

Investment in research improves lives and saves money



facts about:

Children's Dental Health Research *"If you think research is expensive, try disease."*

- Mary Lasker 1901-1994

Today:

- ❑ Dental caries, or tooth decay, is the single most common chronic childhood disease — five times more common than asthma, four times more common than early-childhood obesity and 20 times more common than diabetes.*
- ❑ For children, untreated dental caries can cause pain, dysfunction, school absences, difficulty concentrating and poor appearance — problems that greatly affect a child's quality of life and ability to succeed.**
- ❑ Thanks to public- and private-sector-funded research, we know that dental caries is caused by acid-producing bacteria that erode tooth enamel and the layer under it.*** Such research has also shown that:
 - ❑ Transmission of caries-causing bacteria from mother to child is the primary vehicle through which children first acquire the disease that causes cavities.◊
 - ❑ In addition to bacteria, frequent sugar intake also increases the risk of childhood caries.◊
 - ❑ Other factors, including environment and socioeconomic status, have been shown to be risk factors for the development of childhood caries.◊
- ❑ Research has also made possible the development of effective preventative tools such as fluoridated water, toothpastes and rinses, sealants and safe and durable fillings for decayed teeth.
- ❑ Researchers have also concentrated on the effects of motivational interviewing to encourage positive health behaviors, caries risk assessment tools and oral microflora tests.◻

The Cost:

- ❑ Nearly half of all 5-year-olds have experienced tooth decay. Children with early cavities are nearly three times more likely to develop cavities in their adult teeth.◊
- ❑ In 2012, the total dental expenses for U.S. children aged 5-17 years were approximately \$21 billion, with nearly 42% of dental costs paid out of pocket.◊◊
- ❑ One study conducted in 2012 found that preventable oral health conditions accounted for over 830,000 emergency room visits to hospitals in the United States in a single year.†
- ❑ The average cost of applying a dental sealant to a child's permanent teeth — which reduces the risk of decay — is less than one-third the cost of filling a cavity.◊

* THE AMERICAN ACADEMY OF PEDIATRIC DENTISTRY <WWW.AAPD.ORG>
 ** CENTERS FOR DISEASE CONTROL AND PREVENTION <WWW.CDC.GOV>
 *** COLGATE-PALMOLIVE <WWW.COLGATEPALMOLIVE.COM>
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 ◊◊ NATIONAL INSTITUTE OF DENTAL AND CRANIOFACIAL RESEARCH <WWW.NIDCR.NIH.GOV>
 ◊◊◊ AGENCY FOR HEALTHCARE RESEARCH AND QUALITY <WWW.AHRQ.GOV>
 † THE PEW CENTER ON THE STATES <WWW.PEWCENTERONTHESATES.ORG/DENTAL>
 †† NATIONAL INSTITUTES OF HEALTH REPORTER, TOOTH DECAY <WWW.REPORT.NIH.GOV>
 ††† UNIVERSITY OF THE PACIFIC ARTHUR A DUGONI SCHOOL OF DENTISTRY <WWW.DENTAL.PACIFIC.EDU>
 ◻ AMERICAN ACADEMY OF PERIODONTOLOGY <WWW.PERIO.ORG>
 ◻◻ BORRELLI, B. ET AL. PEDIATR DENT. 2015; 37(3):254-265.

IMPROVING LIVES
SAVING MONEY

HOW RESEARCH IMPROVES LIVES:

- ❑ Research has shown an association between untreated periodontal disease and low weight and pre-term births.◻ Research has also demonstrated that dental care is safe to receive during pregnancy, and revealed that most pregnant women do not receive dental services. Armed with this information, several states are developing guidelines for perinatal dental care.◊
- ❑ The U.S. Department of Health and Human Services estimates that without the progress made in understanding, preventing and treating dental caries and periodontal disease, there would be an additional 18.6 million Americans age 45 and older with none of their natural teeth.††
- ❑ An analysis conducted in 2013 found that if 1,000 children enrolled in California's Medicaid program (MediCal) who were not receiving dental services began receiving such services, it would reduce total MediCal expenses by at least \$2,000. The cost of covering dental services would be more than offset by savings associated with preventative measures and treatment.†††
- ❑ New technologies will further prevent tooth decay. Research is underway to develop powerful imaging tools that can detect the earliest demineralization of tooth enamel. These tools will allow the application of solutions to reverse early decay and stop disease.††

HOW RESEARCH SAVES MONEY:

