

Preventing Early Childhood Caries: Lessons from the Field

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Abstract

Early childhood caries (ECC) is a significant public health concern affecting millions of high-risk families with young children. The purpose of this article is to present the proceedings from a May 2005 national forum, convened in Washington, DC, by the Maternal and Child Health Bureau of the Health Resources and Services Administration, which brought together representatives of 14 ECC programs from around the United States to share experiences and help inform future efforts to prevent and reduce ECC. Conclusions drawn from the presentations representing public, private, and academic sectors include: (1) oral health is an integral part of overall health and impacts quality of life and health outcomes; (2) oral health should be integrated into broader child health and development systems; (3) dental caries should be addressed through a chronic disease management model; (4) comprehensive approaches incorporating multiple strategies that involve families, clinicians, and child services providers in ECC prevention and reduction efforts should be employed. Lessons learned from existing ECC programs—summaries of which are included in the article—provide valuable insight into a number of core principles for preventing ECC. Findings from this workshop constitute a knowledge base that can help improve and strengthen ECC programs. (*Pediatr Dent* 2006;28:553-560)

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Early childhood caries (ECC) is a significant public health concern that affects millions of families with young children. High levels of *Streptococcus mutans*, a common strain of oral bacteria, and prolonged exposure to carbohydrates result in acid production that demineralizes tooth surfaces and creates cavities unless adequate protective measures are instituted and maintained. The prevalent and progressive nature of this disease is illustrated by reports that 6 of 10 children in the United States have 1 or more decayed or filled primary teeth by age 5.¹ Children from low-income families and from racial/ethnic minority groups are more likely to experience dental caries and have unmet treatment needs than higher-income and non-Hispanic white children.² Untreated decay can cause

severe pain, infection, and premature loss of teeth which inhibit children's ability to eat and speak and contribute to poor growth and development.¹

Several prominent medical and dental professional organizations have taken steps to address ECC in the United States. The American Academy of Pediatric Dentistry (AAPD) led the way in 1986 by releasing guidelines on infant oral health care that recommended that infants have an oral evaluation within 6 months of the eruption of the first primary tooth or by 12 months of age.³ In 2000, the American Dental Association (ADA) issued a statement emphasizing children's susceptibility to decay as soon as their teeth erupt.⁴ The ADA also joined the AAPD in recommending dental care for infants by 12 months of age along with education for parents and caregivers on ECC prevention. The American Academy of Pediatrics (AAP) subsequently issued a policy statement in 2003 recommending oral health assessments by trained health professionals beginning at 6 months of age and establishment of "dental homes" for high-risk infants by age 1.⁵

The US Surgeon General's Office has also emphasized the importance of oral health through a series of activities and reports. *Oral Health in America*, released in 2000, called

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for the development of a national oral health plan consisting of 5 core components:

1. changing perceptions so that oral health becomes an accepted component of general health;
2. building the science and evidence base to improve oral health research;
3. integrating oral health into the overall health infrastructure;
4. removing known barriers to oral health care; and
5. using public-private partnerships to reduce oral health disparities.¹

The Surgeon General's Office subsequently released a follow-up report, *National Call to Action to Promote Oral Health*, in 2003. This report provided the basis for integrating efforts of a Partnership Network, a broad coalition of public and private entities dedicated to improving the nation's oral health, in addressing the five core plan components noted above. The Partnership Network seeks to promote communication and collaboration among all key stakeholders and act as a forum to measure progress toward these actions in coordination with the Healthy People 2010 initiative.⁶

Although numerous ECC initiatives have been mounted in various sites throughout the United States, program representatives had not been convened to share experiences and lessons learned in response to the Surgeon General's Call to Action. Accordingly, the Maternal and Child Health Bureau (MCHB) of the Health Resources and Services Administration (HRSA) convened the first such national forum of ECC programs in Washington, DC in May of 2005. The purpose of the forum was to afford representatives an opportunity to share experiences and begin building a knowledge base to improve efforts designed to prevent and decrease ECC.

The purpose of this article is to:

1. present an overview of components and activities used by the Early Childhood Caries (ECC) programs represented at the Maternal and Child Health Bureau forum;
2. summarize common challenges and lessons learned; and
3. highlight important areas of consideration for future ECC initiatives.

