



Dental Public Health Activities & Practices

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SECTION I: PRACTICE OVERVIEW

Name of the Dental Public Health Activity:

First Smiles – A First 5 Oral Health Education and Training Program

Public Health Functions:

Assurance – Oral Health Communications
 Assurance – Building Linkages and Partnerships for Interventions
 Assurance – Building State and Community Capacity for Interventions
 Assurance – Access to Care and Health System Interventions

Healthy People 2010 Objectives:

21-1 Reduce dental caries experience in children
 21-2 Reduce untreated dental decay in children and adults
 21-10 Increase utilization of oral health system
 21-12 Increase preventive dental services for low-income children and adolescents

State:

CA

Federal Region:

West
Region IX

Key Words for Searches:

Early childhood caries, oral health training, prevention, workforce, oral health education

Abstract:

First Smiles is an oral health training and education program funded by a \$7 million contract awarded by the First 5 California Commission. The program is co-managed by the Dental Health Foundation and the California Dental Association Foundation. The 4-year statewide program, conducted from 2004-2008, aimed to prevent tooth decay in children age 0-5 years. First Smiles was developed based on the need to provide early risk assessment and dental prevention and care to young children, to improve the workforce (dental providers and non-dental healthcare providers), and to increase parent/caregiver knowledge on oral health. The program delivered provider education and training targeting medical/dental professionals and early childhood caregivers. The program also provided consumer education targeting community-based organizations that have significant early interaction with parents and caregivers of young children. A Scientific Advisory Committee, with leading experts in children's oral health, guided the development of the curriculum and training materials for providers and consumers to assure standardized key messages and use of the newest scientific information on dental disease prevention in children. First Smiles succeeded in training more than 18,800 dental/medical providers and child care staff at Women, Infants and Children (WIC), Head Start and other child care programs/facilities, exceeding all training goals except in training of dental assistants. Additionally, the program distributed over one million brochures in nine languages to caregivers throughout the State. Evaluation showed increased knowledge and skills of dental and medical providers trained through First Smiles. Outcomes included more dental providers delivering fluoride varnish to young children and discussing infant's bottle or breast feeding practices with parents; more primary care providers reporting "always or almost always" referring pregnant patients to a dentist (from 18% to 52%); and more parents wiping or brushing their children's teeth after every meal (from 14% to 21%).

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SECTION II: PRACTICE DESCRIPTION

History of the Practice:

First 5 California, also known as the California Children and Families Commission, is funded by voter-approved tax on the sale of tobacco products. The commission supports selected statewide initiatives to improve the lives of children from the prenatal period to the time they enter kindergarten. First 5 California's programs are designed to meet the goal of ensuring more children are born healthy, raised in nurturing homes, and ready to succeed in school.

One of the First 5 California programs, the **Early Childhood Oral Health Initiative**, was launched in 2004 in recognition of the link between a child's oral health and overall health and the critical gap in accessing preventive and treatment services for low-income families, which in part is due to provider and parent knowledge, attitudes and involvement. The goal of the Initiative was to reduce the incidence of tooth decay in young children. First 5 California viewed the Initiative as "a workforce enhancement" and established an objective to increase the number of providers to provide quality oral health education and preventive services to young children, particularly children from low-income families and with disabilities/special health care needs.

The Initiative supported two programs: an insurance-based demonstration program and a statewide workforce education and training program. **First Smiles**, the statewide workforce education and training program, was funded by the First 5 California Commission through a Request for Proposal (RFP).

Justification of the Practice:

Dental caries (tooth decay) is the most prevalent chronic infectious disease among children. Severe dental caries is a particular problem in young children due to various factors including the need for extensive dental treatment, behavioral management for dental procedures in a dental office, and at times, the need for general anesthesia in a hospital/operating room setting. Child health professionals, with appropriate training, can play a significant role in reducing the burden of dental disease.

California's 1993-94 Oral Health Needs Assessment (the most recent study at the time of the First Smiles program) revealed that the State had higher oral health needs compared to the national average (higher caries rate and more unmet dental treatment needs). The **First Smiles** program was developed based on the need for early risk assessment; need for early access to prevention and care; lack of dental providers willing to treat infants and toddlers; need to engage more non-dental healthcare providers to support children's oral health; and need to increase parent and caregiver knowledge about oral health.

