

3M Science.
Applied to Life.™

Why teeth matter

Empowering communities to fight tooth decay
in underserved populations

Focus: Disadvantaged children

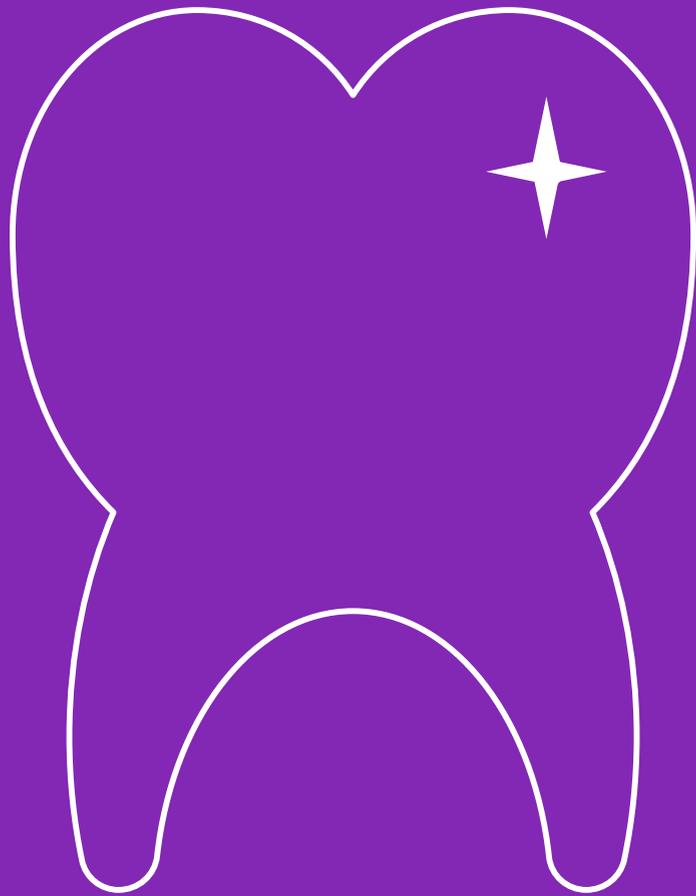
Published by 3M Oral Care in collaboration
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“Every tooth in a man’s head is more valuable than a diamond.”

–Miguel de Cervantes

3M Oral Care and The Oral Health Council:

Driving practical programs to help prevent tooth decay globally

Tooth decay (dental caries*) is an epidemic that still plagues every society, hitting the most vulnerable populations hardest.

Health equity is a goal of most modern societies, and that needs to apply to oral care too. Every citizen, especially the most vulnerable, deserves access to quality oral care. But enormous oral health disparities still exist within and between countries.

Dental public health professionals from around the world met at The Oral Health Council at 3M Corporate Headquarters. They shared best practices from their countries on preventing dental decay among young children, the elderly and other vulnerable populations.

This eBook focuses on prevention of tooth decay in disadvantaged children and builds on some of those discussions.

Please join us in our mission to empower countries and communities to fight tooth decay.

Visit www.3m.com/whyteethmatter to learn more.

*Dental caries is classified as a non-communicable disease by the World Health Organization.

About 3M Oral Care:

Named the most innovative company in the dental industry worldwide, 3M Oral Care promotes lifelong oral health by developing proven dental and orthodontic solutions.

“The ultimate reason for change is for improved oral health, worldwide elevation in quality of life and relief of financial burdens from country to country.”

—Dr. Avijit Banerjee, DDS



Tooth decay is the most common childhood disease worldwide.

But it's largely preventable.

“Safe and effective disease prevention measures exist that everyone can adopt to improve oral health and prevent disease.”

–Oral Health in America: A Report of the Surgeon General - Executive Summary. 2000.

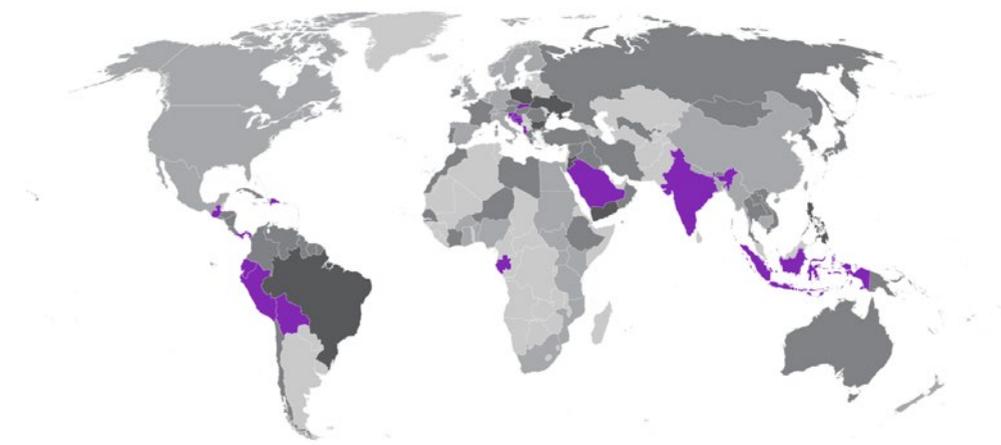
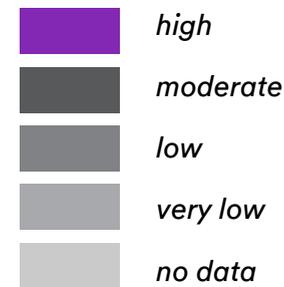
Tooth decay is blighting children's lives all over the world

The majority of tooth decay around the world goes untreated, says the World Dental Federation (FDI).

Tooth decay afflicts not only low- and middle-income countries, but also high-income, such as the United States, the United Kingdom and Japan. Almost everywhere it hits with more severity in communities of low socioeconomic status.