Workshop presentations

The workshop, held on May 16-17, 2005 in Washington, DC, brought together a cross-section of individuals involved in funding and managing ECC programs to share their experiences and lessons and to lay the groundwork for future activities to reduce and prevent ECC. Workshop participants were chosen to provide a broad representation of ECC approaches being used across the country, including programs supported by national public and private funding sources (eg, federal agencies, private foundations, etc.). Participants represented an array of perspectives from the public, private, and academic sectors.

On the first day of the workshop, representatives from 14 ECC programs provided a brief overview of their activities,

followed by a question-and-answer session and discussion by the assembled group. Program representatives had been instructed to use the Association of State and Territorial Dental Directors (ASTDD) Best Practices criteria as a guide for preparing their presentations. ASTDD created its Best Practices for Oral Health Programs initiative in response to the Surgeon General's emphasis on oral health and Call to Action. The ASTDD initiative created 5 criteria to help document successful practices in dental public health: (1) impact/effectiveness; (2) efficiency; (3) demonstrated sustainability; (4) collaboration/integration; and (5) objectives/rationale.⁷

On the second day of the workshop, participants identified common elements across the ECC programs as well as challenges they faced in planning, implementing, and sustaining their programs. In addition, they developed a list of considerations for developing and sustaining initiatives to prevent and reduce ECC.

ECC prevention approaches

Program representatives highlighted an array of ECC prevention approaches that included components to address family and provider needs. Program elements include information on: (1) the disease process and how it can be prevented; (2) anticipatory guidance; (3) supplies to prevent ECC; and (4) links to oral health care providers. Programs also offer provider training and mentorship to better equip a wide variety of dental and nondental providers with the skills needed to deliver a range of ECC preventive and treatment services (Tables 1 and 2).

Family services

Parents/caretakers are children's main source of health-related instruction. Programs that provide family education about oral health and daily dental health help to ensure that parents/caretakers understand the importance of oral health and ways to maintain it by providing information on patterns of tooth eruption, age-appropriate oral hygiene techniques, nutritional guidelines and other topics. They also distribute oral hygiene supplies such as toothbrushes, floss, and toothpaste free of charge to families. By encouraging good oral health practices, these programs aim to reduce *S mutans* transmission and improve oral health outcomes. Programs such as Iowa's Healthy Smiles Parent Education Program include information about disease transmission so that families learn to refrain from sharing personal hygiene items such as toothbrushes and dental floss, a practice reported by programs to be particularly common among siblings. Similarly, mothers/caregivers are taught to avoid sharing utensils (eg, spoons) or using their own saliva to clean a pacifier or bottle nipple.

Many programs also provide basic oral health risk assessment training to parents/caretakers, which involves observing children's teeth for early signs of dental decay using methods such as the lift the lip technique. Lift the lip is a simple technique developed by the University of

