individualize Treatment Plans

As a general dentist and inventor and researcher in oral biotech, Dr. Kim Kutsch has focused much of his career on developing the caries risk assessments as a primary driver to improve oral health and ensure the most appropriate care based on individual patient needs. To address a lack of risk assessment tools available for his private practice, Dr. Kutsch started his own business to develop products to meet this need. At the 2011 Institute for Oral Health conference, he shared insights on a proven system for risk assessment that he has developed and uses in daily practice.

Treating the Cause Behind Dental Disease

Over a decade ago, after 20 years in practice, Dr. Kutsch recognized that despite all the high-tech restorative treatments he used in treating dental disease, his patients continued to get cavities. This realization prompted his paradigm shift toward treating the cause of disease, instead of only the symptoms –which launched him on the road of caries risk assessment that guides his practice today. This approach has never been more necessary; Dr. Kutsch now sees more serious dental disease than in any other time in over 30 years of dentistry.

The pH factor in caries

Dr. Kutsch stressed that an effective approach to managing caries is to consider this disease is pH-based, strongly influenced by sugars and changes in saliva that affect the re-mineralization of teeth. A healthy pH level is above 5.5 and close to or above neutral, and when we eat or drink throughout the day, our pH level drops and our tooth enamel dissolves. As our pH level rises again about 30 minutes after eating, our saliva helps remineralize our teeth. The longer pH remains low, the greater the opportunity for caries to develop.

> *"Dental caries is a bacteria caused by long periods of low pH that result in net mineral loss on the teeth. Caries is pH-specific."*
>
> *– Dr. Kim Kutsch*

Three common risk factors that influence low pH include:

- Sugar – Too much sugar in the diet, or snacking too often during the day reduces pH. Long periods of low pH expose the teeth to greater mineral loss.
- Bacteria – Too much bacteria from lack of brushing and flossing.
- Saliva – Saliva helps drive pH levels back to normal for healthy remineralization of teeth. As many medications cause xerostomia (dry mouth), this lack of saliva keeps pH low and increases the likelihood of caries.

CAMBRA: CAries Management By Risk Assessment

His focus on risk assessment prompted Dr. Kutsch to become closely involved as part of the team who developed CAMBRA (CAries Management By Risk Assessment), a program now integrated as a standard part of dental school curriculum. It represents a "quantum leap forward" in how we treat this disease. For many years dentists have used restoration to fill cavities, but that only addresses the symptoms and outcome; those patients will continue to have the disease until dentists address what is causing it.

To illustrate this idea, Dr. Kutsch cited a six-year study to validate CAMBRA in which researchers tracked nearly 13,000 patients, including 63% who were at high risk of caries. After only one year, of those high-risk people who had not seen a dentist, 88% had new cavities. Clearly, identifying caries risk and reducing the overall cost of care is imperative in today's economy. While many people consider dental care a low priority compared with feeding the family and paying the mortgage, poor oral health can introduce far greater expense in medical complications, missed work, and reduced quality of life from the pain and discomfort of dental disease.

> *"Risk assessment gives the dental professional the opportunity to make a more accurate diagnosis, to provide better health care and disease management, which leads to greater predictability of treatment outcomes, reduce the cost burdens, increased patient satisfaction, and greater practice profitability."*
>
> *– Dr. Kim Kutsch*

Ironically, although risk assessments may bring improved health outcomes and reduced treatment costs, a challenge remains for dentists who see disease-free patients as a threat to the revenue of their practice. Our profession faces an uphill battle, especially during tough economic times, with a solution that asks dentists to invest unreimbursed time to conduct risk assessments, and be willing to accept less revenue when healthier patients require fewer restorative services.

Making Risk Assessment Simple

An important lesson learned on the road to CAMBRA was that, "A campaign is worthless without behavioral change; behavioral change is worthless without sustainability." After training over 4,000 practices on conducting risk assessments, Dr. Kutsch found that only about 600 were still doing them, and many patients were not adopting the healthy behaviors required to reduce caries. Additionally, it was unrealistic to expect hygienists to spend time educating patients on caries risk when they little or no time available to do so, are not reimbursed for it if they do invest the time, and have never been trained to on this type of consultation with patients. As a result, the CAMBRA team focused on how to simplify risk assessment to make it easier for dental teams to adopt. The new process involves three steps: Assess, Diagnose, and Prescribe.

Step 1: Assess

The new Caries Risk Assessment (CRA) form includes two sections, one for patients and one for providers:

- Patients are asked to answer simple questions that explore common risk factors in their daily diet as well as their willingness to change unhealthy behaviors. This approach not only solves part of the dental team capacity problem, it also helps to involve patients in

understanding the bigger picture of their oral health risks. Getting patients to self-report their risk factors is a powerful motivator in behavior change: telling the dentist they recognize plaque or problems with their teeth often resonates stronger than hearing it from the dentist.

- Providers identify whether a patient has disease indicators such as white spot lesions and visible cavitations and track their biofilm levels to determine overall caries risk level.

When a surprising 25% of his patients refused the free caries risk screening, Dr. Kutsch used it as an opportunity to open a conversation on patient concerns and how to better help them.

Step 2: Diagnose

The next step in managing caries risk is to evaluate the risk factors, disease indicators, and biofilm level noted on the CRA form in inform the overall diagnosis of caries risk and guide the treatment strategy.

Step 3: Prescribe

The third step to CAMBRA is to prescribe therapy to treat the disease, based on the risk level. As expected, in all cases we will treat any lesions and apply fluoride varnish. Depending on risk level, additional preventive products and more frequent follow-up visits are recommended.

Patients are offered three levels of treatment plan, which allow them to choose the approach that most realistically fits their budget and personal motivation. The treatments include a proactive plan and a conservative plan, but also a "no change" plan that describes what to expect if they choose to do nothing to avoid caries risk. When given the option to do nothing to improve their health, the majority of patients typically opt to take some action.

"Letting patients choose what they want to do is more likely to be successful in terms of sustainability of their behavioral change than dentists telling them they need to brush and floss."

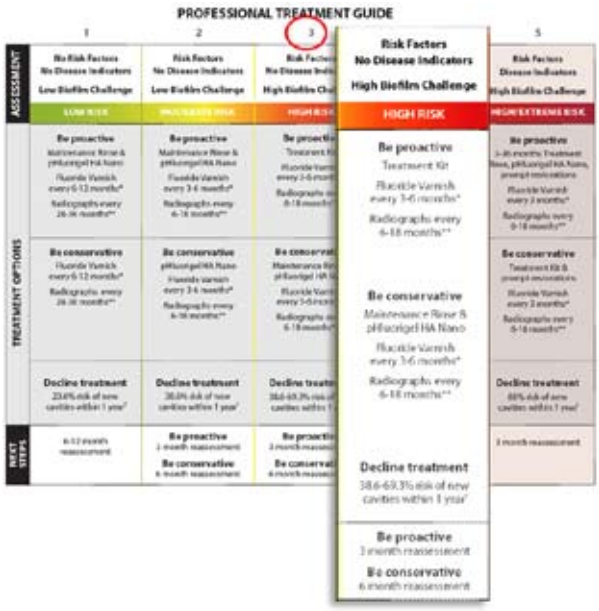
– Dr. Kim Kutsch

The prescriptive treatment phase breaks into three categories:

- Reparative – Remineralization of tooth enamel through fluoride varnish and other elements found super-saturated in saliva, and restoration of any caries lesions.
- Therapeutic – Antimicrobial products, pH strategies, and probiotics. Metabolic aides such as chewing gum with Xylitol have proven effective in relieving dry mouth, and also in reducing caries transmission between mothers and young children as primary teeth emerge.
- Behavioral – This component is the real key, particularly in terms of modifiable behaviors such as nutritional habits that affect pH levels, and homecare habits, which influence caries risk. The frequency of sugar intake and snacking is more important that the actual foods: even healthy foods nibbled all day never give the mouth a chance to recover from low pH, which leads to an increase in the bacteria that cause mineral loss and caries. Additionally, many medications cause dry mouth, a problem common not only in seniors but children with asthma or ADHD.

Motivating behavioral change

Because behavioral changes are so important to reducing caries risk, dental professionals need to learn how to conduct motivational interviews with patients—to basically become health coaches. These discussions should get patients thinking about how their oral health is affecting their life, and then explore common concerns associated with change such as their understanding of the problem and ability to change, as well as the benefits of changing and consequences of doing nothing.



The Caries Risk Assessment form aids this process by targeting risk level based on various factors, and offering a menu of treatment plans for patients, so they can determine which approach they are ready to adopt. The CRA tool gives dentists and hygienists a roadmap for guiding patients in making their own decision, which ultimately leads to more sustainable behavior changes.

While the latest CRA form has only recently been implemented, early adopters report overwhelming enthusiasm from front desk staff, dental teams, and patients as well. One of the top challenges in motivating dental offices to perform risk assessments has been capacity; dental hygienists simply do not have the time or training. The new CRA form presents an exciting step forward as the patient engagement helps to offset the time burden, making it more feasible and cost-effective for dental practices to conduct risk assessments.

David Wong, DMD, DMSc

Associate Dean of Research, Filex & Mildred Yip Endowed Professor of Oral Biology, Oral Biology & Medicine, and Director of Dental Research Institute at UCLA School of Dentistry

Saliva: The New Diagnostic Frontier

A powerful opportunity for disease prevention is emerging in new technologies being developed in the arena of salivary diagnostics. As a primary indicator of oral health, saliva provides a world of insight and is now being used to detect and even predict disease. At the 2011 Institute for Oral Health conference, Dr. David Wong, a leading researcher in salivary diagnostics at the UCLA School of Dentistry, discussed how their progressive work aims to accelerate diagnosis and treatment, reduce health disparities, and enhance dentistry and medicine as a whole. He focused on the development of salivary diagnostics, the role it plays in oral and systemic diseases, and how these diagnostics can help integrate dentistry and primary health care.

The Rising Need for Salivary Diagnostics

On a practical level, a key goal driving the development of salivary diagnostics is to provide a more expedient and cost-effective tool for detecting disease. To illustrate this idea, Dr. Wong highlighted a scenario around Sjőgren's Syndrome, a disease brought into public awareness when it interrupted the high powered career of tennis star, Venus Williams. If a patient complained of dry mouth, dry eyes, joint pain, and chronic fatigue, a dentist would likely refer them to specialists, where a triage cycle might include a half dozen tests over several weeks. For the patient it means thousands of dollars of expense and weeks of mounting anxiety waiting for results about their condition. As this disease often goes undetected for years, and is known to develop into B-cell lymphoma in about 10% of patients, it is a good example in which early detection through simple screening –such as salivary diagnostics– could make a world of difference in overall patient health, as well as substantially reducing the cost of care.

With Sjőgren's Syndrome, which primarily affects moisture-producing glands, scientists have now identified 26 biomarkers in saliva that can help detect the disease. In the scenario above, this means that instead of embarking on a lengthy and costly triage cycle, the dentist could conduct a simple, chairside saliva test that would detect within minutes whether the patient had the disease. The positive impacts on both the patient and provider are clear; and more significant when we scale up this concept to more high profile diseases, such as oral cancer, breast cancer, and diabetes.

So where are we now in terms of the science and capability to affect such results? Closer than you might think. Point of care technology for salivary diagnostics is being refined that would enable quick, chairside results for detecting a wide range of diseases. With important data delivered in real-time, dentists could contribute to early detection, make appropriate referrals to medical colleagues,

and design dental treatment plans that help ensure the most successful health outcomes.

How Salivary Diagnostics Helps Detect Disease

Saliva is essentially a diagnostic tool. It provides valuable insights for early detection of caries, periodontal disease, and oral cancer, as well as indicators for systemic diseases. Additionally, saliva offers a quick, easy, and cost-effective way to monitor the health of the mouth and the body.