Tooth decay worldwide

Average number of decayed, missing and filled teeth in 12-year-olds¹
Latest available data
1994–2014



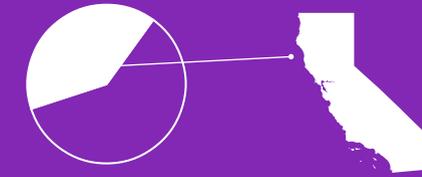
¹ FDI. The Challenge of Oral Disease. Oral Health Atlas (2015).

² WHO expert consultation on public health intervention against early childhood caries: report of a meeting, Bangkok, Thailand, 26-28 January 2016

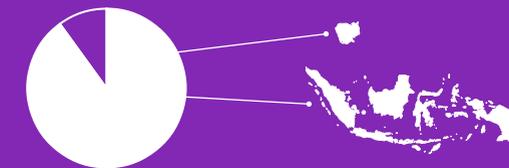
³ Public Health England: Child Oral Health: Applying All Our Health August 2017

*“More than **40%** of our kids (California, U.S.) have caries by the time they reach kindergarten.”*

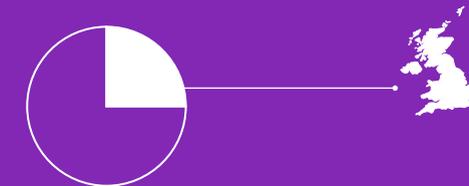
–Francisco Ramos-Gomez, paediatric dentist, USCF



*In Cambodia and Indonesia, **90%** of 3- to 5-year-olds have caries, with very high rates of decayed, missing and filled teeth.²*



***One in four** U.K. children will have tooth decay when they start school, with on average three to four teeth affected.³*



“They don’t know that eating shouldn’t hurt. But it does for them, so these kids often are not getting the nutrition they need to grow.”

–Dave Perry, DDS, “Mommy, It Hurts to Chew” The California Smile Survey, 2006



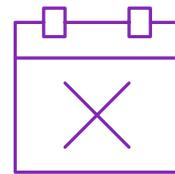
It really hurts: the truth about tooth decay in children

Children with chronically painful teeth have trouble getting a good night's sleep.

They can have a hard time relaxing, sitting still and paying attention in class.

Ugly, rotten or missing teeth due to decay and difficulty talking without pain can greatly exacerbate the natural shyness in childhood.

Children with infected and painful teeth miss more school days than other children, disrupting their educational and social development.¹



1.6 million
lost school days
in the U.S. alone²

¹ "Mommy, It Hurts to Chew" The California Smile Survey, 2006

² Oral Health Worldwide, A report by FDI World Dental Federation, figures are from 1996



Untreated tooth decay is an infection that makes kids sick

Severe oral infections can result in facial swellings and abscesses. They are the most frequent reason for hospitalization in young children, according to dental research.¹

In 2007, the widely reported death of 12-year-old Deamonte Driver from untreated tooth decay and a resulting brain infection shocked many in the U.S. and around the world. Shining the spotlight on the barriers to accessing care in certain communities, it was the catalyst for improvements in access to dental care in his home state of Maryland and others.³

“Severe tooth decay can make children sick. Kids with tooth decay are prone to repeated infections in their ears, their sinuses and other parts of their bodies, because their infected teeth are continually pouring pathogens into their systems.”

–Dave Perry, DDS, pediatric dentist at Alameda Pediatric Dentistry and former chairman of the board of the Dental Health Foundation.



Tooth decay is the **number one reason** why children aged 5 to 9 are admitted to hospital in England.²

¹ Nalliah, R. P., Allareddy, V., Elangovan, S., Karimbux, N., & Allareddy, V. (2010). Hospital based emergency department visits attributed to dental caries in the United States in 2006. *Journal of Evidence Based Dental Practice*, 10(4), 212–222.

² Public Health England: Child Oral Health: Applying All Our Health August 2017

³ “Teeth – the Story of Beauty, Inequality and the Struggle for Oral Health in America, by Mary Otto, published by The New Press