Table 1. Overview of Selected ECC Programs' Objectives, Services, and Activities

Program and region	Objectives	Services and activities
Access to Baby and Child Dentistry (ABCD) – Washington State	Cooperative initiative involving many public and private entities to provide preventive and restorative dental care to Medicaid-eligible young children with the goal of first screening by first birthday.	Outreach and case management to Medicaid-eligible families to ensure early dental visits to participating dentists who are trained and certified to care for very young children and receive enhanced Medicaid fees.
American Academy of Pediatrics (AAP) Collaborative Care Program (PedsCare) – United States	Cooperative agreement with Maternal and Child Health Bureau to provide pediatricians with the tools to implement the 2003 AAP Policy Statement on Oral Health Risk Assessment Timing and Establishment of the Dental Home.	Provider training consisting of educational sessions, oral health risk assessment preceptorships, and remote distribution of training materials to the national American Academy of Pediatrics community. The program also includes a listserv and Web site that provides information and updates on oral health issues and offers technical support to various oral health projects funded through CATCH* and HTPCP† grant programs.
Cavity Free Kids: Oral Health Education for Preschoolers and their Families – Washington State	An oral health curriculum designed for Head Start and Early Head Start programs to promote oral health and disease prevention in the classroom and beyond.	Oral health education for enrolled preschoolers and their families with a train-the-trainer model to introduce the curriculum to other Head Start programs within and outside of Washington.
First Five California Early Childhood Oral Health Initiative – California	First 5 California Oral Health Initiative sponsors 2 major programs to significantly reduce dental decay in young children through age 5 including children with special health care needs: the Insurance-based Oral Health Demonstration Project and the Early Childhood Health and Oral Health Education and Training Project.	The Insurance-based Project contracts with private health plans to administer family education, provider training, and clinical services in underserved areas. The Education and Training Project trains medical and dental providers on preventive oral health services and parents and consumers on the importance of oral health. Technical assistance is also provided to local and State First 5 commissions.
Healthy Kids, Healthy Teeth – Alameda County, California	Demonstration project to increase access to dental care, reduce prevalence of Early Childhood Caries, and reduce the cost of dental care for children 0 to 5 years old.	Families receive comprehensive case management and referrals to participating providers, while providers receive training and financial incentives for services rendered to participating children.
Indian Health Service – United States	Regional Support Centers award 5-year competitive grants to address oral health to the 12 national IHS areas.	Grants fund a wide range of services, including clinical care, family and provider training, and oral health promotion campaigns.
Into the Mouth of Babes – North Carolina	Collaboration of 6 public and private entities to train medical providers to deliver preventive oral health services to high-risk young children up to age 3.	Preventive service package consisting of oral screening and referral, parent counseling, and fluoride varnish applications covered under Medicaid.
Iowa Healthy Smiles Parent Education Program – Iowa	Home-based oral health family education and training program administered through local Head Start and Early Head Start programs and other home-based and child care support programs.	Head Start/Early Head Start and other home-based program family support and child care workers deliver parent training on prevention and early detection of oral disease to high-risk families during their home visits.
Kansas Head Start Association's Early Head Start Oral Health Initiative – Kansas	System of oral health parent and staff education services and interventions administered through local Early Head Start programs with the goal of keeping young children, through the age of 3, cavity free.	Families that have participated in Early Head Start for a minimum duration are eligible to receive oral health risk assessments, dental cleanings and exams, and fluoride varnish applications. Parents are taught the lift the lip screening technique.
Kids Smile: Kentucky's Screening and Fluoride Varnish Program – Kentucky	Program launched by the Kentucky Department of Health and University of Kentucky, College of Dentistry to improve the oral health status of children 0-5 years of age and to enhance oral health screening skills of health professionals who regularly see young children.	Public health nurses receive training in oral health screening, risk assessment, family oral health education communication strategies, and making referrals to appropriate oral health providers.
Klamath Falls Early Childhood Cavity Prevention Program – Klamath County, Oregon	Community-based initiative involving many public and private entities to provide a dental home and comprehensive services for pregnant women enrolled in Medicaid and their newborns.	Eligible pregnant women are referred through partners, such as WIC and the local dental hygiene training program, assigned a dental home for themselves and expectant child, and receive home visits and needed clinical and preventive care. Providers can also receive continuing education credit for oral health training.
More Smiling Faces in Beautiful Places – South Carolina	One of 6 oral health initiatives funded by the Robert Wood Johnson Foundation as part of its State Action for Oral Health Access (SAOHA) Program. Goals of the More Smiling Faces program is to increase access to oral health for children from birth to age 6 and children and adolescents with special needs.	Creation of an integrated oral health network of providers, provision of pediatric oral health training for dental and medical providers, comprehensive care coordination system, and parent and family education and support.
Prevention Management Model for Early Childhood Caries (MAYA Project) – California	The MAYA project is a clinical trial being conducted by the UCSF Center to Address Disparities in Children's Oral Health funded by the NIH. MAYA is designed to test the effectiveness of a new approach for preventing and managing dental decay in infants and toddlers.	This study randomly assigns participants to several groups in which all receive anticipatory guidance counseling. The interventions in the randomized groups include case management, chlorhexidine rinse for postpartum women, and fluoride varnish application on infants and toddlers.
Prevention of Early Childhood Caries Using Fluoride Varnish – California	This is another clinical trial conducted by the UCSF Center to Address Disparities in Children's Oral Health to determine the efficacy of fluoride varnish application in preventing tooth decay in young children.	Evaluates the oral health outcomes of children assigned to 3 groups: (1) fluoride varnish 1x/year; (2) fluoride varnish 2x/year; and (3) no fluoride varnish. Families of children in all groups receive oral health counseling, and all children receive annual dental screenings.