"Across cultures, saliva often carries a negative connotation, which has translated into the clinical world. But soon, the scientific credibility of this oral fluid –in terms of diagnostic evaluation and biological content– will dissipate the social, psychological, and behavioral negativity."

–Dr. David Wong

On a daily basis, the salivary glands produce a liter and a half of fluid, which carries with it "disease discriminatory information." Scientists have learned that the complex structure of the glands enables saliva to capture information "communicated" by diseases. That data is being harnessed in tools for salivary diagnostics. With this information we can more rapidly detect the presence and severity of oral (and systemic) diseases to help ensure patients receive the most appropriate care.

To ensure the scientific findings translate into practical clinical use, Dr. Wong's research team at UCLA has developed a publically available online database called the Salivaomics Knowledge Base (www.skb.ucla.edu). This web-based resource provides information on the biology, diagnostic potential, and pharmacological implications of saliva. The site offers data breakdowns by five diagnostic alphabets: proteome, transcriptome, microRNA, metabolome, and genome. Why? Because not every disease identifies itself through proteomes; however, saliva is sophisticated enough to deliver data on numerous levels, making the possibilities of disease detection more sophisticated.

How Salivary Diagnostics Helps Detect Disease

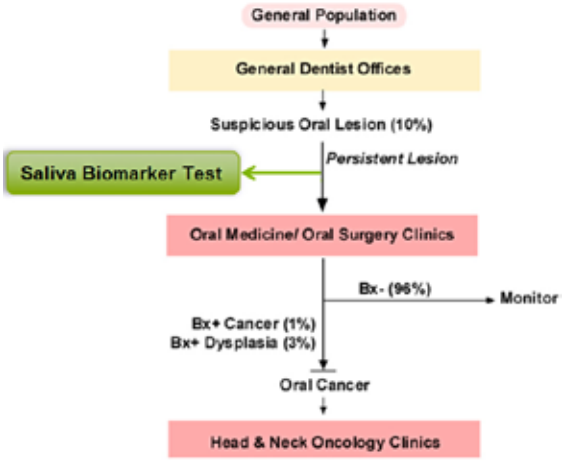
While dental professionals welcome the advance of oral health research, what they need most are practical tools they can apply in every practice. Dr. Wong highlighted a few real-time examples of what salivary diagnostics can mean for early detection and prevention of oral diseases. While the technology is not fully ready for daily dental practice, rapid progress is bringing it closer to clinical reality.

Detecting oral cancer

As the sixth most common cancer, 350,000 new cases of oral cancer appear every year. For the past three to four decades, the survival rate has remained at about five years, which reflects a dire need for effective early screening technology. Dr. Wong's UCLA Lab identified four critical oral cancer biomarkers in saliva, and prioritized their impact on survival rates. When mapped across the four stages of cancer, early detection of oral cancer equates to a 60-80% chance of survival, compared with only 20-40% survival rates for late stage detection of the disease. This represents a substantial improvement in health outcomes, as well as improved quality of life for the patient, and significant reduction of cost burden on the health care system.

Another benefit of saliva testing as a diagnostic tool is the simplicity. As it requires no complex training or supervision, it can easily be incorporated into the daily flow of a dental practice.

As an example, during a typical exam, a dentist might find a suspicious oral lesion and apply treatment to relieve it. If the patient returns and the lesion persists, the dentist usually refers the patient to an oral surgeon for a biopsy to detect or rule out oral cancer. Because about 96% of these biopsies are found to be cancer-free, it could be more beneficial for both patients and providers to get an immediate, less costly answer during the initial visit. With an FDA-approved, scientifically credible saliva biomarker test done quickly at chairside, the patient could avoid invasive surgery, avoid the higher costs of treatment and time away from work or school, and avoid the anxiety of a lengthy wait for test results. For dentists, the saliva test could deliver valuable data in real-time, enabling appropriate treatment strategies to be put into action at the earliest opportunity. Furthermore, patients could easily be retested every few months to monitor the condition.



Engaging dentists in medical disease detection

An added consideration in salivary diagnostics is how dentists can play a role in the detection of systemic diseases. Despite the overwhelming numbers of unmet dental need across the country, statistics show that more Americans visit a dentist regularly (72%) than see a physician (43%) in a typical year. Dentists are in a unique position to offer saliva screening for high-risk patients who may be candidates for common cancers and chronic diseases such as diabetes and osteoporosis. As a measure of receptiveness across the dental industry, a recent survey cited that nearly 88% percent of dentists would be willing to collect oral fluids to help screen for medical conditions. This approach represents an important step in advancing oral health as part of overall health, a "compelling, empowering vision of where the dental profession can be, moving forward."

"The clinical impact of salivary diagnostics is immense. Every year we have 210,000 new cases of breast cancer. Factor that into a screening scenario, and it's enormous. Add in the emotional impact, because that really needs to be addressed as well."

–Dr. David Wong

To highlight a success story, Dr. Wong cited a study in which his team identified eight salivary mRNA and one protein biomarkers that can detect breast cancer with 92% clinical accuracy. Today, when symptoms are detected, the patient is directed to get a surgical biopsy. Even if it turns out to be cancer-free, which is often the case, the patient has been subjected to a costly, invasive procedure, and several weeks of incredible anxiety. If an easy, scientifically credible, chairside evaluation was available, caregivers on many fronts –primary care physicians, dentists, breast cancer centers, etc.– could inform patients immediately as to their disease risk and appropriate next steps.

> "*We need to take these outcomes and march them forward as definitive, pivotal clinical evaluations that meet FDA standards. We're energized and focused on that, because if we don't do that, the level of interest from industry, diagnostic, pharmaceutical, would be at best a curiosity. They would not commit to the business path needed to carry this forward to clinical maturation. That's what we would like to do, because 50 years from now this early disease detection could become clinical reality. I think that's what we all want to see.*"

Russell Maier, MD

Program Director, Central Washington Family Medicine Residency;
Board Member, Washington Dental Service Foundation;
Co-Chair Smiles for Life

Engaging Primary Care in Prevention:
An ounce of prevention is worth a pound of cure

Embracing a prevention-oriented model for oral health means change. It means accepting that the health profession needs a new way of approaching care if they want to achieve new results. Towards that end, the 2011 Institute for Oral Health conference featured Dr. Russell Maier, a primary care physician who has dedicated much of his career to developing and promoting solutions for disease prevention that integrate medicine and dental care.

Prevention vs. Treatment

In striving to create a more patient-centered health care system, we need to adopt the perspective that prevention is often the most cost-effective form of health care. As a conceptual model, disease prevention could be considered in four phases:

1. Asymptomatic state – scenario for potential disease, e.g., a one year old child with two or three teeth.
2. Simple, process to detect the asymptomatic state – e.g., looking into the child's mouth, and talking with the family about what to do.
3. Treatment that 'cures' the asymptomatic state – e.g., appropriate oral hygiene, dietary guidance, fluoride varnish application.
4. Effective follow-up to prevent asymptomatic state – e.g., motivate ongoing oral hygiene, oral health education, regular dental visits.

> *"The old adage is that we can't drill and fill our way out of the childhood caries crisis. Nor can we screen and advise our way out of this crisis using one set of health professionals."*
>
> *–Dr. Russell Maier*

Across the medical profession, there is increasing awareness that dental care is the number one unmet health need, with a growing emphasis on incorporating oral exams into pediatric check-ups. Many organizations such as the American Academy of Pediatric Dentistry and American Academy of Pediatrics promote the importance of dental visits by age one, yet in the past year, studies show only 36% of two to four year olds have seen a dentist. This disparity between recommendations for prevention and consumer behavior demonstrates a need to engage primary care providers in oral health, as they have more frequent access to children at an early age.

Why Engage Primary Care?

A great deal of primary care is focused on prevention, with a good amount of evidence demonstrating how prevention makes a difference in improving health. Like mumps or measles, caries is an infectious, preventable disease, and should be managed as such ,

using proactive strategies to ensure the disease does not occur in the first place, rather than simply managing it as it recurs over time.

While the dental workforce is shrinking, even in many underserved and rural communities there may be at least one family physician. Across the country, family physicians care for 50% of adults and 25% of all children. Although there are 40,000 pediatricians, the current trend is for specializing, which means pediatricians are increasingly providing less and less primary care. As a result, family physicians represent an opportunity to bring preventive oral health services to populations that need it most.

As primary care "forms the base of all functioning health system in the world," and as the dental profession strives to recognized as equal in value to medicine, it is vital to bring these two disciplines together in a meaningful way. Educating primary care providers on the impact of oral health on systemic health, and engaging them in oral disease prevention is an effective way to form a more integrated, collaborative, and patient-focused platform for health management.

When we consider the crisis with early childhood caries, it is important to note that by age two, most children have seen a pediatrician or family physician eight times. Imagine if all those visits include preventive oral health services? Family physicians also see a range of patients typically targeted in dental care as high-risk, such as adolescents, pregnant women, and the elderly ---all of whom might benefit from an oral health screening and fluoride treatment, which they might otherwise never receive if they lack access to a dentist.

Teaching Oral Health to Primary Care Providers

For many years, Dr. Maier has been closely involved in a number of progressive initiatives to teach primary care providers about oral health and train them to deliver preventive services to children.

Interdisciplinary Children's Oral Health Promotion

One early effort sponsored by the University of Washington (UW) brought together their departments of Pediatric Dentistry and Family Medicine to form the Interdisciplinary Children's Oral Health Promotion (ICOHP) initiative. The ICOHP taskforce conducted focus groups and testing to determine the best approaches for training family physician residents on oral health issues. Through a pilot program in Yakima, WA, they trained residents in public health, dental development, caries and dental emergencies, and connections between oral health and systemic health. For mentoring, the residents collaborated with community dentists and local oral health champions, and successfully advanced their knowledge and skills to incorporate basic oral health services into their daily family medicine practice.

As UW medical graduates typically disseminate across the country, the residents from the ICOHP program will bring with them an enhanced perspective on health care that intrinsically includes oral health.

"In terms of systems change, if we can get all of our residents in our region aware of oral health, they're going to go out with the expectation that it's a normal part of care, and take that wherever they go."

–Dr. Russell Maier

Smiles for Life Oral Health Curriculum

As part of a nationwide effort to integrate primary care and oral health, Dr. Maier helped develop a new group within the American Academy of Family Physicians called the Society of Teachers of Family Medicine (STFM). The group, which now has 5,000 members, developed an evidence-based curriculum platform —*Smiles for Life*—which teaches oral health to family medicine and pediatric providers.

Since the first edition launched in 2005, the *Smiles for Life* oral health curriculum has been a sweeping success. With web-based and downloadable modules available online (smilesforlifeoralhealth.org), this program has continued to be the most popular content offered by STFM, month after month by a factor of ten over the second most requested content. By their second year, Smiles for Life won an "STFM Innovative Program Award," and in their third year they gained endorsement for continuing education credits.

Now in their third edition of the curriculum, *Smiles for Life* includes eight 50-minute modules:

1. The Relationship of Oral to Systemic Health
2. Child Oral Health
3. Adult Oral Health and Disease
4. Dental Emergencies
5. Oral Health in Pregnancy
6. Fluoride Varnish
7. The Oral Examination
8. Geriatric Oral Health

In addition to self-service education, instructors can also download the modules with speaking notes to deliver training. The program reinforces learning with interactive clinical cases, test questions, and links to oral health websites. Additionally, the *Smiles for Life* website provides downloadable oral health education posters and handouts (available in five languages) for use in medical offices.