Fighting tooth decay can improve people's overall health

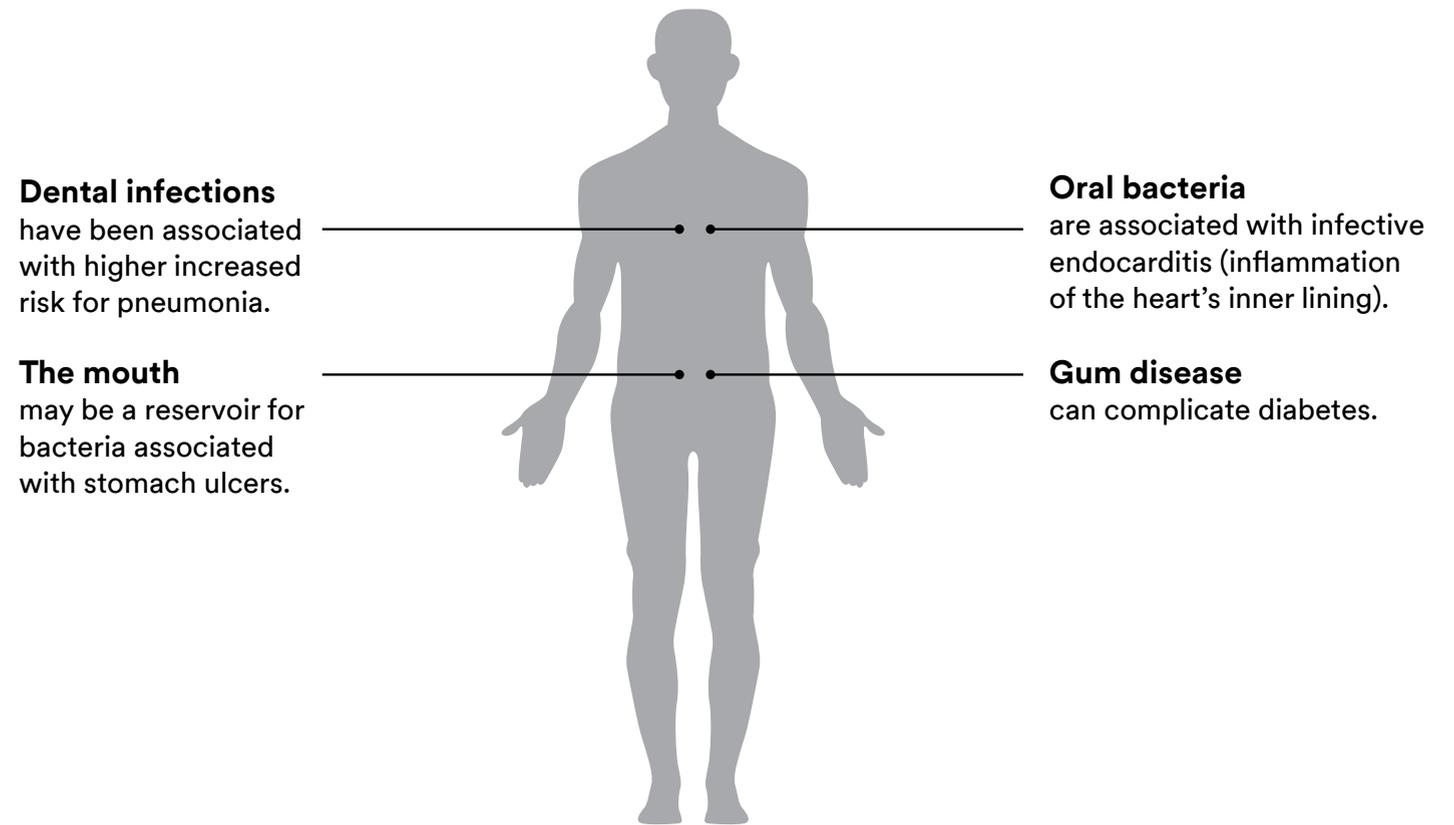
It is now widely accepted that a person's oral health impacts their overall health and vice versa. Many general health conditions increase the risk of mouth diseases: for instance, diabetes can increase the risk of periodontal (gum) disease.

Increasingly, common practices such as dental screenings before surgery, or brushing the teeth of Intensive Care patients who are on ventilators, are showing that treating and preventing oral disease can reduce medical complications, improve outcomes and produce savings.¹

A dental check-up can also reveal signs of problems in the body. By looking into a person's mouth you can tell whether they are well or poorly nourished. Lesions (sores or wounds) in the mouth may be the first sign of HIV infection, while changes in how teeth look can indicate serious eating disorders.

¹ Maret D, et al. Dental screening of medical patients for oral infections and inflammation: consideration of risk and benefit, *Microbes and Infection* (2016). <http://dx.doi.org/10.1016/j.micinf.2016.10.002>

How an unhealthy mouth can affect the body



[Source: Oral Health Worldwide, A report by FDI World Dental Federation, p15]

Why is child tooth decay still around in the 21st century?

- 1. We're all consuming too much sugar**
Sixty-five countries consume more than 100g of sugar per person per day. That's almost four times as much as the WHO's new guidelines suggest is healthy.
- 2. Many of us are not getting enough fluoride**
Only 25 countries have systems that establish optimal levels of fluoride in the water, and many children do not get any topical fluoride.
- 3. We put off expensive dental visits**
High 'out-of-pocket' costs in some countries can cause people (particularly low-income) to delay care until it's too late. Last-resort emergency room treatment tends to be costly, riskier and less effective.
- 4. We can't find a dentist who'll take us**
Access is tough for people living in rural areas. Dental coverage is low in low- and middle-income countries, but also in parts of the U.S., for example.
- 5. We start with prevention too late**
Although a child's oral health begins in utero, few countries invest in early preventive care, and tooth decay is increasing fast in the youngest age group.
- 6. Many of us still don't know why or how to take care of our teeth**
Education is key to preventing tooth decay. Yet few countries have invested in dental public health experts to drive impactful programs and integration with kids' primary medical care is rare.

Source: FDI. The Challenge of Oral Disease. Oral Health Atlas (2015).



Why prevention pays

Regular preventive care, as well as early diagnosis and treatment, can help avoid costly dental problems.

Late stage interventions **waste limited health-care dollars**, introduce significant risk to patients, and do nothing to address the underlying cause of disease — the presence of harmful bacteria fueled by poor oral self-care, lack of treatment and an unhealthy diet.¹

The price of neglect²

The average cost of dental care per person in California in U.S. \$ 2009



[²Source: FDI. The Challenge of Oral Disease. Oral Health Atlas (2015). p56]

“For the cost of treating a few kids with serious dental disease, you could run a prevention and education program covering whole schools or school districts. Over the long haul, we could save taxpayer dollars by preventing dental problems in the first place.”

–Jared Fine, DDS, MPH, Dental Health Administrator for Alameda County in California

Prevention techniques that work

Infants are not only especially susceptible to tooth decay but also totally dependent on how their parents and caregivers look after their teeth. Many governments focus resources on 6-year-olds and up, neglecting this very young age group. But there are many cost-effective steps that can be taken to give babies the best chance of strong, healthy teeth for their whole lives. Integrating medical, dental and other health-care services and collaborating broadly within communities is key.