*CATCH=Community Access to Child Health.

†HTPCP=Healthy Tomorrows Partnerships for Children Program.

Washington's School of Dentistry as part of a toolkit and workshop to instruct families and providers on how to conduct a brief oral health assessment of infant's and toddler's teeth. The Head Start Oral Health Initiative in Kansas found that parents who screened their children using lift the lip once a month became more receptive to oral health education and to seeking needed oral health care.

Some programs have also found that training given in conjunction with regular home visits by nurses reinforces oral health education and promotes positive behavior change among families. The Klamath Falls Early Childhood Cavity Prevention Program targets Medicaid-eligible pregnant women with multiple home visits during the mother's pregnancy until her child is age 2. These home visits educate families about the transmission of caries, provide oral health toolkits, and address barriers to accessing oral health care. Additionally, all members of a household are encouraged to obtain regular oral health care to reduce individual- and household-level risks for dental disease.

Another important family service provided by many ECC programs is coordination of services to help families maneuver their way through complex health care systems. Care coordinators (also referred to as patient navigators) are trained as generalists to address a broad range of health and social needs. Such training increases access to both dental and medical care, promoting effective reciprocal communication between medical and oral health providers. Activities involve:

1. tracking patients' medical and dental service utilization and referrals;
2. ensuring timely receipt of follow-up care;
3. keeping all providers informed of treatment plans and progress; and
4. working with families and providers to establish dental homes.

In addition, care coordinators' efforts can increase the utilization of oral health care services by addressing barriers to accessing care. Programs noted that care coordinators: (1) help families apply for health insurance; (2) explain dental coverage benefits; and (3) assist in resolving coverage disputes. Care coordinators can also address communication barriers that may hinder access to care. California's

Table 2. ECC Programs Targeting Families, Clinical Providers, and Nonclinical Providers

Program and region	ECC Program Targeted to:		
	Families	Clinical providers	Child service providers
Access to Baby and Child Dentistry (ABCD), Washington State	X	X	
American Academy of Pediatrics (AAP) Collaborative Care Program (PedsCare), United States		X	
First Five California Early Childhood Oral Health Initiative, California	X	X	
Cavity Free Kids: Oral Health Education for Preschoolers and their Families, Washington State	X		X
Healthy Kids, Healthy Teeth, Alameda County, California	X	X	
Indian Health Service, United States	X	X	X
Into the Mouth of Babes, North Carolina	X	X	
Iowa Healthy Smiles Parent Education Program, Iowa	X		X
Kansas Head Start Association's Early Head Start Oral Health Initiative, Kansas	X		X
Kids Smile: Kentucky's Screening and Fluoride Varnish Program, Kentucky		X	
Klamath Falls Early Childhood Cavity Prevention Program, Klamath County, Oregon	X	X	
More Smiling Faces in Beautiful Places, South Carolina	X	X	X
Prevention Management Model for Early Childhood Caries (MAYA Project), California	X		
Prevention of Early Childhood Caries Using Fluoride Varnish, California	X		

Healthy Kids, Healthy Teeth program serves its diverse patient population by providing bilingual/bicultural care coordinators who are able to effectively communicate with families of differing English proficiency and health literacy levels. Families often require assistance with needs related to maintaining optimal oral health care, including:

1. health and social services, such as the Supplemental Food Program for Women, Infants and Children (WIC);
2. transportation assistance; and
3. public financial assistance.

Training and support for clinical providers serving young children and their families

Clinical provider training was identified as a central component of many ECC programs. Oral health care providers who do not regularly serve pediatric populations often lack the specialized knowledge and skills necessary to effectively care for infants and toddlers. Some programs have trained dental providers and others to appropriately respond to young children's behavior during visits and to use techniques to help comfort young children and enable the safe delivery of oral health care services. For example, the public health nurses in Kentucky's Kids Smile Oral Health Education

and Prevention Program were taught to use knee-to-knee positioning, often with a familiar family member to help ease the child's anxiety, more safely conduct screenings, and apply fluoride varnish. Programs have also provided specific instruction in conducting ECC risk assessment when primary teeth erupt, as well as training on the provision of appropriate anticipatory guidance as children age.