Inputs, Activities, Outputs and Outcomes of the Practice:

The California Dental Association Foundation (CDAF) and Dental Health Foundation (DHF), in a joint venture, were awarded a 4-year, \$7 million grant from the First 5 California Commission to implement **First Smiles** in 2004-2008.

Program Goal

First Smiles' goal was to deliver provider education and training targeted to medical and dental professionals and to deliver consumer education targeted to community-based organizations that have significant interaction with parents and caregivers of children age 0-5 years.

Program Targets

First Smiles targets for professional education and training included:

- dental professionals, such as general dentists, dental hygienists, dental assistants, and dental students
- medical professionals, such as pediatricians, family practice physicians, obstetricians, nurse practitioners who work with young children, and medical residents

For the program, the First 5 California Commission contracted CDAF and DHF to provide education to 75% of California's dental providers and 50% of the state's primary care providers; and to provide more in-depth training to 30% of the dental providers and 20% of the medical providers. This resulted in targeting education for 30,000 dental professionals and 10,000 medical professionals, and in delivering intensive training to 14,000 dental professionals and 3,500 medical professionals statewide.

In addition, First Smiles targeted consumer education for parents and caregivers who can be reached through early childhood educators at WIC, Head Start, First 5 School Readiness, California Childcare Health, and other child care programs and centers.

Program Guidance and Oversight

Two groups provided guidance and professional expertise in oral health for First Smiles: the Scientific Advisory Committee and the Oversight Committee:

- A multi-disciplinary Scientific Advisory Committee (SAC) was created to guide program activities. The Scientific Advisory Committee was comprised of 15 leading experts in children's oral health (included oral health of children with special health care needs). The SAC members were nationally-acclaimed faculty, researchers, community representatives, special needs experts, dental providers, and primary care physicians. SAC members provided guidance in the development of the curriculum and consumer messages, and ensured that all educational and training materials for dental/medical providers and consumers have consistent and standardized messages to promote the oral health of young children including children with disabilities and other health care needs. An evaluation subcommittee reviewed the Evaluation Plan and survey instruments.
- First 5 appointed an Oversight Committee comprised of representatives from First 5 County Commissions, Diversity Council, Special Needs Project, and the SAC. The Oversight Committee met in the project's first year. This Committee was intended to provide First 5 with feedback on the program but it became apparent that SAC should take over this role.

Program Strategies

The project was designed to utilize scientific knowledge (e.g., the transmission of bacteria from caregiver to the child, caries progression and reversal, and the changing balance between pathological factors and protective factors). The education and training included current scientific information on dental disease prevention in early childhood, prenatal and perinatal care, and care for children special health care needs.

(a) Education and Training of Dental/Medical Professionals

The First Smiles program offered education and training in a variety of formats including:

- one-hour or two-hour in-person training (delivered at provider offices, local dental society events, etc.),
- full-day training (provided at major meetings and conferences),
- two-hour webcast training sessions and modules (for distance learning).

Education also included disseminating information through journal articles and newsletters, and posting latest scientific information on the Web.

Partner organizations delivered provider trainings. The trainings for dental and medical providers were divided into three parts: (1) Early Childhood Caries: What Causes It and How To Prevent It; (2) Oral Health Assessment for Babies and Young Children; and (3) Billing and Call to Action. Most training to medical and dental providers included the following learning objectives:

- Identify pathological and protective factors for dental disease among babies and young children (0-5 years of age).
- Perform an oral health assessment for babies and young children.
- Apply fluoride varnish to the teeth of babies and young children.
- Provide anticipatory guidance and effective family education on oral health topics.
- Learn three behavior management techniques when working with babies and young children (for dental providers).

- Document and bill appropriately for dental health services for babies and young children.

The dental and medical curriculum also included a train-the-trainer approach. First Smiles conducted a two-day session and trained more than 30 trainers. These trainers were recruited from partner organizations, the scientific advisory committee, CDAF, and DHF.

Webcasts and on-demand trainings were offered through the First Smiles website for medical and dental providers. Providers were also offered the curriculum through the mail.

(b) Education of Consumers

First Smiles efforts in educating consumers involved training community organizations' staff, who then delivered oral health education to pregnant women and parents of young children. These organizations used train-the-trainer approach to train other staff. For example, WIC and Head Start Associations recruited master trainers to provide training at regional meetings and annual meetings, and the California Childcare Health Program had a trainer who trained their network childcare providers.