Developing teeth	Good habits for life	Suggested care in the community	
Baby in womb	The children of women with mouth infections are more likely to get cavities before the age of 5. So it's important that pregnant women go to the dentist to get treatment, as well as brushing or flossing their teeth.	Education around oral care during pregnancy Community fluoridation	
Age: 6 months Teething begins.	Simply wiping to clean when the first tooth appears removes bacterial plaque. Avoid baby bottle syndrome (Early Childhood Caries) by giving children water to drink rather than sugary drinks or fruit juices.	Start at 6 months Help families to find a 'dental home' for regular preventive care.	
Age: 2 1/2 years All primary (upper and lower) teeth have erupted.	Children < 3 years old can start supervised brushing twice a day with a smear of toothpaste around the size of a grain of rice. Once older than 3, they can progress to an amount no larger than a pea.	Provide counseling on good teeth care and what to expect children to be able to manage alone, taking into account individual risk factors, as well as family beliefs and diet.	Start at 2 1/2 years
Age: 6 years and up Permanent teeth begin to appear.	Establish good dietary habits, limiting sugar to the bare minimum. Avoid soda and watch out for hidden sugar in sauces. Develop a life-time habit of twice-daily brushing with fluoride toothpaste.	Include initial oral health risk assessments in early primary care medical visits, for example, immunizations.	Ensure access of underserved children to school prevention programs. Expand scope of dental practice to include dental therapists and hygienists who can travel to remote areas.

[Source: FDI. The Challenge of Oral Disease. Oral Health Atlas (2015). p10]



Global challenges with local solutions

Despite huge advances in oral care science and technology, far too many people around the world still suffer from tooth decay.

Internationally, the causes tend to be the same, and in most countries certain populations tend to be hardest hit because their dental care delivery system fails to cater for them effectively.

In this section, we look at some of the most common challenges from countries around the globe and hear stories from local advocates who fight to defend kids' teeth.

1. Reaching children from low-income families
2. Increasing access to preventive care
3. Protecting kids' teeth from sugar
4. Reaching large populations
5. Teaching the public to care about teeth

Stories from the frontlines

Reaching children from low-income families

Creating a child-focused community of caregivers in Los Angeles, US

Dr. Francisco J. Ramos-Gomez, DDS, MS, MPH, is a passionate advocate for the rights of disadvantaged young children to good oral health care.

My time spent working both abroad and in my home city of Los Angeles has made me increasingly aware of the shortcomings of current preventive measures in oral health, especially among young children. Children, especially those between 3 and 5, pay a huge price when they don't receive appropriate prevention. They can experience a poor quality of life and fail to thrive as a result, with repercussions into adulthood. The solution is collaboration between dental and medical professionals, the education of family members and partnerships with community programs.

Collaboration with pediatricians brings the best care for all children. Pediatricians and nurses trained in dental prevention can create awareness of the importance of a healthy mouth among children and caregivers. We tried this initiative in Los Angeles and were able to lower the caries rate in children from 78 percent to 25 percent.

Many families face transportation challenges, and as a result, postpone oral treatment until infection has set in. If we can provide 12-month immunizations and one-year oral health check-ups at the same time, there is a greater chance of providing earlier risk assessment and recommendations to caregivers.

Language and culture can also be barriers. The Community Oral Health Worker's project (2016-17) found that intensive bilingual education sessions significantly improved caregivers' understanding of how and why to effectively look after their kids' teeth.

Read more on <http://www.uclaiocp.org/about-us>

“The cases I’ve seen of kids having chronic pain, trouble eating, developmental issues and other maladies have sparked my crusade to advocate for the betterment of children’s health through preventive oral care.”

—Dr. Francisco Ramos-Gomez



Dentistry for Peruvian babies: care from the cradle up

*Dr. Mario César Elías Podestá, DDS, MS, PhD, is a world-renowned pediatric dentist, known for his mission to provide dentistry for babies and for his book on the topic.**

Peru has historically been one of the poorest countries with the greatest health-care disparities in Latin America. The number of Peruvians living above the [poverty](#) line outnumbered those living in poverty for the first time in 2006. The proportion of Peruvians living in extreme poverty fell below 10 percent in 2009, and in 2013 was further reduced to less than five percent. However, poverty is still widespread among indigenous communities of the Andean highlands and Amazon jungle.

Lack of education and access to care, as well as consumption of too much sugar, all contribute to a very high prevalence of caries. My wish is for the health and education ministries to collaborate more and build a common educational program for people about the importance of taking care of their family's teeth and how to do it effectively. I believe education leads to prevention, and my dream is a generation with zero caries.

I advocate for national programs to address oral health issues from infancy so that we prevent disease rather than having to treat it later. One of the most impactful programs I have been involved in was when I served as Head of the Pediatric Dentistry Service of the Peruvian Air Force (FAP).

From 1991 to 2004, I focused on care for children from birth to 3 years old in the FAP nurseries. I developed a program that required that FAP children attend a Baby Clinic and included:

- Dental care starting from birth until tooth eruption: cleaning the mouth with gauze and boiled water
- Education in oral health for pediatricians, neonatologists, gynecologists-obstetricians, nurses and dental assistants
- Caries risk assessment
- Silver diamine fluoride application four times at one-week intervals for active dental caries

The Air Force Baby Clinic program reduced the prevalence of tooth decay from around 62 percent (1989) to 35 percent (2001) to seven percent (2005).

Another preventive program in place is “Budget For Results” which aims to teach children proper tooth-brushing technique, as well as providing toothbrushes, dental exams and nutritional counseling.

There is a big opportunity for us to explore prevention efforts on a national scale and introduce new, better programs to reduce Peru's incidence of caries.

*Elías PMC; Arellano SC; Tello MG. Odontología para Bebés. Fundamentos teóricos y Prácticos para el Clínico. Savia Editorial, Lima, 2016

“Too often we address dental problems when the disease is already present rather than trying to prevent caries from developing and progressing in the first place.”

–Dr. Mario César Elías Podestá

Reaching the most vulnerable as early as possible in Chile

Dr. Jaime Jamett Rojas, DDS, is a specialist in pediatric dentistry, and is Director of Clinical Services at the Faculty of Dentistry at Valparaiso University in Chile.

Chile is characterized by significant [income inequality](#). Patients in [poverty](#), particularly children, are much more likely to experience untreated tooth decay than the population at the highest socioeconomic level. That is why our main goals are to increase the percentage of primary teeth that are cavity-free and to establish a preventive program in children from birth to age 5.

Public resources should be focused on high-risk, vulnerable children for the biggest impact.