In tracking latest successes, the *Smiles for Life* website has seen about 135,000 downloads, which includes nearly 60,000 courses and 77,000 supplemental materials, and 9,000 online courses completed. *Smiles for Life* has extended into classrooms as well, with core curriculum now in over 30 medical schools and used by most family medicine residency programs. Furthermore, the curriculum is now integrated in many state oral health programs, and being leveraged by the dental profession. STFM estimates that nearly 20% of those accessing the content are dental professionals such as dental assistants and hygienists.

The program's success is largely thanks to generous funding from Washington Dental Service Foundation and "a collaborative network of funders who share a common commitment to enhancing the role of primary care physicians in the promotion of oral health." Ironically, it was not initiated by the dental profession, but a group in the medical world who approached numerous dental foundations and offered to help promote ways to improve oral health.

Washington Dental Service Foundation - Prevention Initiatives

While a key goal is to "reset the cultural standards" to give primary care providers the expectation of addressing oral health in their practices, it is also important to monitor what those providers are actually doing in their practice with respect to oral health. For over a decade, Washington Dental Service Foundation (WDSF) has been active with a number of initiatives designed to support this issue.

Engaging primary care providers

Beyond providing oral health education to primary care providers, WDSF has also engaged the medical profession to assist with the following:

- Policy changes – First, to ensure that all medical providers knew it was acceptable to talk with their patients about oral health. All the major medical associations in Washington state that impact children were on board with this policy. Additionally, WDSF and physicians worked to drive policy change for reimbursement. Medicaid now reimburses primary care providers for oral health preventive services, oral screenings, and anticipatory guidance.
- Communications – To build buy-in for expanding Medicaid reimbursement, WDSF partnered with medical organizations on public awareness campaigns about oral health, and the importance of baby teeth. Furthermore, these communications helped build support with key legislators and children's health advocates.
- Training – Over the past eight years, WDSF has successfully delivered oral health training to nearly one in three primary care physicians across Washington state. As an example, a pilot program of six Group Health clinics has now expanded oral health services and education to 25 clinics, and integrated oral health into their electronic health record and health education materials. The program, which is a major step forward in introducing oral health into a large scale healthcare delivery system, has been enthusiastically embraced by both providers and patients.

Access to Baby and Child Dentistry

Sponsored by WDSF, the Access to Baby and Child Dentistry (ABCD) program strives to increase access to dentists for Medicaid-eligible children from birth to age six in counties across Washington state. ABCD is a training and certification program for practicing dentists that emphasizes preventive and restorative services for early childhood care, including training on techniques specific to young children such as the lap-to-lap exam, as well as patient and parent education on oral health.

According to the 2010 Smile Survey, Washington state has 13% fewer low-income preschoolers with cavities since 2005.

–Washington Dental Service Foundation

Currently, ABCD has trained nearly 1,600 dentists, and their efforts are having a positive impact as evidenced by Medicaid utilization rates. Since 1997, Medicaid utilization in counties with ABCD programs for kids under age 6 increased from 19.5% to 47% by 2010; for children under age two, rates increased from 1.4% to 27%. To learn more about ABCD, visit abcd-dental.org.

National Interprofessional Initiative for Oral Health

Over the past three years, WDSF has grown a small committee into a funded initiative with a taskforce of 30 stakeholders from dentistry, medicine, pharmacy, and other arenas to focus on integrating oral health into the health care system. The initiative features core curriculum from the Smiles for Life learning platform to educate primary care physicians and nurses on oral health and how to deliver preventive services.

What's Ahead for Integrated Care

On the whole, efforts to integrate oral health into primary care have been tremendously successful. However, we still face challenges such as agreeing on the scope of care, coding issues, financing and insurance silos. The dental profession can benefit greatly from leveraging medicine's expertise in primary prevention and patient counseling, as well as their frequent access to young children.

> "*When you have a patient in your dental practices, they aren't a set of teeth ethereally floating out there separated from that body that may have hypertension or early diabetes. We need to increase our focus on prevention in oral health because it's simple, cheap, and safe to do, and we have people out there who could do it. As primary care providers, we see people before they have children and after kids are born. We can help you. When we identify high-risk kids who need extra dental services, we need a place to send them, and to have good communication back and forth about their care as part of the overall health system. It's a model which, if we can make it work across specialties for preventing caries, we can apply it to prevention for other chronic diseases.*"

Jessica Y. Lee, DDS, MPH, PhD

Associate Professor, Departments of Pediatric Dentistry and Health Policy, University of North Carolina

The Effects of Early Preventive Visits on Use, Costs and Oral Health Status

When we focus on prevention in dentistry, a prevalent theme is cost: the more preventive services we provide, the more we potentially reduce costs downstream. Yet it would seem we may need more data to prove the value of prevention to build buy-in across an industry traditionally centered on revenue through restoration. At the 2011 Institute for Oral Health conference, Dr. Jessica Lee, a pediatric dentist and health services researcher, provided valuable evidence on how early preventive care substantially reduces Early Childhood Caries and associated costs.

The first dentist to receive a presidential commendation for science and engineering, Dr. Lee was celebrated for her progressive work in early childhood caries.

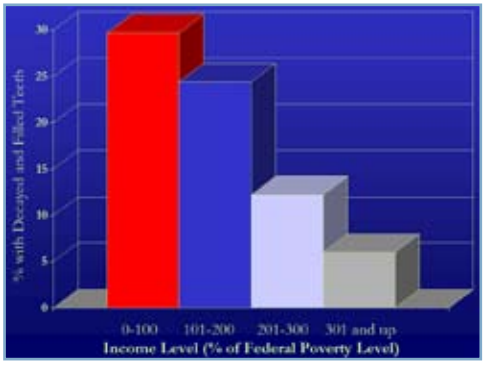
"Most amazing is that the White House recognized oral health as one of the most important areas of research. That's a major step forward for our profession."

–Dr. Jessica Lee

The Impact of Early Childhood Caries

A look at the prevalence

Dr. Lee began with the end in mind: "Preventive visits work; they do reduce costs. But they have to start early." In every socio-economic status and every race category, the prevalence of caries continues to increase in young children. Even with fluoridated water in many communities and reasonable reimbursement rates for delivering preventive services, NHANES reports that 41% of children age two to eleven have dental caries. Furthermore, in low-income families, nearly 30% of preschool children have treated and untreated tooth decay.



Understanding the consequences

In addition to the oral health impacts, early childhood caries introduces a host of other problems that influence a child's physical, mental, and social development. The pain and discomfort of tooth decay and oral infection often affect eating habits, so a child's nutrition suffers, and they often experience learning and sleep disorders.

"We want children to have routine dental care, and missing school for dental visits is not affecting their school performance. But kids who miss school due to dental pain are also reporting more C's and D's because their poor oral health is affecting their ability to do well in school."

–Dr. Jessica Lee

Additionally, both children and parents are negatively impacted by lost hours away from school and work, a burden significantly more severe for low-income, minority, non-insured families. Dr. Lee highlighted that while a common statistic refers to 51 million hours of lost school time, it is important to distinguish between time lost due to dental visits versus dental pain and infection. Although a recent study by the American Journal of Public Health showed that the majority of missed school time was for routine dental visits, 17% of children were out due to dental problems, and those children tended to perform more poorly in school. Another study noted that nearly one quarter of all kindergarten to third grade children have experienced dental pain, and over one-third of kids in grades 4-12 have had dental problems. These are alarming statistics when we consider the bigger picture impact on school performance and overall health.

"When you take a kid to the operating room, you escalate the treatment costs about 50-fold. The bill is about $2,000 - $5,000 for the hospital costs alone. Avoid one of these, and it has tremendous cost savings."

–Dr. Jessica Lee

A further concern with Early Childhood Caries (ECC) is that treatment for young children is considerably more complex and expensive, often requiring general anesthesia or sedation. Because the operating room costs for treating ECC are often captured in medical claims, carriers and even dental providers may not recognize the impact. As an example, studies show that from 1997-2002, dental surgery visits increased nearly 50%, most notably in children age three and four, which typically raised the cost of care to $2,000 - $5,000 for each procedure. As these were "avoidable hospitalizations," this data demonstrates a need for much stronger focus on preventive care for children.

The Solution: Early preventive dental visits

Start with educating parents

A key factor in reversing the trends in ECC and related rising costs is early preventive visits –and that starts with helping parents understand the overall impacts on health and child development, as well as the cost savings that come from prevention. Dental providers and community caregivers need to invest time in counseling parents on important age-specific milestones for dental care, and practical ways to maintain good oral health. Dr. Lee emphasized that while pediatricians typically advise parents on key milestones for child care, dentists rarely do. As a result, families have little or no guidance on the changing oral health needs of their children and how to avoid problems that bring so many costly consequences.

By providing this guidance at the earliest opportunity, parents have a better chance of adopting healthy behaviors that reduce ECC and promote better long term health. As new parents are often receptive to learning best practices for child care, it is an ideal time for dental providers to emphasize oral health care. Given babies love to put things in their mouths, parents should get them used to a toothbrush as well.

"Countless moms have told me, 'No one told me baby teeth are important or that babies get cavities. No one told me my kid might do poorly in school. If you tell me I need to brush my child's teeth, I'll do it.' "

–Dr. Jessica Lee

Motivate regular dental visits

An important benefit of early preventive dental visits is that they introduce healthy behaviors to children (and their parents) at the earliest stages of child development. Maintaining good oral health and seeing the dentist on a regular basis are key to reducing ECC, and Dr. Lee's study showed that children who had seen a dentist by age one were more likely to continuing seeking preventive services, needed less restorative care, and had fewer dental-related emergency visits than children who first saw a dentist much later. Sadly, the study cited that among a sample of 9,000 children, only 23 had visited a dentist by age one, and less than 9% had seen a dentist by age five.

The impact on costs

Recent Medicaid data estimates the U.S. spends over $93 billion each year on treatment to restore tooth decay, with over one-third of that cost spent on children. Another $53 million is spent on hospitalizations for dental-related treatment –most of which is preventable. Removing even a fraction of the children who require dental surgery could result in substantial cost savings.

In years of research to prove the power of early preventive dental care on reducing ECC, Dr. Lee has also focused on how early preventive visits reduce treatment costs across high-risk populations. Some important highlights include:

- First preventive visit by age one reduces costs – Among high-risk children who had their first preventive visit by age one, dental costs were on average dramatically lower (~ $260) than for kids who first saw the dentist at age 4-5 (~$550). Dr. Lee emphasized that these findings factor in both dental claims data and hospital costs found in medical claims, as this combination provides a more realistic picture of the total costs.

- Early preventive visit reduce caries – Based on dental claims data, compared with children who received no preventive services, children who had four or more preventive visits had a 13% reduction in caries for anterior teeth (incisors and canines), and over 17% fewer cavities in back teeth. This represents considerable cost savings in the dental costs alone; it does not factor in the major savings from hospitalization avoided through ECC prevention.

Improving long term health status

An additional focal point in Dr. Lee's research has been to estimate the effect of early preventive dental visits on a child's oral health over time. A study of children entering kindergarten tracked differences in those who had received their first preventive services by ages 2, 3, 4, and 5, as well as kids who had never seen a dentist by age 5. This latter population is the greatest concern: 62% of these kids had some dental disease when they started school. These children were over three times more likely to develop caries than those who had received preventive care by age two.

While the study noted even a high incidence of caries in children who had early preventive dental visits, their oral health improved with regular care. The kids who had never seen a dentist had over 50% more untreated tooth decay, which is especially dangerous when we consider the impacts on long term oral health, overall health, and a child's intellectual and social development.