The curriculum used included these topics:

- Early Childhood Caries (what is it; how does it begin; and how to care for your baby's teeth)
- Pregnancy (how to prevent problems in pregnant women)
- Healthy Teeth Begins at Birth (with a brochure available in different languages)

Partners' Activities

The CDAF and DHF joint venture established a large and extensive network of medical and dental entities reaching dental/medical professionals and consumers throughout California:

- Alameda County Public Health Department (ACPHD)
- American Academy of Pediatric Dentistry (AAPD)
- Anderson Center for Dental Care, Children's Hospital San Diego
- California Childcare Health Program (CCHP)
- California Dental Assistants Association
- California Dental Hygienists' Association (CDHA)
- California Head Start Association (CHSA)
- California Primary Care Association (CPCA)
- California Society of Pediatric Dentistry (CSPD)
- California WIC Association (CALWIC)
- Contra Costa Health Services, Family, Maternal and Child Health Programs
- Dental Societies of the California Dental Association
- Kaiser Permanente
- Molina Healthcare
- University of California San Francisco School of Dentistry
- University of Southern California School of Dentistry
- University of California San Francisco School of Nursing
- University of the Pacific, Arthur A. Dugoni School of Dentistry
- Center for Special Care, University of the Pacific, Arthur A. Dugoni School of Dentistry
- Calibrated trainers throughout the state

Alameda County Public Health Department developed the core 2-hour and 4-hour curriculum for the dental/medical professionals; Anderson Center modified the curriculum to a one-hour version for physicians. The core curriculum for consumers was developed by the Washington Dental Service Foundation and then modified by CHSA, CALWIC and CCHP to meet their specific needs. The Center for Special Care Dentistry at the Dugoni School added sections for children with special needs to all versions of the curriculum.

Training for medical providers was often conducted in physician offices by Molina, ACPHD, Contra Costa Health Department, and Anderson Center. Group trainings were conducted by the CPCA for clinic physicians. Kaiser Permanente also offered multiple video conferences and group trainings.

The Dental Schools, the dental society components, and the dental hygienists association components offered group trainings to dental providers. The California Dental Association (CDA) also offered trainings at its semi-annual meetings.

Statewide associations for WIC, Head Start, and the University of California, San Francisco (UCSF) Early Childhood Education Program trained program staff to educate parents/caregivers.

Program Outputs

(a) Dental/Medical Professionals Training

The project succeeded in exceeding all training goals except for the training of dental assistants.

Target Audience	Goal	Reached
Dentists	5,016	6,352
Dental Hygienists	2,902	3,333
Dental Assistants	5,719	5,131
Medical Physicians	2,700	3,086
Medical Residents	495	566
Nurse Practitioners	200	385
TOTAL	17,032	18,853

(b) Early Childhood Caregiver Education for Consumers

Through train-the-trainer sessions, 883 community agency staff (484 from Head Start, 254 from WIC agencies, and 145 through UCSF Early Childhood Education Program) received oral health training. These trainers educated parents and caregivers.

Program Evaluation

A comprehensive Evaluation Plan addressed process and impact results. The primary study questions included the following:

- How many providers were reached by the program and what were their characteristics?
- What was the extent of knowledge gain and retention among those attending a training?
- To what extent was there an increase in self-perceived skills and confidence among dentists and physicians in serving children age 0-5, including children with special needs?
- To what extent were dental and primary care professionals who attended a training providing preventive oral health services to young children, and what changes occurred in their practices as a result of participating?
- To what extent did course participants value the training courses?
- What system and policy improvements occurred in the field of dentistry, including California dental schools, that this program influenced?
- To what extent did community organizations implement the oral health curriculum into their agencies' programs for parents as a result of participating in training?
- To what extent did parents learn about, value and adopt desired behaviors as a result of receiving education from the participating community organizations?

For the duration of the First Smiles program, from 2004 to 2008, an interim evaluation report was provided each year and a final evaluation report was delivered. Reports are available at on the First Smiles Website at http://www.first5oralhealth.org/page.asp?page_id=415.

Program Outcomes

Outcomes of the First Smiles program included the following. See the [final evaluation report](#) for additional reported outcomes.

Providers and Their Practice Characteristics:

- The First Smiles program exceeded its overall training goal. A total of 18,853 attended a First Smiles training. An additional 883 staff from community service organizations received training in children's oral health. The program drew a diverse population of dentists and physicians in race/ethnicity, gender, and years in practice.