In Chile, 70 percent of 6-year-olds already have tooth decay – a far higher percentage than in many other countries that have targeted dental caries in early childhood. For that reason, I believe the most effective strategies focus on infants.

At the 2016 Oral Health Council Summit, I presented an intervention program for oral health in children from birth to age 2. The proposal is aimed at setting children on a trajectory for good oral health immediately at birth. Follow-up sessions in early childhood, with education on keeping teeth clean, eating healthy food, and above-all a friendly approach that makes

kids feel comfortable, should allow us to solve enamel problems early with minimally invasive procedures.

Early in 2018, the University of Valparaiso will recommend to the Ministry of Health that this program be implemented nationally to significantly increase the numbers of children free of tooth decay in Chile.

“Key goals for the country are increasing the percentage of children free of caries and focusing public resources on the most vulnerable population — children.”

–Dr. Jaime Jamett Rojas





Increasing access to preventive care

Giving kids a Head Start — A collaborative approach to helping underserved kids in Minnesota, US

Deborah Jacobi, RDH, MA, is the policy director at Minnesota-based [Apple Tree Dental](#).

At Apple Tree Dental, we use a proactive, prevention-oriented, patient-centered approach called Community Collaborative Practice to improve the oral health of all people, including those with special dental access needs who face barriers to care.

I have been fortunate in my work at Apple Tree to help drive many of the state of Minnesota's most progressive oral care policies to improve access to care for underserved populations. One of the programs I am most proud of was aimed at strengthening the oral care element of Head Start, a program founded in 1969 that provides federal funding to local programs, serving 30 million children and low-income families in all 50 states. Despite significant efforts, however, Minnesota's Head Start program was not able to obtain dental care for participants.

A broad group of public health experts, agencies and dental professionals lobbied to allow dental hygienists to help fill this gap by providing their scope of practice in community settings through a collaborative practice approach. In this model, hygienists, dentists and community agencies work together to extend the reach of dentistry.

Hygienists with certain qualifications and a written agreement now provide education, preventive services and 'assessment, triage and referral' at the Head Start center. Our model also strengthens linkages for dental treatment with appropriate community providers, including private dentists, safety net providers, educational programs, NGOs and mobile programs.

Results:

Within one year of our collaborative model being approved, more than 30 hygienists were spread across the state. The number of kids undergoing a dental exam increased by 10 percent in just the first six months of the program. And dental examination completion rates went from 80 percent to 90 percent in the first six months of implementation of the model in Minnesota.

Consensus around change is never easy

Not everyone felt comfortable with this expansion of dental hygienists' activities. But we were successful as a group in driving this change because rather than focusing on our differences, we united around a shared vision. All of us, whichever stakeholder group we came from, wanted these vulnerable children to be better served so that they could have a better start in life. We were all trying to apply our knowledge in a savvier way so that dental care could reach the right people at the right time.

“Who cares if you have a cure or treatment for something, if you're not getting it out to the highest risk people?”

—Deborah Jacobi, Apple Tree Dental

Taking dental care to schools to help high-risk kids

William R. Maas, DDS, MPH, MS, Former Assistant Surgeon General, U.S. Public Health Service (retired)

I have always advocated for improved access to dental care for disadvantaged children. I work as an advisor to the dental policy campaign of The Pew Charitable Trusts and was a member of the project team that prepared the first-ever Surgeon General's report on oral health in America.

I firmly believe that a person's access to oral care increases the likelihood of him or her having caries detected at an early stage and receiving services to arrest the decay process, as well as learning how to change personal behaviors.

Unfortunately, due to a host of reasons—including geographic isolation, a lack of education or low income—care is not always available.

Barriers to health care vary across age groups, but there are ways to meet each patient group where it's at. For example, school-aged children can have care delivered to them in schools.

Recognizing that not many low-income children in the U.S. were receiving pit and fissure sealants (effective, easy-to-apply preventive treatments), many public health agencies set up school sealant programs using portable equipment or mobile clinics.

These programs have demonstrated that children can receive sealants before decay starts, or seal bacteria off from existing caries to arrest the progress of decay.

Trained dental workers must do the procedure carefully, but it doesn't require all the equipment that a dental office has. Currently, five states have programs in more than 75 percent of high-need schools.

This program is free to the child, since the cost is billed to state public insurance, and removes barriers like transportation availability, or caregivers having to spend time away from work.

"Changing policy and procedures is difficult, and the solutions are certainly easier said than done. Those of us advocating for change must be educated on how to work with policymakers for policy changes that expand care and lower costs without sacrificing effectiveness."

—Dr. William Maas

If 100 children *do not* receive sealants:



- 50 children will have caries
- 50 children will not have caries

If 100 children *do* receive sealants:



- 12 children will have caries
- **38 children will be caries-free due to sealant application**
- 50 children will not have caries

76% reduction in caries

Protecting kids' teeth from sugar

Saving Chilean kids from the scourge of sugary drinks

Pediatric dentist, Dr. Sergio Vergara, DDS, leads a national program in Chile called "Sembrando Sonrisas del Servicio de Salud Talcahuano" to help disadvantaged young children keep their teeth safe through preventive care and education.

In December 2016, the [World Economic Forum](#) reported Chile as the world's largest per-capita consumer of sugary drinks, at 188 calories per person per day, ahead of Mexico and the United States, which clock in at 157 and 158 calories, respectively.

Chile currently has the highest prevalence of obesity in Latin America. From 2009-2014, Chile saw the fastest absolute growth of sugar-sweetened beverages (SSB) sales in the world.

Sugar is a leading risk factor for tooth decay. Reducing its consumption as part of a healthy diet promotes better oral health and may reduce diabetes, obesity and other non-communicable diseases.

Chile's Nutrition Labeling Law, enacted in 2015, requires all foods with a high content of sugars, salt or saturated fats to be marked in their containers with visible seals. The law appears to be having an impact, with a gradual reduction in the number of children consuming these types of food.