Early prevention as a cost-saving strategy

Overall these studies demonstrate an urgent need to educate parents on ways to maintain good oral health in their children from infancy, and the importance of seeing a dentist by

age one and frequently thereafter. This "anticipatory guidance" to motivate early preventive dental visits is imperative to any strategy aimed at reducing the cost of dental care. Because treating early childhood caries often requires the added expense and complexity of hospitalization, those medical costs must be considered in overall dental costs. Add to that the fact that many hospitals face scheduling backlogs, forcing children to wait six to eight months before receiving restorative dental care. The result is a costly line up at the emergency room of kids in severe pain. Studies show that when high-risk children increased their dental visits to every three to four months, dental-related hospital costs dropped dramatically as the need for oral surgery diminished.

While many general dentists may be reluctant to see children as they lack the training to perform complex restorative care on kids, these providers are well trained in preventive services and often know the families. Our nation needs these dentists to open up their practice to encourage parents to bring kids in early, and help promote prevention-oriented behaviors that set the stage for a lifetime of cost-effective oral health.

"Getting kids to a dentist early and frequently reduces costs. But you need to factor in medical costs as well. If you believe in better health outcomes, and keeping kids out of the operating room, that's where the cost savings will come."

–Dr. Jessica Lee

Roger Adams, DMD, MS, MBA
Co-Founder and CEO/President, Sealants for Smiles®

A Model for Prevention: Rebranding School-based Sealant Programs

For the 2011 Institute for Oral Health conference on "Prevention: Rebranding the Profession," Dr. Roger Adams shared his approach to what branding means in dentistry and its impact on advancing prevention. A former oral surgeon and business development expert in dental plans, and now co-founder and CEO of the non-profit organization *Sealants for Smiles*, Dr. Adams brings a well-rounded, practical perspective on what it takes to successfully implement a school-based, prevention-oriented oral health program.

What is the "Brand" of the Dental Profession?

In focusing on prevention, a key component to success lies in the dental industry's ability to influence public perception about oral health. That is essentially what "brand" is about —a core concept that defines the attributes and personality of a business or organization. "Branding" is the ways in which those attributes are conveyed to the public (through communications, visual identity, etc.) to influence their perception about the business or organization. A successful brand is one that resonates well with consumers, one that is easy to understand and reflects their values. In the dental profession, we face a challenge in influencing positive change because we have a disconnect between our own perception of our brand and how the public sees dental care.

Currently, a dominant influencer of the dental profession "brand" is cosmetic dentistry. Making smiles more beautiful is an attractive concept to consumers, but as a brand for the profession, it applies to only a fraction of the national audience. Millions of people perceive dental care as an unaffordable and inaccessible service they will turn to only when discomfort grows too urgent. This negative concept is a common perception of our brand, and we need to change that.

Rebranding Prevention with Sealants for Smiles

In order to change public perception about dental care, consumers need to experience the value. That means ensuring that the majority who need it most have access to care, and more importantly, access to preventive services that improve health and reduce the need for costly dental care. In early 2007, Dr. Adams saw an opportunity to drive real change in his community and home state when he discovered that nearly 75,000 children in elementary schools within an hour of his office had unmet dental needs. As a result, he helped to found Sealants for Smiles, a charitable organization that provides free oral health education and preventive dental services to over 156,000 underserved children in schools across Utah – the first of its kind in the state.

Proving the value from day one

From a business perspective, Dr. Adams recognized that in order to succeed, the program would need to be able to prove their value and run like a cost-effective private practice.

As they were essentially taking over a failed United Way campaign, the team sought to ensure they did not repeat that organization's mistakes, such as inappropriate administration, unreliable volunteer hygienists, and use of inconsistent, low quality sealants. The *Sealants for Smiles* team built the organization based on solid business practices, including:

- Secured dental sealant sponsorship from a reputable company for donation of high-volume inventory of a single, consistent product.
- Hired dedicated hygienists (retrained yearly by the dental sealant company) who use consistent, best practice protocols to ensure continuity of service. Dr. Adams noted that they paid the hygienists well but demanded high productivity, and as a result, in the first year the organization delivered four times as many sealants as United Way had, within the same budget.
- Partnered with benefits company, Dental Select, to develop electronic dental records to effectively track data on all services delivered and monitor health outcomes over time.
- Developed real-time reporting and outcome measures to report on progress for each school visit, and big picture perspectives on the number of sealants provided vs. unmet dental needs.

Evolving the model for prevention

Since their launch four years ago, *Sealants for Smiles* has delivered over 66,000 sealants, providing $4.5 million in dental services at no cost to parents or schools. When they started in 2007, 51% of the children evaluated in 2nd and 6th grade had unmet dental needs; by 2011 that number had dropped to 35%. The impact of the program is especially significant given the fact that the majority of these kids are Hispanic or other ethnicities, often with parents who are illegal immigrants who might never come to a dental office. Without programs like this, many of these children would end up in the emergency room.

To illustrate the severity, Dr. Adams recounted a touching episode about a young Hispanic patient:

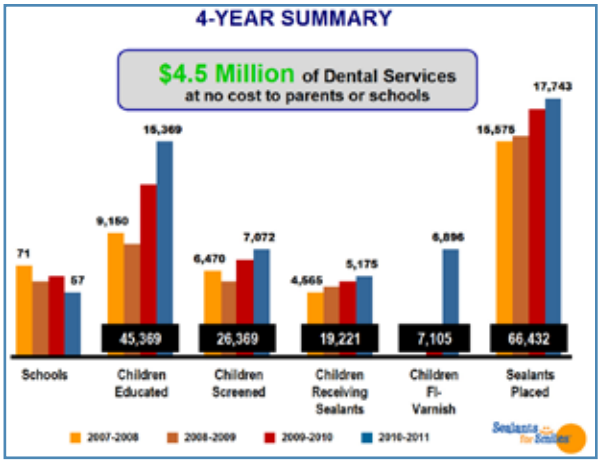
> "*She complained that her mouth bled when she brushed, and I told her the hygienist would help her with that, but she could also take care of it herself with dental floss. She replied that her family can't afford dental floss, and she has to share her toothbrush with her five brothers and sisters. I later asked the principal how many kids have a similar situation and he said it was about 95%. It's basically a third world country right here in our community. That's what we're dealing with*."

In delivering preventive services, the program also provides recommendations on follow-up and referral to community dentists. While there is a strong likelihood that these children will not see a dentist for the restorative care they need, the dental sealant and fluoride treatments they receive at school are a good start toward improving their oral health.

To continue evolving the program, *Sealants for Smiles* has grown in scope in a variety of important ways, including:

- Increased services to include fluoride varnish for all children; oral health screenings by a licensed dentist for 2nd and 6th graders.
- Increased funding to support children eligible under Medicaid, CHIP, and third-party payers.

- Expanded outcomes measures to include rescreenings; tracking sealant retention and percentage of decay in sealed teeth; and a four-year review by school and Medicaid reports by teacher. This last report is important as teachers are instrumental in encouraging kids to participate in the sealant program by returning permission slips (available in 13 languages).



  When the principal sees a low number of participating children for a given teacher, it is a good indicator they do not understand the importance and there is opportunity to engage them to improve the outcome Additionally, Medicaid monitors help the team identify how many Medicaid-eligible children they need to see per year at a given school in order receive funding. Often the numbers required are low and simply prompting principals and teachers is enough to motivate them into action to ensure the program returns another year.

- Enhanced oral health education delivered to classrooms via an entertaining DVD that teaches children about maintaining good oral health. In a study of nearly 5,000 6th graders that tracked their understanding of oral health concepts before and after viewing the DVD, the *Sealants for Smiles* team found a 15% increase in comprehension.

Rebranding school-based preventive oral health programs

As *Sealants for Smiles* continues to see success rates rise, Dr. Adams is passionate about extending care to include entire schools, pre-kindergarten through 6th grade. By reducing the levels of unmet dental need and incidence of caries, the remaining percentage of children needing restorative care would be low enough to be manageable for available dentists. As part of this strategy, he advocates the rebranding of sealant programs to be represented as school-based oral health education and prevention programs. By increasing the emphasis on prevention education, we can further reduce caries incidence, especially in the older kids who can better understand the concepts.

After running the numbers, the program determined it was financially viable to deliver services school-wide if enough Medicaid-eligible children participated. Recently, they piloted the effort, providing sealants and oral exams to over 900 kids at the state's largest elementary school.

Going forward, to ensure success for an expanded school-based program for prevention, Dr. Adams emphasized the need for excellence in three infrastructure components:

- Recordkeeping – Accurate, digital records with real-time entries for each child helps ensure that precise data is tracked to prove the value and impact of the program on health improvements across the state.

- Reporting – Providing evaluation reports to principals and teachers by grade helps them understand the overall need, as well as priority levels for each child in terms of urgent, moderate, or early intervention needed. This reporting also helps build buy-in with the schools and increase participation.

- Outcomes measurement – Essential to the program is measuring progress to highlight how many children are receiving care, the impact of services provided, and the increase in oral health understanding as a result of the educational component of the program.

If we want the overarching "brand" for dentistry to convey a dedication to improving oral health and overall health, a key way to communicate that brand is to increase our commitment to prevention. By providing access to programs like *Sealants for Smiles* that deliver both preventive services and oral health education, we can help influence public perception of the dental profession as a supportive partner in maintaining a healthy lifestyle.

To learn more, visit the Sealants for Smiles website: ***sealantsforsmiles.org***

Lewis N. Lampiris, DDS, MPH

American Dental Association - Director, Council on Access, Prevention and Interprofessional Relations

Prevention and the American Dental Association

As a strong advocate for prevention in oral health, the American Dental Association (ADA) invests in a number of valuable initiatives to promote prevention awareness and access to preventive services. Leading many of these efforts is the ADA's Council on Access, Prevention and Interprofessional Relations (CAPIR), whose mission is to provide leadership, vision, and coordination of the ADA's activities to advance oral health care within the health delivery system, promote prevention as the cornerstone of oral health, and improve access to oral health services for underserved populations.

At the 2011 Institute for Oral Health conference, Dr. Lewis Lampiris, the director of CAPIR, provided a look into how the ADA works, and highlighted policies, programs, and activities that promote dental disease prevention.

Inside the ADA

The ADA is guided by their strategic goals to support dentists in succeeding throughout their careers; serve as a trusted resource for oral health information; improve public health outcomes through effective collaboration across numerous stakeholders; and to ensure the financial security of the ADA to enable them to support strategic initiatives.

The three components of governance

To establish oral health policies, the ADA relies on three tiers of support in their organization:

- House of Delegates is the supreme authority as the legislative and policy making body of the ADA.
- Councils develop and recommend policies to the House of Delegates, which are transmitted through the ADA Board of Trustees.
- Board of Trustees manage administration, including implementing policy and overseeing the day to day business of the ADA.

Promoting prevention through CAPIR

The Council on Access, Prevention and Interprofessional Relations (CAPIR) is dedicated to advancing oral health care by promoting prevention as "the cornerstone of oral health" and improving access to care for underserved populations. CAPIR focuses heavily on collaboration with multiple stakeholders and oral health champions to help drive policies that support population-based prevention strategies such as community water fluoridation and school-based dental sealant programs.

ADA Policies for Prevention

While the inner workings of the ADA are complex, their focus on prevention is made simple by targeting five core concepts that guide their policies for improving oral health:

- Increase collaboration to promote consistency and adoption of best practices
- Replicate effective programs and provide measurable outcomes
- Build the science base to establish evidence-based guidelines
- Increase workforce capacity, diversity, and flexibility
- Change perceptions about oral health and prevention, across the public and providers

Currently, the ADA has more than 35 policies related to prevention, such as those centered on:

- Fluoride varnish use, school-based fluoride mouthrinse programs, and topic fluoride programs.
- Community-based fluoridated water programs, with recommendations for fluoride levels, home water treatment systems, and more.