Knowledge Gain and Retention:

- All training participants exhibited gained knowledge in most areas of the curriculum content (an average of 80% correct post-test scores).
- Parents demonstrated a gained knowledge (an average of 73% correct post-test scores) after receiving education on children’s oral health, and retained knowledge six months later (similar follow-up scores).

Self-Perceived Skill Level Increase

- The highest self-perceived increase in skill level for dental and medical providers was the ability to communicate with parents and provide education and anticipatory guidance.
- Dental providers reported increased clinical skills in learning how to perform a knee-to-knee exam, and medical providers in assessing dental caries risk and protective factors.

Adoption of Desired Provider and Consumer Behaviors

- Six months after the training, 16% (25 of 156) of general dentists at follow-up said they were seeing more children age 0-5 years in their practices; close to 80% reported having the capacity to accommodate appointments for this age group.
- Six months after the training, dental providers significantly increased the frequency of performing the following procedures for children age 0-5 years: application of fluoride varnish and discussion of an infant’s bottle or breast feeding practices. For pregnant patients, dental providers increased the frequency of discussing breast feeding practices and recommending xylitol gum.
- Six months after the training, 52% of the primary care providers reported “always or almost always” referring pregnant patients to a dentist, up from 18%. They also increased their frequency of coordinating care with a dental provider for their pregnant patients (12% to 20%).
- The number of parents wiping or brushing their children’s teeth after every meal increased significantly six months after receiving oral health education (14% to 21%).

Access/Systems Change

- Local collaboration supporting children’s oral health increased.
- Key dental and medical leaders cited important policy and practice changes in California attributable or contributable to First Smiles. These changes included increased awareness by the California state legislature of oral health problems and potential solutions, integration of Caries Management by Risk Assessment (CAMBRA) into the dental schools’ education, and dedicating resources to delivery fluoride varnish by some school districts.

Budget Estimates and Formulas of the Practice:

The budget for the project was \$7 million over 4 years. Almost all of the trainings were subcontracted to various organizations throughout the state. A rough breakdown of the budget is provided below:

Personnel	\$ 2,000,000
Curriculum Development	\$ 60,000
Supplies (including printing brochures, training materials, etc)	\$ 320,000
Evaluation	\$ 640,000
Website, virtual trainings and on-demand training	\$ 500,000
Trainers/faculty	\$ 100,000
Training Dental Providers (subcontracts)	\$ 1,500,000
Training Medical Providers (subcontracts)	\$ 1,300,000
Training Early Childhood Educators (subcontracts)	\$ 440,000
Travel	\$ 100,000

Lessons Learned and/or Plans for Improvement:

Based on the final evaluation of the First Smiles program (2004-2008), the following key recommendations are provided to build on the successes of First Smiles:

- Strengthen the First Smiles curriculum in areas where post-test results for each group indicated the need for more emphasis. For example, that managing the behavior of children age 0-5 years with special needs is generally the same as for all children of that age.
- Fund more opportunities for training dental professionals concerning children with disabilities and other special needs.

- Provide support for more joint training of medical and dental providers, incorporating a hands-on component in fluoride varnish application for medical providers.
- Deliver more training to primary care providers, particularly to providers in OB-GYN and rural practices, using the in-office training and technical assistance strategy.
- Work with Healthy Families to ensure fluoride varnish is covered as a medical procedure by its health plans, and that Healthy Families and Medi-Cal cover anticipatory guidance in both their medical and dental plans.
- Support advocacy and education efforts that help inform primary care providers of the Medi-Cal benefit of reimbursement for fluoride varnish application.
- Provide funding and other assistance to WIC and Head Start agencies to increase their capacity for integrating the parent oral health curriculum into their client education services.
- Support appropriate ways of helping California dental schools to update and increase the proportion of didactic and clinical curricula focused on children age 0-5 years.

Available Information Resources:

1. First Smiles Website: <http://www.first5oralhealth.org/>
The Website provides resource information developed and used during the funded program period for the dental team, the medical team, the early childhood education team, and parents. Anticipatory guidelines and consumer brochures in 10 languages and videos can be downloaded from the Website. First Smiles Website will continue to exist beyond the grant.
2. First Smiles evaluation reports: http://www.first5oralhealth.org/page.asp?page_id=415

SECTION III: PRACTICE EVALUATION INFORMATION

Impact/Effectiveness

How has the practice demonstrated impact, applicability, and benefits to the oral health care and well-being of certain populations or communities (i.e., reference scientific evidence, outcomes of the practice and/or evaluation results)?