Sembrando Sonrisas, launched in 2015 by President Michelle Bachelet, provides free oral health exams, preventive education, toothpaste and toothbrushes plus twice-annual applications of fluoride varnish to children between the ages of 2 and nearly 6. The program is being replicated in other Latin American countries.

As manager of Sembrando Sonrisas (now reaching 400,000 children), I have seen what it takes to start and maintain an effective program. You need a team of professionals who strongly believe in preventive care, education and promotion and are willing to be present within the community outside of the dental office, such as at schools or neighborhood meetings. This is crucial in bringing oral health closer to places of study and work.

"Through my work in dentistry and public health, I can directly contribute to improving the health of our population and create a ripple effect by motivating others to do the same."

—Dr. Sergio Vergara



Reaching large populations

China's challenge: How to protect the teeth of 1.38 billion people?



Reaching the masses in China

A large gap exists between the current dental workforce and estimated needs as the population ages but is also poised to grow faster with the two-child policy.¹

In rural or mountainous areas, access to care is limited and general awareness of the need to care for teeth is low.

To help overcome these challenges, the Chinese government has, since 2008, been setting aside special funds to support a free children's sealant and fluoride treatment program nationally.

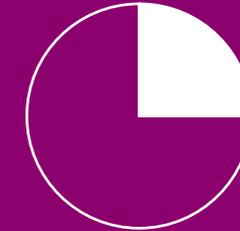
By 2017 more than five million kids were treated with free sealants, and more than two million with free fluorides.²

—Mr Chang Ji Le, Special Inspector of China's 4th National Oral Health Epidemiological Survey Results, published September 20th, 2017.

¹Meeting the oral health needs of 12-year-olds in China, human resources for oral health. BMC Public Health (2017)

²China's 4th National Oral Health Epidemiological Survey (2017)

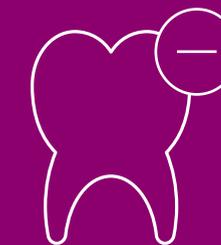
The state of kids' teeth in China²



A quarter of Chinese 5-year-olds brush their teeth twice a day



Nearly 3/4 of children under the age of 5 had caries in their primary teeth



Rural children have more cavities than urban children

One person can make a difference

Dr. Lian Bao Cui, DDS, is a private dentist from Ji'nan, Shandong Province, China. He strongly believes in the power of education and community engagement to help reduce dental decay as well as the opportunity for the individual to drive positive change.

I was born into a family of dentistry, and my father had spent a lifetime in oral medicine. I once asked my father why he treated the patient like a member of the family, and he told me that not only could we cure our patients; we could also give them the experience of being cared for.

Many people don't realize that oral disease has such a serious impact on overall health, potentially affecting a person's whole life. For this reason, I devote a lot of time, energy and financial resources to the prevention and treatment of children's dental diseases.

I have led dental staff annually to visit schools in local and surrounding areas to provide dental check-ups to children free of charge. We talk to parents about the dangers of dental disease and the ways to prevent it. We let them know that tooth decay can cause systemic disease, not just pain in the mouth.

Since 2006, we have given free lessons to parents more than 300 times, and we have examined the mouths of more than 20,000 students for free. More than 8,000 children have been given free fluoride and sealant treatment.

At the 2016 Oral Health Council, I proposed a program to the government as a member of the Chinese People's Political Consultative Conference (CPPCC). It targets school-aged kindergartens in urban areas to provide them with sealant and fluoride varnish treatment, as well as education about the dangers of tooth decay and what they can do to prevent it. This proposal won approval and funding for 2017 onwards by the Huaiyin District government of the city of Ji'nan. I hope that it can be expanded to the whole city, then to the whole Shandong province within five years. And then finally, provincial success will take it to the whole country.

On a larger scale, progress is happening too. For instance, in Ji'nan City, in 2016, around 320,000 kids, aged 7 to 9, were provided free sealant treatments with the help of public stomatological hospitals and private dental clinics, and funds from the Ji'nan government.



Teaching people to care about teeth

Love Teeth Day

Teaching millions to care for their teeth

Dr. Jing Chen, MDS, is the founder of the private Chenjing Oral Clinic in Shenzhen and a dedicated advocate for community education. She is a translator and editor of dental publications to help bring the latest developments — both clinical and public health — to the local dental community.

We must change the idea that tooth decay is not a serious problem. While threatening statistics may be effective and necessary for people to understand the risk, there are also other ways to bring awareness to oral health in a more positive way.

In China, we celebrate Love Teeth Day on the 20th of every September. This nationwide campaign was an agreement made between nine government and non-government organizations in 1989 as a strategy to promote self-care and community involvement in oral health education programs.

Each year we have a different topic that guides activities such as discussion forums, exhibition tours, missions to reach rural patients, and more. Most recently, the topic was oral health as it relates to overall health, which is a pressing issue facing most countries across the globe today.

Luckily, Love Teeth Day has captured the government's attention. More importantly, the public has responded well. We're one step closer toward making oral health a priority for all of China.

Learn more: [‘Love Teeth Day’ campaign in China and its impact on oral public health - the twentieth anniversary.](#)

“When discussing a population’s ailments like diabetes, heart disease or cancer, it’s hard to imagine that tooth decay could be part of the same conversation. Those who experience tooth decay, however, know the debilitating pain it causes and the financial burden of restorative treatment.”

–Dr Jing Chen, Shenzhen, China

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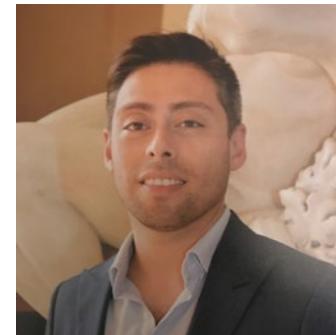
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What can you do?

What can you do to improve oral health in your country?

1. Educate early

Educate parents and their medical and dental providers on the importance of dental care during pregnancy and early childhood.