Some ECC programs have targeted their activities specifically to primary care providers like pediatricians and nurses, as they are more likely to see very young children than are oral health providers. To this end, a number of programs have incorporated oral health screening and referral into existing primary care protocols. Kentucky's Kids Smile program, for instance, modified a widely used well-child exam form to include 2 new sections on oral health screening and anticipatory guidance. AAP's Pediatric Collaborative Care Program (PedsCare) trains pediatricians to: (1) interview parents about children's oral health care needs; (2) conduct an oral health risk assessment; and (3) apply fluoride varnishes. In keeping with AAP's policy on the timing of oral health risk assessments and the establishment of a dental home,⁵ all pediatricians are encouraged to refer children to a dentist for ongoing dental care. This strategy fosters formal communication among providers about patients' treatment progress and need for follow-up care.

Some ECC programs have sought to increase interest and participation from the private sector by using providers who have gone through the training to recruit others. This train-the-trainer model allows providers to attest firsthand to a program's merits and share their newly acquired knowledge about ECC prevention and treatment strategies. Washington's ABCD Champions Program is designed to train ABCD oral health leaders to present information about the program's history and impact of ECC on children's health and to deliver training in anticipatory guidance and counseling. Other programs use veteran providers as mentors to offer hands-on experience to new providers. AAP's PedsCare created the Oral Health Risk Assessment Preceptorship Program to provide individualized training in conducting oral health risk assessments and other skills to pediatricians in their practices.

In addition to improving provider training, some programs have contributed to a growing body of best practices research for ECC. To date, relatively few randomized clinical trials have been conducted using available ECC educational tools and clinical services. The University of California, San Francisco has responded by initiating 2 randomized clinical trials to assess the effectiveness of ECC interventions:

1. The first trial, Prevention of Early Childhood Caries Using Fluoride Varnish, evaluated the effectiveness of fluoride varnish applications in preventing ECC in caries-free children 6 to 44 months old. This study's findings support the use of fluoride varnish to prevent ECC and the need for an early dental visit, especially for children at high risk for caries.⁸

2. The second trial, Prevention Management for Early Childhood Caries (MAYA Project), is an ongoing trial that is evaluating the effectiveness of a moderate intensity caries prevention program. This program includes counseling and chlorhexidine rinsing for new mothers and fluoride varnish applications for their 12- to 30-month-old children.

Many public and private insurance plans do not cover all of the clinical services designed to prevent ECC. In addition, many providers do not accept children covered by Medicaid due to low reimbursement rates. In response, ECC programs have supported providers by addressing these financial barriers, particularly for underserved populations. Programs such as Washington's ABCD Program have worked with Medicaid to develop new billable services that cover: (1) anticipatory guidance; (2) family education; (3) oral exams; (4) risk assessments; and (5) fluoride varnish applications twice annually per enrolled family. North Carolina's Into the Mouths of Babes also collaborated with the State Medicaid agency to establish an oral health preventive service package for Medicaid-covered children as part of their medical program. The package includes oral screenings, parent counseling, and fluoride varnish applications by primary care health professionals beginning at initial tooth eruption and continuing up to age 3.

The use of technological innovations has also improved the quality and reach of ECC training and clinical support tools for providers. AAP's PedsCare Program developed an oral health risk assessment training toolkit that includes a CD-ROM and printed materials that are distributed to pediatricians throughout the United States. The toolkit was subsequently placed on AAP's oral health Web page to make it accessible to all health care providers. The program also created a listserv to provide a source of information regarding oral health resources, notifications, and events. Other programs have used technology to improve data collection and management. Providers in Kentucky's Kids Smile program use a personal digital assistant to capture oral health risk assessment data. California's Prevention Management for Early Childhood Caries (MAYA Project) created a Web-accessible database that allows providers to immediately update patient information from remote locations using secure login information.

Programs also assist providers in translating research findings into practice and addressing their concerns related to the care of pregnant women and young children, particularly the safe use of chemotherapeutic agents. For example, Kentucky's Kids Smile program educates providers about potentially toxic doses of fluoride varnish and the risk of fluorosis in young children. Similarly, Oregon's Klamath Falls Early Childhood Cavity Prevention Program addressed providers' concerns about the safety of administering chemotherapeutic agents to pregnant women. In general, programs stressed that these and other health risks from clinical preventive services are generally minimal and can be avoided by carefully following safety guidelines.