To learn more about current ADA policies, visit: ada.org/currentpolicies.aspx.

- Childhood caries prevention through school-based oral health risk assessments and public awareness campaigns about childhood caries.
- Oral health and disease prevention education in health care curricula, non-dental health training, and patient education. Additional initiatives are underway to integrate oral health awareness into learning standards in grade schools and beyond.
- Oral health literacy policies that provide definition and platforms for educating dental professionals and community caregivers on how to effectively guide patients into maintaining good oral health.
- Nutrition recommendations about sugar-free foods, drinks, and medications to promote caries prevention. Currently, CAPIR is collaborating with other ADA councils on recommendations that address complex issues related to oral health and nutrition.
- Tobacco use in terms of prevention and cessation resources to reduce incidence of oral cancer.

ADA Programs and Activities Focused on Prevention

In addition to prevention-oriented policies and awareness campaigns, the ADA helps support the dental profession and the public through a range of science-based programs and resources.

ADA Center for Evidence-Based Dentistry

A primary focal point is their online resource, the ADA® Center for Evidence-Based Dentistry™ (ebd.ada.org). The site features clinical guidelines, systematic reviews, and critical summaries for dental professionals, as well as a patient-friendly version with "plain language" summaries and

"The ADA Evidence-Based Dentistry website is an amazing source of information on using the scientific evidence and clinical expertise of dentists, as well as patient needs and preferences."
–Dr. Lewis Lampiris

patient resources. This ADA Evidence-Based Dentistry site is also now optimized for mobile devices (visit mobile.ebd.ada.org).

- Clinical Recommendations - Currently available are eight clinical recommendations related to disease prevention, such as those for topical fluoride application and non-fluoride caries prevention, oral cancer screening, and treating tobacco use.
- Systematic Reviews – Over 1,700 reviews updated quarterly on a wide range of topics such as community oral health and oral health literacy, geriatric and special care dentistry, pediatric dentistry, preventive dentistry, oral cancer, and tobacco use and cessation.
- Critical Summaries – Available for all of systematic reviews, these brief summaries provide key concepts and clinical implications in a user-friendly, one-page overview.

Caries Risk Assessment

To help dental teams work with patients to identify caries risk and prevent disease, the ADA has developed two downloadable Caries Risk Assessment forms. One form targets children aged zero to six, the other is for all patients over six years old. These forms are available online at: http://gsa.ada.org/search?q=Caries+Risk+Assessment+Form&site=ADAorg_Collection&client=ADAFrontEnd&proxystylesheet=ADAFrontEnd&output=xml_no_dtd.

CAPIR's prevention-focused activities

A primary objective in CAPIR's activities involves identifying the diverse considerations across the many stakeholders that comprise the infrastructure for creating a system of oral health care. By gaining a complete picture –one that factors in private practice dentists, safety net clinics, local health departments, federally qualified health centers, schools, Head Start programs, and others– more effective decisions can be made to do the greatest good.

In their focus on prevention, CAPIR manages programs such as those for:

- Access to dental care, community oral health infrastructure and capacity.
- Geriatric dentistry and special needs care.
- Population-based prevention such as water fluoridation, tobacco cessation, nutrition, and facial protection related to sports dentistry.
- Oral health literacy including community outreach to raise awareness on early childhood caries with high risk, minority populations. As the only health care agency to focus on health literacy, the ADA's programs have been used as a model by the American Medical Association and others.
- Interprofessional relations that support integration with medicine such as programs targeting the connection between diabetes and oral health, and oral health care for patients with complex medical conditions.
- Community Dental Health Coordinator pilot program, which helps address the workforce capacity problem by introducing a new member of the dental team.

Advancing Prevention with a New Dental Team Member

A significant burden on the dental care system is the lack of access and support for millions of Americans in low-income and rural communities. The ADA has introduced a solution by sponsoring the Community Dental Health Coordinator (CDHC) Pilot Program. The 18-month training program extends the scope of Community Health Workers to include oral health competencies and basic dental care skills. CDHCs can then serve as a valuable, trusted resource in their own communities where residents have little or no access to dental care. As an extended member of the dental team, a CDHC serves as a liaison between health services and the community through outreach and counseling, helps facilitate access to care, and works to improve the patient experience with culturally relevant communications.

The 18-month CDHC training program, launched in March 2009, includes one year of online modules in dental skills and community health skills, followed by six months of clinical internship. Currently, training is underway at universities in Arizona, Oklahoma, and Pennsylvania, and they receive a certificate of completion. The primary goal for CDHCs is prevention, through raising awareness on oral health and helping individuals and families in the community get the care they need.

Some key responsibilities of CDHCs include:

- Coordinating access to dental care, including scheduling appointments, enrolling in Medicaid and CHIP, arranging transportation, and support to reduce personal barriers such as language translation and counseling.

- Providing culturally appropriate health education such as oral health literacy and motivational interviews, nutritional guidance, and tobacco cessation –all in simple, patient-friendly language, and with the appropriate sensitivity of a trusted community partner.

- Perform basic dental services (under supervision) including caries risk assessments, oral hygiene education, fluoride varnish and dental sealant application, x-rays, and temporary restoration placement.

This new generation of community-based dental team members helps to bolster workforce capacity for low-income populations served by schools, social services, Federally Qualified Health Centers, Head Start sites, tribal clinics, institutional settings, and private practices.

To measure the effectiveness of the CDHC program, the ADA will be evaluating it until September 2013, exploring key questions such as:

- Does the program help improve access to oral health care?
- as the program positively impacted oral health outcomes?
- Is the program financially sustainable?

Improving Oral Health through Collaboration

The ADA sponsors many collaborative events to bring together experts focused on improving oral health. Events cover a broad spectrum of population needs, from summits on early childhood caries and oral health in Native Americans, to consensus conferences on care for vulnerable older adults and Medicaid populations. In the interest of broader collaboration, the ADA shares findings from these events on their website (ada.org), and recently hosted a webinar of proceedings from a conference on vulnerable elders (ada.org/nccc). Additionally, the organization continually participates in national meetings, workgroups, advisory committees, and expert panels focused on improving oral health.

Developing a National Prevention Strategy

As a final note, Dr. Lampiris highlighted a key initiative for collaboration across the health care industry: to develop a National Prevention Strategy for oral health. The initiative will bring together numerous stakeholders who will have an impact, including government, private sector dentistry, dental education, financing, non-dental health care providers, advocates, public health, and community representatives. Planning begins in 2012, and in 2013 stakeholders will convene to define a consensus strategy on a unified approach for prevention that works effectively to incorporate valuable scientific evidence, increase public/private partnerships, and ensure the use of proven prevention measures to demonstrate the value of prevention in improving oral health.

John Luther, DDS
Chief Dental Officer, UnitedHealthcare

Take Care New York: An Innovative Approach to a New Health Mandate

As part of the equation in "rebranding the profession" to improve oral health, leaders in the dental benefits industry are looking to innovate dental care delivery to increase prevention in order to improve outcomes by reducing patient risk and associated costs. Dr. John Luther, Chief Dental Officer at UnitedHealthcare, introduced his presentation by emphasizing the need for a "paradigm shift from a surgical-based profession to one that focuses on individual patient needs, is more evidence and risk-based and prevention-oriented." In addition to providing an overview of where dental benefits are today, Dr. Luther highlighted a progressive partnership that brings together UnitedHealthcare and New York University's Dental School to encourage prevention and early intervention.

Dental Benefits: Are today's plans keeping pace with real needs?

Currently, 54% of Americans have access to dental benefits, but are people getting the most appropriate care? While the dental profession recognizes risk assessment and associated preventive strategies are important, the focus continues to be on treating the downstream effects of disease and a "one size fits all" approach to plan design. The industry needs to shift its efforts to a patient centered risk based model, designed to manage the disease itself through the use of individual risk assessment and a focus on prevention,, both of which should be major drivers in reducing costs.

These efforts are supported by emerging evidence-based guidelines which are increasingly centered on reducing risk and integrating risk assessment as critically important best practice tools. Dental benefits need to evolve to keep pace, to eliminate the "one size fits all" model and more appropriately address individual needs. As one commonly cited example, most dental plans cover two cleanings per year, yet many high-risk patients, such as those with periodontal disease, might have better health outcomes with three or even four cleanings per year.

"Building a future based on prevention would give us the win-win situation we're all looking for. It would decrease costs and increase quality of care. I believe that's the only hope we have of moving forward."

– Dr. John Luther

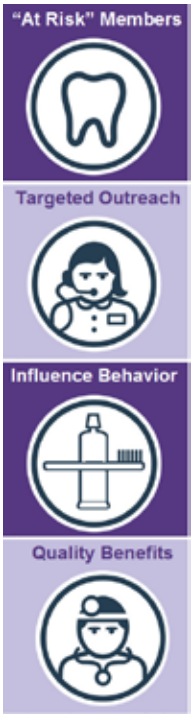
Alternatively, low-risk individuals might need only one cleaning per year and would benefit from lower cost premiums as a result. To meet these consumer needs, we need a new approach to dental plan design, one that manages costs by shifting the focus from complex restorative care to prevention, early diagnosis and intervention, using non-surgical approaches whenever possible. Instead of focusing on the impacts of dental disease, we would manage the disease itself, and look for opportunities to reward wellness.

What can carriers do to advance oral disease prevention?

Our current approach to dental plan design faces many constraints, such as our procedure based coding system, the need to manage costs, and the regulatory environment, including health care reform. Changing the paradigm involves major challenges, such as how to evolve procedure-based benefits into a risk-based, patient-centered model that adequately compensates providers for prevention as well as disease management.

A proactive approach to disease management

UnitedHealthcare is working within the current benefit structure by developing innovative approaches based on the principles of "disease management" to create a more proactive model that identifies at-risk members who are not actively seeking dental care and encouraging behavior changes to help improve health outcomes and reduce costs.



- Focus on at-risk members – Individuals such as children, pregnant women, and those with chronic conditions such as diabetes, who rarely see a dentist, are identified using medical and dental claims data and are encouraged to engage in healthier behaviors for maintaining good oral health.
- Perform targeted outreach to parents, patients, and caregivers using creative communication strategies (websites, newsletters, interactive voice messages) to promote the importance of prevention in long term oral health. For children in particular, it is especially critical to encourage care by age one and to find a "dental home" for regular care.
- Influence behavior changes by monitoring claims activity to track member follow up with the dentist and procedures received, adjusting communications to improve engagement with at-risk members.
- Deliver quality benefits that offer enhanced coverage for specific at-risk populations, including expectant mothers such as additional oral exams, cleanings, fluoride and sealants, and periodontal care.

Today's consumer is growing accustomed to increased levels of product personalization –and they will soon demand that of their health care. As Dr. Luther noted, "People are going to expect that we provide customized care to fit their individual needs. That's something all of us in the dental benefits industry should keep in mind if we want to maintain our relevance."

Take Care New York – An innovative solution for caries prevention

When New York City introduced the two-year Take Care New York mandate to increase dental visits in children under age 21 and pregnant women, Dr. Luther recognized the importance of forming strategic partnerships that could advance prevention, help stem early childhood caries, and increase health literacy. UnitedHealthcare (UHC) engaged their physician and dentist networks in New York City and partnered with New York University (NYU) Dental School to serve as a "center of excellence" for complex care and help in developing education for physicians, dentists and interested midlevels.

The primary objective is to get young children into a dental home as soon as possible, focusing on those at higher risk. Because very young children are much more likely to visit their physician before their first visit to a dentist, primary care physicians (pediatricians and family practice physicians) are educated and encouraged to perform basic oral screenings on young children presenting for well child visits, apply fluoride varnish, provide anticipatory guidance and refer the children to a dentist. UHC then sends letters to patients/parents emphasizing the importance of finding a "dental home" and providing referrals to dental offices in their community.