2. Get parents involved

Teach all stakeholders about the importance of parental engagement and behavioral change in preventive dental care, from the eruption of the first tooth, or, at the latest, by 1 year old.

3. Make preventive care affordable

Provide incentives for dentists to prevent rather than treat, and enable regular preventive check-ups through health-care coverage.

4. Get the message out consistently

Support all medical, dental and other providers in offering simple, clear and consistent oral health messages and services targeting pregnant women, infants and children, particularly those from vulnerable populations.

5. Support innovative ways to reach patients where they are

Reach infants and young children at well-baby visits and immunization programs, where cross-trained medical or nursing personnel might be able to provide initial oral health assessments and guidance at an earlier age.

6. Focus on the highest risk groups

Learn who needs help most. Support periodic screening programs (for example, in schools). Incorporate [Individual Risk Assessment](#), as part of diagnosis and treatment planning.

7. Create a tooth-friendly environment

Support community water fluoridation, and school fluoride, sealant and tooth brushing programs. Adopt policies which limit sugar consumption.

[Learn more from the World Dental Federation about effective advocacy approaches.](#)

Visit 3m.com/whYTEETHMATTER for more stories, advice and oral health facts.

Some key questions to ask

Wherever you are in the world, if you want to drive a preventive program, start with trying to answer the following questions:

- What are the dental disease statistics in my country?
- Who's suffering most?
- Do we have fluoridation programs?
- How much sugar is being consumed by whom?
- Are sugary foods and drinks available in schools?
- What are our food labeling requirements?
- How is dental care regulated in my country?
- What is the scope of hygienist/assistant practice? Is it possible to fill gaps by extending their scope?
- Does reimbursement cover the cost of providing preventive services?
- Are people putting off dental care because of cost?
- How are parents educated now about the importance of keeping their kids' teeth healthy?
- Which other stakeholders could we partner with to drive something bigger? Perhaps along with diabetes or obesity challenges?
- Are there any influential politicians who might support an oral health program?

How to help kids have healthier teeth whatever your role

For Teachers:

Ask about toothaches

If a student seems distracted, can't sit still, or stops participating in class, find out if they're experiencing tooth pain.

Make oral health fun

Help your students think about and discuss the importance of dental health. The ADA has great resources for interactive discussions with children about their oral health.

For Pediatricians:¹

Ask about dental health

Primary care teams can help patients understand that looking after their teeth helps their overall health. Just by bringing up oral health, doctors can identify a need for coaching or even referral for a check-up.

Include a quick oral exam

A quick oral exam could be included during a standard Ears, Eyes, Neck and Throat exam during a well-visit, or as part of an immunization program. Nurses can carry out preventive measures like fluoride varnish.

For Parents and Caregivers:

Keep teeth clean

The most effective way to help prevent cavities is by brushing your kids' teeth twice a day with fluoridated toothpaste for two minutes at a time.

For children under the age of 3, the recommended amount of toothpaste is a "smear," or about as much as a grain of rice. For 3- to 6-year-olds, a pea-sized amount is just right.

The American Academy of Pediatric Dentistry recommends assisting kids with brushing their teeth until they're 8 years old to ensure the teeth are being brushed effectively.

For children who are more at risk for caries, the ADA recommends professionally-applied fluoride treatments.

Start with babies

- Bring them in for a check-up before their first tooth erupts, usually before they're 6 months old.
- Avoid high-frequency consumption of liquid and solid foods containing sugar.
- Never put babies to sleep with a bottle filled with milk or liquids containing sugar.
- Avoid "snack" breast-feeding after the first primary tooth begins to erupt and other solid foods are introduced.
- Get into the habit of cleaning your baby's gums after every feeding. A wash cloth or a soft, infant toothbrush and a little water is all you need.
- Be sure to switch from a bottle to drinking from a cup as she approaches her first birthday.

[¹Hummel J, Phillips KE, Holt B, Hayes C. Oral Health: An Essential Component of Primary Care. Seattle, WA: Qualis Health; June 2015]

Drilling down on tooth decay: more facts

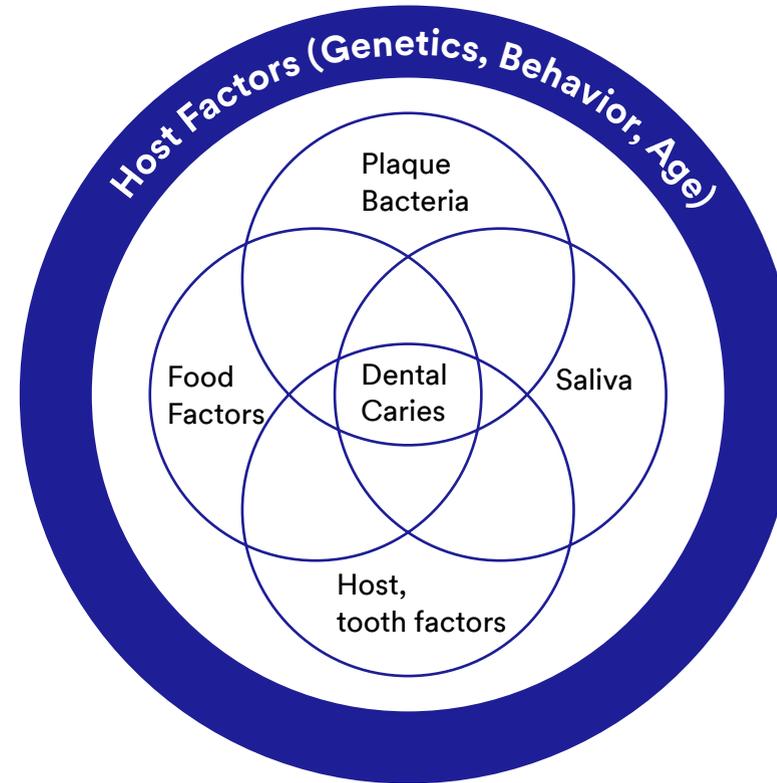
The microbiology of our mouths

Microbiologists explain our mouths as complex ecosystems, teeming with an incredible number of microorganisms, including bacteria. Bacteria come together in communities, called biofilms, that attach to our teeth. Dental plaque is one type of biofilm.