Training and support for nonclinical providers serving young children and their families

Workshop participants stressed that the provision of accurate oral health information and guidelines to young children and their families should not be limited to just the medical and dental communities. Programs such as Head Start, WIC, and others that provide services to young children and their families are natural partners in efforts to reduce and prevent ECC. In many cases, these programs are trusted sources for information and referrals in their local communities and serve as catalysts for children's entry into dental homes. The Washington Dental Service Foundation's Cavity Free Kids curriculum trains Head Start program staff to provide oral health education to preschoolers and their families. This curriculum has been used successfully in other Head Start programs throughout the country. Similarly, the Iowa Healthy Smiles Parent Education Program and the Kansas Head Start Association's Early Head Start Oral Health Initiative educate parents and program staff on ECC, including oral health risk assessments and lift the lip screening.

Common challenges

During the workshop, participants identified key challenges common to all programs that affect service delivery and ultimately ECC outcomes. One of the most fundamental challenges has been building strong political will and broad stakeholder support for ECC initiatives. Legislators and public health officials are often unaware of how prevalent ECC is among their constituent populations or what strategies are most effective in decreasing or preventing the disease. Strong stakeholder support is especially essential to ensure adequate financial investment to sustain ECC program services and infrastructure.

It also can be difficult to build support among all types of health care providers. The transmissible nature of ECC between family members and others and the need for early detection to control the disease progress requires collaboration among oral health and primary health care providers to address ECC. The traditional separation between the oral health and medical fields, however, serves as a major barrier to communication and collaboration between providers, thereby limiting the impact of ECC programs.

Another major challenge in designing and implementing a comprehensive approach to eliminating ECC involves promoting wide acceptance of the need to manage ECC as a chronic disease and the need for ongoing risk assessment throughout an individual's life. The use of a chronic disease management model requires monitoring and the ability to respond to risk factors, which may change over the course of an individual's life. To achieve this, programs report that providers must first be taught about caries as a chronic, complex disease process and the concept of caries risk across the lifespan before they are able to support ECC interventions geared toward managing these risks over time.

Increasingly diverse families offer special challenges to effective communication of oral health messages and

delivery of culturally competent oral health care. Cultural differences exert strong influences on beliefs about: (1) oral health; (2) oral hygiene and nutrition practices; and (3) health-seeking behaviors. These differences stem from a range of factors, including, among others: (1) race; (2) ethnicity; (3) language; (4) socioeconomic status; and (5) education level. ECC programs that are not sensitive and responsive to these cultural differences run the risk of developing interventions that are not easily transferred from one population to another. For example, programs targeted to Florida Hispanics may not necessarily be appropriate for California Hispanics. Designing culturally competent programs that tailor their services to each group's needs can be costly and time-intensive.

Discussion

In examining these ECC programs, participants identified 4 core principles for the prevention and management of ECC:

1. The first is recognition that oral health is an integral part of overall health. Oral health for young children is about much more than 'baby teeth.' Poor oral health can have significant negative consequences for general health and social, intellectual, physical, and emotional development.
2. Because oral health is not separate and distinct from overall health, efforts to promote good oral health and treat oral disease should be integrally linked to broader systems that provide primary care services for children.
3. The group also identified the need to address ECC as a chronic disease throughout an individual's life and to implement risk-based approaches to ECC prevention and management that apply resources in proportion to children's risk for dental disease.
4. Finally, the importance of using a comprehensive approach that incorporates multiple, parallel, short-, and long-term strategies must be employed to successfully prevent ECC.

Programs that have sought to incorporate these core principles have used a wide variety of components to meet the needs of families, providers, and others serving young children and their families. Activities such as family outreach and education have been used to help families recognize ECC as an important health concern and empower them with the knowledge and skills necessary to adopt good oral health behaviors and recognize early signs of tooth decay. Some programs have also provided comprehensive case management services to clients, thereby increasing their ability to address a wider range of clients' health and social service needs. Provider training and mentorship services have encouraged providers to become more comfortable caring for populations most at risk for ECC transmission and infection, and provided instruction in administering chemotherapeutic agents safely and effectively. Use of these diverse approaches has helped programs reach a wide range of providers and families.