In addition, NYU Dental has been available for treatment of complex cases, and UHC has worked on developing measures for monitoring health outcomes such as utilization of fluoride varnish. Overall, UHC has focused heavily on effective communications to address the diverse needs of the various stakeholders. From educating physicians on caries risk assessments and urging dentists to promote prevention and non-surgical treatment, to helping patients understand the impact of oral health and increase their comfort with receiving dental care. Furthermore, UHC recognizes the responsibility of the dental plans to coordinate care between care providers, ensure timely payments, develop clinical information, and deliver data reporting on process and outcomes.

Defining success for Take Care New York

Based on measures required by the TCNY program, UnitedHealthcare has developed metrics for tracking progress on process and outcomes for this health mandate, monitoring rates of dental visits, caries incidence, and fluoride services provided. At a high level, they define success through increases in the following:

- increased number of dental visits
- more physicians applying fluoride varnish
- increases in children receiving dental care at a younger age
- higher utilization of preventive services and fewer restorative services
- improved health outcomes, and lower costs as evidenced by claims data

Take Care New York results as of September 2011 are promising:

Nearly 96% of preventive procedures were performed on children age 6 and under, with 62% on children 3 and under.

Lessons Learned

While most health care providers would agree that prevention –especially in children—is critically important, Dr. Luther offered a reminder that the shift in thinking required to execute this type of program has not been fully embraced by practicing physicians and dentists. Some lessons learned so far in the Take Care New York program include:

- Physicians may see the inclusion of preventive dental procedures in their practices as disruptive, and may be reluctant to make changes in their practices, although large group practices and pediatricians have embraced delivery of these services more quickly.
- Although fluoride varnish is important in improving oral health, greater effort needs to go into ensuring referrals to dentists, which is the primary objective of the program.
- To help encourage physicians, we need to offer additional incentives such as CE credits and flexible options for oral health education, and to simplify claims filing for fluoride varnish application,to ensure it easily fits within their existing processes.

Expanding Prevention: UHC initiatives nationwide

In addition to Take Care New York, UnitedHealthcare is developing similar efforts in other States and is working with organizations nationwide to promote prevention and early intervention to help improve health outcomes. Some examples include:

- Developing outreach programs and physician education to promote dental visits and fluoride use, particularly in states such as Mississippi, which have a high rate of early childhood caries.
- Sponsoring research for the California Practice Based Research Network at UC San Francisco in its study on the impact of CAMBRA (CAries Management By Risk Assessment) in private practice. The goal of the study is to demonstrate that managing caries based on risk status in private practice can significantly improve outcomes by reducing the need for restorative treatment.
- In addition to efforts in Early Childhood Caries, UHC is engaged in a Medical-Dental Integration program where dental and medical data is combined to determine if compliance on the dental side can positively impact chronic conditions such as diabetes and cardiovascular disease, and help decrease medical expenses. As an example, UHC may look at high-risk patients with diabetes who also have periodontal disease yet rarely see a dentist. They then reach out to those patients to encourage dental visits, monitor results, and track claims data to determine the impact on medical and dental outcomes and costs.
- Focusing on "wellness" by including dentists as part of a collaborative health care team to improve overall health. Currently, UHC is sponsoring a pilot program in which dentists provide biometric screenings for diabetes and hypertension, and patients receive the assessment as well as educational materials and counseling on the importance of maintaining good oral health and nutrition. Screening results can also be shared directly with the patient's physician.

Despite these important steps forward, dental benefits need to evolve to reduce the focus on restorative care and other reparative approaches as drivers in dental practice, and increase incentives for preventive services and more medicinal strategies to manage dental diseases. While carriers are increasing their use of evidence-based guidelines in plan design, they have been slow to develop good patient risk assessment tools and corresponding preventive benefits. The future of dental plans needs a new model centered on prevention and non-surgical intervention. By promoting risk assessments, innovative diagnostic tools, even products that help improve oral health, dental benefits can more quickly achieve the goal of improving outcomes while reducing costs.

David S. Gesko, DDS
Dental Director and Senior Vice President, HealthPartners

Workforce Considerations Related to Prevention

As Dental Director at Minnesota's HealthPartners organization, Dr. David Gesko helps lead many innovative programs for improving oral health through prevention strategies. At the 2011 Institute for Oral Health conference, Dr. Gesko addressed the current state of the dental workforce and how population demographics are necessitating changes in today's dental practice. To meet the increasing need for preventive services and dental care in underserved populations, he highlighted progressive solutions that extend the traditional dental team with new roles and closer integration with primary care providers.

Our Dental Workforce: Can we keep up with population growth?

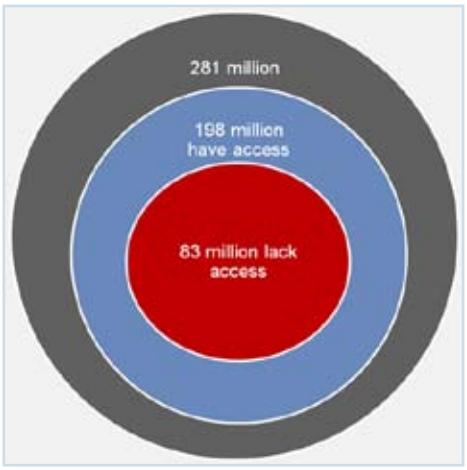
The wave of "baby boomers" reaching retirement age in 2011 brings a serious wake up call to the dental profession when we consider the rapid decline in dental workforce available to meet the needs of this population. Additionally, we are seeing substantial growth in low-income minority communities, which include millions of children who have little or no access to dental care.

- Seniors vs. dentists – We are facing an alarming disparity between the percentage of adults over age 60 versus the number of students entering dental school. In Minnesota alone, while the senior population is expected to more than double over the next 20 years, dental school class size is already 25% below what is needed to serve this population. By 2030, the state may see a dental care crisis -- over 100% understaffed to handle geriatric patients.

"Some say dentistry is a great place to be right now because we're in demand. That's true. But in terms of meeting the needs of the population—we've got a big problem."

– Dr. David Gesko

- Retiring dentists vs. dental graduates – Studies show that the number of retiring dentists is rapidly outpacing the number of new dental graduates entering the field; this year by about 10%. While this contrast is expected to level off somewhat by 2020, we need immediate solutions to expand the workforce to accommodate care for growing populations.



- Impact of immigration trends – Like many states, Minnesota is seeing a substantial rise in diverse populations, expecting that "over half of total population growth in the decade ahead will be minority." As an example, the Twin-Cities now

have the greatest population of Somalians outside of Somalia itself. Our nation has over 80 million people who lack access to dental care, and this growth in diversity is further accelerating the need.

What's a Solution? Introducing the new role of Dental Therapist

In referencing the conference theme of "Rebranding the Profession", Dr. Gesko emphasized the need to innovative changes in dental care delivery to reduce the gap between population growth and dental workforce. Since 2008, Minnesota has been leading the nation with educational programs that introduce a new role in the dental profession: the Dental Therapist. These new clinicians support the team approach advocated by the HealthPartners to better support communities with more effective solutions for delivering care.

With the first class of dental therapists entering the workforce in 2012, these clinicians are trained to support the entire dental practice by providing a strong bridge between the dental office and patient families. They extend the reach of dentists and, help educate patients, and allow greater time for dentists to focus on treatment planning and complex restorative care.

Educational tracks for Dental Therapists

Minnesota law provides for two categories of Dental Therapist (DT): a clinician trained to deliver basic dental services; and an Advanced Dental Therapist (ADT), who, by definition, is a hygienist who then receives additional training. Both levels gain the experience to provide a range of preventive services under general supervision, such as:

- Oral health instruction and disease prevention education
- Preliminary charting of the oral cavity
- Producing dental x-rays
- Mechanical polishing
- Applying fluoride varnishes and sealants

Dental Therapists undergo in-depth pre-clinical and clinical training over a 28 month program, with Bachelor and Masters Degrees available, and much of their coursework and testing is identical to dental students. Their final terms include outreach experiences, which help prepare them to support a key goal of the overall Dental Therapy initiative: to deliver services to underserved populations including rural communities where there is a lack of traditional dental offices.

Another Key Solution: Focus on prevention

Oral health risk assessments

HealthPartners embraces the "Triple Aim" principles of the Institute of Medicine, which emphasize "simultaneously optimizing health, patient experience, and affordability." To meet this goal, HealthPartners focuses heavily on prevention. An important aspect of that is the use of electronic dental records to track data on risk assessments for caries, periodontal disease, and oral cancer. In this way, they can

effectively monitor trends in clinical performance and health outcomes, and establish best practice guidelines for improving oral health and reducing costs through prevention.

HealthPartners Dental Group also engages patients in understanding their oral health risks by providing a Personal Care Report. The report highlights results from their risk assessments for caries, periodontal disease, and oral cancer, explains risk factors driving those results, and provides recommendations to help them improve their health.

Engaging primary care in caries prevention

Another key factor in advancing caries prevention –especially in children where caries is the #1 chronic disease– is enlisting the help of primary care providers to deliver basic preventive dental services such as applying fluoride varnish to at-risk children. As Dr. Gesko joked, many physicians are trained to consider the mouth as simply the portal for delivering medications, so it is up to the dental profession to advocate the importance of good oral health on overall health. As Medicaid has gotten on board with reimbursing physicians for these services in most states nationwide, primary care providers have become more receptive to receiving training to support better oral health in their patients. At HealthPartners, their medical group collaborates closely with the dental group to ensure the best experience and outcomes for patients. Currently all HealthPartners physicians are trained to provide varnish, and, after only nine months, up to 86% of eligible children are receiving this preventive service.

Educating primary care on the impact of gum disease

Dr. Gesko emphasized that while the overall health impacts of gum disease and periodontal disease are common knowledge to dental providers, many primary care physicians are less aware of the severe implications of poor oral health. A valuable step in "rebranding the profession" is to raise awareness with our medical colleagues on how oral bacteria contributes to serious health conditions such as diabetes, heart disease, stroke, respiratory and bone diseases, pre-term births, and more. As an example, periodontal infection –affecting 75% of adults over age 35– generates bacteria that aggravate inflammation throughout the body.

Electronic health records that integrate medical and dental

To more effectively care for patients with chronic health conditions such as diabetes and congestive heart failure, the HealthPartners electronic dental record links with medical records. Dentists can download medical data into a patient's dental record to gain a more comprehensive picture of health needs and treatment strategy. Through the electronic dental record, providers can access a website with treatment recommendations for patients with chronic conditions, which helps improve the quality of care and ensure the most appropriate protocols are used.

Understanding the power of saliva

Another vital concern in oral health is the impact of xerostomia or "dry mouth", often caused by medications. This lack of saliva (especially common in older adults) often leads to inflammation and sores in the mouth, as well as cavities. We need to consider solutions to counteract xerostomia as an important part of prevention. As a positive step

See also the 2011 IOH Conference presentation by Dr. David Wong on the "new frontier" of salivary diagnostics.

forward, the HealthPartners Pharmacy now flags medications that cause xerostomia, and pharmacists provide an educational flyer to patients about how to recognize and reduce the symptoms of dry mouth. For example, patients are encouraged to increase their intake of water and reduce caffeinated and sugared drinks, all with the goal of reducing oral health risks and improving the overall patient experience.

When we look at the big picture of health care, we still see the common theme that 20% of the people generate 80% of the costs. As a profession, we can help reduce the impact with proactive approaches –focused on prevention-- that increase access to care for high-risk populations, identify risks early, and educate both patients and our medical colleagues to improve overall health outcomes.