The microflora in the plaque can be in a state of dynamic balance that is perfectly healthy. Or the balance may shift.

This can happen with many medications that reduce the flow of teeth-protecting saliva. Sugar consumption gives acid-producing, decay-causing bacteria a great chance to thrive. Poor oral hygiene can also throw things out of balance, spurring overgrowth of some of the more harmful 'tooth-attacking' microbes.

The latest research is showing that while we do inherit microbes from our parents, whether we get cavities or not is more due to lifestyle factors like diet.



The mouth is an ecosystem. A change in its delicate balance, like high exposure to sugar, can trigger 'dysbiosis' – the start of the caries disease process.

[Source: Host Genetic Control of the Oral Microbiome in Health and Disease, Cell Host & Microbe]



The skinny on sugar

Sugar is a leading risk factor for tooth decay. Reducing its consumption as part of a healthy diet promotes better oral health and may reduce diabetes, obesity and other non-communicable diseases.

The highest levels of tooth decay are found in middle-income countries, where sugar consumption is on the rise and health systems are not able to provide appropriate prevention or access to oral healthcare. [Source: FDI]

A dynamic relationship: sugar and oral health

Our mouths are in a constant battle of demineralization and remineralization. When we consume sugar, the bacteria in our mouths digest the sugar and produce acid, which weakens tooth enamel (demineralization). Conversely, the minerals in our saliva – and the fluoride from toothpaste and water – help the weakened tooth enamel repair and strengthen itself (remineralization).

Prevention of enamel loss is very important for the long-term health of our teeth. The “acid attacks” that occur in our mouths when we consume sugar cause tooth erosion and can significantly contribute to tooth decay.

[Sugars and dental caries - American Journal of Clinical Nutrition, October 2003 vol. 78 no. 4 881S-892S](#)

“I am making dentures for a 23-year-old right now. She didn’t have good dental care growing up, was drinking four to five cans of Mountain Dew per day, but was too scared of the dentist to ever have anything done. So now her only option is to have all of her teeth extracted.”

–Ruth Peterka, DDS, Apple Tree Dental, Minnesota, U.S.



Fact:

According to the Royal College of Surgeons, the average 5-year-old consumes their own weight in sugar each year.



Fact:

The average sugar intake in the U.S. is 22 teaspoons per person per day. That’s almost four times as much as the World Health Organization’s new guidelines suggest is healthy.



Fact:

Sugar hides in places we wouldn’t think to look, like barbecue and pasta sauces, fruit yogurt and even bread. And the biggest offenders to our teeth typically include soda, sports drinks, fruit juices and gummy/sticky and long-lasting sweets.

To find out more:

Global oral health issues:

[World Dental Federation \(FDI\) publications and sites](#)

[Priorities for research for oral health in the 21st Century – the approach of the WHO Global Oral Health Programme](#)

["International group shares concerns about disconnect between dental, medical care", Mary Otto, Association of Health Care Journalists blog, May 2017](#)

[Dental public health capacity worldwide: results of a global survey](#)

[WHO Expert Consultation on Public Health Intervention against Early Childhood Caries: Report of a meeting, Bangkok, Thailand, 26-28 January 2016](#)

[Institute of Medicine Report Brief. Improving Access to Oral Health Care for Vulnerable and Underserved Populations, 2011](#)

U.K.:

[Challenges facing children's oral health services](#)

China:

[Sun et al. Meeting the oral health needs of 12-year olds in China, human resources for oral health, BMC Public Health \(2017\)](#)

[Sun X, Bernabé E, Liu X, Gallagher JE, Zheng S \(2016\) Determinants of Catastrophic Dental Health Expenditure in China. PLoS ONE 11\(12\): e0168341.](#)

[China's 4th National Oral Health Epidemiological Survey \(2017\)](#)

U.S.:

[Pew Charitable Trusts Dental Campaign](#)

[Oral Health in America: A Report of the Surgeon General-- Executive Summary . Rockville, MD: US Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health, 2000.](#)

"Teeth – the Story of Beauty, Inequality and the Struggle for Oral Health in America" by Mary Otto, published by The New Press

To find out more:

Care of children's teeth:

[FDI Policy Statement: Perinatal and Infant Oral Health, September 2014.](#)

Maintaining and improving the oral health of young children:

[Pediatrics. 2014 Dec;134\(6\):1224-9. doi: 10.1542/peds.2014-2984.](#)

[Ramos-Gomez, F and Ng, M. Into the Future: Keeping Healthy Teeth Caries Free: Pediatric CAMBRA Protocols. CDA Journal, October 2011.](#)

The California Smile Survey: An oral health assessment of California's Kindergarten and 3rd grade children

[S.Wilkniss and S.Tripoli. Health Investments That Pay Off: Strategies to Improve Oral Health \(Washington, D.C.: National Governors Association Center for Best Practices, October 29, 2015\).](#)

[Evidence-Based Clinical Recommendations for the Use of Pit-and-Fissure Sealants: A Report of the American Dental Association Council on Scientific Affairs](#)

Oral care integration with primary care and school care:

[Hummel J, Phillips KE, Holt B, Hayes C. Oral Health: An Essential Component of Primary Care. Seattle, WA: Qualis Health; June 2015](#)

Link between oral health and overall health:

[Dental screening of medical patients for oral infections and inflammation: consideration of risk and benefit](#)

On sugar:

[Sugars and dental caries - American Journal of Clinical Nutrition, October 2003, vol. 78 no. 4 881S-892S](#)

Tooth facts for non-specialists:

[Encyclopedia of Oral Health by 3M Oral Care](#)

Please join us in our mission to empower countries and communities to fight tooth decay.

Visit www.3m.com/whyteethmatter to learn more.



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