The First Smiles program achieved outcomes that will provide long term benefits to the oral health of young children in California. All training participants exhibited gained knowledge in most areas of the curriculum content. The highest self-perceived increase in skill level for dental and medical providers was the ability to communicate with parents and provide education and anticipatory guidance. Dental providers reported increased clinical skills in learning how to perform a knee-to-knee exam and medical providers in assessing dental caries risk and protective factors. Six months after the training, dental providers significantly increased the frequency of performing application of fluoride varnish and discussion of an infant's bottle or breast feeding practices. Six months after the training, more primary care providers reported "always or almost always" referring pregnant patients to a dentist; they also increased their frequency of coordinating care with a dental provider for their pregnant patients. The majority (84%) of early childhood educators and other professional staff referred children age 0-5 years for dental care as part of their regular job. Key dental and medical leaders cited important policy and practice changes in California attributable or contributable to First Smiles.

Efficiency

How has the practice demonstrated cost and resource efficiency where expenses are appropriate to benefits? How has the practice demonstrated realistic and reasonable staffing and time requirements? Provide unit cost analysis or cost-benefit analysis if appropriate.

The program demonstrated efficiency through: (1) promoting a unified and comprehensive approach through statewide education and/or training of dental/medical professionals and consumers, and (2) having a multi-pronged approach of training primary care physicians, primary care dentists, and WIC, Head Start, and other child care providers to simultaneously improve oral health awareness among a variety of health professionals who interact with children and their families.

Efficiency is also realized through cost-savings gained through emphasis on prevention of tooth decay. Low-income children who have their first preventive dental visit by age one are less likely to need extensive restorative treatment or to have emergency room visits due to dental pain or infection. The average dentally related costs are almost 40% lower (\$263 compared to \$447) over a five year period than for children who receive their first preventive visit after age one. Early prevention of tooth decay in primary teeth can lead to behavior modification to reduce the risk of tooth decay in the permanent teeth, resulting in lower treatment costs throughout the lifespan.

Demonstrated Sustainability

How has the practice showed sustainable benefits and/or how has the practice been sustainable within populations/communities and between states/territories? What mechanisms have been built into the practice to assure sustainability?

Although First Smiles was funded for only four years (2004-2008), the program aimed to provide sustainable benefits to improve oral health and access to dental care for the young children of the state. Sustainable benefits achieved include:

- Medicaid claims data showed that the number of providers (medical and dental) who are providing preventive services to infants and toddlers has increased.
- The website continues to serve as a substantial resource for dental and medical providers and early childhood caregivers.
- Providers throughout the state, including the WIC programs, continue to use the First Smiles consumer brochure.

Collaboration/Integration

How has the practice built effective partnerships/collaborations among various organizations and integrated oral health with other health projects and issues? What are the traditional, non-traditional, public and private partnerships/collaborations established by the practice for integration, effectiveness, efficiency and sustainability?

First Smiles promoted collaboration and integration:

- The joint venture by California Dental Association Foundation (CDAF) and the Dental Health Foundation (DHF) to manage First Smiles was an effective collaboration. Prior to the program, these organizations had a history of discord. After First Smiles, the two organizations are continuing to work together to improve the oral health of the state's residents.
- The program collaborated with medical provider groups to promote and integrate oral health. For example, an oral health committee has been established in the American Academy of Pediatrics (AAP) Chapter 1 in California; the committee includes medical and dental professionals.
- The program created a close collaboration with WIC. Since 2008, dental providers offer preventive dental visits at WIC centers.

Objectives/Rationale

How has the practice addressed HP 2010 objectives, met the National Call to Action to Promote Oral Health, and/or built basic infrastructure and capacity for state/territorial/community oral health programs?

The First Smiles program responded to the National Call to Action to Promote Oral Health which asks to increase oral health workforce diversity, capacity and flexibility, to implement strategies that accelerate the transfer of science, and to replicate effective programs/proven practices to reduce dental disease and improve oral health care access.

The program also addressed several HP 2010 oral health objectives, including reducing dental caries experience in children, increasing utilization of the oral health system, and increasing preventive dental services for low-income children.

Extent of Use Among States

Describe the extent of the practice or aspects of the practice used in other states.

Although all states have invested in the education and training of dental/medical professionals and consumers, the First Smiles program was special in its statewide strategy to train a large number of dental and medical professionals and to coordinate the training through extensive partnerships and collaborations.