- ❑ It is estimated that from 1979 through 1989 alone, the American public saved more than \$39 billion in dental expenditures due to the power of prevention.††
- ❑ Since the 1950s, the total federal investment in NIH-funded oral health research has saved the American public at least \$3 for every \$1 invested.††

Perspectives:



Dr. Foti Panagakos, DMD, Ph.D.
Global director of scientific affairs,
Colgate-Palmolive

"Addressing preventable disease is the norm in today's health care system. It is the most effective way to reduce costs and improve health. This is no different for oral disease. Working together, industry and its partners can enhance the prevention and treatment of oral disease through the development and testing of new treatments that will improve oral health, overall health and quality of life for all."

facts about: } Children's Dental Health Research

Research in Motion:

*A story of the dental research field's goal to build a tooth**

- By studying several different aspects of dental research, scientists hope to one day match, or possibly improve upon, nature's instructions to engineer replacement tissues for damaged teeth.
- Scientists are pursuing this goal by first studying the pathway by which humans are able to create teeth. Once this information is known, they will be able to break down the pathway to its simplest vital components with hopes of recreating it in an artificial environment.
- The end result? "Our hope is a coherent molecular blueprint to build a tooth," says researcher Dr. Richard Maas of Brigham and Women's Hospital and Harvard Medical School. When asked how he sees this impacting the dental field, he replied: "... millions of Americans still lose a significant number of teeth during their lives, and dental disease remains a significant health problem. So, if we could generate a biomimetic substitute, it would be welcome."

Research in Action:

Former U.S. Surgeon General David Satcher called tooth decay a "silent epidemic." However, because medical, health and social sciences researchers have uncovered the etiology, biological causes of, and environmental and social risk factors associated with dental caries, successful initiatives are underway to prevent and arrest the disease in those at highest risk.*

Based on a finding from a University of Pacific pilot project, California is expanding access to dental care among the underserved through teledentistry. Hygienists with additional training can provide care and triage patient loads through virtual consultations with a dentist.***

Reducing children's risk of serious tooth decay is the focus of a project funded by the Center for Medicare and Medicaid Innovation. Columbia University researchers will use "family-level, peer-counseled and technology-assisted behavioral risk reduction strategies [to help] divert young children with early- and advanced-stage early childhood caries (ECC) from high-cost surgical dental facilities to low-cost non-surgical disease management." Philanthropies such as the W.K. Kellogg Foundation are also funding research to reduce oral health disparities.**

Oral Health America is marking 10 years of its program Smiles Across America, which reaches over 400,000 underserved children annually in school-based settings to deliver oral disease prevention and oral health promotion services such as dental sealants, fluoride varnish treatments and family education. The program works with partner organizations around the country, and also receives donated dental products from corporate sponsors.◇

The American Dental Association began the Give Kids A Smile program in 2003 as a way for dentists to join with others in the community to provide dental services to underserved children. Dentists and other team members volunteer their time and services to provide screenings, treatments, and education to children throughout the United States. Each year, approximately 350,000 children benefit from more than 1,500 events, thanks to the efforts of over 40,000 volunteers.◇◇

*NATIONAL INSTITUTE OF DENTAL AND CRANIOFACIAL RESEARCH <WWW.NIDCR.NIH.GOV>

**CHILDRENS DENTAL HEALTH PROJECT <WWW.CDHP.ORG>

*** UNIVERSITY OF THE PACIFIC ARTHUR A DUGONI SCHOOL OF DENTISTRY <WWW.DENTAL.PACIFIC.EDU>

◇ ORAL HEALTH AMERICA <WWW.ORALHEALTHAMERICA.ORG>

◇◇ AMERICAN DENTAL ASSOCIATION <WWW.ADA.ORG>

The Bottom Line:

With the help of multiple research disciplines, we now possess the knowledge and tools to dramatically reduce the incidence of dental caries, successfully treat existing cases and target high risk populations for prevention and treatment. Community interventions are underway, and public- and private-sector funded research is ongoing to reverse the damage wrought by caries and other childhood dental diseases, further refine prevention and treatment tools and reach as many children and pregnant women as possible with appropriate dental care.

Public spending is a wise investment: **

Research shows potential savings, over 10 years, of various caries reduction strategies. For every \$1 spent by state Medicaid programs, the projected outcomes are:

- \$1.76 in savings to provide xylitol gum to mothers and caretakers of children at highest risk for caries.
- \$3.21 in savings for increased tooth brushing with fluoridated toothpaste among 2-year-olds.
- \$6 if children under 6 received access to fluoridated water.

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