Courtney Chinn, DDS, MPH
Columbia University, College of Dental Medicine

My Smile Buddy: Bio-Behavioral Disease Management for Young Minority Children

In today's dental profession, we often think about patients in terms of improving access, treatment, and benefits; however, we rarely focus on the real patient experience. Many generations of dentists were not trained to communicate with patients on a personal level, yet developing a deeper engagement is vital in helping to educate patients and families on oral health, and encourage them to adopt healthier behaviors that include regular dental visits. This year's Institute for Oral Health annual conference highlighted a new generation of dentist: Dr. Courtney Chinn from Columbia University's College of Dental Medicine, who has helped developed an innovative approach for engaging parents and children to teach them about the importance of oral health and prevention.

Dr. Chinn provided an overview of his team's interactive mobile computer application called *MySmileBuddy*, a family-friendly application that can be used by health care workers and non-dental counselors in community settings to educate parents and perform risk assessments for early childhood caries.

Preventing Childhood Caries: How do we change family behaviors?

Currently, our nation faces a growing epidemic of early childhood caries (ECC), with studies estimating that 44 percent of four year olds and 34 percent of three year olds have caries. Even with surgical repair, recurrence of new cavities within two years is 40-60 percent. (Dr. Chinn posited that if we were cardiac surgeons, we would never accept this failure rate; why do we accept it in dentistry?) Numerous programs are emerging to increase access to care and deliver preventive services, yet to fully address the problem, we need to take a further step back and consider the family dynamics where poor oral health habits develop in the first place.

In his focus on the social sciences aspect of dentistry, Dr. Chinn emphasized that the challenge is to bridge the gap between health education and health behavior change. To make the point, he offered a simple scenario that may be common to pediatric dentists: He sees a high-risk child, recommends they use prescription fluoride, and the parents promise to use it. Yet when he sees that child again, he discovers more cavities and can see the fluoride has not been used. Why?

"As dentists, we know ECC is an infectious, diet-dependent disease and predictive of life long caries risk. But how do we communicate that to our patients and affect real change? It's easier to slap in the filling, even though we know that doesn't stop the disease process."
–Dr. Courtney Chinn

To truly prevent ECC, we need to bridge that gap between what we recommend to patients and what they actually do. Dr. Chinn and his team (led by Dr. Burton Edelstein, founder of the Children's Dental Health Project) answered that call with an approach that personalizes the education, helping families understand oral health in terms of how they live their daily life. By exploring their nutritional habits and social context, we can more effectively motivate healthy behaviors that families can easily adopt to help prevent lifelong caries risk.

Understanding factors that influence behavioral change

Because the project was geared specifically to help low-income, minority children, an important first step was to understand the overall social context of these families. To influence behavioral changes that could reduce ECC, the approach to oral health education would need to address many social factors beyond economics such as:

- Society – Race, inequities between economic groups, and access to dental care resources.
- Community – Quality and safety of the family's home, schools, and social environment; community oral health resources.
- Family – Family culture, economic status, education level of the parents, and parents' own health status and health behaviors.
- Children – Physical, genetic, and demographic attributes, health behaviors and development, use of dental care and access to dental insurance.

Who should deliver this message?

In bringing forth this solution, another key consideration was: who is best to deliver this message? While dentists have the specialized knowledge, they are typically procedure-focused and have no way to bill for extra time spent counseling a parent. Hence, their frame of reference and financial motivation might make them less effective in the social dynamics necessary for the new approach. The team then considered community health workers, and found that concerns about their lack of dental knowledge were outweighed by the valuable "insider" knowledge these caregivers possess. Often they have established trust with families in their community and have access to them outside a dental office. Community health workers also typically have a strong understanding of cultural contexts that could help ensure their communications are appropriate and well-received.

What role can technology play and what would it look like?

Moving forward with the idea of enlisting community health workers to engage families, the team focused on what ECC management might look like when delivered by a non-dentist in a community setting. They recognized that technology could play an important role on three fronts: it could help ensure oral health messaging is delivered accurately and consistently; provide a model in which to record patient and family assessment data; and offer a compelling, interactive, and highly visual educational experience.

Supported by a grant from the National Center on Minority Health and Health Disparities, to design the application the team formed a trans-disciplinary taskforce that included dentists, pediatricians, nutritionists, public health workers and social workers, and experts in educational technology. The group's primary objectives were to:

- Develop an electronic, interactive tool for ECC risk assessment and oral health education that is easy to understand and portable for use in home and community settings.

- Train community health workers to use this tool to help low-income, minority, low-literacy parents understand ECC risks and set healthy goals for preventing caries.

MySmileBuddy

The end result is *MySmileBuddy*, a highly visual Apple® iPad® application backed by a robust database. The interface design factored in feedback from focus groups with Head Start parents and staff to identify words and imagery that would resonate best with them, even considering foods that would be culturally relevant to their communities. The group also interviewed local dental safety net providers to understand variables such as the types of fluorides they can access. With this level of detail, they could tailor the application to ensure relevancy for each community.

Assessing *MySmileBuddy*: How well is it doing?

With pilot programs launched in early 2011, the development team has been evaluating how well *MySmileBuddy* is meeting key objectives. To determine if it is a viable risk assessment tool, they have been tracking clinical findings, and will compare them with paper risk assessments conducted at the Columbia University Pediatric Dental Clinic. To assess the value and helpfulness of *MySmileBuddy* as an educational tool, the group has interviewed community health workers and families, and so far the feedback has been very positive.

Lessons Learned

To continue to refine *MySmileBuddy* and better understand their audience, Dr. Chinn's team has looked closely at lessons learned through feedback from all the stakeholders:

- Parents – Their insights have revealed a great deal about the social context in which families view their health care. One interesting finding was that minority parents often expressed they are "culture-bound to express deference to health professionals." Unfortunately, as Dr Chinn put it, they are essentially saying, "Even if I don't agree with your recommendation, I'm going to agree with your recommendation, but once I leave your office..." Additionally, parents admitted they were less comfortable with a dentist, and that although they had heard oral health messages before, they "believed it more" coming from a trusted community health worker who understands their culture.

- Community health workers – Community health workers made a surprising claim that oral health was not a problem in their community because they were able to send kids to a dental clinic. They felt they had solved the issue and were instead focused on pressing concerns about jobs, housing, and food. However, as community health workers recognized their responsibility in connecting families to dental care, this provided the opening to engage them in educating parents and motivating behavior changes to help reduce childhood caries. While they wanted to avoid assuming a role as a dental care worker (e.g., doing oral exams), they expressed great enthusiasm for *MySmileBuddy* as an educational tool, and were eager to help encourage families toward healthier behaviors.

After many months of development and community engagement, *MySmileBuddy* is moving forward with a working prototype, which thus far has been validated with enthusiastic response by a small group of community health workers. As we look at the future of dentistry in terms of improving oral health and overall health, innovative approaches to prevention and health literacy —like *MySmileBuddy*— will be an essential part of the picture.

Dan Buettner

Best-selling Author & National Geographic Explorer; Founder of Blue Zones®

Blue Zones: Secrets of a Long Life

To culminate the 2011 Institute for Oral Health conference focused on prevention, best-selling author Dan Buettner shared his vision for a "new paradigm of prevention." In partnership with National Geographic, Buettner has worked around the globe, studying cultures where people consistently live longer and healthier. He introduced Blue Zones, the organization he founded to capture best practices from cultures with longer life expectancy, and the innovative work they are doing to transform American cities into Blue Zones.

How Blue Zones Got Started

According to studies, about 90% of longevity is dictated by lifestyle and environment, as opposed to genetics. On that premise, Blue Zones was founded to determine the key factors in communities worldwide that have greater health outcomes. The goal was to extract a "formula" for longevity that could be used to improve health, wellness, and life expectancy in cities around America.

Today's society is inundated with information about the best ways to increase longevity: exercise, organic food, vitamins, yoga. Yet with no proven remedy to slow or reverse the aging process, Buettner sought answers through an enthnographic analysis, seeking out cultures that demonstrated greater longevity, and finding out how they do it. With a generous grant from National Geographic and partnership with the National Institute on Aging, Buettner convened an international team of experts in medical anthropology, medical research, epidemiology, demographics, and community design. Together they conducted a three year study: first, to identify the five parts of the world with populations over 10,000 where people live noticeably longer; and second, to explore those cultures and learn their best practices for longevity.

The Blue Zones study focused on key criteria, specifically cultures in which people have:

- Up to 12 years more life expectancy
- A fraction of the rate of cardiovascular disease
- The lowest rate of middle age mortality
- The highest rate of people over the age of 100

The answers took them all around the globe; yet in each disparate place, the secrets to longevity were surprisingly similar.

A Visit to Three Blue Zones

Sardinia

In the remote highlands of a small, rugged island off the coast of Italy, more men live to over 100 years old than anywhere else in the world. This region of Sardinia features 17 villages

of about 42,000 people living a simple lifestyle, relatively unchanged for thousands of years. While Sardinia is the only Blue Zone with a genetic component (the second most "genetically pure" people in the world, after Iceland), most of their longevity is attributable to their lifestyle. As the rough terrain of the highlands is not conducive to farming, for centuries men have worked as shepherds, a low-stress job with a gentle, plodding pace. Women are the workhorses in this society, running the household, managing finances, and even responsible for defending villages, a role they have held since Roman times.

In America and across much of the globe, there are six female centenarians for every one male over 100. In Sardinia the ratio is 1:1. Studies suggest that because Sardinian women bear the majority of stress, their life expectancy is reduced somewhat. Nevertheless, the culture demonstrates important keys to longevity:

- Low-impact daily exercise – A Sardinian shepherd's life takes them on five-mile walks over hilly terrain every day for many years. Additionally, the sloping villages of the highlands, and the manual efforts of cooking and gardening keep everyone moving in a natural, healthy way throughout their life.

- Healthy nutrition – As a poor culture, the Sardinians grow their own food, and live mostly on a plant-based diet, breads made of wheat germ, and a little meat once a week. They are famous for their "healthy wine," which tests have shown has three times as many polyphenols (antioxidants) than most wines anywhere in the world. As part of the Sardinian daily diet, this wine may contribute to their lack of heart disease.

- Attitude toward aging – Unlike America and many other cultures, in Sardinia the older you get, the more celebrated you are. Even in their elder years, people maintain active working lives. The culture embraces a strong sense of family, with older generations usually living with their children or grandchildren --not to be cared for, but to actively participate in the vibrancy of the household. Elders cook, garden, care for children, and "transmit wisdom from one generation to the next." One 107 year old woman claimed that the secret to her longevity was that in living with her children, she felt loved and she knew she was "expected to live." Unlike in America, these aging adults would never waste away in a nursing home. They have purpose and meaning that makes life worth living another day.

Okinawa

Some 800 miles south of Tokyo, the island of Okinawa is "ground zero for rural longevity in women." Okinawans have the longest, disease-free life expectancy in the world, living an average of seven years longer than Americans. They have one-fifth the rate of breast and colon cancer; one-sixth the rate of cardiovascular disease –the number one cause of death in America. As Okinawans have intermingled with neighboring cultures for centuries, genetics are rarely a factor in their longevity. Rather, a supportive, communal lifestyle plays a primary role in their long, healthy lives.

Guiding principles that support the Okinawans' longevity include:

- Eating small, healthy portions – While they live mainly on a plant based diet, their nutritional focus lies in moderating how much they eat. For 2,500 years, Okinawans have lived by the Confucian adage to "stop eating when your stomach is 80% full." With a simple prayer before each meal, they prompt themselves to avoid overeating.