ECC programs' collective experiences in educating, train-

ing, and providing clinical services has helped to provide valuable insight into strategies for improving the political and scientific climate needed to create effective state and local ECC programs and initiatives. Participants recommended raising the profile of ECC by establishing ECC prevention as a national public health priority. They stressed that oral health is not the sole domain of a single regulatory body, but rather the responsibility of many federal, state, and local health and social service entities. Legislators, public health officials, state agency directors, and other policymakers should support policies that work toward a more integrated service delivery model. In addition, the public must be more informed about the importance of maintaining good oral health to build support for allocating resources to improve access to needed oral health care.

The Surgeon General's report on oral health found that trusted nonoral health providers often make excellent spokespersons for oral health.¹ Workshop participants also noted that broad-based oral health coalitions that rely on families to speak about their firsthand experiences in trying to access oral health services for their children have been particularly effective in outreach efforts. They suggested that a greater effort be made to identify and nurture oral health champions to raise the visibility of oral health as a public health priority and advocate for public support for prevention and early intervention efforts. Similarly, programs should partner with existing public and private organizations to pool their resources and engage providers and potential funding sources in supporting ECC initiatives.

Academic health centers can serve as an important resource for ECC programs. Many centers are well connected to their local communities and can foster more community-oriented and culturally competent services. Among the largest providers of high quality, affordable clinical services to the disadvantaged populations most at-risk for ECC, academic health centers can be important partners in developing best practices, training materials, surveillance tools, and pharmacological products. They may also be helpful in aiding the day-to-day operations of ECC programs by providing additional technical assistance and support.

Partnering with community-based programs, such as religious groups, schools, and community centers may be especially critical in brokering connections with hard-to-reach populations, many of which are among the least likely to access oral health care. These programs are often well respected and trusted by the targeted populations and can encourage buy-in for oral health interventions. Community members should also be engaged and given a forum to voice their concerns about oral health and their need for services early in the planning process so that these ideas can be incorporated into the program design. Respected community leaders and institutions can effectively facilitate outreach efforts and raise the profile of oral health as an important community issue. Community members should also participate in the formal oversight of program operations and have the opportunity to provide feedback on the

quality of and access to services. Such measures bring the local ownership needed to ensure that programs balance long-term prevention and health promotion goals with immediate community needs to access ECC interventions. Community feedback also helps programs determine if they are effectively reaching all high-risk populations and are delivering services in a culturally competent manner.

Strategies were identified for improving the health system's ability to regularly and uniformly monitor ECC indicators at the national level and ensure that ECC programs and providers have the most up-to-date information on ECC. A comprehensive and standardized ECC surveillance system was suggested as necessary to accurately measure the prevalence and incidence of ECC across the nation and to evaluate the impact of interventions over time. The National Oral Health Surveillance System (NOHSS) includes several oral health indicators on caries experience, untreated tooth decay and dental sealants. The NOHSS only measures these indicators in third grade students, however, and does not include health measures specifically for younger children or the maternal population. In addition, not all states and territories submit oral health data to the NOHSS. Additional surveys such as the Behavioral Risk Factor Surveillance System and Pregnancy Risk Assessment Monitoring System could be expanded to include measures of prevalence and risk for dental disease in both the maternal and child populations. These efforts could be aided by integrating surveillance activities into programs currently serving this population, such as WIC and Head Start.

Participants also suggested the development of research-based practice guidelines to improve the quality and safety of ECC interventions. These guidelines should:

1. incorporate best practices that have been proven to be effective;
2. include approaches for minimizing potential health risks; and
3. be tailored to meet the needs of the program's target populations.

Family, staff, and provider education curricula should also be subject to formal credentialing processes, such as accreditation or certification, to validate the accuracy of information presented and evaluate the effectiveness of the curricula across different audiences. New ECC research initiatives also are needed to:

1. evaluate the effectiveness of existing clinical services and training tools; and
2. encourage the development of new ECC interventions.

Conclusions

This examination of current Early Childhood Caries (ECC) programs, while not comprehensive, provides valuable insight into a number of core principles for:

1. preventing, managing, and treating ECC;
2. informing future research efforts; and
3. developing comprehensive approaches to improve the overall health of young children and their families.

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