- Close connection with community – Unlike in America where many individuals do not have a close network of supporters to relieve stress, the social culture in Okinawa contributes to their longevity. At age five, children are connected in groups of five called *moai*, with whom they engage all their life. Like an extended family, the members in a moai support each other through good times and bad, from sharing crops to alleviating stress through illness, divorce, family deaths. The *moais* demonstrate that even in our modern age, it is possible to develop a system of support that costs nothing to the government or taxpayers; it simply engages people to care for one another.

- Sense of purpose (*ikigai*) – Many Americans plow through their daily lives with no real sense of inner purpose, no immediate connection to what keeps them going every day. In contrast, the Okinawans embrace the concept of ikigai, roughly translated as "the reason I wake up in the morning." This sense of purpose is a driving force in the elders. When asking people over 100 about their ikigai, their responses are clear and immediate. For many it is their children and grandchildren, for others it is the profession they have held for decades: teaching karate or basketweaving, or spearing fish to bring to the family.

America's Blue Zone – Loma Linda, California

Buettner's team was aware that many across our nation might hear of these Blue Zones and think, "Well sure, if I had an easy, stress-free life in a remote village, I'd live longer too. But this is America." As such, the team endeavored to locate a Blue Zone within the U.S., and found it in the unlikely suburbs east of Los Angeles. Loma Linda, California has the highest concentration of 7th Day Adventists, a religious faction that places a strong emphasis on health, and runs 70 of the biggest hospitals in America. While the average U.S. life expectancy is about 78, Adventists tend to live about a decade longer, and have a fraction of the heart disease.

Their longevity can be attributed to the following best practices:

- Healthy nutrition and active lifestyle – Adventists take their diet directly from the bible, mostly plant-based, grains, beans, seeds and nuts. Every Friday evening to Saturday evening, they follow the same rituals of prayer, nutrition, and exercise in the form of a relaxing nature walk. The power is not so much in the events themselves, but in the consistency of a healthy rhythm every week over a lifetime.

- Strong bond with healthy community – Because "social behaviors are as contagious as a cold," the Adventists gain value from communing with like-minded others, which helps ensure their healthy habits ripple through society. The oldest members in the Loma Linda community are often the most active, continuing their careers late in life and volunteering to stay closely connected with the community. As an example, Buettner recounted how, after busily building his own fence, one man in his 90's reported to the hospital– where he performed open heart surgery, a service he still engaged in 20 times a month. In another example, a spry woman over 100 lifted weights daily, volunteered for seven organizations, and helped tend to "old folks" in their 60's and 70's who need care.

Nine Common Denominators for a Longer Life

Blue Zones has identified the Power 9™ that demonstrate that no matter where you go in the world, you will see the same nine principles in action among the world's longest living people.

Move naturally

1. Rather than focusing on intense workouts, longevity is increased through natural exercise repeated consistently in the course of daily life. Regular activity that keeps the body moving might include cooking, gardening, climbing stairs, or walking to meet friends.

Have the right outlook

2. Regularly shed stress - People in cultures with greater longevity do not necessarily have less stress than the rest of us; however, they have "rituals to shed stress." For example, the Okinawans spend 15 minutes each day in meditative veneration of their ancestors; the Adventists have their weekly prayer and nature walk. As stress can trigger inflammatory responses associated with many chronic diseases, alleviating this tension on a regular basis can improve health and increase lifespan.

3. Have a sense of purpose – Longevity is increased by having a clear purpose integrated into one's vocabulary and lifestyle. In the cultures to which Blue Zones has traveled, elders have no sense of "retirement." These people embrace a reason to get up in the morning, a drive to be a valuable contributor to their family and community. A key factor is being closely aware and connected to that purpose. A study by the National Institute on Aging showed that people who could articulate their sense of purpose lived about seven years longer than those who could not –which may indicate the power of really owning that purpose and using it as a tool for longevity.

Eat wisely

4. Enjoy a plant-based diet – Those eating mostly a plant-based diet, with only a small portion of meat once or twice a week tend to live longer. They also incorporate protein from beans, seeds, and nuts, and avoid processed foods.

5. Eat smaller portions – People living longer typically use strategies for eating less, such as using smaller plates, serving only what is needed, and stopping before they feel full. Most cultures with higher rates of longevity enjoy a big breakfast, light lunch, and little or no dinner.

6. Drink a little wine or alcohol each day. Moderation is essential, but apparently the relaxation is a good thing for relieving stress and improving sleep for a healthier life.

Connect with others

7. Enjoy family time – Cultures that invest heavily in time with family and friends live a healthier, longer life than those who focus mainly on work, material gain, etc.

8. Get involved with community – Social connections that offer a sense of belonging, people to count on for celebration and support, can increase lifespan.

9. Belong to a "healthy tribe" – Engaging with people who influence healthy physical and emotional habits is key to longevity. Many habits are contagious, such as overeating, smoking, drinking, drug use, even loneliness. Likewise, so are good habits like eating well, daily walks, and meditation. Because living healthier and longer requires positive influences, it is important to invest time with people who support a lifestyle geared toward longevity.

How to adopt the practices that contribute to longevity

Our health care system spends trillions of dollars every year to fight prevalent diseases, which are mostly preventable. Buettner believes the money is "spent poorly because we're aiming at the wrong target." Even the millions spent on prevention-oriented strategies such as diets and fitness clubs seems ill-spent in light of studies confirming that about 70% of people abandon their healthy rituals within nine months. Blue Zones researchers discovered that a key factor in nurturing sustainable healthy behaviors relies not in individual habits, but in transforming the environment of communities as a whole.

"When it comes to the usual rules for anti-aging, there is still no pill, no hormonal intervention, no genetic solution that has been proven to stop, slow, or reverse aging. You have to invest in things you're going to be doing for a long time. Friends tend to be long-term ventures, with measurable influences on your life."

–Dan Buettner

Optimizing environment for healthier lifestyle

"We live in an environment of abundance and ease," claims Buettner, and it may be our undoing. To increase health and longevity, Americans need to live more like the longest-lived cultures, which place less emphasis on individual gain, and more focus on communal nourishment.

- Reduce unhealthy influences in the community – Look at the environment within neighborhoods and around town to identify where changes could be made to discourage unhealthy behaviors. What are the smoking policies in public places? Are sugary drinks and junk food cheap and readily available? Do child care centers allow kids to watch videos instead of engaging them in play?
- Increase perceived safety in public spaces – Policy for public spaces has a "long-term and pervasive impact" on a society's health. Studies show that by making healthy, safe choices in community spaces –such as cleaning up parks or adding surveillance cameras to increase perceived safety– public activity levels increase by 40%.
- Facilitate movement in interior spaces – A great deal of research and resources exist on strategies for designing spaces such as schools, offices, restaurants, and homes in ways that "nudge people into physical activity." To improve health across a community, it is important to optimize interior spaces so people move and socialize more, and eat less.
- Foster volunteerism to increase a sense of purpose – Most communities offer numerous opportunities for people to find a sense of purpose by helping others or the environment. Whether it is volunteerism, continuing a lifelong career that engages others, or simply helping within the family, studies show that continued involvement in communal activities can help lower health care costs.

Case study: Creating a Blue Zones city

In 2009, with the help of a $500,000 grant from the United Health Foundation, Buettner's organization partnered with AARP and the University of Minnesota School of Public Health and investigated cities across Minnesota where they could try a Blue Zones experiment to transform the health of the community. The group targeted five candidate cities, and while all five were eager to participate, the winning city had to prove their readiness to affect real change. Buettner wanted a city that had strong collaboration across key stakeholders such

as the mayor, city manager, head of public health, superintendent of schools, chamber of commerce, and CEOs of local businesses. To vie for the Blue Zones experiment, civic leaders were asked to demonstrate buy-in by signing an agreement and providing volunteers. The winner: Albert Lea, Minnesota.

To transform Albert Lea's population of nearly 20,000 people, the Blue Zones team focused on optimization on three fronts: environment, nutrition, and individuals.

Optimizing environment

The Blue Zones team started with a platform of 60 evidence-based, cost-effective interventions proven to help a population incorporate natural movement into their daily lives. Instead of widening the main street to bring in more traffic from Minneapolis as planned, the team encouraged leaders in Albert Lea to retain the relaxing charm that made the center of town a safe, welcoming hub of the community. The budget was then diverted to revising spaces around the city to facilitate healthier lifestyle. Some success stories in Albert Lea include:

- Revising the sidewalk paths to ensure that every neighborhood in the city's four quadrants was connected to downtown. In this way, they facilitated more physical activity and community interaction.
- Introducing a trail system around a previously inaccessible green space and around a lake near downtown. Now nearly any time of day, people can be seen walking or biking, enjoying both the activity and the community engagement of this space.
- Adding public gardens with volunteer gardeners to parks that were previously open lawn space.

Optimizing nutrition

To encourage healthier eating habits, the Blue Zones team introduced changes at restaurants, grocery stores, workplaces and schools including:

- Restaurants – They made subtle adjustments, such as reducing the size of plates, requiring customers to ask for bread rather than simply delivering it to the table, and rewording menus to gently nudge people away from highly caloric choices. The latter used a little reverse psychology with terms like "fresh" and "healthy," which people tend to avoid in favor of heartier dishes.
- Grocery stores – They tagged foods that were optimal choices for supporting longevity, and ensured the impulse-buy section at the checkout stand had only healthy choices.
- Schools – All 7 schools agreed to implement a policy to deter in-between meal snacking by stating kids were no longer allowed to eat in hallways and classrooms, which eliminated eight hours of potential junk food consumption. Additionally, candy was no longer offered as a reward for good performance or used as a fund raiser.

Optimizing individuals

To build buy-in across the community for the Blue Zones transformation, citizens were encouraged, but not required, to participate. If they agreed, they signed a pledge to participate in the following changes:

- Adopt at least six out of 25 recommendations to change their individual environment for long-term gain, and follow them consistently. Changes ranged from agreeing to garden

Optimizing individuals

To build buy-in across the community for the Blue Zones transformation, citizens were encouraged, but not required, to participate. If they agreed, they signed a pledge to participate in the following changes:

- Adopt at least six out of 25 recommendations to change their individual environment for long-term gain, and follow them consistently. Changes ranged from agreeing to garden and use smaller dining plates, to letting experts optimize their home and keeping a sign near the stove to remind them to plate the food instead of serving family style.
- Connect with others in a five-person moai, arranged by the Blue Zones team. Groups were asked to walk or volunteer together on a regular basis, to encourage new friendships. Out of 110 moais started three years ago, 70 are still connected.
- Attend a purpose seminar to help people assess their strengths, talents, and passions, and determine how to put those to work in a meaningful way.

Measuring the success

Receiving wide-ranging media coverage, the transformation of Albert Lea, MN was considered "stunning." Over the past three years since the Blue Zones experiment began, the city has achieved measurable results, including:

- 25% of the population participated, considered very high for a public health initiative
- More than half of employers reported drops in absenteeism
- Raised the number of smoke-free campuses from zero to 25%
- Increased healthy food purchases at grocery stores
- Decreased the average weight of citizens and increased life expectancy
- Decreased health care costs by 40% for city workers as reported to Blue Cross Blue Shield

Based on these successes, Blue Zones has now partnered with Healthways and began a program in the South Bay Beach Cities of Los Angeles in Q4 of 2010 and the entire state of Iowa in Q3 2011. In looking at health trends in communities nationwide, Buettner emphasized that, "for the first time in our history, the life expectancy of our children is lower than ours." It has become an increasing challenge for people to live healthy in a society that inundates us with high fat foods and sugary drinks, and encourages car-based convenience as part of daily life. To effectively advance disease prevention and longevity requires discipline and innovation on an environmental scale to support change across entire communities so they can get healthier as a collective over time.

> "*The answer to the trillion dollar question of health care is unleashing lots of evidence-based ways to permanently, systematically change people's environment, and doing it one ready community at a time*."